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TEACHING ENGLISH IN MIXED-ABILITY CLASSES

Horobchenko N.G.
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We are often teaching a class that has students who are clearly of different levels. They may have different starting levels of English or they may learn at very different speeds – for any number of reasons.

AIM: to share the ideas and strategies that a teacher can use to deal with this situation.

MATERIALS and METHODS: the first step is *discussion* and *needs analysis*. It is easy for students to get frustrated in a class of mixed ability. Stronger students may feel held back, weaker students may feel pressured. The teacher may feel stressed. The best solution to it is to have an open class discussion about the classroom situation – to ensure the best for everyone it is better to acknowledge the situation and for everyone to agree how to deal with it. It is probably best to stage and structure the discussion. We use a needs analysis to prompt the students to reflect upon their learning style, learning strategies, language needs, learning enjoyment, motivation, language strengths and weaknesses. Questions that are included: 1) What kinds of class activities do you benefit from? 2) What language skill do you most wish to develop? 3) Do you prefer working individually or with a partner? 4) Would you rather sit and listen to the teacher all lesson or participate in group work? Students compare their answers in pairs or small groups. Then I collect the information and prepare a statistical representation of the key questions and answers. This will help to develop the sense of shared community in the class.

The next step is *explanation* the mixed level situation to the students giving them a list of possible approaches to the teaching and learning. In pairs the students rank the ideas according to their suitability for the situation. It seems useful to write a contract of behavior for activities, something like this: "I will help and support my activity partner", "I will participate in group work". If I think my students are not mature enough to carry out this kind of reflection, I'll explain the situation to the class telling them what strategy is to be used. If students know what to expect, I hope they will cooperate. All of this work could be done in the mother tongue, although I feel it is best done primarily in English as it draws attention to the fact that this is a learning language issue. Undoubtedly, it is necessary to encourage students to develop an awareness of their own language abilities and learning needs. What are their strengths and weaknesses, and how can they focus on these? How can they measure their own progress? The students are suggested to keep a learner's diary, regular self-assessment, keeping records of mistakes.

Varying the way students work in the class will help meet the variety of levels in the class. The example is "pair work' – the students are paired strong with strong, weak with weak, or strong with weak. It depends on the situation. I think, in a very controlled activity, the strong with weak will work well. In a freer activity, perhaps strong with strong will be of benefit. Variety in the pairings is the key here – and the teacher should also be sensitive to the general relationships between different students, and learn to note who works well with whom. As for the group work, the groups are of mixed levels or similar ones. The hope is that in a similar group the weaker student will feel more able to contribute. Also, if the group is working with a set of information, the information is divided between the students, forcing them to work together.

Another idea is "whole class-mingles". This is a favored strategy of mine. A mingle activity involves students talking or interacting with many different members of the class in a short period of time in order to achieve a task. This means that any one student will work with students at different levels – experiencing stronger and weaker levels of communication. This supports the weaker students and provides opportunities for the stronger ones.

A classic activity is a "Find someone who ...". In this activity the student has to survey the class to find people who... (for example)

- came to study at our medical institute from another region of the country (Did you come from Poltava?)
- have done something (Have you found out the meaning of the new Latin terms?)
- like something (Do you like Medical Biology?)

If a student answers "yes" to a question, then the other student should ask for more information. If a student answers "no", then the other should find a new person to ask, and may come back to the first student with another question later on. The potential for this is endless. It is a great way to provide practice of a particular language structure, for example, 10 questions all using the past simple and provides controlled practice as well as the opportunity for further freer discussion. It also creates a lively classroom dynamic. Mingles can take many forms – students are suggested to find the person who has a matching word to theirs, or the second half of a split sentence. The students may all have the same or different questions, or a mixture. The key is the general principle of an information gap or communicative need.

CONCLUSION: overall, variety in the types of working groups, and an open discussion of the class situation will help to deal with some of the difficulties that are present in mixed ability classes of students. The aim of these strategies is to create a positive working environment, which is all part of ensuring better learning.

PUBLIC SPEAKING

Gladchenko O. R., *Senior teacher*

Effective communication with other people means the ability to successfully sell your ideas, to be able to persuade people, to motivate your colleagues and entertain your audiences.

Being a good public speaker also means mastering some technical skills like: knowing how to structure your speech or presentation, how to get to the point, how to better deliver facts and technical information, what kind of body language (stance, movements, gestures, and facial expressions), eye contact, vocal variety and pauses to use.

Public speaking is a set of skills. And you know that every skill can be learned through regular practice and training. Persistence and consistency will be especially required if you want to master public speaking in a foreign language.

For students of a higher educational establishment where English is taught public speaking skills give the opportunities:

- to take part in different conferences and give the presentation in front of the audience, feeling totally confident before, during and after the event;
- to give speeches at ceremonies and graduations and to be totally authentic and feeling good;
- to create their own speeches whatever the occasion and give them with pleasure and confidence;
- to become a better listener, a quick thinker and an excellent speaker.

The task of a teacher is to develop public speaking skills of every student during English classes and conferences. Taking an active part in a scientific society will also help a lot.

THE SIGNIFICANCE OF THE LEARNING OF THE FOREIGN LANGUAGES FOR THE STUDENTS OF MEDICAL UNIVERSITIES

Okhtema S.I.
Chair of Foreign Languages

The rise of English is a remarkable success story. When Julius Caesar landed in Britain nearly two thousand years ago, English did not exist. Today English is used by at least 750 million people, and barely half of those speak it as a mother tongue. Some estimates have put that figure closer to one billion. Whatever the total, English today is more widely spoken and written, than any other language has ever been. It has become the language of planet, the first truly global language. English is the medium for 80 per cent of the information stored in the world's computers and it is spoken practically all over the world.

AIM: purpose of research was study the significance of learning of foreign languages for students of Medical Universities; to explore ways of improving the quality of learning. Natural question that occurs is why school leavers do not possess adequate language skills, and an attempt has been made to tackle this question.

METHODS AND MATERIALS: Learning of a foreign language is not an easy task. It is a long and slow process that takes a lot of time and efforts. Learning English is like learning to swim or learning to play ball. A good ball-player spends hours, days, months, and even years practicing. The more he practices, the better he plays. He has to learn to meet the situations of the game as they arise and react to them immediately. And so it is when we are talking. The ideas we wish to express come instantly to our mind, but there is no time for us to stop and think of how to put together the words we need. Acquiring the ability to use a language automatically, that is without stopping to think, is a process of habit information. Forming a habit, any kind of habit, requires much practice.

Every language has patterns that are fundamental. Every language has a body of common words used by all the speakers of that language and thousands of other words that are used less frequently. We can understand and read many words and structures that we cannot use in speaking and writing. Every language has many ways of saying the same thing. Learning English efficiently requires that you put your mind on what you are doing and have intention and will to learn. You have to build up language habits

in English just as you build up language habits in your mother tongue. Language is not to be taught, language is to be learnt.

From lesson to lesson we must improve our knowledge, learn more and more new words, grammatical structures and put them into practice of speaking. It is useful to watch English video films and then have a discussion. We get acquainted with English or American writers reading their works in original. Speech of native speakers serves us a good example, which we try to follow. We can listen to pop songs and try to understand the words.

A critical view of language study and of learning can become an empowering educational device. The students' interests, aspirations and background should be perceived by the teacher or profession. One straightforward approach is to ask the students themselves. After finding out who our students are, what they studied at school, how they feel about language learning, we are in a much better position to decide appropriate objectives in a particular teaching situation, select a methodology, design courses in English for Medical purposes which provide what our students are seeking. In English classes, learners carry out various tasks, gap-filling exercises for checking reading comprehension skills; learning to conduct dialogues on certain topics or performing role-plays. Students find it very hard to cope with learning English for Medical purposes basically because of a lack of general English skills. Learners have to master terms used in medicine, to be able to understand formal professional texts and authentic recordings of lectures produce formal pieces in writing as well as to be able to make professional presentations and participate in discussions on contemporary medical issues.

Our investigation involved gathering data on learners' view on their encountered difficulties in learning English at university, on their learning needs and expectations, on ranking of preferences for language skills, i.e. degree of importance of proficiency in different areas of language, collecting and analyzing learners' self-assessment data throughout the course. To obtain a clear idea of learners' priorities in different aspects of language learning, respondents were requested to indicate how important it was for them to become proficient in various areas of language use.

Knowledge of foreign languages opens many doors before you, gives you many opportunities and advantages. Reading books in original develops students' intellect, their attitudes to life and to other people.

ВИКОРИСТАННЯ ІНТЕРНЕТ-РЕСУРСІВ У НАВЧАННІ АНГЛІЙСЬКІЙ МОВІ

(з досвіду роботи)

Марченко Д.О., *ст. викладач*

Через процеси глобалізації економіки та перехід сучасного суспільства від індустріалізації до інформатизації з'являються нові вимоги роботодавців до майбутніх працівників щодо рівня володіння англійською мовою.

Зокрема, одна з таких вимог полягає в тому, щоб вони могли здійснювати пошук в Інтернеті професійно значущої інформації англійською мовою, ефективно її опрацьовувати і використовувати.

Студенти вищих навчальних закладів – це група людей, об'єднаних спільними інтересами, одним з яких є стійке прагнення якнайкраще оволодіти професійними навичками, що дозволить при отриманні диплома про вищу освіту скласти гідну конкуренцію на ринку праці України, Європи, Америки.

За допомогою опитування було з'ясовано, що майже 85% студентів забезпечені комп'ютерною технікою та мають змогу систематично працювати у мережі Інтернет.

Використовуючи ці результати, можна зробити процес оволодіння англійською мовою цікавішим і захоплюючим, сприяти формуванню у студентів професійної комунікативної компетентності на рівні В2, забезпечити розвиток у студентів навичок ефективного пошуку, вилучення, обробки та використання інформації.

Студенти отримали завдання самостійно вести пошук інформації з тем, які вивчалися, а саме: "Problem Solving Strategy", "System" та зі спеціальності, наприклад, "Supply and Demand"(для студентів економічного факультету).

Викладачем були запропоновані такі сайти для пошуку інформації, що максимально відповідали меті, завданням та професійним інтересам студентів:

- http:// www.nzmaths.co.nz/ps/info/PSStrategies.aspx
  www.old.nokma.ru/mc/fml.solving.htm
- wikipedia.com
  http://hissa.nist.gov/chissa/SEI - Framework

- http://www.
  investopedia.com/university/economocs/economics3.osp
  http://www.netmba.com/econ/micro/supply-demand
  http://en.wikipedia.org/wiki/Supply-and-demand
  http://www.google.ru
  http://softacademy./npu.edu.ua/Programs/Theory-of-Economics

Студенти за бажанням обирали одну з тем та могли об'єднуватися у мінігрупи (2-5 студентів), де вони не лише самостійно розподіляли завдання, визначали послідовність виконання роботи і планували свій час, але й аналітично опрацьовували іншомовну інформацію з Інтернету, вправно застосовуючи вже набуті знання.

Студенти могли у разі потреби використовувати системи автоматизованого перекладу й спеціалізовані електронні словники за необхідності перекладу складних галузевих термінів та терміносполучень або допомогу викладача на індивідуальних заняттях.

Вони також самі приймали рішення, у якій формі представляти результати своєї роботи:

- усне повідомлення;
- презентація;
- програвання ситуацій за ролями тощо.

На контрольному занятті для перевірки рівня сформованості мовленнєвої компетенції у говорінні кожен студент повинен був представити за 3-5 хвилин свій проект і відповісти на запитання як викладача, так і своїх одногрупників.

Майже всі доповідачі використовували наочність: таблиці, схеми, діаграми, новий вокабуляр тощо.

Отже, використання Інтернет-ресурсів у навчання англійській мові забезпечує максимальну автономію студентів, розвиток їх творчих здібностей, вияв індивідуальності і розвиток у процесі такої діяльності навичок та вміння говоріння, аудіювання, читання і письма.

ПАРНА І ГРУПОВА РОБОТА НА ЗАНЯТТЯХ ІНОЗЕМНОЇ МОВИ ЯК ОСНОВА ІНТЕРАКТИВНОГО НАВЧАННЯ

Чучіліна Л.М., *викладач*

Інтерактивне навчання є однією з сучасних технологій, при застосуванні якої утворюється атмосфера колективного спілкування, організованого на базі комунікативних ситуацій. Спілкування в подібних ситуаціях формує сильну і сталу зацікавленість у вивченні іноземної мови і надає студентам можливість засвоювати іншомовний матеріал у більш невимушеній обстановці.

За даними американських психологів відсоток засвоєння матеріалу під час слухання складає 5-10%, під час читання -10-20%, під час письма -20-30%. Під час роботи в парах і групах цей відсоток значно вищий – 30-75%.

Отже, можна стверджувати,. що основою інтерактивного методу навчання є парна і групова робота.

Закордонні методисти розрізняють «відкриті» і «закриті» пари.

«Відкриті» пари – найпростіший вид спілкування під час заняття, коли двоє людей спілкуються, а решта їх слухає. Спілкування у «відкритій» парі може здійснюватись у режимі «викладач-студент» або «студент-студент». У режимі «викладач-студент» можна запропонувати фразу-стимул або коротке повідомлення і попросити студентів розпитати з метою отримання додаткової інформації або висловити свою точку зору. Різновидом «відкритої» пари є так звана "mingle activity", "strip story" та ін.

«Закриті» пари – основна форма парної роботи в сучасній методиці викладання іноземних мов. Робота в закритих парах має ряд переваг. У парах проводяться деякі рольові ігри, що вимагають участі двох співрозмовників: «У готелі», «У магазині», «У кафе», «В аеропорту» та ін.

Ефективним для розвитку навичок говоріння є метод «інтерв'ю», опитування з метою виявлення думок на визначену тему, анкетування, тестування, тощо.

Дуже важливими і не менш ефективними є групові форми роботи. В таких формах присутня подвійна направленість. По-перше, студенти працюють у групі ровесників, де вони можуть досить вільно висловлювати свої думки, мобілізувати свої знання, виявити творчий,

організаційний і лідерський потенціал. По-друге, після закінчення роботи групи починають дискутувати, обмінюватися думками і аргументами. Таким чином, до роботи додається і подвійна мотивація: мотив прояву особистості та самоствердження у групі і мотив досягнення колективної мети.

При організації групової роботи дуже важливо чітко сформулювати мету, яку треба досягти, пояснити яким чином виконувати завдання і вказати час, відведений на його виконання. Формами групової роботи є:"Jigsaw reading/listening activity", "Quiz", "Brainstorm', "A big circle', "Information gap activity"та ін. Однією з групових форм роботи є складання так званих "mind maps". Даний вид вправи є гарною підготовкою до навчання зв'язному висловлюванню по темі.

Організація парної і групової роботи – нелегка справа для викладача, яка вимагає ретельної підготовки і чіткого проведення. Але ці форми роботи, без сумніву, сприяють встановленню емоційного контакту зі студентами, дозволяють уникнути нервового напруження, а це, в свою чергу, призводить до кращого засвоєння матеріалу, розвитку соціальної і суспільної компетентності студентів, розширенню їхніх пізнавальних здібностей, забезпечують можливість демократичного, рівноправного партнерства між викладачем і студентом.

ПОВНІ ЕКВІВАЛЕНТИ ССР З ФЛОРИСТИЧНИМ КОМПОНЕНТОМ В УКРАЇНСЬКІЙ, АНГЛІЙСЬКІЙ ТА ФРАНЦУЗЬКІЙ МОВАХ

Алексахіна Т.О., *викладач*

Спираючись на нашу класифікацію, в основі якої лежить ознака семантичного збігу, до повних еквівалентів ми будемо відносити такі ССР, які мають однакове денотативне і конотативне значення, тобто між співвідносними ССР не має бути відмінностей у плані змісту, стилістичної віднесеності, метафоричності й емоційно-експресивної конотації. Вони повинні мати приблизно однаковий компонентний склад, однакові лексико-граматичні показники, належати до однієї морфологічної категорії, і ще варто додати одну важливу властивість: у них має бути відсутній національний колорит.

Розглянемо явище повної еквівалентності ССР з флористичним компонентом в українській, англійській та французькій мовах на прикладах.

За цими ознаками, на нашу думку, є такі повні еквіваленти в англійській та французькій мовах, де в основі механізму вторинної номінації лежить метафора, яка грунтується на подібності квітів, а саме троянди та лілії, з красою дівчини, з її цнотливістю : *fair as a rose, fresh as a rose* (буквально 'свіжа, як троянда') / *frais comme une rose* – 'гарна, прекрасна, як троянда'; *pure as a lily / pur comme un lis* – 'біла, чиста, невинна, як лілія'. У наступних прикладах ми можемо виокремити такі повні еквіваленти: *path strewn with roses / chemen semé de roses* – 'шлях, укритий трояндами'; *not to be a bed of roses / n'etre pas sur un lit de roses* (буквально 'бути не тільки в ліжку з трояндами') 'живеться не солодко, не завжди чекають квіти' – семантична група – 'життя, насолода життям'; *no rose without a thorn / il n'y a pas de roses sans epines, nulle rose sans epines* – 'немає троянди без колючок' – недоліки; *in the flower of one's age / a la fleur des ans (de l'age)* (буквально 'в квітці чийогось віку') 'в розквіті літ' – вік. Існує лише один повний еквівалент, притаманний трьом мовам: *почервоніє, як мак / turn red as a poppy* (буквально 'стати червоним, як мак') / *rouge comme un coquelicot* – 'червоний, як мак', де семантичним компонентом виступає сором'язливість.

Поданий аналіз дає змогу встановити, що повні фразеологічні еквіваленти, в основі яких, як правило, превалює метафора, властиві в більшості випадків лише англійській та французькій мовам, що можна пояснити спільною історичною долею Франції та Англії, а також загальновідомим фактом впливу французької мови на англійську (приблизно 70 % лексики англійської мови вважають запозиченими із французької). Щодо української мови, то можна зазначити, що повні еквіваленти їй не властиві взагалі. Вважаємо за доцільне відзначити, що повна міжмовна еквівалентність ССР з флористичним компонентом в українській, англійській та французькій мовах є явищем непоширеним, при цьому чим віддаленіші мови, тим менше в них ідентичних фразеологічних відповідників.

РЕАЛІЗАЦІЯ ПРИНЦИПУ КОМУНІКАТИВНОСТІ В ДИСТАНЦІЙНОМУ НАВЧАННІ ІНОЗЕМНИХ МОВ

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Сучасний розвиток науки доводить необхідність розширення мети від володіння іншомовною мовленнєвою діяльністю (читанням, говорінням, аудіюванням, письмом) до більш широкого поняття іншомовної комунікативної компетенції. Згідно теорії мовленнєвої діяльності (І.О. Зимня, Б.В. Бєляєв, О.О. Леонтьєв) успіх іншомовного спілкування комуніканта залежить від рівня практичного володіння мовою. Відповідно, для здійснення мовленнєвої діяльності необхідно оволодіти знаннями, навичками та вміннями, щодо користування засобами мови під час здійснення мовленнєвих дій з певною метою та в конкретних ситуаціях спілкування.

Згідно з принципом комунікативності навчання спрямовується на формування у студентів мовних навичок та мовленнєвих умінь, завдяки яким вони зможуть здійснювати іншомовне мовленнєве спілкування в межах засвоєного навчального матеріалу. Під час навчання викладач має створювати ситуації, що моделюють процес реальної комунікації. Вміння спілкуватися в запропонованих ситуаціях формуються в процесі виконання студентами умовно – мовленнєвих вправ.

Розвиток інформаційних технологій надав нову можливість проведення занять – впровадження дистанційної форми навчання. Застосування комп'ютерів у навчальному процесі приводить до підвищення ефективності, інтенсивності, активізації навчального процесу. Його застосування дозволяє:

- здійснити зберігання інформації у різному оформленні;
- забезпечення безперервного зворотного зв'язку у навчальному процесі;
- адаптацію існуючих навчальних матеріалів до комп'ютеризованих умов навчання;
- забезпечення можливості повторення навчального матеріалу;
- організацію і керування самостійною діяльністю студента;
- поточний і підсумковий контроль знань;
- самоконтроль і саморегулювання навчальної діяльності студента.

Застосування комп'ютерів у навчальній діяльності дозволяє реалізувати комунікативний підхід у навчанні іншомовної мовленнєвої діяльності, оскільки це моделює певну ситуацію реального спілкування. Зворотний зв'язок здійснюється у формі діалогу людини з комп'ютером.

Отже, технологічні можливості комп'ютера дозволяють створити комунікативне середовище для навчання.

Спілкування викладача та студентів електронною поштою може використовуватися навчання, консультації, проведення прямого діалогу між ними. Як викладачі, так і студенти відчувають зручність такої організації іншомовної взаємодії, бо вона позбавляє їх необхідності дотримуватися окремого розкладу консультацій, чим заощаджує час.

Консультація викладача забезпечує оперативний індивідуальний зворотний зв'язок для студента, стосовно виконання завдань та відповідей на запитання. Робота за персональним комп'ютером при навчанні іноземної мови допомагає студентам на етапі тренування подолати психологічний бар'єр, який часто з'являється при використанні іноземної мови як засобу спілкування. Роблячи помилки, студент не відчуває незручності, а, одержавши необхідну навчальну інформацію, успішно долає їх.

Комунікативна діяльність в дистанційному навчанні іноземних мов відзначається природністю та різноманітністю видів робіт, таких як:

1) діалог;
2) листування;
3) консультації;
4) обмін інформацією;
5) дискусія.

Отже, комунікативна компетенція передбачає "володіння лінгвістичною компетенцією, знання відомостей про мову, наявність уміння співвідносити мовні засоби із завданнями й умовами спілкування, розуміння відносин між комунікантами, уміння організовувати мовленнєве спілкування".

МІЖПРЕДМЕТНІ ЗВЯЗКИ В ПРОЦЕСІ ВИВЧЕННЯ ІНОЗЕМНОЇ МОВИ У ВИЩИХ НАВЧАЛЬНИХ ЗАКЛАДАХ

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Основною особливістю сучасної технології навчання стає якнайтісніша інтеграція всіх навчальних дисциплін.

Важливим є те, щоб студенти не просто отримували знання з окремих дисциплін, а вміли користуватися апаратом кожної дисципліни в інтегративному зв'язку для активізації їх пізнавальної та професійної діяльності. Тому актуальність міжпредметних зв'язків (МЗ) сьогодні зростає.

Іноземна мова як навчальна дисципліна інтегрується практично до усіх навчальних дисциплін.

У рекомендаціях Ради Європи з питань освіти (1998) наголошується на необхідності розвитку інтегративних умінь при формуванні професійної мовленнєвої компетенції. Тому основним комунікативно значущим вмінням для студентів технічних спеціальностей є вилучення фахових знань з джерел науково-технічної інформації, їх інтерпретація та активізація здебільшого в усному мовленні.

Широке застосування МЗ дає змогу студентам технічних спеціальностей відпрацьовувати теоретичні основи предмета, виконуючи завдання з іноземної мови відповідно до професійної спрямованості і, отже-розвивати професійні якості. Також, це один з важливих стимулів підвищення ефективності навчання в цілому та інтересу студентів до вивчення іноземної мови зокрема.

Практична реалізація МЗ має забезпечуватися відповідними ораганізаційними умовами:

1) узгодженістю навчальних планів і програм із навчально-методичною документацією;

2) ознайомленням викладачів зі змістом програм і підручників суміжних дисциплін;

3) сумісною роботою викладачів різних кафедр над створенням методичних посібників та плануванням реалізації МЗ.

Важливо підготувати матеріальну навчально-методичну базу, організувати співпрацю викладачів іноземних мов та колег з профілюючих кафедр, викликати у студентів зацікавленість у

використанні іноземної мови для підвищення власної компетенції при вивченні спеціальності.

Важливим є відбір та організація навчального матеріалу; формування необхідної мовної бази, яка б стала основою для успішного читання літератури з фаху іноземною мовою; формування навичок сприйняття змісту текстів при читанні та висловлення думок іноземною мовою.

При відборі навчального матеріалу перш за все необхідно враховувати професійні знання студентів. В іншому разі відповідність рівня інформації рівню компетенції студента у галузі знань рідною мовою не тільки перешкоджатиме розумінню іншомовного тексту, а й знизить інтерес до читання іншомовною літератури зі спеціальності і спричинить негативне ставлення до вивчення іноземної мови в цілому.

Вже на 1 курсі в другому семестрі студентам комп'ютерних спеціальностей пропонуються автентичні тексти за спеціальністю для домашнього читання, наприклад *Computers for the disabled, Word-processing facilities, Basic features of database programs, Security and privacy on the Internet.*

На 2 курсі проводиться проектна робота з самостійним пошуком автентичних фахових текстів із залученням інтернет-ресурсів та подальшою презентацією та обговоренням докладів на конференції.

Такі види діяльності сприяють не лише формуванню іншомовних мовленнєвих навичок та вмінь, збагаченню мови екстралінгвістичною та фактологічною інформацією, а й допомагають уникнути штампів, одноманітності та стереотипів у навчанні.

Таким чином, МЗ є широким полем реалізації творчого потенціалу як викладачів, так і студентів. МЗ дозволяють активізувати пізнавальну діяльність студентів, створити сприятливі умови для засвоєння знань з суміжних предметів та саморозвитку кожного студента.

ФОРМУВАННЯ І ФУНКЦІОНУВАННЯ ЕКОНОМІЧНИХ НЕОЛОГІЗМІВ АНГЛІЙСЬКОЇ МОВИ

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Як відомо, мова є відбиттям суспільної свідомості народу – носія цієї мови. Ті народи, які лідирують у науці, техніці, виробництві, мають так би мовити, пріоритет у номінації нових предметів та явищ, що з'являються у результаті науково-технічного прогресу. Зрозуміло, що для номінації нових явищ і речей використовується, як правило, мовний матеріал народу-винахідника.

Англійська мова як і інші мови, не могла не відреагувати на зміни в суспільному житті носіїв, викликані подіями глобального масштабу XXI сторіччя. Сфера економіки і бізнесу залишається одним із головних постачальників інновацій, особливо якщо враховувати вплив на цю сферу інформаційної революції, а також посилені процеси глобалізації економічного життя.

Концептуально більшість фахівців підтримують глобалізацію (globalization), сприймаючи її як прогресивні зрушення, що сприяють процвітанню людства. Водночас, феномен глобалізації, що викликає фундаментальні зміни в кожному суспільстві може оцінюватися дуже негативно через знищення традиційних цінностей життя і реальну загрозу національній економічній незалежності та соціально-культурній автентичності. Це зумовило появу такого поняття як de-globalization – рух проти глобалізації. Практично повним синонімом слова de-globalization виступає і неологізм globophobia. Людина, яка несхвально ставиться і протестує проти негативних наслідків глобалізації отримала назву globophobe, antiglobalist , globalifobico або globoprotester.

Значна кількість нових слів, що виникають у сфері економіки та бізнесу, відбиває нові економічні теорії та явища для удосконалення життя суспільства. Наприклад, неологізм glocalization позначає процес виготовлення товарів для збуту на світовому ринку з врахуванням специфіки окремої країни. Фразеологічний новотвір economic jihad вводить поняття "економічний джихад" – бойкот товарів певної країни.

При утворенні неологізмів, пов'язаних з економічною сферою, високу "продуктивність" виявляє елемент nomics у значенні "економічна політика; економічний аспект діяльності" Цей елемент

продовжує слугувати базою для створення цілого ряду неологізмів. Так, наприклад, останнім часом виділяється галузь економіки, яку називають "невроекономікою" (neuroeconomics). Вона вивчає вплив процесів, що відбуваються в мозку на економічну поведінку людини. Фахівець в даній галузі іменується "невроекономістом" (neuroeconomist). Неологізм culternomics (culture+economics) було створено для позначення незалежної економіки від особливостей культури певної країни, тобто історії, менталітету населення, релігії.

Розвиток економіки, на думку вчених, повинен здійснюватися тільки за умови, що вона не завдає шкоди навколишньому середовищу, зберігає природу для наступних поколінь. З даною проблемою пов'язана ціла низка нових понять. Ecolonomics (ecology+economics) - спосіб життя, пов'язаний з життєво-важливою діяльністю, яка не шкодить збереженню довкілля. "Екологічна економіка" (eco-economy) займається питаннями економічного розвитку, які враховують необхідність збереження довкілля. Практичною альтернативою існуючим джерелам пального вважається водень (hydrogen), тому виникає новий термін "воднева економіка" (hydrogen-economy).

Необхідно відзначити, що глобальна економічна криза сприяє поповненню словникового складу значною кількістю нових слів і словосполучень. Вчені вважають, що причиною поточної кризи став так званий обвал "субстандартних запозичень" (subprime lending – надання кредитних ресурсів клієнтам з пониженим кредитним рейтингом за ставкою, вищою за основну). Масові банкрутства компаній призвели до масових звільнень службовців, до зростання безробіття.. Так з'являється неологізм worklessness, який позначає стан "хронічного безробіття" на відміну від слова unemployment, що вводить поняття тимчасової відсутності роботи.

Таким чином, нами розглянуті лише деякі аспекти формування та функціонування нової економічної лексики та фразеології. Необхідно наголосити, що збагачення словникового складу англійської мови потребує глибокого лінгвістичного та соціо-лінгвістичного дослідження. Одним із практичних результатів такого дослідження вважається укладення словника економічних інновацій.

ФУНКЦИОНАЛЬНО-СТИЛИСТИЧЕСКИЙ АНАЛИЗ ТЕКСТОВ И РАЦИОНАЛЬНАЯ МЕТОДИКА ОБУЧЕНИЯ ИНОСТРАННЫМ ЯЗЫКАМ В ВУЗАХ

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Методика преподавания иностранных языков должна опираться на лингвистический фундамент не только при отборе языкового материала, но и при его дозировке на разных этапах обучения. Таким образом, рациональная методика строится как методика обучения базовым подъязыкам. В этой связи анализ естественно-научных и технических текстов с целью выявления их лексических, словообразовательных, грамматических, синтаксических и других особенностей представляется актуальной проблемой.

Лексический состав научного стиля рассматривается на фоне лексики книжно-письменного типа речи с использованием многочисленных терминов. Для анализа данного базового подъязыка может быть использован показатель частотности, причем интерес представляет как знание частоты употребления собственно терминов, так и обладание сведениями об употребительности слов - нетерминов, без которых текст не может существовать. Интересен также анализ морфологического состава лексики. По данным исследований специальных языков, последние имеют номинативный характер (существительные и прилагательные могут вместе составлять до 60% всего текста, а с местоимениями- до 65%). В то же время следует отметить большую методическую ценность глаголов и необходимость их тщательного изучения.

Терминологическая лексика как часть словарного состава также обладает рядом интересных свойств. Выявление особенностей словообразования и продуктивных для данной сферы словообразовательных моделей значительно ускорило бы и активизировало усвоение лексического и грамматического материала. Изучение особенностей словообразования языка науки и техники представляет несомненный интерес и для правильного понимания закономерностей современного терминотворчества, а это в настоящее время очень актуально для формирования терминологии в украинском языке.

Синтаксические конструкции научных работ тяготеют к стереотипности. Излагая материал, автор последовательно ведет читателя от этапа к этапу, и структура научного текста приобретает характерный линейный, цепочечный вид. Из строгой логики изложения вытекает такой лингвистический признак как сложный синтаксис, способный передать логическую аргументированность и мотивированность научной мысли. Поскольку для научного изложения характерно отделение главного от второстепенного, то интенсивное использование сложно-подчиненных предложений явилось наиболее удобным способом выражения мысли. Объективность научной речи обусловливает безличность изложения. Отсюда вытекает и преобладание страдательного залога и так называемый именной характер изложения материала, проявляющийся в преобладание инфинитивных, причастных и герундиальных форм. Статистический анализ структуры предложений английского технического текста показывает, что более 50% всех предложений составляют простые двусоставные предложения с усложнениями, выраженными герундиальными, инфинитивными и причастными конструкциями.

Более полное описание этой специфики грамматических структур, используемых в научном стиле, наряду со статистическим описанием синтаксической организации текстов, анализом особенностей отдельных морфологических категорий, длины фраз, распространенности различных видов придаточных предложений и т.п. имело бы безусловную практическую пользу как для правильной организации обучения иностранным языка, так и в практике организации переводческой деятельности. К недостаточно исследованным разделам стилистики относится и описание жанровых разновидностей научного стиля.

Таким образом, очевидно, что систематические исследования специальных языков сферы науки и техники представляют собой перспективный прагматический подход к построению рациональной методики обучения иностранным языкам в условиях жесткого лимита времени. И хотя выявление всех названных нами особенностей предполагает обработку достаточно большого объема информации и представляет собой очень трудоемкий процесс, существенное сокращение сроков решения данной проблемы может быть достигнуто путем применения современных ЭВМ.

МІСЦЕ КОМП'ЮТЕРНОЇ ПРОГРАМИ В ОРГАНІЗАЦІЇ САМОСТІЙНОЇ РОБОТИ СТУДЕНТІВ У ПРОЦЕСІ НАВЧАННЯ ІНОЗЕМНИХ МОВ

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Реформування системи вищої освіти в Україні значною мірою спрямоване на впровадження в навчальний процес основних положень Болонської декларації. Згідно з практикою роботи провідних європейських університетів у студентів кількість годин роботи в аудиторії з викладачем складає приблизно половину, а інколи й менше, від загальної кількості годин, що виділяються на вивчення дисципліни. Таким чином, постає природне запитання про збільшення питомої ваги самостійної роботи студентів, які навчаються за кредитно-модульною системою.

Слід зазначити, що за результатами досліджень суперечностей надання освітніх послуг в існуючій практиці університету та вимог Болонської декларації виявлено, що студенти особливо молодших курсів – колишні учні шкіл – мають наднизький рівень сформованості навичок і вмінь щодо організації самостійної роботи.

Очевидно, що за таких умов організація самостійної роботи студентів покладається на викладача. Сьогодні немає потреби доводити доцільність застосування комп'ютерних засобів навчання, проте, існує проблема їх ефективного застосування. Ми вважаємо, що запровадження комп'ютерних програм для організації самостійної роботи студентів за умов скорочення кількості аудиторних занять є оптимальним шляхом вирішення цієї проблеми.

Комп'ютерна програма має ряд характеристик, які дозволяють їй ефективно керувати самостійною роботою студента. Серед таких виокремимо: можливість створення іншомовного середовища; можливість організовувати навчання гнучко; можливість багаторазового повторення при виконанні вправ, що забезпечує стійкість сформованих навичок і вмінь; наявність зворотного зв'язку різних рівнів, надання підказки, забезпеченість ключами, таким чином, забезпечуючи самоконтроль; подолання психологічного бар'єру тощо.

ВИБАЧЕННЯ ЯК ПОЛІЛЛОКУТИВНИЙ МОВЛЕННЄВИЙ АКТ В АНГЛОМОВНОМУ ДИСКУРСІ

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Мовленнєвий акт (МА), який реалізує комунікативну інтенцію вибачення, є невід'ємною частиною вербальної комунікації. Однак в сучасній лінгвістиці немає єдності поглядів щодо питання про їх статус та мовленнєвоактові характеристики, що зумовлює необхідність вирішення цієї проблеми.

Установленню прагматичного типу висловлення, яке реалізує вибачення, заважає відсутність загальновизнаної класифікації МА.

Існує досить велика кількість класифікацій мовленнєвих актів за семантичними ознаками, за комунікативною направленістю та ін. Загальним для всіх існуючих класифікацій є той факт, що всі вони основані на експліцитно виражених характеристиках мовленнєвих актів. В залежності від критеріїв, які покладено в основу виділення МА, висловлення-вибачення по-різному осмислюються в різних класифікаціях.

Аналіз існуючих класифікацій мовленнєвих актів дозволяє дійти висновку, що мовленнєві акти вибачення не виділяються в окремий клас і більшістю дослідників розглядаються в групі актів, які виражаються одиницями мовленнєвого етикету: експресив; бехабітив; перформатив; сатисфактив; акти визнання, ритуальні мовленнєві акти.

З огляду на принципи комунікації висловлення, що реалізують комунікативну інтенцію вибачення, є дискурсивним утіленням стратегій негативної ввічливості, які виражають прагнення мовця до дистанціювання від слухача, до свободи своїх дій.

Кінцевою метою застосування висловлень з інтенцією вибачення є прагнення вплинути на поведінку співбесідника у необхідному для мовця напрямку. Для вибачення немаловажною метою є також і встановлення такого емоційного контакту, який дозволив би співбесідникам продовжити піддержувати відношення в необхідній тональності (наприклад, дружні, теплі, щирі). Тому в мотиви мовця входять не тільки прагнення здійснити вплив на слухача з метою здобуття для себе деяких переваг. Характер даних висловлень вказує на те, що мовець, вибачаючись, намагається передати слухачеві особливу прихильність, тим самим розраховуючи на відповідну прихильність з боку слухача.

Клас МА вибачення можна символічно представити у наступному вигляді:

$$(М/С)\ (В)\ В_{иб} \rightarrow ПЕ\ (=Р),$$

де С – слухач, (В) – відношення мовця (М) до того, що відбувається (змінна одиниця, яка визначається різними психологічними станами, реакціями мовця на нанесену їм образу слухачеві, або бажанням запобігти виникненню провини); $В_{иб}$ – іллокутивна функція вибачення; ПЕ – перлокутивний ефект, який відображає відновлену рівновагу (Р) в міжособистісних стосунках зі слухачем.

Умовою пропозиціонального змісту в **ретроспективному корегувальному МА вибачення** є вираження мовцем свого емоційного стану – почуття провини, яке є наслідком його малефактивної дії по відношенню до слухача. Підготовчою умовою (або прагматичною пресупозицією, заданою комунікативною ситуацією) є істинність пропозиції, вираженої МА вибачення. Умовою щирості є бажання мовця залагодити свою провину та водночас спонукати слухуча надати вибачення. Суттєвою умовою, що відповідає іллокутивній меті, є намір мовця позбутися почуття своєї провини та спонукати слухача надати вибачення.

Умовою пропозиціонального змісту в **превентивному МА вибачення** є вираження емоційного стану мовця – стурбованості можливими негативними наслідками порушення норм етикету його власними діями. Підготовчою умовою є істинність пропозиції, вираженої МА вибачення. Умовою щирості є бажання мовця запобігти виникненню почуття провини за можливе порушення норм етикету. Суттєвою умовою є намір мовця вербалізувати свій емоційний стан, аби не допустити виникнення почуття провини.

В умовах успішності вибачення простежується поєднання ознак експресива та реквестива: вони співпадають для переважної більшості умов ретроспективних корегувальних МА вибачення і превентивних МА вибачення, хоча в останньому різновиді спонукання слухача до відповіді не є релевантною умовою щирості або суттєвою умовою.

Таким чином, МА вибачення демонструє дві рівновеликі провідні іллокутивні сили і є поліілокутивним.

ПРОФЕСІЙНА СПРОЯМОВАННІСТЬ У НАВЧАННІ СТУДЕНТІВ ІНОЗЕМНОЇ МОВИ

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Англійська мова професійного спілкування (АМПС) актуальна тема сьогодення. Студенти-це дорослі люди, які мають повний професій ний інтерес у вивченні англійської мови. Очікується, що студенти при отриманні диплома матимуть рівень незалежного користувача, що є достатнім для того, щоб вони ефективно функціонували у своєму професійному середовищі. Залежно від потреб у вивченні мови ВНЗ мають пропонувати різні види діяльності: підготовленні на замовлення курси АМПС, також факультативні курси у межах кожного кваліфікаційного рівня відповідно до конкретних потреб студентів, які бажають розвивати свої мовленнєві вміння в межах своєї спеціальності або поліпшувати свої спеціальності або поліпшувати свої професійні комунікативні вміння.

Необхідність включення в курс АМПС змісту спеціальної дисципліни потребує співпраці викладачів англійської мови з викладачами-предметниками.

Що стосовно нашого ВНЗ, то у нас розроблені спеціальні програми для студентів різних спеціальностей. Я працюю зі студентами гуманітарних спеціальностей: юристами та журналістами.

1) По-перше, я завжди аналізую потреби майбутніх спеціалістів у використанні
АМПС у їх професійній діяльності.
2) аналізую рівень підготовленості студентів даної групи ;
3) ставлю цілі для реалізації підготовленої програми;
4) підбираю матеріал для практичних і індивідуальних занять;
5) планую заняття, враховуючи розвиток всіх мовних навичок (читання, аудіювання, письма та мовлення).

Кожне заняття повинно включати чітко сплановані структури, щоб максимально забезпечити практику студентів, яка їм дасть змогу вживати вивчений мате у реальному професійному житті та навчанні. На заняттях створюю атмосферу наближену до реального життя. Особливе значення має мотивація навчання і взаєморозуміння між викладачем і студентами. Використовую різні види діяльності: інтерв`ю, рольові ігри, дискусії, круглі столи. Особливо вдається і

подобається студентам групова, сумісна робота, яка дає змогу працювати нарівні як більш підготовленим студентам, так і слабшим. Це так звані „проекти."

Студенти-журналісти роблять цікаві телевізійні програми, знімаючи фільми та відео, випускаючи стінгазети малюючи постери. А студенти юридичного відділення демонструють свої професійні здібності у рольових іграх з розкриття кримінальних справ в реальних постановках судового процесу. Коли такі вид колективної сумісної праці реалізуються, студенти розуміють що кожний з них це одне ціле і поставлена мета досягнута. Дуже важливо контролювати цей творчий процес студентів і з`ясовувати зв`язки між задачами які здійснюються на заняттях англійської мови і їх реалізацією в майбутній професійній сфері. Англійська мова професійного спілкування-це великий крок вперед у вивченні іноземної мови. Отже, студенти навчаються, стосовно їх професійних потреб,

спілкуватися зі своїми колегами, читати інструкції, вести ділові переговори, запрошувати гостей і т.д.

Навчання мові професійного спілкування має благородну ціль. Це не просто мати мовні навички, а вміти використати їх у відповідній ситуації. Погоджуюсь з висловом, що „ ми не можемо збудувати будівлю, не розуміючи дійсної природи грунту, тобто ми не спроможні навчати студентів ефективно, не звертаючи у ваги, як вони її вивчають. Тільки викладач грає велику роль в допомозі своїм студентам розуміти проблеми, які стосуються реального життя.

Щоб досягти цієї мети, важливо розуміти прагнення і мотивації вивчаючих іноземну мову, як вони уявляють себе у майбутньому: журналістами, юристами або економістами. Вони поєднують свої знання в професійній сфері зі знаннями англійської мови.

ПРО НЕОБХІДНІСТЬ ПЕРЕХОДУ ДО МОДУЛЬНОГО ЦИКЛУ НАВЧАННЯ ІНОЗЕМНІЙ МОВІ АСПІРАНТІВ ТА МАГІСТРІВ У СВІТЛІ ВИМОГ НАЦІОНАЛЬНОЇ ПРОГРАМИ АМПС

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Необхідність підвищення ефективності навчання магістрів/аспірантіввимагає від кафедр іноземних мовстворення такої організації навчального процесу, яка забезпечить магістрам та аспірантам можливість оволодіти додатковими професійно-комунікативними вміннями.

Основною вимогою до магістрів та аспірантів з іноземної мови є досягнення комунікативної компетенції, що дозволяє спеціалісту вирішувати різноманітні професійні завдання, які виникають у різноманітних виробничих ситуаціях.

Часто процес навчання іноземній мові магістрів та аспірантів немовних спеціальностей будується за однією і тією ж схемою, що і навчання іноземній мові студентів молодших курсів, а власне, викладач дає певну інформацію, контролює рівень її засвоєння, дає почергово вправи з читанням професійно-орієнтовних текстів та їх обговорення. Подібна робота з текстом, бесіда за темою, виконання граматичних вправ, здача «тисяч знаків» вже давно не приводить до активного оволодіння іноземною мовою. Слід також враховувати, що більша частина аспірантів закінчує магістерський курс навчання. Таким чином, у багатьох випадках при навчанні магістрів і аспірантів викладач має спрву з достатньо підготовленою аудиторією.

Пропонується модульний цикл навчання іноземній мові. Кожен модуль являє собою окремий короткостроковий спеціалізований курс, націлений на формування конкретних ділових комунікативних вмінь, необхідних для конкретної ситуації спілкування.

Модульний підхід, розрахований на велику самостійну роботу аспірантів, дає можливість виявляти конкретні професійні потреби і на цій основі будувати спеціалізовані курси. На кафедрі іноземних мов викладачі розробили авторську програму вивчення іноземних мов для аспірантів. Програма націлена на створення такої організації навчального процесу, яка надасть можливість формувати у слухачів загальні та професійно-орієнтовні комунікативні мовленнєві компетенції (лінгвістичну, соціолінгвістичну та прагматичну).

СОВРЕМЕННЫЕ НАУЧНО-ТЕХНИЧЕСКИЕ ТЕКСТЫ НА АНГЛИЙСКОМ ЯЗЫКЕ И НЕКОТОРЫЕ ОСОБЕННОСТИ ИХ ПЕРЕВОДА

Башлак И. А.

В данной статье мы рассмотрим некоторые особенности перевода специальных текстов с английского на русский. Быстрое обновление научно-технической информации оказывает существенное влияние не только на содержание современных научно-технических текстов на английском языке, но и на их структурно-грамматические и лексические особенности. При обучении переводу студентов технического вуза необходимо уделять пристальное внимание как отличительным особенностям научно-технических текстов, так и технике их перевода. Общеизвестными лексико-грамматическими особенностями научно технических текстов на английском языке являются их информативность, ведущая роль терминологии и специальной лексики, стремление к номинативности, многочисленные атрибутивные группы и широкое использование эллиптических конструкций.

Однако в настоящее время англоязычные научно-технические материалы все больше приобретают некоторые черты, ранее присущие только газетно-публицистическим материалам или художественным текстам. Это не означает видоизменение научного стиля изложения материалов, но подразумевает дополнительные трудности, с которыми сталкиваются студенты технических вузов при переводе профессионально-ориентированных текстов, и возникновение для преподавателя необходимости уделять более пристальное внимание современным особенностям научных материалов.

В процессе преподавания педагог не только и не столько акцентирует внимание студентов на тех или иных особенностях научного текста, но помогает и показывает, как анализировать лексические и грамматические явления, которые встречаются в научно-технических материалах. Лексическими особенностями современных научно-технических текстов являются: использование стилистически разноплановой лексики, обилие неологизмов, особенно в текстах компьютерной тематики, а также широкое использование метонимии и метафоры, характерное для текстов художественной литературы.

При переводе стилистически разноплановой лексики в научно-технических текстах необходимо руководствоваться общепризнанным принципом сохранения цели коммуникации и научного стиля текста перевода, руководствуясь нормами и узусом русского языка. Если в англоязычных текстах научного стиля допустимо использование разговорных выражений, то в русскоязычных текстах разговорные выражения должны быть заменены нейтральными.

E.g. The scientists also drive home problems with making predictions from models. Ученые также способствуют осознанию проблем путем создания прогнозов на основе моделирования.

Основными тенденциями перевода неологизмов научно-технических текстов является заимствование новых терминов либо их калькирование. Огромная волна заимствований, пришедшаяся на 90-е годы XX века, пополнила лексический состав русского языка множеством общетехнических, инженерных и особенно компьютерных терминов. Однако чрезмерное заимствование терминов на сегодняшний день, к счастью, уступает место лексическим заменам. Несмотря на это, еще часто встречается необоснованное заимствование уже существующих в русском языке терминов или реалий. В этой связи необходимо акцентировать внимание студентов на наличии в русском языке варианта перевода и на отсутствии необходимости заимствования. E.g. to upgrade - обновить, улучшить, усовершенствовать; но не: сделать апгрейд.

Использование метафоры и метонимии в современных научно-технических текстах приближает их по стилю к художественным, делает их более интересными и "живыми", однако, при переводе образность чаще всего теряется вследствие несовпадения картин мира двух языков либо из-за невозможности ее сохранения в рамках научного стиля русского языка. E.g. ... demonstrated masterful use of its lung power...- продемонстрировал мастерское использование возможностей двигателя. Еще одной характерной особенностью современных научно-технических текстов на английском языке становится очень частое использование причинно-следственных союзов и логических связок в начале абзаца, ранее отмечавшееся в основном в середине сложного предложения. Эти слова придают тексту логичность, связывая его отдельные части, и в некоторых случаях несут эмоциональную нагрузку, то есть одновременно используются для выделения определенной наиболее значимой

информации, что обязательно должно быть отражено в тексте перевода. E.g. Moreover, Java's ability to work with different platforms is important in the fragmented cellular-phone market. Более того, способность языка программирования Ява работать с различными платформами важна на фрагментированном рынке сотовых телефонов.

Среди грамматических особенностей современных научно-технических текстов, ранее присущих только газетным материалам, необходимо выделить: использование настоящего времени для обозначения событий, произошедших в недавнем прошлом, в частности, при описании проведенных научных экспериментов, использование инфинитива в функции определения и для обозначения будущего времени.

E.g. To make atoms heavier than uranium, physicists bombard it with neutrons, or squash smaller atoms together. - Чтобы создать атомы тяжелее урана, физики "бомбардировали" его нейронами или сжимали вместе атомы более легких элементов.

The vessel to be completed in summer 2009 is equipped with... - Судно, строительство которого будет завершено летом 2009г., будет оснащено...

Описанные особенности современных англоязычных научно-технических текстов и способы их перевода на русский язык, на наш взгляд, помогут педагогу "выделить в переводимом материале типичные трудности, продемонстрировать типовые переводческие приемы и указать на особенности их использования в различных случаях, показать, как общие принципы перевода реализуются при переводе данного текста" .

ПРОЯВ САМОСТІЙНОСТІ СТУДЕНТІВ НА ПРОГРАМУВАЛЬНОМУ ЕТАПІ ІНДИВІДУАЛЬНОЇ ТРАЄКТОРІЇ НАВЧАННЯ

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Розвиток громадянської і національної свідомості, гуманістичних потреб українського суспільства вимагає переосмислення концептуальних і процесуальних підстав для організації самостійної роботи студентів у сучасному ВНЗ в результаті якої формується творча самостійність особистості майбутнього фахівця.

У зв'язку з вищезазначеним, одним з оптимальних шляхів вирішення проблеми підвищення рівня пізнавально-творчої самостійності студентів вважаємо реалізацію індивідуальної траєкторії навчання студентів, що також надає умови для творчої самореалізації особистості.

Індивідуальна освітня траєкторія – це персональний шлях реалізації особистісного потенціалу кожного студента в освіті. Під особистісним потенціалом студента тут мається на увазі сукупність його здібностей. Процес виявлення, реалізації та розвитку здібностей студентів відбувається в ході освітнього руху студентів індивідуальними траєкторіями

Аналіз особливостей реалізації індивідуальної траєкторії навчання під час формування пізнавально-творчої самостійності студентів в евристично-модульному навчанні виявив, що на кожному етапі самостійність студентів коливається від мінімальної (діагностичний) до максимальної (етап реалізації, демонстрації). Евристично-модульне навчання надає можливості для творчої самореалізації студентів, розвитку їх самостійності, а також забезпечує поетапний контроль, тим самим стимулюючи дисциплінованість студентів.

Наш власний досвід викладання, спостереження, спілкування з викладачами, студентами виявив, що деякі студенти свідомо або неусвідомлено занижують вимоги до себе і беруть легші (простіші за ступенем складності) завдання, вибирають простішу траєкторію індивідуального навчання, пояснюючи це браком часу, завантаженістю та інш. Страх перед помилкою, який більше властивий студентам перших курсів, стримує творчість, самостійність,

призводить до того, що інертне мислення домінує.

Подолання зазначених факторів вбачаємо у попередній психолого-педагогічній підготовці студентів, що включає: налагодження взаємостосунків; створення атмосфери психологічного комфорту, ситуацій успіху, співтворчості в колективі і з кожним окремо; діалогізації процесу навчання на паритетних засадах; культивування схильностей, здібностей, задатків; оволодіння механізмами евристичної діяльності. Попередню підготовку студентів вважаємо початковою ланкою, яка запускає механізм ефективного виконання творчих самостійних робіт і, як наслідок, успішне формування пізнавально-творчої самостійності студентів.

На програмувальному етапі індивідуальної траєкторії навчання студент за допомогою викладача формулює цілі, відбирає тематику, пропонує свої кінцеві освітні продукти та форми їх представлення, складає план роботи, відбирає засоби та способи діяльності, установлює систему контролю й оцінки своєї діяльності, термін виконання.

У нашій практиці викладання на цьому етапі виникає найбільше складностей, бо надання повної самостійності студентам призводить до вибору найпростіших завдань та максимально віддалених строків їх виконання, за деякими незначними винятками. Обов'язковим елементом вважаємо узгодження з викладачем програми індивідуальної траєкторії навчання. Пропонуємо використання евристичної бесіди з м'яким аргументованим підводом до зміни завдання на більш вигідне у плані реалізації власного особистісного потенціалу. У рідких випадках робота над цим етапом вимагала багато часу, тому самостійність студента ми різко обмежували, сподіваючись отримати кращий результат в оптимальні строки. Ліберальність викладача дезорганізує деяких студентів і вони взагалі не поспішають складати власну програму індивідуальної траєкторії вивчення дисципліни. У такому випадку педагогічна вимога має стати стимулом та підвищити мотивацію студентів.

Отже, вважаємо за необхідне надання якомого максимальної самостійності студентам на програмувальному етапі індивідуальної траєкторії навчання з метою підвищення мотивації студентів до реалізації індивідуальної траєкторії навчання внаслідок вибору власної особистісно значущої програми.

TEACHING FOR COMMUNICATION COMPETENCE

I.A. Morozova, *Senior Teacher*

Communicative competence is the ability to use language in meaningful communication. It includes:

- knowledge of the language and what a native speaker would say in a given situation
- skill in using this knowledge in actual communication.

Communicative competence comprises 4 components:

1. Sociolingustic competence- the ability to recognize and produce the language and actions appropriate for a particular situation.
2. Discourse competence- the way in which phrases and sentences are put together into meaningful connected combinations.
3. Linguistic competence- the knowledge of grammatical rules, syntax, semantics, spelling and phonology.
4. Strategic competence- the knowledge of avoiding potential difficulties in communication or dealing with them, and of employing a variety of rhetorical and stylistic devices to effectively enhance communication.

It's impossible to teach for communication competence without using the communicative approach. Language is best acquired when it is not studied in a direct and explicit way. It is acquired most effectively when it is used as a vehicle for doing something else, when it is learned in real communication.

The communicative approach has the following aspects: meaningful, real communication; learner-centered; interesting material; accuracy of speech through fluency; unrehearsed situations; relaxed, comfortable environment; pair and group work; authentic materials; variety of activities.

The teacher's role is to facilitate and encourage both discussions and different kinds of students' activities. Communicative activities enable students to be involved in a lesson and give them both the desire to communicate and a purpose of communication. The teacher must play a role of a good referee in a game, where students have freedom, but at the same time they know the rules. Interesting topics in relaxed environments can find the balance between too many rules and too much freedom.

Authentic material can play an important role as a motivating factor whole keeping the attention of a student. It can be used either at the

beginning of the lesson, during the so-called warming-up activities, or during the lesson, as a factor which helps students imagine a real situation.

Corrections should have either no place or a very minor place in fluency work for it normally distracts from the message. Students should normally not ba aware of intervantion by the teacher, who acts as a facilitator during the performance of the activity. The teacher creates a stable environment; a secure place where students are not afraid to take risks. He structures activities that are task-based and privides constructive feedback. The role of the teacher is to respond to the developing language needs of the learner. Thus the classroom is a learner-centered one where students take some responsibilities for learning. It is necessary to evaluate students' knowledge. The results will be obvious. Out of four existing language skills preference is given to listening and speaking in language learning.

The following communicative teaching procedures, which can be organized into various activities, can be applied, ensuring the practise of the four language skills:

- problem solving (analysing problems, thinking of and explaining the solution);
- information gap (seeking and prividing information);
- making inferences (inferring the meaning through attitude, opinion, behavior);
- pair and group work (co-operative learning);
-interviewing (talking and obtaining information);
- games (using language accomplishing another goal);
- songs and charts (mastering the rhythm);
-role plays (creating a real situation).

The guiding principle of communicative methodology is that learners need a purpose for listening , speaking, reading, and writing. Presenting an activity as "something we are going to do today" is not purposeful enough. The students must have a reason for participating, and all activities must be relevant to the students' lives. Using the communicative approach makes both teaching and learning fun.

THE IMPORTANCE OF TESTING

Yarmak L.P., *Senior teacher*

Testing is an important part of every teaching and learning experience. Well-made tests of English can help students in at least two ways. First of all, such tests can help creative positive attitudes toward your class. In the interest of motivation and efficient instruction, teachers almost universally aim at providing positive classroom experiences for their students. There are some important ways that testing can contribute to this aim. One that applies in nearly every class is a sense of accomplishment. Tests of appropriate difficulty, announced well in advance and covering skills scheduled to be evaluated, can also contribute to a positive tone by demonstrating your spirit of fair play and consistency with course objectives.

A second way that English tests can benefit students is by helping them master the language. They are helped, of course, when they study for exams and again when exams are returned and discussed. Where several tests are given, learning can also be enhanced by students' growing awareness of your objectives and the areas of emphasis in the course. Tests can foster learning, too, by their diagnostic characteristics: They confirm what each person has mastered, and they point up those language items needing further attention. Naturally, a better awareness of course objectives and personal language needs can help your students adjust their personal goals. For example, one person might note your strong test emphasis on aural comprehension, and he might also find that he had missed several vocabulary items on a recent test. One logical step would be for him to concentrate on the meaning of troublesome words, especially in a spoken context. Learning to spell them or recognize them in a printed context would become a second priority.

In short, properly made English tests can help create positive attitudes toward instruction by giving students a sense of accomplishment and a feeling that the teacher's evaluation of them matches what he has taught them. Good English tests also help students learn the language by requiring them to study hard, emphasizing course objectives, and showing them where they need to improve.

We, the teachers of English, are generally expected to be accountable for the results of our instruction. Our tests can help us answer the important question "Have I been effective in my teaching?" In other words, we can

use them to diagnose our own efforts as well as those of our students. As we record the test scores, we might well ask ourselves the following questions: "Are my lessons on the right level? Or am I aiming my instruction too low or too high?" "Am I teaching some skills effectively but others less effectively?" "What areas do we need more work on? Which points need reviewing?" "Should I spend more (or less) time on this material with next year's students?"

And tests can provide insights into ways that we can improve the evaluation process itself: "Were the test instructions clear?" "Was everyone able to finish in the allotted time?" "Did the test cause unnecessary anxiety or resentment?" "Did the test results reflect accurately how my students have been responding in class and in their assigned work?"

Tests, then, can benefit students, teachers, and even administrators by confirming progress that has been made and showing how we can best redirect our future efforts. In addition, good tests can sustain or enhance class morale and aid learning.

Language testing today reflects current interest in teaching genuine communication, but it also reflects earlier concerns for scientifically sound tests.

Tests today are mainly concerned with evaluating real communication in the second language. In this communicative era of testing we feel that the best exams are those that combine various subskills as we do when exchanging ideas orally or in writing. In particular, communicative tests need to measure more than isolated language skills: they should indicate how well a person can function in his second language.

Language components involved in communicated include vocabulary, grammar and pronunciation. While they are all blended in a skill such as listening, it is possible to test how well each component has been mastered individually.

SUSTAINABLE GROWTH: AN IMPOSSIBILITY THEOREM

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Impossibility statements are the very foundation of science. It is impossible to: travel faster than the speed of light; create or destroy matter-energy; build a perpetual motion machine, etc. By respecting impossibility theorems we avoid wasting resources on projects that are bound to fail. Therefore economists should be very interested in impossibility theorems, especially the one to be demonstrated here, namely that it is impossible for the world economy to grow its way out of poverty and environmental degradation. In other words, sustainable growth is impossible.

In its physical dimensions the economy is an open subsystem of the earth ecosystem, which is finite, nongrowing, and materially closed.

As the economic subsystem grows it incorporates an ever greater proportion of the total ecosystem into itself and must reach a limit at 100 percent, if not before. Therefore its growth is not sustainable.

Economists will complain that growth in GNP is a mixture of quantitative and qualitative increase and therefore not strictly subject to physical laws. They have a point. Precisely because quantitative and qualitative changes are very different it is best to keep them separate and call them by the different names already provided in the dictionary. To grow means "to increase naturally in size by the addition of material through assimilation or accretion." To develop means "to expand or realize the potentialities of; to bring gradually to a fuller, greater, or better state." When something grows it gets bigger. When something develops it gets different.

The earth ecosystem develops (evolves), but does not grow. Its subsystem, the economy, must eventually stop growing, but can continue to develop.

The term "sustainable development" therefore makes sense for the economy, but only if it is understood as "development without growth" — i.e., qualitative improvement of a physical economic base that is maintained in a steady state by a throughput of matter-energy that is within the regenerative and assimilative capacities of the ecosystem.

EFFECTIVE UTILIZATION OF GROUND RESOURCES FOR MANUFACTURE NON-POLLUTING PRODUCTION

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One necessary condition for highly productive, competely competative manufacture of non-polluting production is the technology which considers of soil, climatic conditions and market appeal of products.

Such statement of a problem demands to follow optimum principles of the land cultivation, and also their processing for each enterprise in the view of its resource opportunities in scientifically proved agricultural system.

By definition of modern researchers increase of production efficiency is possible only under condition of an intensive use of fertile soils and due to reduction of investments in unproductive land.

As the leading researches have shown, short soil in the Sumy area are subjected to withdrawal from farming and transfering them into other categories of soil because its use is not justified economically.

Agroindustrial companies of the Sumy region use 25, 6 % of soil which is grounvided not suitable for production of ecological goods. It leads to partial loss of fertility of soil, reduces a recoupment of peants, losses in the income of enterprises.

Rather high plughole in the Sumy region is a consequence of its extensive conducting of farming. Even with the big areas which are not cultivated, processes of erosion continue to progress.

The analysis of use of soil testifies that a plenty erosive the soils can be found in Trostyanets (10, 63 yew. ga), Krasnopolye (14, 85 yew. ga) and Romny (11, 21 yew. ga) regions.

A principal cause of reduction in efficiency of some enterprises is the infringement of scientific principles which do not break ecologically technological production.

It is always necessary to consider natural, economic and market factors in order to increase efficiency of land cultivation and its productive use.

ECOLOGICAL GOODWILL AS A MAIN ELEMENT OF BUSINESS VALUE

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The characteristic feature and fundamental principal of sustainable development is an ecosystem – based approach to solving problems of all levels: global, regional, national and local.

The ecosystem approach is based on one of the fundamental values of the twenty – first century – a respectful, careful, safe and non – consuming approach towards nature. Thus, economic systems and their potential should be evaluated not only through sufficiency resources and effective of their using, but also as saving natural fund. Thus, coming the difficult situation of ecological debt of enterprises and increasing attention of public to this question there must be creation and development of ecological goodwill determining in development of enterprises.

Goodwill is created by individual efforts of people.

Today goodwill is ability of enterprise to create a value on the basis of knowledges which form a value.

Ecological goodwill both aggregate of non-material and material advantages of enterprise, which are able to bring a superprofit, created as on the basis of production of goods with the observance of ecological standards of production, without the genetically modified organisms (GMO), providing disposable production in this way.

Ecological goodwill has two descriptions in its basis:

1) production and products does not harm to the health of man;

2) production of enterprise is organized so that provides minimum ecodestructive influence on an environment, and includes technologies which support reproduction processes in nature.

It is important also to select two constituents: non-material and material. in a concept of an «ecological goodwill»

The material is formed on the basis of the use by the enterprise of technologies which provide realization of production on ecological bases, and the non-material comes forward as embodiment of material constituent and ecological image of enterprise and products which to them is produced (it can be formed on the basis of ecological safety for a man, instead of for an environment).

THE INCOME-POLLUTION RELATIONSHIPS IN THE SUSTAINABLE DEVELOPMENT

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There is an old debate about the relationships between economic growth and the environmental quality.

One of an ambiguous questions of an Environmental Economics is how to treat the increase in countries well being. That is we need to clarify whether economic growth positively or negatively influences the environmental quality.

The recent studies conducted in the area of Environmental Economics suggest inverted U-shape relationship between pollution and per capita income.

The sustainable economic development is achieved when economic growth is associated with decline in the total level of pollution, and there are available resources for future generations to meet their own needs. The first problem about the relations and of economic growth and pollution is discussed in this paper. The bell-shaped link between pollution and income is known as *Environmental Kuznets Curve (EKC)*; after Simon Kuznets, who in 1955 showed that at the early stages of a country's development the gap between poor and rich increases, while later when the country becomes wealthier the inequality gap decreases. The EKC pattern suggest that on the first stages of country's development there is a negative link between pollution and growth, but later when people become wealthier more attention is paid to the pollution, and as a result environmental quality improves.

The pollution-income relationship was specified in the usual way as quadratic relationship for Ukraine. The emission data set failed to support the usual form of EKC, however showed a sustainable plateau in pollution in the range of UAN 1000-15000 (in 2007 prices). It suggests that the automobile pollution should start to decline in Ukraine beyond income level of UAH15000. In terms of sustainable economics it means that Ukraine is on yet on the path of sustainable development due to overall pollution, which is constantly increasing.

HEAT-SUPPLY NETWORK DISPATCHING SYSTEM

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The city municipal network consists of heating, natural gas supply, water supply, etc. Automatization and scientific track are the inevitable trend of city management. We can use information technologies to improve the city municipal integrated service management level and make the management of municipal administration better.

As example consider one of the information systems for heating distribution. Heat-supply Network Dispatching System ((HNDS) is based on Geographical Information System (GIS).

GIS is a space information system set up for specifically applied goal, it can pretreatment, input, store, search and query, analyze, display, upgrade and offer the technological for space data based on computer hardware, software and network.

GIS is a new developing disciplines involved computer, geography, surveying remote sensing, environmental, urban science, space theory, management and relevant disciplines, by unified managing the space position, character and time realm correlated with geographical information, organizing and using geographical information according to a kind of new way.

Because GIS possess the powerful functions of managing and analyzing space data, it is extensive being applied to the urban comprehensive pipeline management.

HNDS uses the relief map and combines the information of inspect equipment with situation of heat-supply network, intuitionistic displays the state of inspect equipment and estate of heat-supply network.

Using the models of forecast and analysis, the system fulfills reasonable configure for each tache of heating supply dispatching.

HSNDS is a compositive system based on client/server framework, its software and hardware environment. Server part of this system consists of two servers, one service for GIS to manage data of map and attribute, another service for databases. Client part needs disposal data and calculates it.

HNDS can be divided into engineering operation, inquire and statistic, calculate initialization, operation hydraulic regime analyzing, emergency regime analysis and dealing with, real-time data monitoring.

The engineering operation module can carry out flowing functions, such as loading, closing, saving, display usage and display content of Engineering of heat-supply network.

Through using the module of showing the single pipe network can show the single scene of heating pipe network.

For multiple source heating supply enterprise, it can show a certain hot water or steam network of the designate source.

The operation hydraulic regime analyzing subsystem can

utilize all kinds of pipe network data gathered in real time and the existing topological data of network,

design parameters to carry on operation hydraulic regime analyzing of the heating supply network,

show the results of analyzing by way of report form and pressure diagram,

afford the dispatching schemes of heat source, valve, pipe network and pump under different operating conditions,

carry on computational analysis for some kinds of modes of hot water heat-supply systems centralized regulation, for example constant flow control, variable flow control and centralized control with flow variable by steps, draw temperature adjustment curve.

The subsystem of Real-time Data Monitoring can gather long-distance information of each monitoring point of the pipe network, judge and store the real-time data of pipe network state accepting, show the real-time operation conditions of each monitoring point of the pipe network in the form of chart and curve.

The HNDS software based on GIS technology is comprehensive platform software, it combines geographical information with many kinds of technology, such as data monitoring, load forecast, emergency regime dealing with and operation hydraulic regime analyzing, etc.

The software uses the computer information technology, communication technology and modernly predicts technology, offers a kind of advanced scientific operation management tool to the heat-supply trade, it improves the operation decision level of the heat-supplying to the maximum extent.

PROBLEMS OF MAINTAINANCE AND STABLE USE OF BIODIVERSITY IN UKRAINE

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On this stage of civilization no world problem was paid so much decisions of OUN, Conventions, summits of leaders of the countries of the world, higher organs of power of the states, world public, and others like that, as to the maintenance of biodiversity and to its stable use. It is particularly, «Conference of OUN on an environment and development» (1992), XIX special session of General Assembly of OUN (1997) and others.

Global elimination of biodiversity, its contamination, and break of functional connections by the society lead to six global ecological crises:

rise in temperature of climate;

destruction of ozone layer;

contamination of mainlands and oceans by heavy metals, compounds, fuel fossils and others;

appearing of deserts ;

acid rains;

elimination, transformations and aggravation of biodiversity), which in the last 30 years substantially changed for the worse a world economy, policy, led society, climate and so on.

Contamination and degradation of natural environment grew into a global problem which increases with the growth of population and development of economic activity.

State of biosphere directly or mediated determines all main spheres of life of society- spiritual, material and political. It is presently destroyed or very changed about 65 % of grouping and world ecosystems, which is the result of dominating in the world economy of the liberal market system, due to which the resources of biodiversity have a consumer cost only, and their social and ecological cost is not taken into account.

For the last 100 years human activity inflicted enormous harm to animal and vegetable world of Ukraine. Only in pre-war years on the Donetsk area and in Crimea disappeared more than 40 types of plants, in Carpathians - 20. About 700 types of animals and plants are brought to the Red book of Ukraine which are on the border of extinction or elimination.

A few ages back 55 % of territories of modern Ukraine were

covered by the forest, 32 % by steppes, 5 % by swamp lands, 1 % by meadows, and such correlation was saved to beginning of the XX century.

At present moment the forest planting make - 14, 6 % of territories of the state, steppes, - less than 1 %, swamps - near 3 %, the area of meadows was increased to 9 %. Reduction of untouched natural territories considerably abbreviates important space of wild animals and plants.

Violation of ecological balance on territory of Ukraine in combination with a socio-economic crisis results in not reverse processes in an environment and draws the row of negative tendencies of socio-economic character.

For today a question of restoration of assimilatory ability of biosphere of the planet is one of the most vital questions. The solution of this question is impossible at the level of a separately taken state. If humanity on the whole will not take actions on working out these problems, Earth will cease the existence as a planet that is suitable for existence of living organisms.

Therefore, ecological condition of the world and in Ukraine needs revision of the present conception of relationships with nature and passing to multifunctional ecologically-balanced conception, which answers the laws of unity, integrity and interdependence of biosphere and society. For this purpose it is necessary to define the supplies of resources on a planet and in every state separately, biodiversity above all things, and requirement in it of different states, and further on this base to make balance of their unexhausting use.

Using positions, accepted at Rio de Janeiro in 1992 «Order-paper for the XXI century», directed on removal of world disbalance in social and ecological spheres, to define the quotas of exception and use of resources for every state, including their biosphere, social, and other values in the cost of resources.

Selling the quotas of overall cost of resources as quotas on the emission of CO_2 should be started from the most productive and functionally important ecosystems which are the forests. It is exactly forests that nowadays provide the dynamic equilibrium of ecological balance of biosphere.

СЕКЦІЯ СТУДЕНТІВ І ТА ІІ КУРСІВ
EUROPEAN UNION LAW

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The Law of the European Union is the unique legal system which operates alongside with the laws of Member States of the European Union. (EU).

EU law has direct effect within the legal systems of its Member States, and overrides national law in many areas, especially in the areas covered by the Single Market.

Like the EU itself, EU law can be divided into three pillars. The first of these, the European Community pillar, comprises the majority of law produced by the EU and is where the European Court of Justice has the most power. The EU can also enact legislation under the second and third pillars - relating to criminal law and foreign policy respectively - although the powers of the Court of Justice are much reduced and direct effect does not apply.

The primary legislation, or treaties, are effectively the constitutional law of the European Union. They are created by governments from all EU Member States acting by consensus.

There are four main legislative procedures in the EU, with the main difference between them being how the European Parliament interacts with the Council of the European Union. These are the Codecision procedure, the Assent procedure, the Cooperation procedure and the Consultation procedure.

The European Parliament, the Commission and the Council of Ministers are empowered by the Treaties to legislate on all matters within the EU's competence. Examples of this secondary legislation are regulations, directives, decisions, recommendations and opinions. Secondary legislation also includes inter-institutional agreements, which are agreements made between European Union institutions mostly in budgetary matters.

The main EU principles are supremacy and direct effect. They are rather contradictive and require some perfection to correspond the national systems of EU Member states.

The core of European Union economic and social policy is summed up under the idea of the four freedoms - free movement of goods, workers capital and the freedom of establishment to provide services.

MANAGEMENT

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Management in business and human organization activity is simply the act of getting people together to accomplish desired goals. Management comprises planning, organizing, staffing, leading or directing, and controlling an organization or effort for the purpose of accomplishing a goal. Researching encompasses the deployment and manipulation of human resources, financial resources, technological resources, and natural resources. The verb «*manage*» comes from the Italian manager, which in turn derives from the Latin manus. The French word «*mesnagement*» (later «*management*») influenced the development in meaning of the English word management in the 17th and 18th centuries. Management is organization and coordination of the activities of an enterprise in accordance with certain policies and in achievement of clearly defined objectives. Management is often included as a factor of production along with machines, materials, and money. One habit of thought regards management as equivalent to "business administration" and thus excludes management in places outside commerce, as for example in charities and in the public sector. More realistically, however, every organization must manage its work, people, processes, technology, etc. in order to maximize its effectiveness. Nonetheless, many people refer to university departments which teach management as "business schools." Some institutions use that name while others employ the more inclusive term "*management.*" English speakers may also use the term "*management*" or "*the management*" as a collective word describing the managers of an organization, for example of a corporation. Historically this use of the term was often contrasted with the term "Labor" referring to those being managed. In for-profit work, management has as its primary function the satisfaction of a range of stakeholders. This typically involves making a profit, creating valued products at a reasonable cost, and providing rewarding employment opportunities. Management also has the task of innovating and of improving the functioning of organizations. Management operates through various functions, often classified as planning, organizing, leading/motivating, and controlling

INFLATION

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Inflation is one of the most acute development problems of the economy practically in each country in the world. We have to understand the nature of inflation, its origins, and causes of appearance and consequences of it to act effectively against this socio-economic phenomenon.

Inflation is a rise in the general level of prices of goods and services in an economy over a period of time. Inflation can also be described as a decline in the real value of money.

Inflation originally referred to the debasement of the currency. When gold was used as currency, gold coins could be collected by the government, melted down, mixed with other metals such as silver, copper or lead, and reissued at the same nominal value. By diluting the gold with other metals, the government could increase the total number of coins. When the cost of each coin is lowered in this way, the government profits from an increase in seigniorage. This practice would increase the money supply but at the same time lower the relative value of each coin. As the relative value of the coins decrease, consumers would need more coins to exchange for the same goods and services.

Related economic concepts include: *deflation*, a fall in the general price level; *disinflation*, a decrease in the rate of inflation; *hyperinflation*, an out-of-control inflationary spiral; *stagflation*, a combination of inflation, slow economic growth and rising unemployment; and *reflation*, which is an attempt to raise the general level of prices to counteract deflationary pressures.

What causes inflation? There are a few different reasons that can account for the inflation in our goods and services:

- **Cost-push inflation** occurs when businesses respond to rising production costs, by raising prices in order to maintain their profit margins. There are many reasons why costs might rise:

1) rising imported raw materials costs;
2) rising labor costs;
3) higher indirect taxes imposed by the government.

- **Demand-pull inflation** is likely when there is full employment of resources and when short-run aggregate supply is inelastic. In these circumstances an increase in aggregate demand will lead to an increase in prices. Aggregate demand might rise for a number of reasons – some of which occur together at the same moment of the economic cycle:

1) a depreciation of the exchange rate;
2) a reduction in direct or indirect taxation;
3) the rapid growth of the money supply;
4) rising consumer confidence and an increase in the rate of growth of house prices;

Inflation is usually measured by calculating the inflation rate of a price index, usually the Consumer Price Index. The Consumer Price Index measures prices of a selection of goods and services purchased by a "typical consumer". The inflation rate is the percentage rate of change of a price index over time.

price level, $\Delta P_L = \frac{\sum_i p_{i1} q_{i0}}{\sum_i p_{i0} q_{i0}}$

Where:

ΔP_L is the change in

p_{i0} is the price of each good i in the first period,

q_{i0} is the quantity of each good i in the first period,

p_{i1} is the price of each good i in the second period.

An increase in the general level of prices implies a decrease in the purchasing power of the currency. The effect of inflation is not distributed evenly, and as a consequence there are hidden costs to some and benefits to others from this decrease in purchasing power. For example, with inflation lenders or depositors who are paid a fixed rate of interest on loans or deposits will lose purchasing power from their interest earnings, while their borrowers benefit. Individuals or institutions with cash assets will experience a decline in the purchasing power of their holdings. Increases in payments to workers and pensioners often lag behind inflation, especially for those with fixed payments. Uncertainty about future inflation may discourage investment and saving.

COMPUTERS IN OUR LIFE

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Nowadays, we cannot imagine our life without computers and the fact is that they have become so important that nothing can replace them. Since 1948 when the first real computer has been invented our life has changed so much that we can call it real digital revolution. First computers differed from today's ones. They were so huge that they occupied whole rooms or buildings being relatively slow.

Nowadays they are also used by scientist and they may also be as huge as the old ones but they are millions times faster. They can perform many complex operations simultaneously and scientist practically can't do without them. But not only in science and industry computers are being used. Thanks to them modern medicine can diagnose diseases faster and more thoroughly. They also help police to solve crimes and collect evidence. Moreover, computers are wide-spread in education. Except their classic tasks such as administration and accountancy they are used in process of learning. Computers have become so popular that not knowing how to use them means to be illiterate.

Computers are the future whether we like it or not. Some people dislike computers, because of the complications it takes to understand the basics. Computers are not exactly the easiest tools to work with, but they are the most rewarding, and they are the future. For people who don't know much about computers, you will be lost in the future. You should learn what you can while you still have the chance, because things will develop too quickly for you and you will not be able to cope with new technological events. Computers will fall into careers and our everyday life more rapidly then you think.

Computers have made life easier and more convenient I have been working for several years utilizing computer. From my experience, I can tell how important is to have a computer in our everyday life. Computer is the absolute requirement of the new millennium. Everybody needs to be computer literate these days, so they can compete with rapidly changing technology.

My career of choice will be a Computer Programmer, because I like computers, and I am logical. I will be working hard toward my goal and achieve my degree in that field. I worked with PowerPoint, Office 2000, and Excel, which are all Microsoft Products. I have done Structured Programming. Hopefully, within a year and a half, I will receive my Associates in Science, and work. My intention is to become financially independent. Eventually, with night classes, I will further my education with a Bachelors of Science, of the same field, of course. I feel that this is my fate.

VIRTUAL WATER

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Virtual water (also known as embedded water or hidden water) refers, in the context of trade, to the water used in the production of a good or service. The precise volume of such water can be more or less dependent on climatic conditions and agricultural practice. Virtual water is water that is used in the various steps of the production chain.

Professor John Anthony Allan was the creator of the virtual water concept, which measures how water is embedded in the production and trade of food and consumer products.

The virtual water concept has opened the door to more productive water use by explaining how and why nations such as the USA, Argentina and Brazil "export" billions of liters of water each year, while others like Japan, Egypt and Italy "import" billions of liters of water.

The water is said to be virtual because once the wheat is grown, the real water used to grow it is no longer actually contained in the wheat. The concept on virtual water helps us realize how much water is needed to produce different goods and services and how to use the scarce water available in the best way.

The virtual- water content of a product consists of three components, called green, blue and grey components.

The "green" virtual- water content of a product is the volume of rainwater that evaporated during the production process.

The "blue" virtual- water content of a product is the volume of surface water or groundwater that evaporated as a result of the production of the product.

The "grey" virtual- water content of a product is the volume of water that becomes polluted during its production.

It is relevant to know the ratio of the green to blue water use, because the impacts on the hydrological cycle are different. Both the green and blue components in the total virtual-water content of a product refer to evaporation. The grey component in the total virtual- water content of a product refers to the volume of polluted water.

AIDS - BLACK DEATH OF THE XXI CENTURY

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Secondary immunodeficiency syndrome (AIDS) is caused by a virus and characterized by severe immune deficiency resulting in opportunistic infections, malignancies, and neurological lesion.

AIM: to describe the major ways of transmission the infection, the dangers for the human life and the precautions health care workers can take to avoid getting infected.

MATERIALS and METHODS: The major transmission routes of HIV are sexual contact, parenteral exposure to blood and blood products and perinatal transmission. Extensive laboratory research and epidemiological studies indicate that HIV is not transmitted by shaking hands, hugging, kissing, contacting bodily secretion such as sweat, mucus (as in sneezing or coughing) or saliva. The time from exposure to HIV until the onset of the acute clinical illness is typically 2 to 4 weeks. Patients report fever, lethargy, fatigue, headaches, retro-orbital pain, sore throat, muscular pain, occasional diarrhea, rash and the swollen lymph nodes. In the late stages of HIV infection the nervous system becomes highly susceptible to a wide array of disorders involving brain, spinal cord, peripheral nerve and muscle. Skin disease is an extremely common complication of HIV infection, affecting up to 90% of persons. The first test developed to detect HIV infection was isolation of the virus through tissue culture. Most infections occur as a result of repeated and close contacts with a carrier of HIV, specifically mucous membrane contact with blood or body fluids. Sexual relationships are the major source of such contacts, and people must be educated to modify sexual practices, to avoid sexual encounters with persons in high-risk groups, reduce the number and frequency of sexual contacts, use protective devices. HIV carriers and persons belonging to a high-risk group should not donate their blood (or organs for transplantation), and should inform medical and dental professionals of their status.

CONCLUSION: AIDS patients are particularly contagious to hospital personnel and patients, their body fluids and blood should be handled with extreme care, following the same procedures used with patients who carry hepatitis B virus.

PROGRESS IN CANCER TREATMENT

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The problem of cancer is being discussed in innumerable papers from all parts of the world because cancer still continues to be the first among human diseases.

AIM: to introduce the ways that are likely to be considered the most effective in treating oncological diseases nowadays.

MATERIALS and METHODS. Cancer or carcinoma, as it is often called, is a malignant tumor which arises from the epithelial cells. A tumor is a mass of new tissue which grows independently from its surrounding structures. A malignant tumor is made up of connective tissue enclosing epithelial cells. Some tumors remain localized, others rapidly invade healthy tissue and metastasize leading to early death. The incidence of carcinomas comprises 90% of all malignant tumors. The symptoms being vague or absent at an early stage, cancer is a very dangerous disease for life.

Scientists have found an intense characteristic of stem and progenitor cells that may trigger initiation and progression of cancerous tumors. In a study published in the December 2005 issue of the Journal Cancer Cell, a group of researchers from Columbia University Medical Center reported that stem and progenitor cells are vulnerable to a certain error during cell division that can result in serious chromosomal defects. This susceptibility may explain how a tumor-initiating cell, also known as a cancer stem cell, arises from a normal cell. It may also clarify how a cancer stem cell acquires further mutations that increase tumor malignancy. The researchers discovered that stem and progenitor cells are deficient in this safeguard and will divide even if the chromosomes are entangled. All three cell types evaluated by the researchers – mouse embryonic stem cells, mouse neural progenitor cells, and human bone marrow progenitor cells – attempted cell division with entangled chromosomes. Study of laboratory mice has shown that exposure to artificial light at night stimulated the growth of human breast tumors by suppressing the levels of melatonin. In contrast, extended periods of darkness at night greatly showed the growth of the tumors. These results help explain why women who work night shifts have a higher rate of breast cancer that other women. In advanced industrial

countries such as the United States, it provides a new explanation for the epidemic rise in breast cancer incidence.

"We know that many tumors are largely dependent on a nutrient called linoleic acid, an essential fatty acid, in order to grow," observed lead author David Black, a neuroendocrinologist from the Bassett Research Institute. "Melatonin interferes with the tumor's ability to use linoleic acid as a growth signal, which causes tumor metabolism and growth activity to shut down". To test this hypothesis the researchers injected human breast cancer cells into laboratory mice. After these cells developed into cancerous tumors, the tumors were implanted into female rats where they could continue to grow. The researchers took blood samples from 12 healthy volunteers under three different conditions: during the daytime, during the night following two hours of complete darkness, and during the night following 90 minutes of exposure to bright fluorescent light. These blood samples were then pumped directly through the developing tumors. The melatonin rich blood collected from subjects while in total darkness severely slowed the growth of tumors. These results are due to a direct effect of the melatonin on the cancer cells. The melatonin is clearly suppressing tumor development and growth. In contrast, tests with the melatonin-depleted blood from light-exposed subjects stimulated tumor growth.

Nonsurgical cancer therapy that kills tumors but leaves healthy surrounding tissue intact could soon become available for patients. These recent study's results ultimately become reality. The Los Alamos National Laboratory Trident laser group, working with researchers from the University of Nevada, Reno has succeeded in concentration the intensity of a laser-driver carbon ion beam into a narrow range. This study supports earlier studies led by the University of Nevada that found much higher quality laser proton beams from laser acceleration as opposed to traditional particle acceleration.

CONCLUSION: progress made in cancer research and treatment is a result of success in biochemistry, molecular biology, genetics, immunology and virology. Experimental studies have proved that viruses of animal species may produce malignant tumors in other animals. The cancer control program includes both social and medical measures. There are many specialized treatment, prevention and research centers where surgery, radiation and chemotherapy are used.

COMPUTER CRIMES

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Computer crime has increased considerably since the mid-1960s, but its true extent remains unknown. Quite apart from the difficulty of defining computer criminality, and apart from the absence of clear legislation in many jurisdictions, computer criminality shares with other forms of economic crime the difficulty of detecting it. Most such crimes some investigators claim as many as 99 percent – are not reported because publicity about a company's problems with their computers may undermine the public's trust and confidence in that institution.

The number of reported computer crimes may seem to be insignificant, but many of those that have been successful have profits. Some investigators have estimated the total annual losses through computer fraud to be as high as $ 5 billion.

Let us look at the various types of computer crimes to see what they have in common and how they differ. Investigators of computer crime generally focus on activities that entail access to the computer's hardware and software. Most such acts have in common a loss to the rightful owner of data, and often the perpetrator gains financially. But this need not be the case. Some computer crimes may even pose a threat to the national security.

- Computer fraud involves the falsification of stored data or deception in legitimate transactions by manipulation of data or programming, including the unlawful acquisition of data or programs for purposes of financial gain of the perpetrator or of a third party.
- Computer espionage consists of activities by which unauthorized computer access steals information for purposes of exploitation from databases belonging to government or private parties.
- Computer sabotage consists of the tampering with, destruction of, or scrambling of data or software by means of gaining access to data banks.
- Computer hacking is the act of gaining unlawful access to data banks for malicious, though not necessarily destructive purposes, and for neither financial gain nor purposes of espionage.
- Theft of computer time, software, and hardware includes not only the unauthorized use of computer time and software services but also the unauthorized copying of software programs, and the outright theft of computer equipment.

So far, most known computer crimes seem involves manipulations for purposes of fraud or industrial espionage. But the number of computer nuisance crimes, including sabotage and hacking, has been increasing, and thefts of computer time and software are predicted rise rapidly.

FOREX IS JUST A SPECULATIVE TRADE

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Forex is an international market. Operations are conducted through the system of institutes: central bank, commercial bank, investment bank, brokers and dealers, pension funds, insurance companies, multinational corporations etc.

Usually appeals sound «to earn on Forex». This appeal is used by duality of value of the term "to Earn". From one side, it is work with the payment of labour. From other side, it is a receipt of any type of income, including profit. It's have to take into account that the offered marginal trade is not provided for work with payment of a pay-envelope. It is one of types of business with the start-up capital and inevitable risks. In any economy book it is possible to read, that business with more high level of profitableness is always more risky. The use of credit shoulder results not only in the increase of profitableness of operations, to growth of speed of capital increase but also to the proportional increase of risks of losses.

Marginal trade as a type of business has a list of specific features: a large start-up capital is not required; there are not chiefs and inferiors; there is not competitive activity for suppliers and consumers; the same type operations which do not require the obligatory mastering of new receptions or skills; very large potential profitableness in combination with the high risk of losses. These features make marginal trade attractive for the beginning of trade at a small start-up capital.

It is enough simple to see everything and to make an attempt on educational accounts with virtual money. But to the got «results» it is needed to belong very carefully and critically. Such accounts usually «live» for 2-4 weeks. For this time not always it is succeeded to look after all possible situations at the market. Most beginners here see only that they want to see that is lightness and speed of increase of capital.

That's because impossible to forget that any business always contains possibility to get an income by chance.

QUANTUM COMPUTERS

Lobunko O., *student M-71,*
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Scientific and technological progress is changing faster and faster all the time. Technology is growing at an exponential rate. It is doubling every few years. Science and technology in the 20th century dawned with quantum theory. With quantum mechanics mankind acquired grand strength. The greatest achievement of Scientific and technological progress in quantum technology is a quantum computer.

Nowadays, we cannot imagine our life without computers and the fact is that they have become so important that nothing can replace them. They seem to be everywhere today. Since 1948 when the first real computer has been invented our life has changed so much that we can call it real digital revolution. Nowadays they are also used by scientist and they may also be as huge as the old ones but they are millions times faster. But the most powerful computer is a quantum computer.

Quantum computers have first been proposed by Richard Feynman in the early 80's. Experimental research was begun in 1990s. In 1994 Peter Shor from AT&T's Bell Laboratories in New Jersey devised the first quantum algorithm that, in principle, can perform efficient factorization of large numbers. The potential of Shor's algorithm stimulated many scientists to work toward realizing the quantum computers. Significant progress has been made in recent years by numerous research groups around the world. A prototype of a quantum computer has been built. The team of Aizek Chuang demonstrated the world's first 2-qubit quantum computer (in 1998 at University of California Berkeley). On the 19th of January 2007 Canadian company D-Wave demonstrated their 16-qubit quantum computer, called ORION. However, the company is extremely optimistic that the company plans to introduce a 512-qubit processor, followed by a 1,024-qubit processor in 2009.

A quantum computer is a device for computation that exploits quantum mechanical phenomena to perform operations on data. The feature of the quantum computer is ability to execute huge computing in very short time. Quantum computers can perform many different calculations in parallel: a system with n qubits can perform 2n calculations at once!

A classical, as well as a quantum computer, essentially consists of 3 parts: a memory, which holds the current machine state, a processor, which performs elementary operations on the machine state.

A TEMPERATURE IN THE NATURE AND TECHNIQUE

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Temperature is one of those aspects of the everyday world that seems rather abstract when viewed from the standpoint of physics. In scientific terms, it is not simply a measure of hot and cold, but an indicator of molecular motion and energy flow. Thermometers measure temperature by a number of means, including the expansion that takes place in a medium such as mercury or alcohol. These measuring devices are gauged in several different ways, with scales based on the freezing and boiling points of water—as well as, in the case of the absolute temperature scale, the point at which all molecular motion virtually ceases.

Energy appears in many forms, including thermal energy, or the energy associated with heat. Heat is internal thermal energy that flows from one body of matter to another—or, more specifically, from a system at a higher temperature to one at a lower temperature.

Two systems at the same temperature are said to be in a state of thermal equilibrium. When this occurs, there is no exchange of heat. Though people ordinarily speak of "heat" as an expression of relative warmth or coldness, in physical terms, heat only exists in transfer between two systems. It is never something inherently part of a system; thus, unless there is a transfer of internal energy, there is no heat, scientifically speaking.

Thus, heat cannot be said to exist unless there is one system in contact with another system of differing temperature. This can be illustrated by way of the old philosophical question: "If a tree falls in the woods when there is no one to hear it, does it make a sound?" From a physicist's point of view, of course, sound waves are emitted whether or not there is an ear to receive their vibrations; but, consider this same scenario in terms of heat. First, replace the falling tree with a hypothetical object possessing a certain amount of internal energy; then replace sound waves with heat. In this case, if this object is not in contact with something else that has a different temperature, it "does not make a sound"—in other words, it transfers no internal energy, and, thus, there is no heat from the standpoint of physics.

VIRTUAL ORGANIZATION

Y. Timokhina, *student MK – 71,*
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A Virtual organization comprises a set of independent organizations that share resources and a skill to achieve its goal, but that is not limited to an alliance of for profit enterprises. The interaction among members of the virtual organizations is mainly done through computer networks.

In a virtual word "organization" is understood as planned, coordinated and purposeful action of human beings and computer AIs in order to construct and compile a common intangible product or service to its community.

A virtual workplace is a workplace that is not located in any one physical space. Rather, several workplaces are technologically connected without regard to geographic boundaries. Employees are thus able to interact and work with one another in a collaborated environment regardless of where they are in the world.

A virtual workplace decreases unnecessary costs by integrating technology processes, people processes, and online processes.

With information technology playing a greater role in the daily operations of organizations today, virtual workplaces are beginning to replace the traditional office environment of cubicles and office buildings.

Individual virtual workplaces vary in how they apply existing technology to facilitate team cooperation. Three popular approaches are:

1. Telecommuting: the availability and use of communications technologies, such as the internet, to work in an offsite location.
2. Hot desk environment: employees are not given individual desks; rather each day employees are allocated to a desk where they can access the internet, email and computer networks files. This is similar to hotelling: recognizing that employees spend more time at the clients' office rather than at the employer's office, employees are not assigned a permanent desk.
3. Virtual team: the collaboration of employees working closely together and in constant contact but are physically located in different parts of the word.

There are various types of virtual reality:

1. Immersive experience-The user visits a world through a wearable device and interacts with that world as though he/she were actually a part of it.

2. Desktop systems-They are at the lower end of the spectrum in terms of cost and are worlds that are not immersive and that run on regular personal computers without additional hardware.

3. Mirror world or second person experiences-The user is represented by a figure or avatar inside the computer. The user manipulates this avatar within the world and interacts indirectly with the world.

4. Telepresence technology-The user remotely controls a mechanical manipulator to perform some action or explore some aspect of a world.

5. CAVE (cave automatic virtual environment)-It consists of a multiple screen environment, which surrounds the user.

6. Portals are starting web sites for users to access the knowledge content they need and want.

A Virtual workplace enables individuals to work from anyplace at anytime in the word. This is convenient to not only for the employee, but the consumer as well. It fits the need of excellent and timely customer service for an internation organization.

The most persuasive argument for any organization is that concerning costs. Virtual workplaces streamline systems from multiple facets of work into a single unified unit easily accessible by both the consumer and the employee. Decreasing costs as well as increasing efficiency, due to the single system, is an instantaneous advantage. A Virtual workplace is easier for employees because of business traveling, consolidates services, and assists in the communication processes.

Virtual workplaces allow a company to reach more of its employees via meeting workplaces and virtual training sessions. Having a virtual training sessions saves a company money, not only the cost of travel where only a small handful of its employees receive proper training, but in the long run where all of its employees can receive the proper training and be more productive with a sharper learning curve.

LARGE HADRON COLLIDER

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Large Hadron Collider (LCH) - the most powerful particle accelerator in the world. It is located in the European centre of nuclear researches on depth of 100 meters underground. It represents a huge ring in diameter of 27 km: two bunches of protons will move on it in opposite directions, being dispersed till the speed close to a velocity of light, and facing with each other. Consequences of collisions also become a studying subject. The idea of project LHC was born in 1984 and has been officially approved by ten years later. The construction of LHC started in 2001 after the previous big accelerator CERN - the electron-positron collider LEP (Large Electron-Positron Collider).The purpose of the Large Hadron Collider is to increase our knowledge about the universe. In an attempt to understand our universe, including how it works and its actual structure, scientists proposed a theory called the standard model. This theory tries to define and explain the fundamental particles that make the universe what it is. It combines elements from Einstein's theory of relativity with quantum theory. It also deals with three of the four basic forces of the universe: strong nuclear force, weak nuclear force and electromagnetic force. It does not address the effects of gravity, the fourth fundamental force.

Constructing the Large Hadron Collider.The Standard Model makes several predictions about the universe, many of which seem to be true according to various experiments. But there are other aspects of the model that remain unproven. One of those is a theoretical particle called the Higgs boson particle.
The Higgs boson particle may answer questions about mass. Why does matter have mass? Scientists have identified particles that have no mass, such as neutrinos. Why should one kind of particle have mass and another lack it? Scientists have proposed many ideas to explain the existence of mass. The simplest of these is the Higgs mechanism. This theory says that there may be a particle and a corresponding mediating force that would explain why some particles have mass. The theoretical particle has never been observed and may not even exist. Some scientists hope the events created by the LHC will also uncover evidence for the existence of the Higgs boson particle. Others hope that the events will provide hints of new information we haven't even considered yet.

Big Bang on a Small Scale.By smashing protons together hard and fast enough, the LHC will cause protons to break apart into smaller atomic subparticles. These tiny subparticles are very unstable and only exist for a fraction of a second before decaying or recombining with other subparticles. But according to the Big Bang theory, all matter in the early universe consisted of these tiny subparticles. As

the universe expanded and cooled, these particles combined to form larger particles like protons and neutrons.

Another question scientists have about matter deals with early conditions in the universe. During the earliest moments of the universe, matter and energy were coupled. Just after matter and energy separated, particles of matter and antimatter annihilated each other.

POLLUTION IN UKRAINE

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Pollution is the contamination of the environment air, water, and land. Such contamination originates from human activities that create waste products. An industrial and intensively farmed country, Ukraine contains some of the most polluted landscapes in Eastern Europe. Pollution became evident in Ukraine with industrial development in the 19th century.

Air pollution is especially severe in many cities and towns of southeastern Ukraine, notably in Kharkiv, Luhansk, Donetsk, Dnipropetrovsk and Zaporizhia. Metallurgical coke- chemical plants, steel mills, and thermal power plants are major sources of high levels of uncontrolled emissions of sulphur dioxide, dust, unburned hydrocarbons, and other harmful substances. Other Ukrainian cities with major chronic air pollution problems include Kyiv, Komunarsk, Makiivka and Odesa.

Over one-third of the emissions into the atmosphere originate, from automobile transport. That source is aggravated by the use of leaded gasoline and inefficient engines as well as a lack of catalytic converters.

Almost all surface waters of Ukraine belong to the Black Sea and the Sea of Azov basins. The high population density, heavy industrial development, the low governmental priority placed upon environmental protection until very recently, have given rise to chronic and serious levels of water pollution throughout Ukraine. The Dnister and the Danube are included among the most polluted bodies of water in the territory of the former Soviet Union.

Environmental pollution is one of the most burning problems of our time. Nowadays every student knows what acid rain and greenhouse effect mean. In Ukraine, like everywhere in the world, people have done things that have badly damaged the nature. As a result, it's dangerous to eat fish that was caught in the river or mushrooms that were picked in the woods because they may be contaminated. The Chernobyl disaster remains one of the most tragic "unnatural" catastrophes.

DIFFUSION OF INNOVATION

Yulia Mykula, *JT-72,*
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The process of the diffusion of innovation has been around since the first new idea popped into someone's head. The diffusion process is not a math equation or a chemical reaction but rather a natural progression of peoples' attitudes, opinions, and feelings towards accepting a new idea.

According to Rogers, the diffusion of innovations is "the process by which an innovation is communicated through certain channels over time among the members of a social system. Innovation is used more generally here to mean an item, thought, or process that is new. Good examples of innovation would be automobiles, brain surgery, and a new kind of running shoe.

Relative advantage. This characteristic expresses to what extent the new product is better than the one it is replacing.

Compatibility. Compatibility is the level of which an innovation fits into the specific society. The smoother the innovation fits into the culture, the faster the rate of adoption.

Complexity. This type of innovation is the extent of how difficult it is for an adopter to understand and use an innovation. It is very logical to think that the harder an innovation is to use, or at least perceived to use, the less likely that an adopter would be to consume it.

Divisibility. This refers to the ability of the consumer to give the innovation a test run before deciding whether to adopt it or not. Being able to try out a product before purchase helps increase the rate of adoption drastically.

Communicability. This characteristic is simply stated as the idea that when an innovations benefit does not directly or immediately solve or fix a consumers problem or need it will not diffuse through a society as quickly compared to an innovation that is more of solution to a problem. We'd better buy pills which treat us after three days than after a month.

To realize how an innovation diffuses through a society you must first understand how one person adopts an innovation. The process can be broken down into five stages.

The first stage of the adoption process is awareness. At this stage the innovation is introduced to the person but there is no true knowledge of the product. Because of this lack of information the person does not feel the

need to run out and find out more information, much less consider consuming it. It is argued that a person often stumbles upon the innovation on accident during the awareness stage it will provide little incentive to get more information. Others feel that for a person to become aware, the innovation must fill a particular need in their life for them to notice. The second stage is interest. Here the person decides to invest time and energy into finding out more about the innovation. At this point the person feels good about the innovation but does not really know how or if it can be useful. The interest stage is purely to gather knowledge, not to decide whether to adopt. The third stage is evaluation. Here the person firsts begins to make a decision about the innovation. Then if the innovation appears to be positive for their life they will try it out. If the innovation has a negative connotation to the individual they may seek the advice and knowledge of their peers. This leads into the next stage called the trial stage. Here the individual physically gives the innovation a chance by trying it out for a limited basis. Research proves that most people will not adopt an innovation without personally testing it first to see if it really "works". The final stage is the adoption stage. Here the individual uses information that they have gathered in the interest and evaluation stages and with the outcome of the trial stage decides to adopt the innovation. There is, however, another possible stage to adoption process. After the individual adopts the innovation they may decide to reject it for whatever reason. This decision is called discontinuance.

So you see people do not just welcome into their homes every innovation that is put in front of them. Every person reacts differently in the ways that they hear about, understand, and finally accept or do not accept an innovation. Much in this process depends on individuals or other decision making units as well as on attributes of innovation.

ABBREVIATION IN MEDICAL TERMINOLOGY

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Text normalization, the process of identifying variants and bringing them to a common form, is an important aspect of successful information retrieval from medical documents such as health records, clinical notes, radiology reports and discharge summaries. In the medical domain a significant part of the general problem of text normalization is abbreviation. Numerous abbreviations are used throughout medical texts and identifying their meaning is critical to understanding the document.

A problem is presented by the fact that abbreviations are highly ambiguous with respect to their meaning. The Unified Medical Language System (UMLS) is a database containing biomedical information and tools developed at the National Library of Medicine. Using the UMLS as an example, "RA" can have such meanings as "rheumatoid arthritis", "renal artery", "right atrium", "refractory anemia", "right arm" and other terms. It has been estimated that about 33% of the abbreviations in the UMLS are ambiguous. In addition to problems associated with text interpretation, abbreviations constitute a major source of errors in a system that automatically generates lexicons for medical natural language processing (NLP).

When processing documents to identify those that contain a specific term, it would be desirable to identify all the documents that also use an abbreviation for the specific term. For example, if searching for documents containing the term "rheumatoid arthritis," it would be desirable to retrieve all those documents that use the abbreviation "RA" in the sense of "rheumatoid arthritis." At the same time, it is desirable not to identify documents that use the same abbreviation, but with a sense different from that of "rheumatoid arthritis." Continuing with the above example, it would be desirable that the search not identify those documents where "RA" means "right atrium."

One way to take context into account is to encode the type of discourse in which the abbreviation occurs. Discourse can, for example, be defined as the type of medical document and the medical specialty. As a more particular example, "RA" in a cardiology report can be normalized to "right atrium," while "RA" in a rheumatology note can be normalized to "rheumatoid arthritis." Unfortunately, this method of using the global context to resolve abbreviation ambiguity suffers from a number of drawbacks that limit its use in automatic document processing applications.

CURRENT USE AND CLASSIFICATION OF ACRONYMS

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In the English language the widespread use of acronyms and initialisms is a relatively new linguistic phenomenon, becoming increasingly evident since the mid-20th century. As literacy rates rose, and as advances in science and technology brought with them more complicated terms and concepts, the practice of abbreviating terms became increasingly convenient. The Oxford English Dictionary records the first printed use of the word initialism as occurring in 1899, but it did not come into general use until forties.

Around 1943, the term acronym was coined to recognize abbreviations and contractions of phrases pronounced as words. For example, the army offense of being Absent Without Official Leave was abbreviated to "A.W.O.L." in reports, but when pronounced "awol" became an acronym. While initial letters are commonly used to form an acronym, the original definition was a word made from the initial letters or syllables of other words, for example UNIVAC from Universal Automatic Computer. «The word acronym itself comes from Greek: άκοξ, akros, "topmost, extreme" +όνομα, ovoma, "name".

Acronyms and initialisms are used most often to abbreviate names of organizations and long or frequently referenced terms. The rapid advance of science and technology in recent centuries seems to be an underlying force driving the usage, as new inventions and concepts with multiword names create a demand for shorter, more manageable names. For example, from the U.S. Navy, is COMCRUDESPAC. which stands for Commander Cruisers Destroyers Pacific.

Classification of acronyms:

- Pronounced as a word, containing only initial letters;

Laser: light amplification by the stimulated emission of radiation; NATO: North Atlantic Treaty Organization; Scuba: self-contained underwater breathing apparatus; EPCOT: Experimental Prototype Community of Tomorrow; AIDS: acquired immune deficiency syndrome

- Pronounced as a word, containing non-initial letters: Amphetamine: Alpha-methyl-phenethylamine; Gestapo: Geheime Statspolizei ("secret state police"); Interpol: International Criminal Police Organization; Radar: radio detection and ranging

• Pronounced as a word or names of letters, depending on speaker or context:

FAQ: ([fæk] or [ef ei kju:]) frequently asked questions;

IRA: 1)When used for Irish Republican Army, pronounced as letters in English [ai a: ei], but as a word in Spanish ['ira]

2)When used for Individual Retirement Account, can be pronounced as letters or as a word [aire]

• Pronounced as a combination of names of letters and a word: CD-ROM: Compact Disc Read-only Memory

IUPAC: International Union of Pure and Applied Chemistry

• Pronounced only as the names of letters:

BBC: British Broadcasting Corporation

CNN: Cable News Network

DNA: deoxyribonucleic acid

USA: United States of America

HIV: human immunodeficiency virus

• Shortcut incorporated into name:

MMMC: Minnesota Mining and Manufacturing Company

EEE: Electronic Entertainment Exposition

WWWC: World Wide Web Consortium

• Multi-layered acronyms:

FRC: FIRST Robotics Competition, i.e., For Inspiration Recognition of Science and Technology Robotics Competition

The acronyms can therefore be used for various purposes: for simple amusement, for finding unknown meanings, for illustrating and emphasizing points in training, speaking or presentations, and for examples of how language and expressions develop and evolve. Whatever, acronyms add colour and texture to the written and spoken word, and to life in general. They are a fascinating reflection of the development of communications, language and social attitudes.

Acronyms, whether true acronyms or not, add colour, fun and interest to our language, and thereby they act as memory devices. Many technical and process-related acronyms greatly assist in memory retention and learning. Many acronyms when used properly can certainly enhance communications, because they act as "short-hand" and therefore increase the efficiency of communications; in other words, more meaning is conveyed in less time and fewer words.

GREENPEACE

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In 1971, motivated by their vision of a green and peaceful world, a small team of activists set sail from Vancouver, Canada, in an old fishing boat. These activists, the founders of Greenpeace, believed a few individuals could make a difference. Their mission was to "bear witness" to US underground nuclear testing at Amchitka, a tiny island off the West Coast of Alaska, which is one of the world's most earthquake-prone regions. Amchitka was the last refuge for 3000 endangered sea otters, and home to bald eagles, peregrine falcons and other widelife. Even though their old boat, the Phyllis Cormack, was intercepted before it got to Amchitka, the journey sparked a flurry of public interest .The US still detonated the bomb, but the voice of reason had been heard. Nuclear testing on Amchitka ended that same year, and the island was later declared a bird sanctuary. Today, Greenpeace is an international organisation that prioritises global environmental campaigns. Based in Amsterdam, the Netherlands, Greenpeace has 2.8 million supporters worldwide, and national as well as regional offices in 41 countries.

Greenpeace's cornerstone principles and core values are reflected in all our environmental campaign work, worldwide. These are:

- We 'bear witness' to environmental destruction in a peaceful, non-violent manner;
- We use non-violent confrontation to raise the level and quality of public debate;
- In exposing threats to the environment and finding solutions we have no permanent allies or adversaries;
- We ensure our financial independence from political or commercial interests;
- We seek solutions for, and promote open, informed debate about society's environmental choices.

Greenpeace has many victories in own activity. This organization exists because this fragile earth deserves a voice. It needs solutions. It needs change. It needs action.

NANOPARTICLES IN MEDICINE

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An important characteristic of particles just a few nanometres across is that they are of the right scale to interact with biological molecules and living cells in a specific and guided manner. Metal nanoparticles, in particular, possess physical characteristics that make them ideal diagnostic probes or even therapeutic agents. A number research groups in the world are focusing on developing novel strategies involving gold, silver and magnetic nanoparticles to aid the treatment of disease. Gold and silver owe their colour and shininess to oscillations of free electrons on their surface called plasmons which control how light is reflected. The plasmon frequency is also affected by the size and shape of the metal surface. Consequently gold nanoparticles are deep red but change to blue when the particles cluster into larger objects; for silver particles the colour change is from yellow to orange.

A team at the University of Strathclyde led by Duncan Graham has developed a particularly sensitive biomedical sensor based on the fact that the plasmons of silver-nanoparticle aggregates enormously enhance the characteristic wavelengths of light scattered from an attached probe molecule – an effect called surface enhanced resonant Raman scattering. The silver particles are coated with a DNA sequence designed to bind to a specific target biomolecule or gene. When the particles recognise their target, they scatter the light illuminating them at a different wavelength which is then detected. Another type of multi-tasking DNA probe is being developed by Tracy Melvin and Tom Brown at the University of Southampton. It is based on gold nanoparticles and semiconductor quantum dots combined to create an optical 'nano switch'. Cadmium sulphide (or selenide) quantum dots fluoresce with a
wavelength that depends on their size. However, on contact with gold nanoparticles, the fluorescence is switched off. The principle is to attach a strand of the target DNA to the quantum dot, and then link the DNA strand with the complementary base sequence to a gold nanoparticle. When mixed so that the strands bind, the light emission is turned off. If complementary DNA is then introduced from a clinical sample, it displaces the gold-linked DNA sequence and light emission is switched on again (see figure opposite left).

Gold nanoparticles could also be used to make cancer radiotherapy quicker, more effective and cheaper. David Hirst, Fred Currell from Queen's University Belfast are building a prototype X-ray system based on the principle that tumours have very porous blood vessels which preferentially accumulate injected metal particles. Gold atoms readily absorb X-rays of particular energies, releasing a shower of electrons. Unlike X-rays, they travel only a short distance before wreaking havoc on the surrounding tissue, in this case the tumour; in effect, each nanoparticle has a 'sphere of destruction' around it. Using gold nanoparticles in conjunction with tailored X-ray beams would reduce the number of treatments needed, as well as limiting damage to surrounding healthy tissue, and would be particularly effective on brain tumours, which are notoriously difficult to treat.

Magnetism is another property of metals that is being exploited in medicine. Magnetically responsive nanoparticles are already used as contrast agents in magnetic resonance imaging (MRI). Now, researchers are considering how to apply them to deliver drugs and even genes into cells. University has been attaching DNA sequences, which express a target protein, to nanoparticles with ironoxide cores, and then using an oscillating magnetic field to encourage cells to take up the DNA. In a further project, his research group is exploring how to deliver the corrected cystic fibrosis gene into the lungs of a sufferer using an external magnetic field to pull the nanoparticles through the thick mucus typically secreted by the lung tissue. The patient would lie on a table with an oscillating-magnet array underneath and inhale the particles from a nebuliser. Another application, which his team is investigating, is tissue engineering. By attaching molecules that recognize specific ion channels in cell membranes to magnetic nanoparticles, various cellular processes can be regulated to activate, for example, the formation of bone or cartilage. There is another using of magnetic nanoparticles. An exterior magnetic field can be manipulated such that it heats up the particles enough to kill targeted cancer cells. This burgeoning area of nanotechnology typifies how understanding the basic physics and properties of matter underpins applications that can improve the quality of life.

SUPPLY, DEMAND AND MARKET PRICES

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Market economies are directed by prices. Prices ration scarce recources, and they motivate production. As a general rule, the more scarce something is, the higher its price will be, and the fewer people will want to buy it. Economists describe this as the rationing effect of prices.

Prices encourage producers to increase or decrease their level of output. Economists refer to this as the production - motivating function of prices. Prices send out «signals» to buyers and sellers, keeping the economy responsive to the forces of supply and demand.

In a free market economy prices are determined by the interaction of the forces of supply and demand. Perfectly competitive markets are those in which many buyers and sellers, with full knowledge of market conditions, buy and sell products that are identical to one another.

Demand is a consumer's willingness and ability to buy a product or a service at a particular time and place. If you would like to own a new pair of athletic shoes but can't afford them, economists would describe that your feeling is desire, not demand. If, however, you had the money and were ready to spend it on shoes, you would be included in their demand calculations.

The law of demand describes the relationship between prices and the quantity of goods and services that would be purchased at each price. It says that all else being equal, more items will be sold at a lower price than at a higher price.

The degree to which price changes affect demand will depend upon the elasticity of demand for a particular item.

If total revenue increased following a price decrease, demand would be elastic. If the price decrease led to a decrease in total revenue, the demand for the item would be described as inelastic.

The demand for some goods and services will be inelastic for one or more of the following reasons:

- They are necessities.
- It is difficult to find substitutes.
- They are relatively inexpensive.
- It is difficult to delay a purchase.

Sometimes things happen that change the demand for an item at each and every price. When this occurs, we have an increase or a decrease in demand.

Supply, which is the quantity of goods or services that sellers offer for sale at all possible prices at a particular time and place, varies directly with a price. In other words, at a higher price, more goods and services will be offered for sale than at a lower one, and vice versa.

The price at which goods and services actually change hands is known as the equilibrium, or market price. It is the point at which the quantity demanded exactly equals the quantity supplied. Market price can be represented graphically as the point of intersection of the supply and demand curves.

Shifts in demand or supply will affect market price. When everything else is held constant, an increase in demand will result in an increase in market price, and vice versa. Similarly, an increase in supply will result in a decrease in price, and vice versa.

The market price is the only price that can exist for any length of time under perfect competition conditions. Perfect competition exists when the following conditions prevail:

- Buyers and sellers have full knowledge of the prices quoted in the market.
- There are many buyers and sellers so that no individual or group can control

nces.

THE GLOBAL POSITIONING SYSTEM

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The Global Positioning System (GPS) is a global navigation satellite system (GNSS) developed by the United States Department of Defense and managed by the United States Air Force 50th Space Wing. It is the only fully functional GNSS in the world, can be used freely, and is often used by civilians for navigation purposes. It uses a constellation of between 24 and 32 Medium Earth Orbit satellites that transmit precise microwave signals, which allow GPS receivers to determine their current location, the time, and their velocity. Its official name is NAVSTAR GPS. Although NAVSTAR is not an acronym, a few backronyms have been created for it.

Since it became fully operational in 1993, GPS has become a widely used aid to navigation worldwide, and a useful tool for map-making, land surveying, commerce, scientific uses, and hobbies such as geocaching. Also, the precise time reference is used in many applications including the scientific study of earthquakes. GPS is also a required key synchronization resource of cellular networks, such as the Qualcomm CDMA air interface used by many wireless carriers in a multitude of countries.

The first satellite navigation system, Transit, used by the United States Navy, was first successfully tested in 1960. Using a constellation of five satellites, it could provide a navigational fix approximately once per hour. In 1967, the U.S. Navy developed the Timation satellite which proved the ability to place accurate clocks in space, a technology that GPS relies upon. In the 1970s, the ground-based Omega Navigation System, based on signal phase comparison, became the first worldwide radio navigation system.

The design of GPS is based partly on similar ground-based radio navigation systems, such as LORAN and the Decca Navigator developed in the early 1940s, and used during World War II. Additional inspiration for the GPS came when the Soviet Union launched the first Sputnik in 1957. A team of U.S. scientists led by Dr. Richard B. Kershner were monitoring Sputnik's radio transmissions. They discovered that, because of the Doppler effect, the frequency of the signal being transmitted by Sputnik was higher as the satellite approached, and lower as it continued away from them. They realized that since they knew their exact location on the globe, they could pinpoint where the satellite was along its orbit by measuring the Doppler distortion.

After Korean Air Lines Flight 007 was shot down in 1983 after straying into the USSR's prohibited airspace, President Ronald Reagan issued a directive making GPS freely available for civilian use as a common good. The satellites were launched between 1989 and 1993.

Initially the highest quality signal was reserved for military use, while the signal available for civilian use was intentionally degraded ("Selective Availability", SA). Selective Availability was ended in 2000, improving the precision of civilan GPS from about 100m to about 20m.

Of crucial importance for the function of GPS is the placement of atomic clocks in the satellites, first proposed by Friedwardt Winterberg in 1955. Only then can the required position accuracy be reached.

A GPS receiver calculates its position by precisely timing the signals sent by the GPS satellites high above the Earth. Each satellite continually transmits messages containing the time the message was sent, precise orbital information (the ephemeris), and the general system health and rough orbits of all GPS satellites (the almanac). The receiver measures the transit time of each message and computes the distance to each satellite. Geometric trilateration is used to combine these distances with the location of the satellites to determine the receiver's location. The position is displayed, perhaps with a moving map display or latitude and longitude; elevation information may be included. Many GPS units also show derived information such as direction and speed, calculated from position changes.

It might seem three satellites are enough to solve for position, since space has three dimensions. However a very small clock error multiplied by the very large speed of light—the speed at which satellite signals propagate—results in a large positional error. The receiver uses a fourth satellite to solve for x, y, z, and t which is used to correct the receiver's clock.

TONSILLITIS (AN INFECTION OF THE TONSILS)

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Nowadays because of many reasons (air pollution, bad nourishment, stresses, viruses, etc.) people's immune system is weak, it causes a lot of diseases. One of the most popular type of diseases is respiratory diseases (bronchitis, laryngitis, pharyngitis, tonsillitis).

AIM: learn through the notion of "tonsillitis", its symptoms and causes of appearing, its types and ways of treatment and prevention of tonsillitis.

METHODS & MATERIALS: Tonsillitis is an infection of the tonsils and will often, but not necessarily, cause a sore throat and fever.

There are 3 main types of tonsillitis: acute, subacute and chronic. Acute tonsillitis can either be bacterial or viral in origin. Subacute tonsillitis (which can last between 3 weeks and 3 months) is caused by the bacterium Actinomyces. Chronic tonsillitis, which can last for long periods if not treated, is almost always bacterial.

The tonsils are lumps of tissue located on either side of the back of the throat. They are part of the body's immune system, designed to protect us by trapping bacteria and viruses that try to enter the body through the mouth.

But sometimes infections are too much for the tonsils to handle, and these fighters of infection become infected themselves. When that happens, it's called tonsillitis.

Tonsillitis is usually caused by the same viruses that cause the common cold. It also can be caused by certain types of bacteria. For example, you've probably heard of strep throat. It's an infection in your throat or tonsils caused by a specific type of bacteria called group A *streptococci*

What Are the Signs and Symptoms?

If you have healthy tonsils, you probably don't even notice them — even if you look at the back of your throat in a mirror. The tonsils become a lot easier to see when someone has tonsillitis because they swell up and become red. Here are some of the signs of tonsillitis:

- sore throat, which can be mild to severe
- swelling of the tonsils
- swelling of the lymph nodes (glands) in your neck
- redness in the tonsils
- white spots or pus on the tonsils
- changes in your voice
- fever

- difficulty swallowing

If you have symptoms of tonsillitis, it's a good idea to visit your doctor.

What Do Doctors Do?

Your doctor will ask about your symptoms and examine your throat and neck. If your doctor thinks you have tonsillitis, he or she may use a soft swab to gently collect a sample from your tonsils and the back of your throat. The sample is then tested to see if strep bacteria are present. The test is quick and easy and it will tell you and your doctor whether you will need medication to get better.

If the test shows that bacteria caused your sore throat, your doctor will usually prescribe an antibiotic to kill the bacteria. Not only will this help you feel better, it will also help prevent complications of untreated strep throat. (When strep throat isn't treated properly with antibiotics, people can develop serious complications, such as kidney disease.)

If your doctor prescribes antibiotics, be sure to follow the directions carefully. You'll need to finish taking all the medicine even if your symptoms go away and you feel better. That will prevent the infection from flaring up again and help protect you against any complications.

If a strep test comes back negative, it's probably a virus causing the tonsillitis. If this is the case, antibiotics won't help. Just like with a cold (also caused by a virus), you'll have to take it easy for several days and let the virus run its course.

If you have frequent episodes of tonsillitis, your doctor or an **otolaryngologist**, (a doctor who specializes in ear, nose, and throat problems) may recommend a tonsillectomy. This is a surgical procedure to remove the tonsils. Tonsillectomy may also be recommended if the infection is not responding to antibiotics.

How Can I Prevent Tonsillitis?

Tonsillitis is contagious. This means you can get it from someone else who has it. Sneezing and coughing can pass the tonsillitis-causing virus or bacteria from one person to the next. But you can protect yourself from catching tonsillitis or passing it to somebody else: wash your hands frequently; if someone in your household or your friend has tonsillitis, don't use that person's cups, silverware, toothbrush, or other utensils; & if you have tonsillitis, keep your stuff separate & don't share it with anyone; don't kiss your boyfriend or girlfriend until you're completely over the tonsillitis; once you've recovered, throw out your toothbrush & buy a new one. That way you won't reinfect yourself.

LA LANGAGE DE PROGRAMMATION

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La langage de programmation - le système formel des signes destiné pour la description des algorithmes sous la forme, qui est confortable pour l'interprète (par exemple, l'ordinateur). La langage de programmation définit la composition des règles lexicales, syntaxiques et sémantiques utilisées à la rédaction du programme informatique. Il permet au programmeur exactement de définir cela, à quels événements réagira l'ordinateur, comme se trouveront et être remis donné, ainsi que quel notamment les actions il faut accomplir au-dessus de ceux-ci aux circonstances diverses.

Les créateurs des langues interprètent différemment la notion la langage de programmation. Parmi les communautés des places reconnues comme la plupart des concepteurs, il y a des suivants :

• ***la fonction*** : la langage de programmation est destiné pour l'orthographe des programmes informatiques, qui sont appliqués pour la transmission à l'ordinateur des instructions pour l'exécution de n'importe quel procès calculatoire et l'organisation de la gestion des installations particulières.

• ***la tâche*** : la langage de programmation se distingue des langues naturelles ce qu'est destiné pour la transmission des équipes et les données de la personne à l'ordinateur, pendant que les langues naturelles sont utilisées seulement pour les relations des gens entre eux-mêmes. En principe, on peut généraliser la définition la langage de programmation est le moyen de la transmission des équipes, les ordres, la direction précise vers l'action; tandis que les langues humaines servent aussi pour l'échange d'information.

• ***l'exécution*** : la langage de programmation peut utiliser les structures spéciales pour la définition et la manipulation par les structures des données et la gestion du procès des calculs.

Aux dernières décennies dans la programmation est apparu et a reçu le développement essentiel l'approche sujet.

La première langue sujet Simula-67 était créée comme le moyen du modelage du travail des appareils divers et les mécanismes.

WHAT IS ENERGY MANAGEMENT?

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Energy Management can be considered as the sum of measures carried out to maintain comfort levels and production rates with using the minimum energy.

The main actions of energy managers are focused on energy conservation, energy recovery and energy substitution.

Reducing the CO_2 emissions, saving money, more comfortable working environment are achievements of energy management.

Energy management is a way to clearly identify all the energy costs.

One of the most important tasks of energy management today is to inform people to change their habits as far as energy use is concerned.

Not only energy managers but any person can change the energy policy. Everybody who uses the building can do something to improve the energy use.

The following basic things should be taken into account and practiced.

The number of hours when the building is occupied is a factor that influences the energy demand.

Energy management also depends on the type of the building and its age. When we use old buildings we should consider some specific aspects. Sun light, sun heat, energy system controls, distribution and efficiency are important aspects of the already existing buildings that influence the energy management. On the other hand, orientation, insulation and materials are important aspects in energy saving if it is a new building.

Energy savings can consider changing the energy type being used.

The cost of the electricity can be reduced by controlling the time of the electric loads.

Efficient installed equipment is one of the most important energy solicitors of the building.

Control devices such as thermostats, switches should be easily accessible to the energy users.

External factors are also of a big importance. Weather and climatic characteristics can contribute to energy saving.

ENDOCRINE SYSTEM AND DISORDERS

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The endocrine system is an integrated system of small organs that involve the release of extracellular signaling molecules known as hormones. The endocrine system is instrumental in regulating metabolism, growth, development and puberty, and tissue function and plays a part in determining mood.

There are many endocrine system disorders, which may cause many dangerous diseases in the human body.

Hyperthyroidism is a condition caused by the effects of too much thyroid hormone in tissues of the body. Although there are several different causes of hyperthyroidism, most of the symptoms that patients experience are the same regardless of the cause. Because the body's metabolism is increased, patients often feel hotter than those around them and can slowly lose weight even though they may be eating more.

Hypothyroidism is a condition characterized by abnormally low thyroid hormone production. Many disorders result in hypothyroidism. These disorders may involve directly or indirectly the thyroid gland. Because thyroid hormone affects growth, development, and many cellular processes, inadequate thyroid hormone has widespread consequences for the body.

Hyperparathyroidism or hypoparathyroidism is a condition in which the body produces too much or too little parathyroid hormone. The parathyroid hormone regulates calcium and phosphate levels and helps to maintain these levels. Over activity of one or more of the parathyroid glands causes high calcium levels (hypocalcaemia) and low levels of phosphate in the blood.

Acromegaly is a syndrome that results when the pituitary gland produces excess growth hormone after epiphyseal plate closure. A number of disorders may affect the pituitary to create this circumstance, although most commonly it involves a GH producing tumor derived from a distinct type of cells and called pituitary adenoma. Acromegaly most commonly affects adults in middle age, and can result in severe disfigurement, serious complicating conditions, and premature death if unchecked.

CALCIUM, ASPIRIN AND CANCER

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Cancer research is basic research into cancer in order to identify causes, develop strategies for prevention, diagnosis, treatments, and cure. It`s very important because nothing of these points is fully discovered at the same time the mortality is too high and is still raising. So, what was done in this sphere at the last time? For example, it was found out that calcium helps lower cancer risk in women.

Dr Yikyung Park and his colleagues at the National Cancer Institute analyzed data from nearly 300,000 men and nearly 200,000 women, all of whom were participants in the National Institutes of Health-AARP Diet and Health Study. They found out that over an average of seven years follow up, there were 36,965 new cancer cases among the men and 16,605 among the women. In men, calcium intake was not linked to total cancer incidence. In women incidence decreased with intakes of up to 1,300 milligrams per day. The men consuming the most calcium through food and supplements - up to 1,530 milligrams a day - had a 16 percent reduced risk of digestive cancer compared to those consuming the least calcium, at about 500 milligrams a day. For women, a similar effect was observed. The decrease in risk was most pronounced when it came to colorectal cancer. No effect of calcium was found for breast, prostate or any other kind of cancer except digestive. It means that calcium itself is known to reduce abnormal growth of cells of the gastrointestinal tract and also containing of vitamin D and conjugated linoleic acid can protect against cancer too.

Another research in this sphere tells us about aspirin and its influence on stomach cancers. Researchers at the National Cancer Institute in the United States studied a group of over 300,000 people, noting their consumption of aspirin and other non-steroidal anti-inflammatory drugs and noting the numbers developing stomach and esophageal cancer. People who had taken aspirin at least once in the preceding year were significantly less likely to go on to develop non-cardiac gastric cancer. There was also a 32 percent reduction in this cancer for those taking other non-steroidal anti-inflammatory drugs. To my mind it can be a new method of prevention cancer.

THE DEATH OF THE AUTHOR ACCORDING TO ROLAND BARTHES

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Roland Barthes is a french writer, critic, and literary theorist. In 1968 he wrote an essay "The Death of the Author". Barthes saw the notion or authority of the author in the criticism of a literary text as the forced projection of an ultimate meaning of the text. By imagining an ultimate intended meaning of a piece of literature one could infer an ultimate explanation for it. But Barthes points out that the great proliferation of meaning in a language and the inconceivable state of the author's mind makes any such ultimate realization impossible.

Reading this essay we come to the following conclusions: a) the Death of the Author means the death of the Critic; b) the reader has the right to estimate any product without being influenced by the personal point of view of the Author. Therefore the Author should "die" to rehabilitate the reader; c) the Author should be neutral or "die", giving the chance to the reader to make conclusions; not to litter a product by own guesses; d) a language is dead not being used in the writing or by the writing person; e) the Author bears the book, the Scriptor is born with the text; f) expressing himself, the Author uses the ready dictionary where words have a talk with the help of other words; g) the occurrence of the Scriptor is a way of disposal of the Author; h) regular liberation of sense occurs by "running" in the space of the multidimensional writing; i) the writing is given for "running" and for break in consciousness; j) the multidimensional writing is like a tree, and a way of its knowledge goes through "branches" to "root", but "root" aspires to infinity; k) the liberation of complete essence of the writing belongs to the reader, he perceives obvious styles of a polysemy of values, strokes in the text; l) the future of the writing is in the "death" of the Author; m) the Author dies in one appearance and revives in another one; n) the Author is not identical to the person who has done the writing; o) the writing is self-sufficient; p) the reader constitutes the text.

The main idea of the essay is that the birth of the reader must be at the cost of the death of the Author". Barthes asserts that the Author is dead because he is no longer a part of the deep structure in a particular text. The Author does not create the meaning in the text: one cannot explain a text by knowing about the person who wrote it. A text, however, cannot physically exist disconnected from the Author who writes it.

ENGLISH LANGUAGE AND JOURNALISM

Marina Osjukhina, *JT-81*,
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Today we live in a wide developed word, where only contemporary person can be the best, so that it is very important to know computer, national language, and one ore two foreign languages. A journalist is not an exception.

One of the most widespread languages all over the word is English, a journalist, who will be good at it, can resive better job, than a correspondent, who speaks only one language. Why so?

Sometimes a redaction will have to take an interview with American diplomat, pop-star or ambassador from GB, it will be very expensive to pay money for interpreter, that's why redactor will ask one of his workers, who knows English, to make an article.

Also, sometimes a journalist can resive any documents in English, and he had to translate them, but computer translators always make a lot of mistakes, so a man can lost main details. But if a journalist knows language, he will catch a main topic and will right correct article.

Educated journalist will speak with young teenagers, who often use English slang, very easy, so he will have an opportunity to be good at teen questions.

English is a very important link in today's education, but also is very useful in a daily journalist work.

СЕКЦІЯ СТУДЕНТІВ ІІІ КУРСУ
THE PLOT TO ASSASSINATE HITLER JULY 20, 1944

A. Budakov, *PM-61,*
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The 20 July plot of 1944 was a failed attempt to assassinate Adolf Hitler, the leader of Nazi Germany.

Oberst Claus Schenk, Count von Stauffenberg lost his left hand and fingers from his right fighting in Tunisia. As a member of the aristocracy, he had double contempt for Hitler, and joined the plot to kill him. General Ludwig Beck, Chief of Staff back in 1938, was the nominal leader.

The Normandy Landings inspired the plotters to attempt an assassination in the face of the Allied breakout. Von Stauffenberg placed a briefcase with a bomb inside Hitler's "Wolf's Lair" — his command post for the Eastern Front in Rastenburg, Prussia. The bomb was one of many British bombs confiscated by the Abwehr, the German intelligence organization. Stauffenberg had to activate the bomb with tongs. He placed the bomb under the conference table and left. He and the other plotters believed Hitler was dead and prepared to seize Berlin with Home Army troops .Hitler was not dead.

Meanwhile, Stauffenberg was shot at midnight by a firing squad, loyal Army officers rounded up conspirators, many of whom tried to spare their lives by informing. Implicated was Erwin Rommel, who had been approached by the plotters but did not join. Rommel was recovering from wounds at home. For his failure to inform Hitler, he was given a choice: take poison and get a state funeral, or refuse and see your family executed as well. Rommel took poison. The man who had the best ability to change Germany's fortunes of war was gone. Also forced to commit suicide or sent to concentration camps were thousands of family members of the plotters. Hitler used the July 20 Plot as an excuse to destroy anyone in the Army he feared would oppose him. The traditional salute was replaced with the Nazi Sieg Heil. Eventually 20,000 were killed or sent to concentration camps in the purge.

Hitler, a manic hypochondriac, became obsessed with his health after the assassination attempt.The failure of the July 20 plot precluded any possibility of Germany negotiating a peace with the Allies. Hitler intended to fight to the death in a struggle that would see the end of National Socialism or the end of Germany's enemies.

FOREX – A NEW INSTRUMENT FOR MONEY MAKERS

Zh.Derkach, *student*,
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The very beginnings of Forex or currency trade have an important place in history. A careful glance at ancient cultures reveals that trade played a significant role in daily life. The earliest forms of currency in use were coins. However, sometime in the Middle Ages, a need was felt for a different form of payment.

Today, it is agreed that the Babylonians were among the first to use paper bills and receipts. From then onwards, till around the early 20th century, the markets themselves underwent a huge change as they became more volatile in nature due to the increased activity.

The Forex market, as we know it today, originated in 1973. The Forex market is relatively young and is the largest financial market in the world today. Some of the players in this huge playground include banks, currency speculators, multinational co operations, governments and other financial markets and institutions. Apart from them individuals too can be a part of this market, but individuals often participates indirectly through banks or brokers.

Reasons for popularity of Forex market: transactions can be made on the internet, or through the phone; the market is open 24 hours; the leverage that this market offers; the high liquidity and the low dealing costs are few of the reasons for its popularity. Since the brokers or dealers negotiate directly with each other, there are no clearinghouses or central exchanges, making it free from any external control. It is estimated that the average trade in the markets exceed 2- 2.5 trillion US dollars, on a daily basis. The underlying principle is the exchange of one currency for another with an intention of making profits on the difference of rates. In other words, money is bought and sold.

Due to the presence of trading centres worldwide, there is no one fixed single rate, but a number of different rates depending on which bank or trader is trading. Care is taken to ensure that the rates are more or less close, or else there would be a lot of exploitation. Exchange rates however are liable to change several times a day and are prone to fluctuations. This largely happens due to changes in monetary flows, because of inflation, changes in GDP growth, trade deficits or surpluses, mergers and acquisitions etc. In order to have some idea as to which

direction the market is headed, players often make fundamental and technical analyses.

Making a fundamental analysis requires a player to take a step back in order to see a bigger picture, and to note important indicators around him, which could determine future trends or fluctuations in the markets. The factors can range from the political state of a country to its general economy. A technical analysis on the other hand, requires a player to take a closer, in depth look at factors such as the patterns of price movements, price charts, amount of transactions taking place etc in order to decide when an entry or exit from a market needs to be made.

Trade is usually carried out in US dollars as it has the highest currency value but other currencies are also used. The trading usually done is called Marginal Trading and it simply refers to a trade made using not only one's money but also borrowed money from a brokerage firm. This idea is mainly due to the fact that one does not need a real money supply in order to speculate. This enables overhead expenses for the transfer of money to be decreased, and allows players to trade with smaller amounts. However, the losses one can have too can also be substantial.

Types of contract arrangements in Forex markets are: a 'spot' transaction is a two day delivery transaction, which represents a direct exchange between currencies. A 'forward' transaction however, means that a previously decided trade occurs at a later date, and at a rate fixed by the players involved. A 'future' transaction has a standard contract size, and maturity dates with an average duration of 3 months. 'Swap' is a system where the players exchange currency on a certain date and agree to reverse the deal at a later set date. An 'option' gives a buyer the right to exchange money from one currency to another at an exchange rate agreed upon on a specific date. But he is under no obligation to do so, at the same time.

An outstanding quality of the Forex market is that no single individual can influence on the prices or deals. Although scams do take place worldwide affecting many people, websites and registered Forex dealers try to encourage players to take responsibility in discouraging unethical activities. On a daily basis, millions are made or lost. But it is the sheer instability of worldwide events itself which adds to its magnetism as can be summed up in this line- "Buy the rumour, sell the fact'.

CUSTOMER RELATIONSHIP MANAGEMENT (CRM) STRATEGY

G. Shaban, *E-61*,
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– How can any company maintain margins in the face of the growing array of competition?

– Typical CRM goals are to improve services provided to customers, and to use customer contact information for targeted marketing.

– CRM consists of the processes a company uses to track and organize its contacts with its current and prospective customers.

– It could completely transform the way your company operates and will have major implications for people, processes and technology.

– By using these practices you'll be able to reduce sales costs, increase customer loyalty, sell more to each customer.

– Payback within months and return on investment of more than 100% is by no means impossible.

– There are several different approaches to CRM, with different software packages focusing on different aspects: Operational CRM, Sales Force Automation, Sales Intelligence, Analytical, Campaign Management, Collaborative CRM, Consumer Relationship CRM.

– A successful CRM strategy is built by addressing three fundamental concerns: understand who your customers are, understand how both parties derive value from the relationship, build processes and systems to remove blockages.

– A successful CRM strategy is clear and succinct.

– It creates value for the company – people become more likely to recommend you to their friends, or marketing efforts deliver higher returns, or the cost of mistargeted service is reduced.

– The strategies then identify what action will be taken to enhance that value.

– A successful CRM strategy will help people focus on building high-value relationships.

– Valuable relationships only happen if you think carefully about what fits for you and your customers.

PUBLIC RELATIONS:MAIN DIRECTONS

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The term **public relations** was proposed by the third president of the USA, Thomas Jefferson, the creator of the Declaration of Independence. He considered **public relations** to be a sphere of human activity, competent in social mind management.

There are seven main directions of public relations:

1. ***Publicity***. Specialists of PR-department establish their own personal contacts with mass media, which in this or another way criticize or use information about company in their articles and activity at all. They give mass media information, positive for the company, which can be later used in materials for society.
2. ***Corporative relations.*** The reputation of company, its image, reactions to the problems which can influence the company success, corporative advertisement, image making consultations for top-managers.
3. ***Crisis-management.*** Management of communications performed under crisis or accident conditions (disasters, management failures).
4. ***Relations with employees.*** Communications inside the company. The base of such communications is motivation of employees for better and more effective execution of their duties.
5. ***Relations in financial field.*** Work with financial structures, cooperation with governmental financial departments.
6. ***Relations with local departments and inhabitants.*** Positive relations with local communities, district, regional authorities. Sponsorship, ecological problems solution, organizing activities at a local level. This direction also includes lobbying.
7. ***Trade propaganda.*** Special programs of public relations, directed to creation of a positive image of companies' goods .

ORGANIC LIGHT EMITTING DIODE TECHNOLOGY IN BRIEF

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Organic Light Emitting Diode (OLED) is any material with light emissive layers made of organic compounds. Organic layers are sandwiched between two conductors (an anode and a cathode) in crossed rows and columns. The resulting matrix of pixels can emit light of different colors when electric current is applied to both conductors.

OLED technology is young but its achievements have been awarded Nobel Prize in 2000. First device with OLED display was performed in 1998. It was car cassette radio. Nowadays such systems can be used in television screens, computer displays, portable system screens such as cell phones and PDAs, advertising, information and indication. An important benefit of OLED displays over traditional liquid crystal displays (LCDs) is that OLEDs do not require a backlight to function. They use less power, so can operate longer on the same charge. Because there is no need for a backlight, an OLED display can be much thinner than an LCD panel.

OLEDs can be categorized into passive-matrix and active-matrix displays. Active-matrix OLEDs (AMOLED) use thin film transistor to switch the individual pixel on or off, and can make higher resolution and larger size displays possible.

According to material classification OLEDs are: small molecules (SM-OLED) or Polymer (PLED). SM-OLED was developed earlier by Kodak Company. But production of small-molecule displays often involves vacuum spraying, which makes the production process more expensive than other techniques. Polymer light-emitting diodes (PLED) are easier in processing. No vacuum is required, and the emissive materials can be applied by inkjet printing. That's why PLED technique is widely used.

Different manufacturing process of OLEDs enables many advantages over flat-panel displays made with LCD technology. OLEDs show a greater range of colors, brightness, and viewing angle than LCDs because OLED pixels directly emit light. OLED pixel colors appear perfectly, even as the viewing angle approaches 90 degrees from normal. OLEDs also have a faster response time than standard LCD screens.

The biggest technical problem for OLEDs is the limited lifetime of the organic materials and expensive price. In addition the intrusion of water

into displays can damage or destroy the organic materials. They can't be used outdoors without waterproof containers or absorbing materials inside the case.

Another great problem: Kodak has licensed its patents to other firms for commercialization, so any company must pay to continue developing.

OLED's unique characteristics allow creating fantastic devices.

Transparent organic light-emitting device (TOLED) emits light in screen plane only and passes over 70% of the light through. As a result back and front side these devices are almost transparent. It can be useful for windshield speedometers or TV- glasses.

Flexible organic light-emitting device (FOLED). The only difference in assembling process is to use flexible bottom layer instead of solid glass. So devices with bent shape can be easily performed on static or flexible surfaces.

Stacked OLED (SOLED) uses a pixel architecture that stacks the red, green, and blue subpixels on top of one another instead of next to one another as is commonly done in CRTs and LCDs. This improves display resolution up to threefold and enhances full-color quality.

Double Emission OLED (DE-OLED) can display signal on the front and backside at the same time. The viewing angle approaches to 360 degrees.

Phosphorescent OLED (PHOLED) uses the principle of electrophosphorescence to convert electrical energy in an OLED into light in a highly efficient manner.

The most interesting ideas of OLED's using can change usual things around us. It opens the door to new applications such as roll-up displays and displays embedded in clothing. Information displays on food package can warn when contents is gone off.

For military needs PHOLED panels can be a perfect lighting unit which can be twisted, pressed or even perforated during transportation. It has no influence on its operability.

For designers it can be interesting to make rolling up curtain-lamp or TOLED windows, transparent during the daytime and emitting light in the evening.

NETBOOKS IN BRIEF

O.A. Iegorov, *IN-61*,
I.A.Bashlak, *ELA*

Netbooks are small laptops designed for wireless communication and access to the Internet. They are small in size, cheap, under-powered and run either Linux or Windows operating system.

History. The influx of netbooks began in 2007 when ASUS introduced a new type of a portable computer. Named the EeePC, it was a clamshell sporting 7-inch screen. ASUS dubbed it a 'netbook'.

It was originally designed for developing countries, but ASUS decided to sell it in the U.S. and Europe as well. The gadget took off.

Eee PCs weren't bought by people in poor countries but by middle-class consumers in western Europe and the US, people who wanted a second laptop to carry in a handbag for peeking at web-based services wherever they were.

By fall 2008, nearly every US computermaker (Dell, HP, Lenovo etc) had produced its own netbook.

Popularity. By late 2008, netbooks had begun to take market share away from laptops. It is estimated that almost thirty times more netbooks were sold in 2008 (11.4 million) than those in 2007 (400,000).

The reasons for the popularity of netbooks are its low price, compact size and dead-simple use. When the Eee PC was conceived, making machine uncomplicated was the key driver in its design.

Misunderstanding. Netbooks are under-powered. You cannot replace a laptop by a netbook. But some vendors do not emphasize this fact in their advertising. As a result, some people continue to return netbooks after buying.

Future. In 2009 the sales of the netbooks are expected to jump up to 35 million and then rising to an estimated 139 million in 2013 accordingly.

The netbook is the future of hardware. For a few users who need a high-performance device, PC makers will offer expensive computers, which can do everything and even more. For everyone else - lawyers looking for something to do on the train, women desperate for something that fits in their handbag - netbooks will dominate. People need portable, cheap and small computers.

IS THIS "HOMO" REALLY "SAPIENS" OR IS HE A FOOL? OR HOW TO BE RESPONSIBLE FOR OWN DEEDS

Y.O. Nazemtseva, *EK-61*,
I.A.Bashlak, *ELA*

The thought that we shouldn't destroy and pollute, to not build up again and cleanse afterwards - is as old as the world. However, the humanity continues to follow the ways of destruction and pollutionin its activities.

Environmental protection is one of the main problems of today.

Technological progress improves people's lives, but at the same time it causes problems which are growing in number day after day. Some of them are well known. Others are quite new.

Among the most urgent problems are the ozone layer, acid rains, global warming, toxic pollution of atmosphere, oceans, disappearance of animals and forests, destruction of soil in some areas, threat to some flora and fauna representatives, accumulation of waste, etc.

What is the Problem with Waste?

The European Union produces 1.3 billion tonnes of waste each year. In other words, 3.5 tonnes of refuse and liquid or solid waste per European citizen. There are estimations according to which 40 million tonnes of this are classed as hazardous, or particularly dangerous. Among other things it can be:

- ✓ Ecotoxic, which causes damage to the environment.
- ✓ Carcinogenic, which causes cancer.
- ✓ Persistent, which remains dangerous for a long time.
- ✓ Bio-accumulative, which accumulates as it makes its way up the food chain.

At present our region has accumulated more than 29 million tonnes of waste that occupy 5 thousand hectares (about 120 tonnes per square metre). It also produces 650 thousand cubic measures of domestic solid waste per year (Sumy produces 420 thousand), what individuals put in their bins. Officially this garbage is placed on 320 landfills and dumps. This figure is much less in any developing country, and is higher for the US.

There are two main problems with waste:

1. We are using resources inefficiently. Every bit of excess packaging, industrial waste, or damaged goods costs resources.
2. The management and disposal of waste is not efficient or clean.

Waste does not just create an environmental impact: it also costs money. This is why industrial waste has been reduced over the last 30 years. A social cost is to show how people perceive the area in which they live.

Dealing with waste is big business: the recycling business alone has an annual turnover of $US 160 billion and employs 1.5 million people worldwide.

The best way to tackle the problems associated with waste is to:

Prevent It. In an industrial sense, this can be looking at the way that the product is designed, manufactured or transported. For individuals - reducing food waste, buying better quality products.

Re-use It. The charity shop, that takes clothes or books that are still good for use 'as is', or places that take mainly unwanted electronic goods, repair them or get the useful parts and then sell them back on .

Recycle It. Some materials (metals, paper, glass, some types of plastic and construction/demolition waste) are now more or less systematically recycled.

Countries that have achieved a high level of recycling of waste have done so because they have been able to create a culture of doing so. In Germany, children are taught at school about the importance of properly separating their waste, and separate bins are provided and weighed. The less mixed waste you have, the less you pay.

Incinerate It and Use the Energy and Heat or use new technology – getting gas from waste via microorganism`s help.

There is only one company, Elga, in Ukraine that can neutralize outdated and old pesticides and agricultural chemicals. It is located in the city of Shostka in Sumy region. The utilization of 1 ton of chemicals costs up to 25 ths hryvnyas per ton. Elga can neutralize not more than 750 tons of pesticides annually.

Landfill It. In the developed world landfills must fit some standards, but, unfortunately, there are still thousands of illegal ones.

To protect nature people should change their attitude to it.

Man should stop taking from nature everything he needs and give it his love instead. Otherwise the price that mankind will have to pay will be too high.

LABELLING

S.V. Chernobuk, *student ES-62,*
Supervisor Mulina N. I., *As. Prof.*

Packaging is heavily integrated into our daily lives. We see it all around us, on everyday items such as chocolate bars and potato chip packets. Packages and labels inform how to use, transport, recycle, or dispose of the package or product. With pharmaceutical, food, medical, and chemical products, some types of information are required by governments. Generally speaking labels have many uses: product identification, name tags, advertising, warnings, and other communication.

Special types of labels called digital labels (printed through a digital process) can also have special applications such as RFID tags, security printing, and sandwich process labels.

Package labelling (BrE) (**labeling** (AmE)) or **marking** is any written, electronic, or graphic communications on the packaging or on a separate but associated label. For consumer packaging, symbols exist for product certifications, trademarks, proof of purchase, etc. Some requirements and symbols exist to communicate aspects of consumer use and safety. Marking must be clear and precise. Recycling directions, resin identification code, and package environmental claims have special codes and symbols. Its color should stand out clearly from that of the package; it is usually black in color. Alternatively, it may also be applied on adhesive labels. Correct and complete marking of packages helps to prevent incorrect handling, accidents, incorrect delivery, losses of weight and volume and Customs fines. Complete marking must comprise the following three parts:

1) shipping mark;
2) information mark;
3) handling instructions.

Labels can be classified due to different criteria: international or local, standard, warning or informational, inhibiting, ecological, etc. Many types of symbols for package labelling are nationally and internationally standardized. What is the CE marking? Abbreviation "CE" corresponds to the French "conformite European" (or English "European Conformity"). For EU countries CE-marking is product data sheet, which indicates that this product meets the essential requirements of EU directives. Features of the CE marking are that it is mandatory for all incoming goods to the

European market covered by the EU Directive, and the certification for compliance with quality standards is voluntary.

There is another labeling, which you can meet in your usual life almost every day and on different products. It helps you to solve particular problems and meet your needs. For example, symbol  "Keep dry". It says, "cargoes bearing this symbol must be protected from excessive humidity and must accordingly be stored under cover. If particularly large or bulky packages cannot be stored in warehouses or sheds, they must be carefully covered with tarpaulins".

Care labels provide helpful information that can save you time and money.

There are a number of symbols that commonly appear on packaging products. Some of these indicate the whether the item is recyclable, while others show the recycled material content. The symbol, called the Mobius loop  , is most commonly found on cardboard packaging. Symbol denotes that the item is recyclable. If the centre of the loop contains a number, this means that the item is made from a certain percentage of recycled materials. Similar symbols can be for plastics and glass.

Ecological labeling. Another symbol often appearing on packaging is the German 'Green Dot'  . This does not have any environmental significance, meaning only that the manufacturer has paid a fee towards the packaging recovery system in Germany.

The European Eco-label has been developed by the European Union. It encourages the development of products, which keep the impact on the environment to a minimum. It is a voluntary scheme. The 'flower' symbol is awarded to products that meet a set of stringent environmental and performance criteria. These criteria take into account all aspects of a product's life, from its production and use to its eventual disposal (cradle-to-grave approach). About 400 products - from washing machines to footwear - currently carry the label.

Make no doubt, skills in symbol reading will help you to buy better things, keep there with solicitude. And you will do it with concern for the environment.

FORM HISTORY OF MICROPROCESSOR

Ivanchuk A., *ES-61,*
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A microprocessor is a programmable digital electronic component that incorporates the functions of a central processing unit (CPU) on a single semiconducting integrated circuit (IC). One or more microprocessors typically serve as the CPU in a computer system, embedded system, or handheld device. From the humble beginnings microprocessor as the drivers for calculators, the continued increase in power has led to the dominance of microprocessors over every other form of computer; every system from the largest mainframes to the smallest handheld computers now uses a microprocessor at its core. First types of microprocessors were three projects arguably delivered a complete microprocessor at about the same time, namely Intel's 4004, the Texas Instruments (TI) TMS 1000, and Garrett AiResearch's Central Air Data Computer (CDAC).

The 4004 was later followed in 1972 by the 8008, the world's first 8-bit microprocessor. It was these features that allowed the home computer "revolution" to take off in the early 1980s, eventually delivering such inexpensive machines as the Sinclair ZX-81, which sold for US$99.

The first multi-chip 16-bit microprocessor was the National Semiconductor IMP-16, introduced in early 1973. An 8-bit version of the chipset was introduced in 1974 as the IMP-8. While 64-bit microprocessor designs have been in use in several markets since the early 1990s, the early 2000s saw the introduction of 64-bit microchips targeted at the PC market.

A different approach to improving a computer's performance is to add extra processors, as in symmetric multiprocessing designs which have been popular in servers and workstations since the early 1990s. In response, the microprocessor manufacturers look for other ways to improve performance, in order to hold on to the momentum of constant upgrades in the market. A multi-core processor is simply a single chip containing more than one microprocessor core, effectively multiplying the potential performance with the number of cores.

In 2005, the first mass-market dual-core processors were announced and as of 2008 dual-core processors are widely used in servers, workstations and PCs while quad-core processors are now available for high-end applications in both the home and professional environments.

THE ART AND SCIENCE OF CONNECTING WITH CONSUMERS

L.Sigida, *student*,
A.M.Dyadechko, *ELA*

It's easy to become confused about these terms: advertising, marketing, promotion, public relations and publicity, and sales. The terms are often used interchangeably. However, they refer to different - but similar activities. Some basic definitions are provided below.

Advertising is bringing a product (or service) to the attention of potential and current customers. Advertising is focused on one particular product or service. Advertising is typically done with signs, brochures, commercials, direct mailings or e-mail messages, personal contact, etc.

Promotion keeps the product in the minds of the customer and helps stimulate demand for the product. Promotion involves ongoing advertising and publicity (mention in the press).

Public relations includes ongoing activities to ensure the overall company has a strong public image. Public relations activities include helping the public to understand the company and its products. Often, public relations are conducted through the media, that is, newspapers, television, magazines, etc..

Publicity is mention in the media. Organizations usually have little control over the message in the media, at least, not as they do in advertising. Regarding publicity, reporters and writers decide what will be said.

Sales involves most or many of the following activities, including cultivating prospective buyers (or leads) in a market segment; conveying the features, advantages and benefits of a product or service to the lead; and closing the sale (or coming to agreement on pricing and services).

Marketing is much more difficult term. Marketing is a new field of science. It is the art and science of connecting with consumers.

Marketing is the social process by which individuals and groups obtain what they need and want through creating and exchanging products and value with others. Kotler.

Marketing is the right product, in the right place, at the right time, at the right price. Adcock.

Marketing is the wide range of activities involved in making sure that you're continuing to meet the needs of your customers and getting value in return.

Marketing is usually focused on one product or service. A marketing plan for one product might be very different than that for another product. Marketing activities include "inbound marketing" and "outbound marketing".

Inbound Marketing Includes Market Research To Find Out:

1. What specific groups of potential customers/clients (markets) might have which specific needs.
2. How those needs might be met for each group (or target market), which suggests how a product might be designed to meet the need.
3. How each of the target markets might choose to access the product, etc. (its "packaging").
4. How much the customers/clients might be willing pay and how (pricing analysis).
5. Who the competitors are (competitor analysis).
6. How to design and describe the product such that customers/clients will buy from the organization, rather than from its competitors (its unique value proposition).
7. How the product should be identified - its personality - to be most identifiable (its naming and branding).

Outbound Marketing Includes:

1. Advertising and promotions (focused on the product).
2. Sales.
3. Public and media relations (focused on the entire organization).
4. Customer service.
5. Customer satisfaction.

Too often, people jump right to the outbound marketing. As a result, they often end up trying to push products into people who really don't want the products at all. Effective inbound marketing often results in much more effective - and less difficult - outbound marketing and sales.

Marketing is science of future and it will help to sale products more effective.

HOW TO LISTEN TO THE MUSIC TODAY?

O. Babak, *PM-61*,
A.M.Dyadechko, *ELA*

The answer for the question in the title is not so obvious and monosemantic as it seems. There are plenty of technical and methodological variants. And any of them means its own value, philosophy and even gastronomic analogy. Rubbish heap against a supermarket: to buy or not buy? Today, when the old crisis of sound-recording industry was aggravated with a world financial crisis, seems there is no doubt that we observe the end of the epoch of physical sound carriers, which began in 1877 with the invention of phonograph by Thomas Edison. Comparison of rubbish heap and Internet is exaggeration. It's better to compare it with wholesale market.

But comparison of licensed audio shops with food supermarkets is quite justly: they are arranged on the same marketing laws. For them to sell the production of parental record-companies and CD's of those artists from whom they have larger sales revenue is more relevant then to satisfy people's needs.

But people who've founded opportunities of the Internet now have special problems. They complain there is too much music to listen. Today is the age of internet radio stations, mp3-blogs where the most hot and the newest releases can be found before their publishing and where there are plenty of rare recordings for last fifty years, torrents with terabytes of different music. People can't even sort downloaded material, not that to listen to it.

Early or late voluntary musical hunger-strike will be the answer for musical gluttony. And musical journalist and blogger from Seattle, hiding under the nickname M., was the first who've guessed to begin a public diet. He set itself a rule not to get new mp3-file, while the previous will not be listened, and not to buy new CD, while the last bought will not be listened till the end (there is an indulgence — if CD is bad, it can be turned off). M. set the term from January till November 2009 for his experiment. He reports about it in his blog and call everybody to follow his lead and join "slow listening movement" (there is an analogy with "slow food movement"). The name is wonderful. The idea of self-restraint is in the air for a long time. So choose the music diet if you are the music fan who can't digest all collected music.

WHY DID THE TITANIC SINK?

K.S. Linnik, *DM-61*,
I.A.Bashlak, *ELA*

On April 14, 1912, Titanic collided with a massive iceberg and sank in less than three hours. At the time, more than 2200 passengers and crew were aboard the Titanic. Only 705 survived. According to the builders of the Titanic, even in the worst possible accident at sea, the ship should have stayed afloat for two to three days. The material failures contributed to the rapid sinking of the Titanic.

Originally, historians thought the iceberg had cut a gash into Titanic's hull. Scientists used sonar to examine the area and discovered the iceberg had caused the hull to buckle, allowing water to enter Titanic between her steel plates.

During an expedition to the wreckage in the North Atlantic on August 15, 1996, researchers brought back steel from the hull of the ship for metallurgical analysis.

Tests showed that the steel from the Titanic was about 10 times more brittle than modern steel when tested at freezing temperature - the estimated temperature of the water at the time the Titanic struck the iceberg.

Tests of the steel's chemical composition also showed a high content of sulfur, oxygen and phosphorous. High levels of those elements cause steel to be more brittle.

The chemical analysis also revealed a low level of manganese - another symptom of brittle steel.

The steel used in constructing Titanic was probably the best plain carbon ship plate available in the period of 1909 to 1911, but it would not be acceptable at the present time for any construction purposes and particularly not for ship construction.

As a result of the Titanic disaster there have been made the changes in both the design of ships and the safety regulations governing ships at sea.

MILITARY APPLICATIONS OF ELECTRONIC TECHNOLOGIES

S. V. Chernobuk, *ES-62*,
I.A.Bashlak, *ELA*

1. **Cluster munitions** or **cluster bombs** are air-dropped or ground-launched munitions that eject smaller submunitions: a cluster of bomblets. The most common types are intended to kill enemy personnel and destroy vehicles.

A basic cluster bomb consists of a hollow shell and the two to more than 2,000 submunitions contained within it. The submunitions themselves may be fitted with small parachutes or streamers to slow their descent.

A growing trend in the design of submunition-based weapons is the smart submunition, which includes the CBU-97 sensor-fused weapon. Munitions specifically intended for anti-tank use may be set to self-destruct if they reach the ground without locating a target, theoretically reducing the risk of unintended civilian deaths and injuries. Each submunition contains four hockey-puck-shaped sensor-fused projectiles called Skeets. The 40 Skeets scan an area of 1,500 feet (460 m) by 500 feet (460 m × 150 m) using infrared and laser sensors until it finds a target, or failing that, self-destructs 50 feet (15 m) above the ground. The laser sensor detects changes in height such as the distinctive contour of a vehicle. At the same time, infrared sensors detect heat signatures, such as those emitted by the engine of a target vehicle. When the combination of height contours and heat signatures indicative of a target are detected, the Skeet detonates.

The CBU-97 was first deployed during Operation Allied Force when the United States and NATO entered the Kosovo War, but were not used. Sensor-fused weapons were first fired in combat during the 2003 invasion of Iraq.

The Convention on Cluster Munitions, CCM, was adopted in Dublin by 107 states on 30 May 2008. The Convention prohibits all use, stockpiling, production and transfer of Cluster Munitions.

2. **Anti-satellite weapons** (ASATs) are space weapons designed to incapacitate or destroy satellites for strategic military purposes. The development and design of anti-satellite weapons has followed a number of paths.

The initial efforts by the USA and the USSR were using ground-launched missiles from the 1950s; many more exotic proposals came afterwards.

The ASAT potential of high-energy lasers has been extensively explored by the US and to a lesser degree by the USSR.

As many as 30 states may already have the capability to use low-power lasers to degrade unhardened sensors on satellites.

So what do you do if someone fires a powerful laser at your satellite? The optics on the satellite will probably be fried, so you couldn't see who did it. In 1997, the US Mid-Infrared Advanced Chemical Laser (MIRACL) was test-fired against a satellite in a 420-kilometer orbit, damaging the satellite's sensors.

The MIRACL laser first became operational in 1980. It can produce over a megawatt of output for up to 70 seconds, making it the most powerful continuous wave (CW) laser in the US.

Electronic signal manipulation is another major class of ASAT weapons effort. The signal to the satellite can be changed with incorrect information replacing the correct information. This is called *"spoofing."*

On January 11, 2007, China destroyed an old orbiting weather satellite. The United States also destroyed a malfunctioning reconnaissance satellite on February 21, 2008.

3. **The TALON** is a man-portable robot operating on small treads. It weighs less than 45 kg. TALON is operated with a joystick control, has seven speed settings (top speed is 6 feet/1.8 meters per second) and can use its treads to climb stairs, maneuver through rubble and even take on snow. It transmits in color, black and white, infrared, and/or night vision to its operator, who may be up to 1,000 m away.

The robot is controlled through a two-way radio or fiber optic line from a portable or wearable Operator Control Unit (OCU) that provides continuous data and video feedback for precise vehicle positioning. SWORDS or the Special Weapons Observation Reconnaissance Detection System, is a weaponized version being developed by Foster-Miller for the US Army for small arms combat and guard roles.

There is a variety of different weapons that can be placed on the SWORDS: M16 rifle, 5.56 mm SAW M249, 7.62 mm M240 machine gun, .50 cal M82 Barrett rifle. In 2007, three SWORDS units were deployed to Iraq. Each unit is armed with a M249 machine gun.

СЕКЦІЯ СТУДЕНТІВ IV КУРСУ
THE HISTORY OF MICROPROCESSORS

D. Mulin., *ES – 51,*
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A **microprocessor** incorporates most or all of the functions of a central processing unit (CPU) on a single integrated circuit (IC). The first microprocessors emerged in the early 1970s and were used for electronic calculators, using Binary-coded decimal arithmetic on 4-bit words. The integration of the CPU onto a single chip therefore greatly reduced the cost of processing capacity. From their beginnings, continued increases in microprocessor capacity have rendered other forms of computers almost completely obsolete, with one or more microprocessor as processing element in everything from the smallest embedded systems and handheld devices to the largest mainframes and supercomputers. Since the early 1970s, the increase in capacity of microprocessors has been known to generally follow Moore's Law, which suggests that the complexity of an integrated circuit, with respect to minimum component cost, doubles every two years.

In 1968, Garrett AiResearch, were invited to produce a digital computer to compete with electromechanical systems then under development for the main flight control computer in the US Navy's new F-14 Tomcat fighter. The design was complete by 1970, and used a MOS-based chipset as the core CPU. This chip was Intel 4004, released on November 15, 1971, the first 4-bit microprocessor.

The 4004 was later followed in 1972 by the 8008, the world's first 8-bit microprocessor. These processors are the precursors to the very successful Intel 8080 (1974), Zilog Z80 (1976), and derivative Intel 8-bit processors. A low overall cost, small packaging, simple computer bus requirements, and sometimes circuitry otherwise provided by external hardware allowed the home computer "revolution" to accelerate sharply in the early 1980s, eventually delivering such inexpensive machines as the Sinclair ZX-81, which sold for US$99.

The first multi-chip 16-bit microprocessor was the National Semiconductor IMP-16, introduced in early 1973. Other early multi-chip 16-bit microprocessors include one used by Digital Equipment Corporation in the LSI-11 OEM board set and the packaged PDP 11/03 minicomputer,

and the Fairchild Semiconductor MicroFlame 9440, both of which were introduced in the 1975 to 1976 timeframe.

The world's first single-chip fully-32-bit microprocessor, was the AT&T Bell Labs *BELLMAC-32A*, with first samples in 1980, and general production in 1982. These microprocessors were used in the 3B2, the world's first desktop supermicrocomputer; in the "Companion", the world's first 32-bit laptop; and in "Alexander", the world's first book-sized supermicrocomputer.

While 64-bit microprocessor designs have been in use in several markets since the early 1990s, the early 2000s saw the introduction of 64-bit microchips targeted at the PC market.

With AMD's introduction of a 64-bit architecture backwards-compatible with x86, x86-64 (now called AMD64), in September 2003, followed by Intel's near fully compatible 64-bit extensions the 64-bit desktop era began. Both versions can run 32-bit legacy applications without any performance penalty as well as new 64-bit software.

A different approach to improving a computer's performance is to add extra processors, as in symmetric multiprocessing designs which have been popular in servers and workstations since the early 1990s. The microprocessor manufacturers looked for other ways to improve performance, in order to hold on to the momentum of constant upgrades in the market.

And in 2005, the first mass-market dual-core processors were announced and as of 2007 dual-core processors are widely used in servers, workstations and PCs while quad-core processors are now available for high-end applications in both the home and professional environments. A multi-core processor is simply a single chip containing more than one microprocessor core, effectively multiplying the potential performance with the number of cores.

THE ECONOMIC CRISES OF 2008

N. Koval., *E – 53*,
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The 2008 financial crisis is affecting millions of people and is one of the hottest topics in the all world. The global financial crisis, brewing for a while, really started to show its effects in the middle of 2007 and into 2008. Around the world stock markets have fallen, large financial institutions have collapsed or been bought out, and governments in even the wealthiest nations have had to come up with rescue packages to bail out their financial systems.

On the one hand many people are concerned that those responsible for the financial problems are the ones being bailed out, while on the other hand, a global financial meltdown will affect the livelihoods of almost everyone in an increasingly inter-connected world. The problem could have been avoided, if ideologues supporting the current economics models weren't so vocal, influential and inconsiderate of others' viewpoints and concerns.

So what caused the financial crisis of 2008?

Economic world system is a huge hard mechanism, and USA has moved all this system. The Economic Crisis of 2008 is believed to have occurred because of global inflation, increased unemployment, high oil and food prices, a declining dollar value, a horrible housing market, and a subprime mortgage crisis. Mortgage lenders were happy to lend money to people who couldn't afford their mortgages. But they did it anyway because there was nothing to lose. These lenders were able to charge higher interest rates and make more money on sub-prime loans. If the borrowers default, they simply seized the house and put it back on the market. On top of that, they were able to pass the risk off to mortgage insurer or package these mortgages as mortgage-backed securities.

There were other factors as well, including the cheap credit which made it too easy for people to buy houses or make other investments based on pure speculation. Cheap credit created more money in the system and people wanted to spend that money. Unfortunately, people wanted to buy the same thing, which increased demand and caused inflation. Private equity firms leveraged billions of dollars of debt to purchase companies and created hundreds of billions of dollars in wealth by simply shuffling paper,

but not creating anything of value. In more recent months speculation on oil prices and higher unemployment further increased inflation.

Credit is a great tool when used wisely. For instance, credit can be used to start or expand a business, which can create jobs. It can also be used to purchase large ticket items such as houses or cars. Again, more jobs are created and people's needs are satisfied. But in the last time, credit went unchecked, and it got out of control.

Ukraine was hit heavy by the crisis of 2008. Analysts say the plights of Ukraine are slumping steel prices, local banking problems and a threatened cutting of Russian gas supply. They also say the situation is not as problematic as in is as Iceland, which had banking debts several times the size of its gross domestic product. Key industries such as metallurgy and machine building are laying off workers, and real wages have started to fall for the first time in a decade. This makes it hard for Ukrainians to make payments on loans, many of which, especially mortgages, were issued in dollars. Since most people are paid in hryvnyas, they have to buy dollars with the weak hryvnya and are paying back much more on the loans than they had expected. Banks have all but stopped issuing loans, and clients have hurried to withdraw deposits. The majority of buildings in this country with the population in 46,6 million persons do not work. The state doesn't carry out the obligations; the salary doesn't paid in many hospitals and schools.

So, nobody knows, how long present crisis will last. Optimists consider that the financial and share markets are definitively stabilised to autumn of next year. With manufacture sphere all is more difficult. Crisis is a sharp collapse of share prices, mass and severe dismissals, a sharp rise in prices for one goods/resources and the same sharp reduction in price of others, a landslide curtailment of production, but millions people all the same not can sit simply in general without business, they are doomed to make something. But we will hope that the situation in the country will stabilized in the nearest future.

RESEARCH OF ORIGIN OF WORLD'S MOST POPULAR SOCIAL NETWORKS

O.A. Oleshko, *IN-51*,
A.M.Dyadechko, *ELA*

Savvy entrepreneurs around the globe continue to develop their clones of the social network. Many of these have been around for years, and some have been very successful.

StudiVZ. A Facebook clone for the German market, the founders of StudiVZ have already sold the site for more than $100 million. StudiVZ is nearly identical to Facebook in terms of features, functionality, and interface.

Xiaonei. The largest Facebook clone in China, Xiaonei sold to Oak Pacific Interactive, a Chinese Internet conglomerate, and was merged with another social network called 5Q.

vkontakte.ru. The Russian Facebook makes no attempt to hide the fact that it's a clone; Vkontakte.ru almost exactly resembles Facebook's design. Russia is also home to rutube.ru, a popular YouTube clone.

DesiMartini. This Facebook clone is designed for India, and prominently features familiar Facebook features such as profiles, friends, groups, and classifieds.

studentSN. Student Social Network is a Facebook clone available in four different countries – Turkey, Russia, Germany, and Great Britain. Its success appears to have been limited, however.

Schuelerregister.de. The name roughly translates to the "Pupil Register", and Schuelerregister.de is another German attempt to copy Facebook.

Feierabend.de. This German clone appears to be more intended for the 50+ set, but is worth noting as it claims more than 100,000 users.

Schueler. Schueler.cc (your "community center") is yet another German attempt at cloning Facebook, claiming more than 30,000 schools as part of its network. They have changed the look and feel a bit, but it's still built around academic and regional networks.

StudentFace. Drawing inspiration in both features and name, StudentFace is a social network for the Australian market. They have added a feature similar to Facebook's News Feed, allowing you "to see which one of your friends have updated their profiles and/or added friends."

ENVIRONMENTAL, SOCIAL AND ECONOMIC ASPECTS OF GLOBAL CLIMATE CHANGE

D. Boronos, *F-51*,
A.M.Dyadechko, *ELA*

Climate change is the largest environmental change expected this century. It is likely to intensify droughts, storms and floods, which will undoubtedly lead to environmental migrations and potential conflicts in the areas migrated to.

One of the most significant aspects of the impacts of climate change, which has unfortunately not received adequate attention from scholars in the social sciences, relates to the equity implications of changes that are occurring and are likely to occur in the future. In general, the impacts of climate change on some of the poorest and the most vulnerable communities in the world could prove extremely unsettling. And, given the inadequacy of capacity, economic strength, and institutional capabilities characterizing some of these communities, they would remain extremely vulnerable to the impacts of climate change and may, therefore, actually see a decline in their economic condition, with a loss of livelihoods and opportunities to maintain even subsistence levels of existence.

The scientific community has reached a strong consensus regarding the science of global climate change. The world is undoubtedly warming, and the warming is largely the result of emissions of carbon dioxide and other greenhouse gases from human activities.

Carbon dioxide and other gases warm the surface of the planet naturally by trapping solar heat in the atmosphere. This is a good thing because it keeps our planet habitable.

However, by burning fossil fuels such as coal, gas and oil and clearing forests we have dramatically increased the amount of carbon dioxide in the Earth's atmosphere and temperatures are rising. The vast majority of scientists agree that global warming is real, it's already happening and that it is the result of our activities and not a natural occurrence.

The evidence is overwhelming and undeniable. We're already seeing changes. Glaciers are melting, plants and animals are being forced from their habitat, and the number of severe storms and droughts is increasing:

- The number of Category 4 and 5 hurricanes has almost doubled in the last 30 years.

- Malaria has spread to higher altitudes in places like the Colombian Andes, 7,000 feet above sea level.
- The flow of ice from glaciers in Greenland has more than doubled over the past decade.
- At least 279 species of plants and animals are already responding to global warming, moving closer to the poles.

If the warming continues, we can expect catastrophic consequences:

- Deaths from global warming will double in just 25 years -- to 300,000 people a year.
- Global sea levels could rise by more than 20 feet with the loss of shelf ice in Greenland and Antarctica, devastating coastal areas worldwide.
- Heat waves will be more frequent and more intense.
- Droughts and wildfires will occur more often.
- The Arctic Ocean could be ice free in summer by 2050.
- More than a million species worldwide could be driven to extinction by 2050.

Some regions are likely to be especially affected by climate change.

- The Arctic, because of the impacts of high rates of projected warming on natural systems and human communities,
- Africa, because of low adaptive capacity and projected climate change impacts,
- Small islands, where there is high exposure of population and infrastructure to projected climate change impacts,
- Asian and African megadeltas, due to large populations and high exposure to sea level rise, storm surges, and river flooding.

Migration and movement of people is a particularly critical source of potential conflict.

The goal is to bring global warming under control by curtailing the release of carbon dioxide and other heat-trapping "greenhouse" gases into the atmosphere. We can contribute to this global cause with personal actions. Our individual efforts are especially significant in countries like the US and Canada, where individuals release 10,000 pounds of carbon dioxide per person every year. We can help immediately by becoming more energy efficient.

WHY SHOULD WE STUDY ECONOMICS?

Seroshtan J.V., *student gr. IN-52,*
Chuchilina L.M., *EL adviser*

-Economics - is the study of economies, the study of how human beings coordinate their wants, given the institutional structures of the society. Economists study how society allocates scarce resources and goods. Goods include products such as food clothing, and housing as well as services such as those provided by doctors, repairmen, and police offices. These resources and goods are considered scarce because of society's tendency to demand more resources and goods than are available.

-An economic policy is a course of action that is intended to influence or control the behavior of the economy. Economic policies are normally implemented and administered by the government. The goals of economic policy consist of value judgements about what economic policy should strive to achieve. While there is some disagreement about the appropriate goals of economic policy, there are three widely accepted goals including:

1. Economic growth: It means that the incomes of all consumers and firms (after accounting for inflation) are increasing over time.
2. Full employment: It means that every member of the labor force who wants to work is able to find work.
3. Price stability: It means to prevent increases in the general price level known as inflation, as well as decreases in the general price level known as deflation.

Failure at least in one of them will lead to serious economic problems.

-The last argument in favour of the study of economics has to do with its general cultural value. Economic discourse has become involved in economic argument. Wherever one goes, one may become involved in economic argument. Not only in the classroom, but in the restaurant, on the train, or at the golf club, one is expected to know something about the trend in the cost of living or the dangers of an inflated currency or the seriousness of the unemployment situation. The great Einstein once said: "Economic institutions exist for man and not man for economic institutions". It is our task then to study these institutions since they have been designed for our good, to reform them when they need reforming, and it necessary to eliminate such of them as may have outlived their usefulness.

THERMAL ANEMOMETERS MEASUREMENTS

O. Shcherbakov, *student*,
A.M.Dyadechko, *ELA*

Thermal anemometers measure fluid velocity by sensing the changes in heat transfer from a small, electrically-heated element exposed to the fluid. In the "constant temperature anemometer," the cooling effect caused by the flow passing the element is balanced by the electrical current to the element, so the element is held at a constant temperature.

The change in current due to a change in flow velocity shows up as a voltage at the anemometer output. A key feature of the thermal anemometer is its ability to measure very rapid changes in velocity. This is accomplished by coupling a very fine sensing element (typically a wire four to six microns in diameter or a platinum thin film deposited on a quartz substrate) with a fast feedback circuit which compensates for the drop in the natural sensor response. Time response to flow fluctuations as short as a few microseconds can be achieved. For thisreason, the thermal anemometer has become a standard tool for researchers studying turbulence. The small sensor size, normally only a millimeter in length, also makes the technique valuable in applications where access is difficult or larger sensors obstruct the flow.

Since the actual measurement is of heat transfer between the sensor and its environment, the thermal anemometer will respond to changes in parameters other than velocity, such as temperature, pressure, and fluid composition. While this adds to versatility, it also means that when more than one parameter is changing, special techniques must be used to extract velocity. Modern systems will automatically correct the velocity reading for temperature changes. When selecting a thermal anemometry probe, the user must choose between film and wire sensors. The choice is based on the fluid characteristics, the velocity range, the number of velocity components, contamination in the flow, and access to the flow.

The traditional sensor for research thermal anemometry has been a fine wire. For very low turbulence intensities, the wire sensor is still superior—and the smaller the wire, the better the results. For those applications that require a wire sensor, the 4 micrometer-diameter platinum-coated tungsten wire is almost a standard for measurements at normal room temperatures and below.

ARTIFICIAL INTELLIGENCE

M.Chernyakova, *AM-51,*
A.M.Dyadechko, *ELA*

It is not my aim to suprise or shock you--but the simplest way I can summarize is to say that there are now in the world machines that can think, that can learn and that can create. Moreover, their ability to do these things is going to increase rapidly until--in a visible future--the range of problems they can handle will be coextensive with the range to which the human mind has been applied.
Herbert Simon

Artificial Intelligence (AI) is the area of computer science focusing on creating machines that can engage on behaviors that humans consider intelligent. The ability to create intelligent machines has intrigued humans since ancient times, and today with the advent of the computer and 50 years of research into AI programming techniques, the dream of smart machines is becoming a reality. Researchers are creating systems which can mimic human thought, understand speech, beat the best human chessplayer, and countless other feats never before possible. Find out how the military is applying AI logic to its hi-tech systems, and how in the near future Artificial Intelligence may impact our lives.

What we can do with AI?We have been studying this issue of AI application for quite some time now and know all the terms and facts. But what we all really need to know is what can we do to get our hands on some AI today. How can we as individuals use our own technology? We hope to discuss this in depth (but as briefly as possible) so that you the consumer can use AI as it is intended.

First, we should be prepared for a change. Our conservative ways stand in the way of progress. AI is a new step that is very helpful to the society. Machines can do jobs that require detailed instructions followed and mental alertness. AI with its learning capabilities can accomplish those tasks but only if the worlds conservatives are ready to change and allow this to be a possibility. It makes us think about how early man finally accepted the wheel as a good invention, not something taking away from its heritage or tradition.

Secondly, we must be prepared to learn about the capabilities of AI. The more use we get out of the machines the less work is required by us. In

turn less injuries and stress to human beings. Human beings are a species that learn by trying, and we must be prepared to give AI a chance seeing AI as a blessing, not an inhibition.

Finally, we need to be prepared for the worst of AI. Something as revolutionary as AI is sure to have many kinks to work out. There is always that fear that if AI is learning based, will machines learn that being rich and successful is a good thing, then wage war against economic powers and famous people? There are so many things that can go wrong with a new system so we must be as prepared as we can be for this new technology.

However, even though the fear of the machines are there, their capabilities are infinite Whatever we teach AI, they will suggest in the future if a positive outcome arrives from it. AI are like children that need to be taught to be kind, well mannered, and intelligent. If they are to make important decisions, they should be wise. We as citizens need to make sure AI programmers are keeping things on the level. We should be sure they are doing the job correctly, so that no future accidents occur.

Philosophy of AI Artificial intelligence, by claiming to be able to recreate the capabilities of the human mind, is both a challenge and an inspiration for philosophy. Are there limits to how intelligent machines can be? Is there an essential difference between human intelligence and artificial intelligence? Can a machine have a mind and consciousness? A few of the most influential answers to these questions are given below.

Turing's "polite convention" *If a machine acts as intelligently as a human being. then it is as intelligent as a human being.* Alan Turing theorized that, ultimately, we can only judge the intelligence of machine based on its behavior. This theory forms the basis of the Turing test.

The Dartmouth proposal *"Every aspect of learning or any other feature of intelligence can be so precisely described that a machine can be made to simulate it."* This assertion was printed in the proposal for the Dartmouth Conference of 1956, and represents the position of most working AI researchers.

The artificial brain argument *The brain can be simulated.* Hans Moravec, Ray Kurzweil and others have argued that it is technologically feasible to copy the brain directly into hardware and software, and that such a simulation will be essentially identical to the original. This argument combines the idea that a suitably powerful machine can simulate any process, with the materialist idea that the mind is the result of physical processes in the brain.

WHAT IS INFLATION ?

A.Kuzmenko , *E – 51,*
A.M.Dyadechko, *ELA*

In economics, inflation is a rise in the general level of prices of goods and services in an economy over a period of time. The term "inflation" once referred to increases in the money supply; however, economic debates about the relationship between money supply and price levels have led to its primary use today in describing price inflation. Inflation can also be described as a decline in the real value of money - a loss of purchasing power in the medium of exchange. When the general price level rises, each unit of currency buys fewer goods and services. A chief measure of price inflation is the inflation rate, which is the percentage change in a price index over time.

Inflation can cause adverse effects on the economy. For example, uncertainty about future inflation may discourage investment and saving. High inflation may lead to shortages of goods if consumers begin hoarding out of concern that prices will increase in the future.

Economists generally agree that high rates of inflation and hyperinflation are caused by an excessive growth of the money supply. Views on which factors determine low to moderate rates of inflation are more varied. Low or moderate inflation may be attributed to fluctuations in real demand for goods and services, or changes in available supplies such as during scarcities, as well as to growth in the money supply. However, the consensus view is that a long sustained period of inflation is caused by money supply growing faster than the rate of economic growth.

Most economists favor a low steady rate of inflation. Low inflation may reduce the severity of economic recessions by enabling the labor market to adjust more quickly in a downturn, and reducing the risk that a liquidity trap prevents monetary policy from stabilizing the economy. The task of keeping the rate of inflation low and stable is usually given to monetary authorities.

THE SPACE ECONOMICS

J. Linnik, *E-51*,
A.M.Dyadechko ,*ELA*

One of the biggest debates in the first half-century of spaceflight has been regarding the economic rationale for sending spacecraft—robotic or human—into the cosmos. Opponents of spaceflight, particularly human missions, see such efforts as extravagances that waste money that could be better spent "on Earth", that is, in different areas like the environment, education, and social programs, among others.

But let's face the fact that Earth cannot solely support our entire race for much longer. If fact it can't support all of us now. With each new child born the resources get spread a little thinner. We need to begin moving into space in order to survive as a species. We are completely capable of doing this. The only thing that is holding us back is our inability to come together and become organized. Unfortunately in order for our civilization to begin spreading into space it is going to take a combined effort of many (to say the least).

It is projected that earth can theoretically sustain a human population of 7.7 billion. The current population is 6,676,349,373 and is growing by at least 90 million a year. From those numbers you can see that we have a rather significant problem looming over us. Think about how many times you have heard about people that are starving because they have no access to food, just in the month or so. It is estimated that we are a little over half way through our planet's oil resources and not even half the world is even industrialized yet. There are just too many people depending on this planet for their only sources of, well everything. This does not make any sense.

In June, NASA released a new strategic communications plan to better communicate the agency's mission to a public that was skeptical or simply unaware of the relevance the agency has in their lives. Part of that plan was a concept of "The Space Economy" intended to show the effect of space exploration on the economy:

SPUR OF COMPETITION TO MEET ECONOMIC CRISIS

G. Tkachenko, *E-51*,
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It really happens so that only economic depression is able to make people think about the efficiency of their business. Gathering super-profits and setting unreal prices managers don't care about reserves of cost saving, becoming vulnerable to external factors and noncompetitive.

In case of external economic shock (growth of energy prices, exchange rates, sharp decrease in consumption) cost-side of economic activity plays a vital role.

Our empirical findings stress the role of competition in increasing efficiency of Ukrainian enterprises. Crisis can potentially make a positive impact on competition, imposing additional constraint to the process of market selection.

Our finding suggests that Ukrainian enterprises have a solid internal potential (in terms of capacity utilization and better employment management), therefore in the long run they will benefit from this economic crisis.

From the other side, based on our finding (relatively weak competition) we suggest to the government to provide support for "competition spur" in the direction of manufacturing enterprises, which play significant role in employment.

Also our computations stress the point that competition should be stimulated between domestic producers. Higher values of efficiency growth suggest that it is a right direction. Competition from imports is a bad direction in case of crisis, because productive laziness (which is perfectly substituted with efficient search for rent distribution) of our businessmen will strengthen the depression.

To support competition on the national level we suggest realizing of the following measures: providing of tax remissions to the most competitive producers, supporting innovations and subsidizing of the most efficient innovative projects through open competition, diffusion of the policy of attracting skilled workers with high educational level, realization of government projects through organizing competition credits at the interest rates.

NUCLEAR REACTIONS

A. Velytchenko, *FE-51*,
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In nuclear physics, a nuclear reaction is the process in which two nuclei or nuclear particles collide to produce products different from the initial particles.

In principle a reaction can involve more than two particles colliding, but because the probability of three or more nuclei to meet at the same time at the same place is much less than for two nuclei, such an event is exceptionally rare.

While the transformation is spontaneous in the case of radioactive decay, it is initiated by a particle in the case of a nuclear reaction. If the particles collide and separate without changing, the process is called an elastic collision rather than a reaction.

Kinetic energy may be released during the course of a reaction (exothermic reaction) or kinetic energy may have to be supplied for the reaction to take place (endothermic reaction). This can be calculated by reference to a table of very accurate particle rest masses as follows.

According to the reference tables, the 63Li nucleus has a relative atomic mass of 6.015 atomic mass units (abbreviated u), the deuteron has 2.014 u, and the helium-4 nucleus has 4.0026 u Thus:

Total rest mass on left side = 6.015 + 2.014 = 8.029 u

Total rest mass on right side = 2 × 4.0026 = 8.0052 u

Missing rest mass = 8.029 - 8.0052 = 0.0238 atomic mass units.

In a nuclear reaction, the total (relativistic) energy is conserved.

The "missing" rest mass must therefore reappear as kinetic energy released in the reaction; its source is the nuclear binding energy.

The following calculations can be used when presenting the point under discussion.

Using Einstein's mass-energy equivalence formula $E = mc^2$, the amount of energy released can be determined. We first need the energy equivalent of one atomic mass unit:

$$1 \text{ u } c^2 = (1.66054 \times 10^{-27} \text{ kg}) \times (2.99792 \times 10^8 \text{ m/s})^2$$

$$= 1.49242 \times 10^{-10} \text{ kg (m/s)}^2 = 1.49242 \times 10^{-10} \text{ J (Joule)}$$

$$\times (1\ \text{MeV} / 1.60218 \times 10^{-13}\ \text{J})$$

$$= 931.49\ \text{MeV},$$

$$1\ \text{u}\, c^2 = 931.49\ \text{MeV}.$$

Hence, the energy released is

$$0.0238 \times 931\ \text{MeV} = 22.4\ \underline{\text{MeV}}.$$

If expressed differently, the mass is reduced by 0.3 %, corresponding to 0.3 % of 90 PJ/kg is 300 TJ/kg.

This is a large amount of energy for a nuclear reaction; the amount is so high because the binding energy per nucleon of the helium-4 nucleus is unusually high, because the He-4 nucleus is doubly magic. (The He-4 nucleus is unusually stable and tightly-bound for the same reason that the helium atom is inert: each pair of protons and neutrons in He-4 occupies a filled **1s** nuclear orbital in the same way that the pair of electrons in the helium atom occupy a filled **1s** electron orbital).

Consequently, alpha particles appear frequently on the right hand side of nuclear reactions.

The energy released in a nuclear reaction can appear mainly in one of the three ways:

- kinetic energy of the product particles
- emission of very high energy photons, called gamma rays
- some energy may remain in the nucleus, as a metastable energy level.

When the product nucleus is metastable, this is indicated by placing an asterisk ("*") next to its atomic number. This energy is eventually released through nuclear decay.

A small amount of energy may also emerge in the form of X-rays.

Generally, the product nucleus has a different atomic number, and thus the configuration of its electron shells is wrong.

As the electrons rearrange themselves and drop to lower energy levels, internal transition X-rays (X-rays with precisely defined emission lines) may be emitted.

СЕКЦІЯ СТУДЕНТІВ VКУРСУ
NEURO-ELECTRONIC INTERFACES

S. Borysov, *PM-41*
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Neuro-electronic interfaces are a visionary goal dealing with the construction of nanodevices that will permit computers to be joined and linked to the nervous system. This idea requires the building of a molecular structure that will permit control and detection of nerve impulses by an external computer. The computers will be able to interpret, register, and respond to signals the body gives off when it feels sensations. The demand for such structures is huge because many diseases involve the decay of the nervous system (ALS and multiple sclerosis). Also, many injuries and accidents may impair the nervous system resulting in dysfunctional systems and paraplegia. If computers could control the nervous system through neuro-electronic interface, problems that impair the system could be controlled so that effects of diseases and injuries could be overcome. Two considerations must be made when selecting the power source for such applications. They are refuelable and nonrefuelable strategies. A refuelable strategy implies energy is refilled continuously or periodically with external sonic chemical, tethered, magnetic, or electrical sources. A nonrefuelable strategy implies that all power is drawn from internal energy storage which would stop when all energy is drained.

One limitation to this innovation is the fact that electrical interference is a possibility. Electric fields, electromagnetic pulses (EMP), and stray fields from other in vivo electrical devices can all cause interference. Also, thick insulators are required to prevent electron leakage, and if high conductivity of the in vivo medium occurs there is a risk of sudden power loss and "shorting out." Finally, thick wires are also needed to conduct substantial power levels without overheating. Little practical progress has been made even though research is happening. The wiring of the structure is extremely difficult because they must be positioned precisely in the nervous system so that it is able to monitor and respond to nervous signals. The structures that will provide the interface must also be compatible with the body's immune system so that they will remain unaffected in the body for a long time. In addition, the structures must also sense ionic currents and be able to cause currents to flow backward. While the potential for these structures is amazing, there is no timetable for when they will be available.

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NEW NANO DEVICE DETECTS IMMUNE SYSTEM CELL SIGNALING

L.Listunova, *PM-41,*
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Scientists have detected previously unnoticed chemical signals that individual cells in the immune system use to communicate with each other over short distances.

The chemical signals cells exchange when they come into contact have been studied extensively. But it has not been possible to detect chemical messages that travel between cells that are nearby but not in contact – called paracrine signals – because they are highly localized and they are produced in concentrations that have been below detection levels.

A new technology, called a multi-trap nanophysiometer, was required to demonstrate the existence of non-contact signaling. This is one of the first microfluidic devices that has been applied successfully to the study of cell-to-cell signaling in the immune system.

The multi-trap nanophysiometer (MTN) was developed by a team of researchers at the Vanderbilt Institute for Integrative Biosystems Research and Education headed by John P. Wikswo, the Gordon A. Cain University Professor at Vanderbilt.

The dendritic cells, T-cells and B-cells in the immune system, which tend to concentrate in the lymph nodes spread throughout the body, function as individual, unattached cells.

If dendritic cells detect invaders in the body, they rapidly migrate to lymph nodes and have to find the appropriate T-cells to alert them. But how dendritic cells attract the right T-cells among millions of cells within the lymph nodes remains an immunological puzzle.

Scientists have been trying to develop systems for single-cell analysis for a number of years.

Because of the difficulty of keeping normal cells alive, they have been forced to use cells that have been genetically altered so they can be cultured indefinitely. Although the alteration "immortalizes" the cells, it also significantly limits their usefulness.

The MTN is the first system that can monitor biochemical changes in large numbers of normal or primary cells at the single-cell level for prolonged periods.

The new device consists of a series of hair-sized channels molded in a special kind of plastic that is glued onto the bottom of a glass microscope coverslip. A shoebox-sized pump pushes fluid (normally the media used to culture cells) through one channel that opens up into a chamber filled with hundreds of tiny, three-sided wells small enough to trap individual cells. When cells are injected upstream, they are passively trapped in the wells and are held there solely by the fluid flowing out even smaller holes in the well bottoms. By precisely controlling the flow rate, the researchers can keep normal cells alive for longer than 24 hours.

The researchers monitor the cells with a digital camera attached to a standard microscope, typically snapping images every 30 seconds.

Special attention should be focused on the fact that the researchers have written software that allows them to analyze the movements and reactions of individual cells. They can record various cell behaviors by injecting different fluorescent dyes into the cells.

The test reports say, for example, that when naive T-cells are primed for an immune response, the concentration of calcium ion in their cytoplasm jumps up. So when the cytoplasm contains a dye that fluoresces when it comes into contact with calcium, it glows brightly enough to be easily detected.

The surprise discovery of paracrine signaling was made by graduate student Shannon Faley, now a postdoctoral research associate at the University of Glasgow, Scotland. While experimenting with a nanophysiometer chamber she filled it with naive human T-cells and then added mature dendritic cells. She was looking for evidence of T-cell activation when the T-cells and dendritic cells were trapped in the same well and came into contact.

This kind of contact is part of the process that allows dendritic cells to convey information about potentially infectious invaders to the naive T-cells, which can then begin dividing to produce an army of effector T-cells custom-designed to attack the invaders.

By using new technology medical people will be able to contribute a lot to fighting immune system invaders.

250 DVDs ON A QUARTER: NEW METHOD OF SELF-ASSEMBLING NANOSCALE ELEMENTS COULD TRANSFORM DATA STORAGE INDUSTRY

A. Dmitriyev, *PM-41*,
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The sawtooth ridges formed by cutting and heating a sapphire crystal serves to guide the self-assembly of nanoscale elements into an ordered pattern over arbitrarily large surfaces. An innovative and easily implemented technique in which nanoscale elements precisely assemble themselves over large surfaces could soon open doors to dramatic improvements in the data storage capacity of electronic media.

The density achievable with the technology we've developed could potentially enable the contents of 250 DVDs to fit onto a surface the size of a quarter.

Shown is an atomic force microscope image of ultra-dense, highly ordered nanoscale elements, looking down from the top. The dots, only 3 nanometers in size and each equidistant from the other, are spaced at a density of 10 terabits per square inch.

Scientist explained that the molecules in the thin film of block copolymers - two or more chemically dissimilar polymer chains linked together - will self-assemble into an extremely precise, equidistant pattern when spread out on a surface, much like a regiment of disciplined soldiers lining up in formation but the order starts to break down as the size of area increase.

To overcome this size constraint, scientists conceived of the elegantly simple solution of layering the film of block copolymers onto the surface of a commercially available sapphire crystal. When the crystal is cut at an angle - a common procedure known as a miscut - and heated to 1,300 to 1,500 degrees Centigrade for 24 hours, its surface reorganizes into a highly ordered pattern of sawtooth ridges that can then be used to guide the self-assembly of the block polymers.

The beauty of the this method is that it takes from processes already in use in industry, so it will be very easy to incorporate into the production line with little cost.

CIGARETTES WITH FILTER OF NANOTUBE

M.V.Averchenkova, *PM-41/,1*
A.M.Dyadechko, *ELA*

The burning cigarette is the whole chemical factory making more 4 thousand of various connections, including mutagen, toxic and about 60 known or prospective carcinogens, for example, cyanic hydrogen, ammonium, isoprene, acetaldehyde, nitrobenzenecetone, carbon dioxide and others.

Manufacture of cigarettes with the filter enables to enter additives (the activated coal, zeolites), in any measure sorbing harmful substances. However constant toughening of requirements to quality of cigarettes causes an increase of efficiency of sorbents. The Chinese researchers have suggested to use carbon nanotubes, already well proved for removal of fluorine, lead, cadmium from solutions.

Oxidize nanotubes (about-OZO), received at catalytic pyrolysis of propylene and the subsequent processing in the concentrated nitric acid, were used in experiments. For comparison standard sorbents – zeolite NaY and the activated coal have been taken.

All sorbents have been placed in filtering mouthpiece of cigarettes. Process of "smoking" spent automatically in standard conditions. The main stream of a smoke passed through sorbents, then a condensate is collected on filters and weighed. About-OZO have appeared the most effective sorbents of nicotine (up to 0,56 mg/cigarettes) and pitches (up to 13 mg/cigarettes) in spite of the fact that their specific surface is much less, than at zeolite or the activated coal. Bent About-OZO length from hundreds nanometers up to micron form the aggregated times in the size 3-40nm which approach for sorbtion all types of molecules of a tobacco smoke.

DIE SÄTZE DER STEUERN IN DEN EUROPÄISCHEN LÄNDERN

Tereschtschenko N., *Studentin E-44,*
Saizewa I., *Leiterin*

Ich habe bemüht sich, den Grund der allmählichen Verkleinerung der Steuersätze auf die Betriebe beim Eintritt des Landes in verschiedene Gesellschaften und die Organisationen zu erklären. Eine Hauptidee des Artikels war die Betrachtung der Vorteile für das Land beim Eintritt in die Europäische Gesellschaft.

Steigende ökonomische Interdependenzen auf den Weltmärkten, Stichwort Globalisierung, und die weitere Vertiefung der Europäischen Integration haben zu einer Zunahme der Mobilität des Kapitals (und vice versa) geführt. Vor diesem Hintergrund steigt im Zusammenhang mit Investitionen und Standortwahl die Sensibilität gegenüber unterschiedlichen Besteuerungen. Dies hat nicht zuletzt dazu gefuhrt, dass Einkommens-sowie Unternehmenssteuersätze weltweit tendenziell deutlich zurückgegangen sind. Die Einkommenssteuersätze fielen in den letzten 25 Jahren in den OECD-Ländrn durchschnittlich um 20 Prozent, die Körperschaftssteuersätze seit 1996 um rund zehn Prozent. Dies gilt gleichermaen für die OECD-Länder insgesamt, als auch für die EU-Mitgliedstaaten. Die Steuereinnahmen aus Unternehmensbesteuerung verringerten sich jedoch zwischen 1997 und 2001 im EU-Schnitt, auf Grund einer Ausweitung der Bemessurtgsgrundlage, nicht. Die Körperschaftssteuersätze sind innerhalb der Regionen sehr unterschiedlich in ihrer Höhe. Die Höhe des gesetzlichen Karperschaftssteuersatzes allein spiegelt nicht die Unternehmen aus der gesetzlichen Bemessungsgrundlage. Bei diesen Steuerkurzungen ist darauf Unternehmensbesteuerung ergibt. Wesentlich fur die Steuerbelastung tatsächliche Steuerbelastung wider, die sich für ein ist auch die hinzuweisen, dass gleichzeitig in einzelnen Ländern massive Kürzungen bei Unternehmensförderungen geplant sind, und zwar auch abseits von Beihilfekürzungen, die im Zuge der übernahme des Acquis seitens der EU vorgeschrieben sind (wie z.B. im Falle von unerlaubten Beihilfen).

Die meisten der beitretenden Länder weisen hohe Leistungsbilanzdefizite auf, die durch Kapitalzuflüsse aus dem Ausland finanziert Werden müssen. Hierbei stellen ausländische Direktinvestitionen eine attraktive Finanzierung dar, da es sich einerseits um relativ dauerhafte Investitionen handelt, die i.d.R. nicht rasch abgezogen werden, und andererseits das betreffende Land beim Aufbau von Know-how, Infrastruktur und letztendlich einer international Wirtschaft unterstützen.

INFORMATION-ANALYTICAL SUBSYSTEM METHODICAL MAINTENANCE OF EDUCATIONAL PROCESS

Barylo A.B., *IN-43*
Litvinenko G.I., *EL adviser*

Nowadays, quality and operational management of all activities o the university is not possible without using sophisticated informatio technologies. The need for continuous monitoring of all activities of th university, creating information infrastructure integrated into the globa network Internet, developing a complete system of electronic documents providing intellectual support for university management requires th development and implementation of an integrated system of automati control. The development of such a system is a complex process. That' why the conceptual design of a functional and structural model of th university might be followed by a selection of several relativel independent research directions to by developed and implemented step b step. One of these directions is the creation of an automated data processing subsystem «Teaching Materials».

Teaching materials are an integral part of the learning-teachin process. The introduction of credit-modular system has made students th primary means of learning, which in turn has greatly increased the role o teaching technique and teaching materials.

That's why it is necessary to have a special subsystem providin information on the availability of teaching/learning materials on all th subjects taught at the University. The Information Systems an Technologies divisions of SSU is now developing a comprehensiv automated information-analytical system «University», which supports th management of educational, research and other activities of the university The subsystem of teaching/learning materials availability is a constituent o this automated system.

The subsystem of teaching material availability control is based o the funds of the University library. This is the key principle of the system.

An analysis of current information systems and identify the element (a system or individual modules), which are necessary for the successfu operation of subsystem «Teaching Materials».

The subsystem in question involves the following elements:

1. subsystem «curriculum» - is designed to provide educational plan for each academic year;

2. subsystem «Subject Program» - includes programs of academic disciplines;

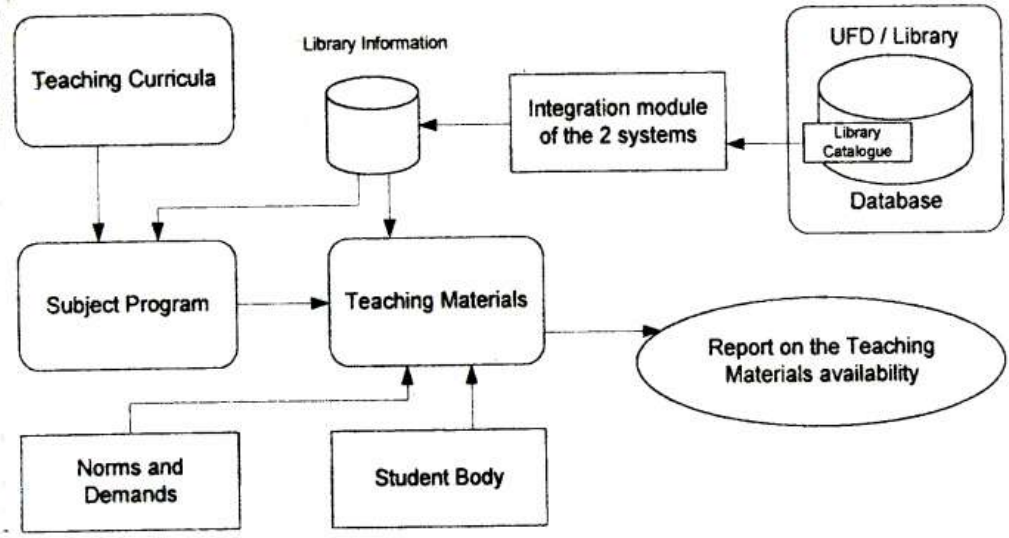
3. system «UFD / Library» - is intended for automation of library activities;

4. integration module - is designed to load the library catalog system «UFD / Library» in the repository, the data from which will be used by other subsystems;

5. regulatory requirements;

6. students;

The detailed scheme of the relationships.



COMPUTER WORMS

Panchenko Oksana, *IN-41*,
Plokhuta T.M., *EL advisor*

A computer worm is a self-replicating computer program. It uses a network to send copies of itself to other nodes (computer terminals on the network) and it may do so without any user intervention. Unlike a virus, it does not need to attach itself to an existing program.

Worms almost always cause harm to the network, if only by consuming bandwidth, whereas viruses almost always corrupt or modify files on a targeted computer.

Many worms have been created which are only designed to spread, and don't attempt to alter the systems they pass through. However, as the Morris worm and Mydoom showed, the network traffic and other unintended effects can often cause major disruption. A "payload" is code designed to do more than spread the worm - it might delete files on a host system (e.g., the ExploreZip worm), encrypt files in a cryptoviral extortion attack, or send documents via e-mail.

A very common payload for worms is to install a backdoor in the infected computer to allow the creation of a "zombie" under control of the worm author - Sobig and Mydoom are examples which created zombies. Networks of such machines are often referred to as botnets and are very commonly used by spam senders for sending junk email or to cloak their website's address. Spammers are therefore thought to be a source of funding for the creation of such worms, and worm writers have been caught selling lists of IP addresses of infected machines. Others try to blackmail companies with threatened DoS attacks.

Beginning with the very first research into worms at Xerox PARC there have been attempts to create useful worms. The Nachi family of worms, for example, tried to download and install patches from Microsoft's website to fix vulnerabilities in the host system — by exploiting those same vulnerabilities. In practice, although this may have made these systems more secure, it generated considerable network traffic, rebooted the machine in the course of patching it, and did its work without the consent of the computer's owner or user.

WAS SIE BEI DER AUSWAHL VON HR-SOFTWARE BEACHTEN SOLLTEN

Govorun J., *Studentin Gr.M-43,*
Saizewa I., *Leiterin*

Heute die Prozesse Managements geben sich durch der verschiedene Programme des Amtes Personal wieder.Der Analyse des Artikels "Was Sie bei der Auswahl von HR-Software beachten sollten" führten mit dem Ziel des Kennenlernen aus moderne Besonderheiten Personal-Management.

Der Artikel mit der Überschrift "Was Sie bei der Auswahl von HR-Software beachten sollten" ist in der Zeitschrift „Personal-Management" veroffentlich. Der Autor dieses Artikels heist Michael Goftwald. Er ist Geschäftsführer der Marktforschungs und Beratungsfirma Softselect und langjahriger ERP-Kenner. Im Artikel handelt es sich um der wesentliche Besonderheit Human Resource – Software. Der Autor des Artikels beschäftigt sich mit der Auswahl HR-Software in dem Prozesse Leitung. Es betont, daß Human-Resources-Management System zum einen die Personalabteilung von administrativen Routinetätigkeiten entlasten soll. Im Artikel bestimmt es zehn Kriterien der Auswahl HR-Software. Nach Befinden Michael Gottwald existieren solche Ratschläge für die Auswahl und Einführung eines HR-Systems: 1) Priorität des Einführungsprojekts im Tagesgeschäft fest legen; 2) Meldet das Geschäftsführung trägt die Verantwortung; 3) Motivierte Projektteams bilden ; 4) Informationswege klar definieren; 5) Keine Auswahl unter Zeitdruck; 7) Mangelnde Erfahrung kompensieren; 8) Anforderung an die Losüng dokumentieren; 9) Vorgehen anhand eines Projektfahrplanes; 10) Auf Kostenschätzungen beharren .

Also, jetzt zwingt der Wettbewerb Marktteilnehmer, Konkurrenten zu kaufen.Wenn Firmen ein HR-System erwerben wollen, sollten sie sowohl ihre Anforderungen an die Lösung dokumentieren Projektverlauf geben. Die wichtigste Rolle können als auch den Markt kritisch.

Heute ist ein Problem, wenn viele mittelständische Unternehmen die Auswahl der HR-Software nehmen. Sie sollen interne und externe HR-Kernprozesse definieren.

INTERACTIVE TRAINERS FOR E-LEARNING

Maksym Kolomiiets, *the student of theIN-43group*

Within the limits of the introduction of e-learning courses developed at our university, there appeared a problem of creating effective examination procedure mathematical and economic disciplines. To realize this problem we applied such tool as interactive trainers which allow simultaneously acquire the courses material, and submit results of the students work to the server

The Java technology has been chosen for the realization of the problem. The trainers represented by Java Applets.

The pattern of a trainer-applet has 2 forms: a condition and its solution. The condition is each time generated with different variables (randomly or depending on the chosen variant). The form of the solution gives an opportunity to send an inquiry for teacher's help, has standard help to use a trainer, a built in calculator and is realized step-by-step. It is possible pass to the following step it is possible only after a correct ending of the previous step. The amount of unsuccessful attempts is limited. Pressing the "Next" button allows to pass to the following step (if the correct step is current) or you are given out a message about a mistake. After completing the trainer the results are submitted to the server. A screen picture of the condition and the current step, as well as inquiry teacher's help are submitted to the server

After the condition has been generated, the student can change the given conditions, by pressing the «New variant» button. It is possible to pass on to the task solution form. As a whole, to examine the student it is possible to use not only text fields for the input of various variants of the answer (radiobuttons, checkboxbuttons), but also possible also dropping out lists and lists for whole formula. There is also practice of creating trainers which show creative abilities of students (for example, to create a model of an enterprise, using the offered base components). There is also practice of overlapping of Java with Flash technology. It is frequently necessary to combine the functional potential of Java with the beauty of registration from Flash. Some trainers on descriptive geometry have been created.

THE COMPLEX ANALYSIS OF THE SPECIALIZED EDUCATIONAL WEB-PORTAL

Molodets L.V., *IN-43,*
G.I.Litvinenko, *EL adviser*

It is an important task. Today increasing the activity's effectiveness and reducing its costs integrating information and simplifying access to it. Web-portals are a key to this task. Building regular architecture web-portals makes their development, expansion and adaptation simpler.

Web-portal, supporting the discipline "Databases and integrated management system" is considered very timely because, being introduced in the process of contemning education, it provides a user with well-timed and well-organized information, making this information accessible and easy to understand. This web-portal means regulated collection of data containing all the information necessary for fast data search, access on three user levels: administrator, moderator, user.

The next general functional aim, that can be formulated for nearly all the Information Technologies is satisfying the need for providing a reliable and well-timed presentation of full, trustworthy and confidential information for its further functional usage. The totality of the features, necessary for satisfying these needs, characterizes the quality of an information system functioning.

Here is a list of menaces which influence the quality of an information system functioning:

1. software and hardware insufficient reliability:
2. untimely processing and presentation of information;
3. staff and users accidental errors;
4. unauthorized access:
5. virus attack in the presence of antivirus precautions;
6. Outdated information stored in the data base in comparison with the real information.

The totality of features, which determine the possibility of usage proper use of an information system, is called its quality. The Quality is determined by technical, operating, economic and ergonomic characteristics of an information system. The Quality can be calculated with the help of a qualitative index which must have physical sense,

describe the quality in full, be easy to calculate and must not contradict each other.

A qualitative index is a vector. Indexes of features, that are by, serve as the components of this vector are represented.

The basic qualitative indexes of an IS are: productivity, reliability, denial resistance, scalability, compatibility, mobility, adaptability, effectiveness, time of response.

Building web-portals with proper architecture demands a complex analysis of the projected web-portal being designed.

The complex analysis includes the following tasks:

- Choice of software and hardware for the web-portal:
- Choice of machine code.

All the Internet servers are processed by Apacher Server, and Apacher Server PHP best of all interacts with, so when designing a specialized Internet web-portal which supports the discipline "Data bases and integrated control systems" the machine language PHP is considered the best choice:

- Carrying out calculations and ensuring the reliability of information system.
  Reliability is characterized by probability of the service denial.
- • Carrying out calculations of the generic productivity of the information system. Productivity can be calculated either by the number of inquiries processed in a unit of time or by me time spent on processing one inquiry.

APPLICATION OF MPI TECHNOLOGY FOR ALLOCATED CALCULATIONS

Ignatenko S.N., *the student,*
Petrov S.A., *the assistant*

The number of NP-full problems has not decreased, but even increased recently. Now we have a lot of superchallenging problems, the of which decision demands great computing capacities and resources. Among these problems are weather forecasting, climate changes, global changes in atmosphere, cryptography, structural biology, superconductivity, astronomy, etc. It is possible to divide these problems into those dealing with processing considerable amounts of data (inquiries to databases) and the problems with a moderate, but a very complex calculation process (exact calculation of mathematical or physical constants, factorization of numbers). One of the basic approaches to the decision of these problems is connected with the creation of powerful computation resources using various architectures. There is no computing system which cannot be compared in peak productivity, volume of operative and disk memory to the total resources of the Internet. Now there exist in the world several projects which unite thousands and even hundreds of thousand computers via the Internet for the solution of some urgent problems, Distrubuted.net, Seti@home, Legion, etc. among them. The occurrence of several computing kernels on one computing platform has opened a new page in the development of parallel calculations. Now even trivial algorithms giving solution to daily problems can have allocated realization, raising thereby an overall performance as a whole.

Computing systems exchange data in the course of allocated calculations. From the point of view of a programmer there exists two paradigms of this process: through divided memory with the organization of synchronization of access and in the form of messages.

The first method is a base for the SMP-machines, the second - for networks of all types, but each of them has advantages and disadvantages.

The SHM models is the most perspective in our time because functions of work with SHM are a part of each multitask operational system. In one computer the means of interprocessor communications are realized through SHM and consequently obviously are faster.

DU BIST, WO DU SITZT

Priadka A., *Studentin Gr. M-43,*
Saitseva I., *Leiterin*

Konferenzen und Meetings sind wie Schauspielbühnen. Schon die Sitzordnung verrät viel über die innere Einstellung der Teilnehmer. Psychologen haben die geheimen Signale enträtselt.

Wo sitzen Sie das nächste Mal im Meeting: wieder auf Ihrem Stammplatz? Warum eigentlich?

Bisher dachten Kommunikationsexperten: alles Routine. Wer sich einmal an seinen Platz gewöhnt hat, genießt fortan die Sicherheit des immer gleichen Ritus. Der Stammplatz – er markiert vor allem ein eigenes Territorium, das sich jemand mit wachsender Betriebszugehörigkeit erkämpft hat und nun besetzt hält. Falsch gedacht. Psychologen sind inzwischen überzeugt: Der Sitzplatz am Konferenztisch verrät uns.

Der genaue Ort in der Runde markiert die Rolle, den Status und die innere Geisteshaltung, die jemand in Wahrheit einnimmt. So setzen sich erstaunlich oft ausgerechnet die Meinungsgegner auch am Konferenztisch gegenüber, der Chef gerne mit dem Blick zur Tür und die ihm wohlgesonnenen Mitarbeiter instinktiv in dessen unmittelbare Nähe. Der Grund: Schon vorab legt jeder seine geistige Position fest und verhält sich unbewusst danach.

Sitzordnung auf Konferenzen und an Meetings

Die US-Psychologin Sharon Livingston hat basierend auf ihren Erkenntnissen aus mehr als 40'000 Gesprächen und Beobachtungen ihre neuen Schlussfolgerungen präsentiert. Demnach spiegeln die Sitzplätze der Teilnehmer von Konferenzen und Meetings die Rolle, den Status sowie die innere Geisteshaltung wider. Meetings tragen zur Verteilung der informellen Rollen im Unternehmen bei.

Die unterschiedliche Nähe der Teilnehmer zur Macht signalisiert dabei den jeweiligen Status am besten. So profitiert, wer nahe beim Chef sitzt von dessen generellen Strahlkraft, aber auch von banalen Dingen wie beispielsweise der Möglichkeit, sich während des Meetings kurz bilateral mit dem Chef abzustimmen.

Bislang wurde der Sitzordnung bei Konferenzen und Meetings wenig Aufmerksamkeit entgegengebracht. Es wurde davon ausgegangen,

dass diese mehr oder weniger Routine ist. Der einmal etablierte Stammplatz markiert quasi Territorium und Betriebszugehörigkeit.

Auf der anderen Seite gehen von bestimmten Sitzplätzen auch negative Signale aus. Der Platz mit dem Rücken zur Tür wird dabei einhellig als schlechtester Platz eingestuft. Wer dort sitzt, dem wird der niedrigste Status beigemessen. Es werden eintretende Kollegen zuletzt erkannt und man wird oftmals als Laufbursche eingesetzt. Der Platz mit Blick auf das Fenster ist ebenso ungünstig. Man ist stets geblendet, und wirkt so unsicher. Ebenfalls eher ungünstig ist der Platz am Tischende, da man weit weg von Hauptredner und Beamer ist. Die Sitzplatzstrategie sollte aber aufgrund der verfolgten Ziele gewählt werden. So greift der Analytiker besser auf den Eckplatz zurück, und der Teammoderator sitzt am besten an der Tischmitte. Aber auch eine bewusst atypische Sitzplatzwahl kann Sinn machen. Der autoritäre Chef wirkt an der Tischmitte sitzend wie ein Teamplayer, und der ewige Widersacher findet sicher mehr Gehör, setzt er sich an die als sympathischer wahrgenommene rechte Seite des Chefs.

Wer regelmäßig neben dem Boss sitzt, von ihm ein paar Mal mit Namen angesprochen wird, besser noch mit Vornamen; zwischendurch mit ihm kurz plaudert oder synchron über einen Insider-Gag lacht, zeigt anderen Gruppenteilnehmern subtil: Ich gehöre zum Führungsgespann! zum Hauptredner sucht – der Alpha-Person des Meetings, der sowieso al

Ein Platz mit dem Rücken zur Tür zum Beispiel ist strategisch äußerst ungünstig. Für die meisten Beobachter gilt er als „der statusniedrigste Ort". Wer dort sitzt, erkennt eintretende Kollegen zuletzt, muss sich jedes Mal umständlich umdrehen und bei fehlenden Unterlagen wird er nicht selten gebeten, die nötigen Dinge „mal eben" zu holen. Ein Laufburschenjob.

Der Platz mit Blick gegen das Fenster ist ebenso von Nachteil. Wer dort sitzt, muss andere Teilnehmer, die mit dem Rücken zum Fenster sitzen, stets im Gegenlicht anblinzeln. So geblendet gerät seine Erscheinung leicht ins Zwielicht: Wer so dreinschaut, wirkt irritiert und unsicher. Nicht gerade wie ein Macher mit Durchblick.

Auch nicht besser: *der Stuhl am Kopfende des Tisches,* weit weg von Beamer, Projektionsfläche oder Flipcharts. Die technischen Hilfen können willkommene Gelegenheiten sein, den eigenen Standpunkt per Fingerzeig zu betonen. er Diskussion spontan das Wort zu ergreifen. Strategisch wesentlich klüger verhält sich, wer die Nähe le Blicke zufliegen.

DIE SÄTZE DER STEUERN IN DEN EUROPÄISCHEN LÄNDERN

Tereschtschenko N., *Studentin E-44*,
Saizewa I., *Leiterin*

Ich habe bemüht sich, den Grund der allmählichen Verkleinerung der Steuersätze auf die Betriebe beim Eintritt des Landes in verschiedene Gesellschaften und die Organisationen zu erklären. Eine Hauptidee des Artikels war die Betrachtung der Vorteile für das Land beim Eintritt in die Europäische Gesellschaft.

Steigende ökonomische Interdependenzen auf den Weltmärkten, Stichwort Globalisierung, und die weitere Vertiefung der Europäischen Integration haben zu einer Zunahme der Mobilität des Kapitals (und vice versa) geführt. Vor diesem Hintergrund steigt im Zusammenhang mit Investitionen und Standortwahl die Sensibilität gegenüber unterschiedlichen Besteuerungen. Dies hat nicht zuletzt dazu gefuhrt, dass Einkommens-sowie Unternehmenssteuersätze weltweit tendenziell deutlich zurückgegangen sind. Die Einkommenssteuersätze fielen in den letzten 25 Jahren in den OECD-Ländrn durchschnittlich um 20 Prozent, die Körperschaftssteuersätze seit 1996 um rund zehn Prozent. Dies gilt gleichermaen für die OECD-Länder insgesamt, als auch für die EU-Mitgliedstaaten. Die Steuereinnahmen aus Unternehmensbesteuerung verringerten sich jedoch zwischen 1997 und 2001 im EU-Schnitt, auf Grund einer Ausweitung der Bemessurtgsgrundlage, nicht. Die Körperschaftssteuersätze sind innerhalb der Regionen sehr unterschiedlich in ihrer Höhe. Die Höhe des gesetzlichen Karperschaftssteuersatzes allein spiegelt nicht die Unternehmen aus der gesetzlichen Bemessungsgrundlage. Bei diesen Steuerkurzungen ist darauf Unternehmensbesteuerung ergibt. Wesentlich fur die Steuerbelastung tatsächliche Steuerbelastung wider, die sich für ein ist auch die hinzuweisen, dass gleichzeitig in einzelnen Ländern massive Kürzungen bei Unternehmensförderungen geplant sind, und zwar auch abseits von Beihilfekürzungen, die im Zuge der übernahme des Acquis seitens der EU vorgeschrieben sind (wie z.B. im Falle von unerlaubten Beihilfen).

Die meisten der beitretenden Länder weisen hohe Leistungsbilanzdefizite auf, die durch Kapitalzuflüsse aus dem Ausland finanziert Werden müssen.

MEDICAL COMPUTER DIAGNOSTICS

Zhalovaga V.O., Ivashchenko V.A., *IN-43*,
G.I.Litvinenko, *EL adviser*

With development of informatics and computers there appeared new problems – how to "teach" computers to think like a man. Modeling of human brain activity calls artificial intelligence. Medical computer diagnostics is one of perspective ways in this science. These technologies can help to save life for thousands or even millions of people. Really, early diagnostics of different heart diseases or malignant tumours saves patient's life and makes treatment easier.

For computer recognition of medical research results to expert support system (ESS) are being created. Using such systems helps not only to diagnose correctly, but also for saves time. It in its turn increases of patient's chances for being cured.

Data input for ESS is done through magnetocardiograph readouts (for heart diseases diagnostics), biopsy results (for cancer). These data allow features, typical for different diseases. After to find comparising these features the program makes a decision about the patient's health condition. Thus, ESS is one of imagery recognition methods. The essense of any imagery recognition method is to process images and attach them to a definite class. In this case the word "class" means health condition (disease).

To increase the system accuracy research of secondary features of different diseases is necessary (for example, analysis of vectors of histological features in the case of oncological diseases, or vectors of positional relationship of cardiogram magnetic fields).

The first stage of ESS creation is learning. This process presupposes representative features separation for different diseases, forming a system of reference tolerances to choose distinguishing of features with the aim constructing optimal subdivision of input data into classes of recognition. The more is the differentiation of these classes the easier they are to distinguish, the higher is the probability of making a correct decision. There are a lot of ways to increase this differentiation. For example, to take more input data that belongs to each class.

The final work stage of ESS – is organization of exams. During an exam the program takes medical research results as test data and carries out

the recognition. Positive exam results mean that the image is assigned to the same class as at the learning stage.

Thus, ESS to is based on a physician knowledge. And this knowledge is registered by the programm as a package of separate differentiated diseases features.

To increase the probability of making right decision and diagnosing the patient correctly it is necessary:

- ✓ to carry enough medical research to describe different diseases;
- ✓ to assure that all the known diseases are included in the programm;
- ✓ to determine the main and secondary classification features of health condition (in this process it is necessary to doctors – specialists in a definite medical fields to «transmint» their knowledge to ESS);
- ✓ to build optimal division of input data on recognition classes;
- ✓ to compare a physician diagnosis with the results produced by the programm.

As a result a lot of time and efforts, spent on this system creation, are justified by the accuracy, and what is also very important, by speed of diagnosis definition. Very often the life of a patient depends on it. That's why it's an urgent problem for a lot of research institutes.

In conclusion we would like to say that specified ESS development is an urgent problem, because according to medical statistics cardiovascular and oncological diseases take first two places among causes of death in Ukraine.

THE ANALYSIS OF THE IS INTENSE-DEFORMED CONDITION OF THIN-WALLED COVERS SOFTWARE PRODUCTS CAD

Nikonec A. , *the student HM-41,*
Gavrilova V., *EL adviser*

Presently systems of the automated designing were included into practice of working out of new constructive decisions and creation of the design documentation. For some last decades to engineers there were accessible tens specialized programs of different degree of complexity for the automated performance of the analysis of behavior of a design under the influence of external forces. New technologies give the chance to create and analyze digital prototypes which allow to develop competitive projects more effective and profitable, and at the same time less expense, way.

Traditionally on a question which arise during design designing, the answer can be received only after research of a physical prototype or even of some prototypes which represents procedure expensive and stretched in time. More profitable alternative - application of digital prototypes by software products CAD which own wide functionality for creation of models of designs, performance of necessary calculations and visualization of the received results. Use of these possibilities allows to carry out the analysis of the is intense-deformed condition (by means of a method of final elements) three-dimensional objects of any complexity at any fastening, static or dynamic loading.

The analysis of the is intense-deformed condition of thin-walled covers it has been executed in the environment of software products, such as SolidWorks, Autodesk Inventor, APM WinMachine. They allow to specify places of fastening and to put necessary constant or replaceable loadings in time, to spend a wide spectrum of various types of calculations for the purpose of definition of distribution of loadings and their compound, linear and angular movings, deformations, internal efforts, frequencies of own fluctuations and own forms, factors of a stock and forms of loss of firmness of a design.

Thus, use of possibilities of software products CAD allows to reduce considerably terms designing and to lower resource-demanding designs, and also to reduce cost of design works and manufacture as a whole.

ELECTRONIC-OPTICAL SYSTEM OF ELECTRONOGRAMS RECOGNITION

Altinnikova K.V, *IN-43*,
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Electronography is a method to study the structure of matter, based on dispersion of electrons accelerated by the explored sample. It used for study the atomic structure of crystals, amorphous solids and liquids, molecules in gases and steam.

More and more both scientific, and industrial complexes appear, requiring recognition of images with high accuracy, which in turn requires the creation and implementation of computer algorithms for image recognition. Solving this problem provides an opportunity to improve the accuracy and timeliness of decision making in the controling and managing complex technological processes.

Despite the intensive development of methods of pattern recognition, machine classification of electronograms still remains an unsolved problem because unstationarity of image brightness of electronograms and relatively large dispersion of realizations for a class.

Most well known recognition algorithms are aimed at solving the model problems, which exclude classes crossing and require statistical stability and homogeneity of the study sample. But in practice it is usually not the case. One of the ways to solve this problem is to solve it using methods of information-extreme intellectual technology (IEIT), based on maximizing the recognition system information capacity.

Our goal is developing an information-extreme method of pattern recognition and software for self educated decision making support system used for electronograms recognition.

To achieve this aim, following tasks we were to solve:

- implementing algorithm of mechanical information compression;
- constructing a hierarchical recognition structure;
- developing and implementing a hierarchical learning algorithm of decision making system;
- optimizing control tolerances for processing images in polar coordinates;
- implementing a hierarchical exam algorithm.

CLEVER HOUSE

Krivonos D.V., *gr. TM-51,*
Chuchilina L.M., *El adviser*

If only Realms of Fantasy magazine existed earlier, then some materials published there would be eligible enough to appear in Science Magazine. Similarly, it refers a clever house phenomenon or an intellectual building as its scientific name. One dreaming of a house that is able to manage various household tasks without help of the host was exploited long ago in the classic scientific fantasy. But the history does not reveal the name of the inventor of the first clever house.

And even if you imagine that the inventor did not go in for fantasy, he should have had some tips about fairy tales about a gin or a golden fish appearing to make your dream come true by your request. And here it is, the inanimate object realizing commands. Thus, the voice command is one of opportunities to manage the clever house.

Well, let's be logical.

A clever house is a premise where devices and mechanisms that bring safety and comfort to people are coded for particular actions. Thereby, the lighting, heating, any kind of rollets and jalousie, doors, audio- and video equipment and household devices are easy to have automated.

Such a household assistant can be managed by a single remote control device, the same we use to switch on the TV or a mini system. And the devices can be controlled by a mobile telephone. As an option, you may simply control your devices at the special site entering your specific access code, and it is absolutely remote control. You visit your web page and see how your house is doing while you are away and you may control the programming yourself.

You approach you house, and it caringly lifts the garage gates for your car, switches on the light and plays your favorite music, and also it warms up your dinner. You go sleeping and your house switches off the light, closes jalousie and switches on a lulling music. In the morning a house opens the blinds up (whether by a particular lightning or the timing set up), makes coffee and performs a great number of useful things. However, they are just simple commands. A clever house is able to water flowers in the garden, subject to all climatic features, provide food for cats

and fishes, check your temperature and blood pressure, and as a result - to take an adequate decision, that is, call for a doctor, at least.

And to make the last condition applicable in reality, sensors are placed throughout the house. The most popular sensors are movement sensitive ones. As soon as you are in the hall, a toilet room, a bathroom, any room you want, the light is on immediately. You go out, - and the light is off. Convenient and cost saving, you know.

The same effect is achieved by sound effects - voice or claps. Remember, a movie character slapped hands and the light is on, slapped her hands twice, it is off. Also you may choose to say «Open, Sesame! » and the door is opened. And you are like in a fairy tale but the tale is modern and high-tech. and you must remember your password not to confuse.

One may want to classify facilities of the intellectual premise into two groups: one providing safety, the other group providing comfort.

Safety is primarily controlling persons who try to steal into the house and video cameras immediately display this person to watch. When you are away for a long time, the house reliably shuts all doors and it is able to imitate as if you are home. It switches on the electricity at different times in the morning and in the evening, it provides real sounds and to control household troubles like shutting water supply in case of leaking. And one of the genius ideas in regards to security is a threatening bow-wow from behind the door and this is widely practiced now.

Save for the above, a clever house is a self-learning program: it keeps situations in memory and concludes, makes decisions and recommends. You don't believe it? You do believe! You need to get accustomed to a clever house as some time go you had to get accustomed to a computer, mobile telephones and bank cards. And today we do not see us without all the staff that makes our life time-saving and comfortable.

USING AUTOMATIC CLASSIFICATION FOR TECHNOLOGICAL PROCESSES HANDLING

Vitalii Vostotskyi, *IN-43,*
G.L. Litvinenko, *E.L. adviser*

The process of production management represents one of the major problems of mankind. The central problem is the construction of the effective model displaying the structure and properties of information streams and giving enough information for forecasting and management

Traditionally, models have been developed by mathematically formulating phenomenological behavior after the phenomena are adequately understood. If these formulations are amenable to analytical or numerical solution, the results enable robust explanation and prediction of system behavior within the bounds of the models' regions of validity. Data organization can be envisioned as a clustering process that identifies neighbors by their proximity to one another. Both handling large amounts of data and dealing effectively with streams of incoming fresh data require robust self- organizing systems capable of continuous updating themselves in a dynamically adaptive manner. Let us briefly describe the approach for data auto-classifying . The process is initiated by arbitrarily establishing clusters, and then assigning individual data to particular clusters based on the proximity of the data to the clusters' centroids. Successive iterations of the data-assigning process lead to the convergence of a set of clusters capturing similar data according to a pre-specified selectivity criterion. A narrow tolerance limit on the selectivity criterion results in a large number of clusters, each containing a relatively small number of very similar data; a broader tolerance yields fewer, more inclusive clusters with greater internal diversity. Cluster centroids are continually updated to adapt to their member data groups as fresh data are encountered. New clusters are created to accommodate those incoming fresh data which are too far (according to the selectivity criterion) from any existing cluster. Architectural details to construct such self-organizing systems deals with approaches, based on the source data characteristics and technological process complexity. Organizing data in this manner enables us to identify member groups and quantify their similarities, and to predict properties of fresh incoming data by their proximity to historical data whose properties are known.

HTML

M.Skuba, *student IN-41*,
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Just as there is a diversity of programming languages available and suitable for conventional programming tasks, there is a diversity of languages available and suitable for Web programming.

There is no reason to believe that any one language will completely monopolize the Web programming scene, although the varying availability and suitability of the current offerings is likely to favor some over others. Java is both available and generally suitable, but not all application developers are likely to prefer it over languages more similar to what they currently use, or, in the case of non-programmers, over higher level languages and tools.

HTML (HyperText Markup Language) is the basic language understood by all WWW (World Wide Web) clients. Unmodified HTML can execute on a PC under Windows or OS/2, on a Mac, or on a Unix workstation. HTML is simple enough that nearly anyone can write an HTML document, and it seems almost everyone is doing so.

HTML was developed as part of the WWW at CERN by Tim Berners-Lee, who is now Director of the World Wide Web Consortium (W3C) at MIT's Laboratory for Computer Science. Refinement of HTML continues at W3C, with standardization via the Internet Engineering Task Force (IETF) of the Internet Society.

HTML descended from SGML (Standard Generalized Markup Language), the ISO standard language for text. SGML is in widespread use by the US Government and the publishing industry for representing documents. HTML applies SGML principles to the WWW. As such, it implements a semantic subset of SGML with similar syntax.

HTML is a markup language rather than a complete programming language. An HTML document (program) is ASCII text with embedded instructions (markups) which affect the way the text is displayed.

The basic model for HTML execution is to fetch a document by its name (e.g. URL), interpret the HTML and display the document, possibly fetching additional HTML documents in the process, and possibly leaving hot areas in the displayed document that, if selected by the user, can accept user input and/or cause additional HTML documents to be fetched by URL.

HTML applications, or what we might consider the HTML

equivalent of an application, consist of a collection of related web pages managed by a single HTTP (HTTP is the topic protocol that defines the interaction of WWW clients and servers) server. This is an oversimplification, but the model is simple, and the language is simple, and that is one of its strengths.

As HTML moves through the standardization process, and is extended by various vendors, it loses some of its simplicity, but it remains a useful language. The Web programmer generally finds HTML lacking in only two areas: its performance in certain types of applications, and the ability to program certain common tasks.

HTML is limited in its computational power. This is intentional in its design, as it prevents the execution of dangerous programs on the client machine. However, Web programmers, as they have become more sophisticated in their applications, have increasingly been hamstrung by these limits.

Tasks unable to be coded in HTML must either be executed on the server in some other language, or on the client in a program in some other language downloaded from a server. Both solutions are awkward for the programmer, often produce a sub-optimal segmentation of an application across program modules, both client and server, and reintroduce safety considerations.

Because of an HTML program's limited functionality, and the resulting shift of computational load to the server, certain types of applications perform poorly, especially in the context of clients connected to the Internet with rather low bandwidth dialup communications (<=28.8Kbps). The performance problems arise from two sources:

a) an application which is highly interactive requires frequently hitting the server across this low bandwidth line which can dramatically and, at times, unacceptably slow observed performance ;

b) requiring all computation to be done on the server increases the load on the server thereby reducing the observed performance of its clients.

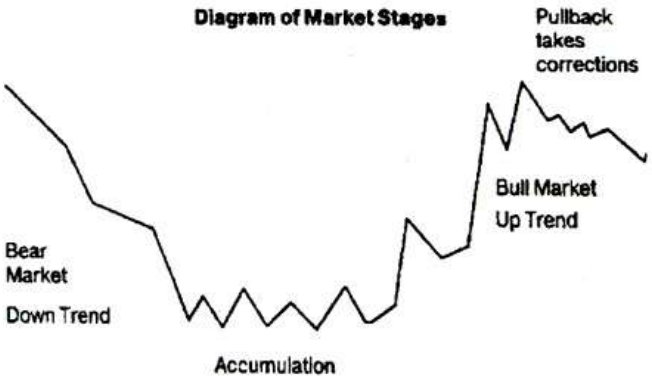
MARKET STAGES

Yana Babakova, *student E-44*

Traditionally markets move from Bull markets to Sideways markets to Bear markets. They move from Bear to Sideways to Bull. People however tend to forget the sideways market stage and assume that markets move from Bear to Bull, to Bear. The only markets that do in fact move from Bull to Bear are the exceptions and not the rule — they are parabolic markets and are usually characterised by thin trading volumes.

Traditionally speaking, the market stages can be summarized as follows:

- ✓ Markets accumulate — go sideways at the end of a down trend.
- ✓ Markets then trend up, trending up they have a correction or a pause.
- ✓ Markets then climax or peak.
- ✓ Markets accumulate (distribution — sideways movement at the top).
- ✓ Markets trend down.



A trader does not sell just because the market has been in an up trend for a long time and a change is due. Before you sell, you at least need to see a sideways move in the market. Analysis is applied to markets because: 1. Markets have stages. 2. Within the stages, there are behavioural characteristics. 3. Within the behavioural characteristics, you have specific patterns. There exist three types of market trends: 1. Up Trend 2. Down Trend 3. No Trend— Congestion.

FUNCTION OF DISPROPORTION

Nelya Shelegeda, *IN-43,*
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It is impossible to provide reliable work of different mechanisms at all stages of their life cycle without wide use of diagnostic tools. Emergency situations at nuclear and thermal power plants, oil and gas pipelines can be considerably diminished or completely eliminated by effective use of automated diagnostic techniques.

There are classes of objects, the parameters of which can change in process of exploitation. This can lead to changes in static characteristics of these objects. The DC (direct-current) or AC (alternating-current) amplifiers, sensors or converters can refer to such objects, in particular. For example:

- In DC amplifier: the so-called «zero drift» is often observed, and amplification coefficient is changed after the input voltage elevates above the defined boundary value. The same is true for various converters.
- In AC amplifiers: the breach of proportionality between input and output processes usually leads to the creation of high-frequency harmonics of the main signal and, as a result, to worsening of the signal presentation quality.

As a rule, breach of proportionality between the input and output processes for the controlled objects leads to deterioration of the quality of their work or to lowering efficiency. That's why it is necessary to elicit the fact of this breach and to spot the reason of such trouble.
This problem can be solved by function of disproportion:

$$z(t) = \frac{y(t)}{x(t)} - \frac{dy/dt}{dx/dt}$$

where: t – time;
$z(t)$ – value of «disproportioanality»;
$x(t)$, $y(t)$ – input and output processes;
dx/dt , dy/dt – values of derivatives.

The fact of proportionality breach between x(t) and y(t) is elicited by value of «disproportionality» z(t), that becomes nonzero.

This method is verified by the check tests and confirmed by the obtained results. Such diagnostic system can be used for controlling the objects functioning during their continuous exploitation.

ARTIFICIAL NEURAL NETWORKS

Boychenko I.V., *IN-43*,
Litvinenko G.I., *EL adviser*

Artificial neural networks(ANNs) have seen an explosion of interest overthe last few years, and are being successfully applied across an extraordinary range of problem domains, in areas as diverse as finance, medicine, engineering, geology and physics. Indeed, anywhere that tereare problems of prediction, classification or control, neural networks are being introduced.

Neural networks are also intuitively appealing, based as they are on a crude low-level model of biological neural systems. In the future, the development of this neurobiological modeling may lead to genuinely intelligent computers.

Neural networks are applicable in virtually every situation in which a relationship between the predictor variables (independents, inputs) and predicted variables (dependents, outputs) exists, even when that relationship is very complex and not easy to articulate in the usual terms of "correlations" or "differences between groups."

Neural networks grew out of research in Artificial Intelligence; specifically, attempts to mimic the fault-tolerance and capacity to learn of biological neural systems by modeling the low-level structure of the brain. A typical feedfoward network has neurons (abstract analogs of biological neural cells) arranged in a distinct layered topology. The input layer is not really neural at all: these units simply serve to introduce the values of the input variables. The hidden and output layer neurons are each connected to all of the units in the preceding layer. Again, it is possible to define networks that are partially-connected to only some units in the preceding layer; however, for most applications fully-connected networks are better.

When the network is executed (used), the input variable values are placed in the input units, and then the hidden and output layer units are progressively executed. Each of them calculates its activation value by taking the weighted sum of the outputs of the units in the preceding layer, and subtracting the threshold. The activation value is passed through the activation function to produce the output of the neuron. When the entire

network has been executed, the outputs of the output layer act as the output of the entire network.

So neuron networks can therefore be used where you have some known information, and would like to infer some unknown information. Some examples are:

Stock market prediction. You know last week's stock prices and today's DOW, NASDAQ, or FTSE index; you want to know tomorrow's stock prices.

Credit assignment. You want to know whether an applicant for a loan is a good or bad credit risk. You usually know applicants' income, previous credit history, etc. (because you ask them these things).

Control. You want to know whether a robot should turn left, turn right, or move forwards in order to reach a target; you know the scene that the robot's camera is currently observing.

Needless to say, not every problem can be solved by a neural network. Many financial institutions use, or have experimented with, neural networks for stock market prediction, so it is likely that any trends predictable by neural techniques are already discounted by the market, and (unfortunately), unless you have a sophisticated understanding of that problem domain, you are unlikely to have any success there either!

Therefore, another important requirement for the use of a neural network therefore is that you know (or at least strongly suspect) that there is a relationship between the proposed known inputs and unknown outputs. This relationship may be noisy (you certainly would not expect that the factors given in the stock market prediction example above could give an exact prediction and there may be an element of pure randomness) but it must exist.

In general, if you use a neural network you won't know the exact nature of the relationship between inputs and outputs. The other key feature of neural networks is that they learn the input/output relationship through training. There are two types of training used in neural networks, with different types of networks using different types of training variables, and can subsequently be used to make predictions where the output is *not* known.

CRISIS IN UKRAINE: STEPS TO REVIVAL

Denisenko Yulia, *student gr. E-52,*
Chuchilina L.M., *El adviser*

With crises Ukraine not to surprise. Crisis of the power and a credibility gap to it, crisis of formation and education crisis, crisis of family relations and crisis of fathers and children, crisis in ecology and economic crisis – these and many other crises became for a long time the integral elements of our everyday life. As if stream, that weaken, that taking power, these private crises all forced the way through more confidently and today have merged in one rough river which has taken out us in storm ocean of global crisis.

The state default soon becomes for Ukraine a reality. People see how bread rises in price and the grivna falls, banks and the enterprises are closed and stock exchanges of the unemployed open. Kilometre counters of the goods in supermarkets wait for the buyers, but buy something the one who for the present has cash.

Credit cards, in the recent past were the certificate of solid position of their owners, do not accept today – even if they are given out by still functioning banks, there is no guarantee that those will continue to work tomorrow, instead of will be closed, as it already happens with hundreds banks on all country.

Analysts speak about short-sighted economic policy of the government, and wrong actions of National Bank, accuse the West of desire to enslave Ukraine hands of IMF and by tradition abuse Russia for a hard line on gas. So obvious discord, unfortunately, specifies only in one – all of us still badly imagine, in what world we have appeared today, what means globalisation and how possible survive in these new condition.

At the same time, quite intelligent explanation to existing position can be found in a cabbala, the ancient doctrine according to which whole world, together with mankind occupying it, represents the uniform system which all links are rigidly connected among themselves like gears in the wheel mechanism. And breakage even one such "gear" leads to failure in work of all mechanism.

Actually, we also observe it today in Ukraine. The crisis which has begun in the American financial system has almost instantly extended worldwide, having grasped and Ukraine. On a course having passed from the category financial in economic, it has stopped all system .

ELECTRONIC MONEY

Yulia Denisenko, *student gr. E-52,*
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Electronic money (also known as e-money, electronic cash, electronic currency, digital money, digital cash or digital currency) refers to money or scrip which is exchanged only electronically. Typically, this involves use of computer networks, the internet and digital stored value systems. Electronic Funds Transfer (EFT) and direct deposit are examples of electronic money. Also, it is a collective term for financial cryptography and technologies enabling it.

While electronic money has been an interesting problem for cryptography, to date, use of digital cash has been relatively low-scale. One rare success has been Hong Kong's Octopus card system, which started as a transit payment system and has grown into a widely used electronic cash system. Singapore also has an electronic money implementation for its public transportation system (commuter trains, bus, etc), which is very similar to Hong Kong's Octopus card and based on the same type of card (FeliCa). A very successful implementation is in the Netherlands, known as Chipknip.

Technically electronic or digital money is a representation, or a system of debits and credits, used (but not limited to this) to exchange value, within another system, or itself as a stand alone system, online or offline. Also sometimes the term electronic money is used to refer to the provider itself. A private currency may use gold to provide extra security, such as digital gold currency. An e-currency system may be fully backed by gold (like e-gold and c-gold), non-gold backed, or both gold and non-gold backed (like e-Bullion and Liberty Reserve). Also, some private organizations, such as the US military use private currencies such as Eagle Cash.

Many systems will sell their electronic currency directly to the end user, such as Paypal and WebMoney, but other systems, such as e-gold, sell only through third party digital currency exchangers.

Some community currencies, like some LETS systems, work with electronic transactions. Cyclos Software allows creation of electronic community currencies.

Ripple monetary system is a project to develop a distributed system of electronic money independent of local currency.

Using cryptography, anonymous ecash was introduced by David Chaum. He used blind signatures to achieve unlinkability between withdrawal and spend transactions.

In cryptography, e-cash usually refers to anonymous e-cash. Depending on the properties of the payment transactions, one distinguishes between on-line and off-line e-cash. The first off-line e-cash system was proposed by Chaum and Naor. Like the first on-line scheme, it is based on RSA blind signatures.

The main focuses of digital cash development are 1) being able to use it through a wider range of hardware such as secured credit cards; and 2) linked bank accounts that would generally be used over an internet means, for exchange with a secure micropayment system such as in large corporations (PayPal).

Theoretical developments in the area of decentralized money are underway that may rival traditional, centralized money. Systems of accounting such as Altruistic Economics are emerging that are entirely electronic, and can be more efficient and more realistic because they do not assume a zero-sum transaction model.

Although digital cash can provide many benefits such as convenience and privacy, increased efficiency of transactions, lower transaction fees, new business opportunities with the expansion of economic activities on the Internet, there are many potential issues with the use of digital cash. The transfer of digital currencies raises local issues such as how to levy taxes or the possible ease of money laundering. There are also potential macroeconomic effects such as exchange rate instabilities and shortage of money supplies (total amount of digital cash versus total amount of real cash available, basically the possibility that digital cash could exceed the real cash available). These issues may only be addressable by some type of cyberspace regulations or laws that regulate the transactions and watch for signs of trouble.

So, modern, quickly developing world impossible to present without electronic money. Quite soon they will become integral part of our life. Electronic money is really incredible invention of humanity.

GAS COMPRESSORS

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Gavrilova V., EL adviser

A gas compressor is a mechanical device that increases the pressure of a gas by reducing its volume. Turbo compressors are most popular. It in comparison with other compressors is more economic, easier in service and cheaper. But centrifugal compressors can have not great efficiencies; around 80% polytrophic therefore a decrease of operating costs for these machines is an important task for government of any country.

Turbo compressors (centrifugal compressors) concern to machines of dynamic compression. Air strikes into impeller, rotating with the big speed, is braked on specially designed volute. At braking air is compressed.

Centrifugal compressors consist of rotor and stator parts The main details of rotor are shaft and impeller (rotating disk) to increase the velocity of the gas. The main details of stator are diffuser, body, bearings, seals. A diffuser (divergent duct) section converts the velocity energy to pressure energy. In the case of centrifugal compressors, commercial designs currently do not exceed a compression ratio of more than a 3.5 to 1 in any one stage. Since compression generates heat, the compressed gas is to be cooled between stages. Main characteristics of centrifugal compressors : flow rate, pressure ratio, rotor speed rotation, gas temperature before a compressor, mass flow rate of an gas, dimension, weight.

Flow channels of turbomachines have complex geometrical form, fluid or gas flow have three-dimensional characteristics. Mathematic models for calculation of viscous gas or fluid turbulent flow in turbomachine channels are quite complicated.

There are many options for the "prime mover" or motor which powers the compressor: gas turbines; steam turbines or water turbines are possible for large compressors; electric motors are cheap and quiet for static compressors; diesel engines or petrol engines are use for portable compressors.

Turbomachines find wide application almost in all of the industry branches. Turbines, turbo-compressors and dynamic pumps constitute such an essential part of power equipment on many plants, that it is possible to state that the work of these plants would be impossible without these units. Gas compressors are used in such applications: in pipeline transport of purified natural gas to move the gas from the production site to the consumer; in petroleum refineries, natural gas processing plants, petrochemical and chemical plants, and similar large industrial plants; in refrigeration and air conditioner equipment; in gas turbine systems to compress the intake combustion air. It's one of effective ways of heating our houses.

PRODUCT BRANDS AND TRADEMARKS

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In developing and managing products, companies must make decisions about branding, packaging, and labeling — three factors that affect the buyer's perception of the product. These elements are particularly important in consumer goods. Manufacturers of industrial products, are concerned about product identification. That is why branding ranks the first in the list.

A brand is a way of identifying a product through a unique name or design that sets the product apart from those offered by competitors. Tide, Oldsmobile, and Bic are brand names. McDonald's golden arches, the Jolly Green Giant, the Pillsbury doughboy, the AT&T globe, and the Prudential rock are brand symbols.

Brand names may be owned by producers of a product as well as by wholesalers and retailers. Sears Roebuck, for example, buys appliances from many manufacturers and sells all of them under its Kenmore brand. A&P, the supermarket chain, purchases canned fruits, jellies, rice, household cleaning products, and frozen foods from hundreds of different suppliers and offers them under the Jane Parker, A&P, and Ann Page brand names. Brands owned by national manufacturers are called national brands. Brands owned by wholesalers and retailers, such as Sears and A&P, are private brands.

As an alternative to branded products, some retailers also offer generic products, which are packaged in plain containers bearing only the name of the product. These products are most often standard rather than first quality. They cost up to 40 percent less than brand-name products because of lower quality, plain labels, and lack of promotion. Generic goods have found a definite market niche, as a look at your local supermarket shelves will demonstrate. However, sales of generics have declined since 1982, partly because inflation has moderated, partly because consumers are disappointed with the uneven quality, and partly because brand-name producers have fought back with cents-off coupons that reduce the generics' cost advantage.

CLEVER HOUSE

Krivonos D.V., *gr. TM-51,*
Chuchilina L.M., *El adviser*

If only Realms of Fantasy magazine existed earlier, then some materials published there would be eligible enough to appear in Science Magazine. Similarly, it refers a clever house phenomenon or an intellectual building as its scientific name. One dreaming of a house that is able to manage various household tasks without help of the host was exploited long ago in the classic scientific fantasy. But the history does not reveal the name of the inventor of the first clever house.

And even if you imagine that the inventor did not go in for fantasy, he should have had some tips about fairy tales about a gin or a golden fish appearing to make your dream come true by your request. And here it is, the inanimate object realizing commands. Thus, the voice command is one of opportunities to manage the clever house.

Well, let's be logical.

A clever house is a premise where devices and mechanisms that bring safety and comfort to people are coded for particular actions. Thereby, the lighting, heating, any kind of rollets and jalousie, doors, audio- and video equipment and household devices are easy to have automated.

Such a household assistant can be managed by a single remote control device, the same we use to switch on the TV or a mini system. And the devices can be controlled by a mobile telephone. As an option, you may simply control your devices at the special site entering your specific access code, and it is absolutely remote control. You visit your web page and see how your house is doing while you are away and you may control the programming yourself.

You approach you house, and it caringly lifts the garage gates for your car, switches on the light and plays your favorite music, and also it warms up your dinner. You go sleeping and your house switches off the light, closes jalousie and switches on a lulling music. In the morning a house opens the blinds up (whether by a particular lightning or the timing set up), makes coffee and performs a great number of useful things. However, they are just simple commands. A clever house is able to water flowers in the garden, subject to all climatic features, provide food for cats and fishes, check your temperature and blood pressure, and as a result - to take an adequate decision, that is, call for a doctor, at least.

DIRECT MARKETING

Grishchenko Olena, *student Mk – 42,*
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Direct marketing is a sub-discipline and type of marketing. There are two main definitional characteristics which distinguish it from other types of marketing:

1. it attempts to send its messages directly to consumers, without the use of intervening media;
2. it is focused on driving purchases that can be attributed to a specific "call-to-action.

For many businesses, it's by far the most cost-effective form of marketing. From direct mail and leaflet drops to telemarketing and email marketing, it allows to target customers with greater accuracy than any other method. Direct marketing is attractive to many marketers, because in many cases its positive effect can be measured directly. Some direct marketing efforts using particular media have been criticized for generating unwanted solicitations. For example, direct mail that is irrelevant to the recipient is considered junk mail, and unwanted email messages are considered spam.

Direct marketing allows to generate a specific response from targeted groups of customers. It's a particularly useful tool for small businesses because it allows to:

- focus limited resources where they are most likely to produce results;
- measure the success of campaigns accurately by analysing responses;
- small business can target a representative sample of target audience and see what delivers the best response rates before developing a full campaign.

A direct marketing campaign can help to achieve the following key objectives:

- increasing sales to existing customers;
- building customer loyalty;
- re-establishing lapsed customer relationships;
- generating new business.

Direct mail (DM) allows to get information about products and services directly into the hands of people who may be interested in it. Though it's often dismissed as junk mail or spam, it can be highly effective in both business and consumer markets if it's properly planned and researched.

Mailing letter typically include a range of enclosures such as a product brochure, order-form and pre-paid reply envelope. Tips for a successful direct-mail campaign:

- a budget which sees your business profiting at a realistic level of response;
- incentives such as prizes or discounts to maximize response;
- a mailing list that's appropriate to business objectives;

- resources to run the campaign.

Leaflet drops and handouts. Leafleting is probably the simplest and cheapest form of direct marketing. It may be worth considering unaddressed leaflet drops and street handouts if marketers want to promote business in local area, particularly to consumers. For example, if business:

- offer services locally - such as food delivery, taxi services, gardening or double-glazing installation
- want to attract people to shop's sale or say the opening of new restaurant

Leafleting brings significantly lower response rates than direct mail. It's less targeted and as a result it's often best to use leaflets for products or services of universal appeal, or when marketer needs a large number of leads.

Telemarketing. Contacting consumers by telephone can offer a number of advantages over other forms of marketing. It allows to:

- gauge the customer's interest immediately
- ask questions to assess the customer's needs
- explain technical or complex messages more effectively

But there are significant disadvantages. Many people find marketing calls an unwelcome interruption - particularly in the evenings when you're most likely to get them at home.

A dedicated telemarketing campaign could help to build a database, generate leads and appointments, follow up responses to direct-mail campaigns, keep in touch with customers and renew relationships with lapsed customers and find out about industry developments and the activities of competitors

Email marketing. Email is an extremely cheap form of direct marketing - a message can be sent to thousands of recipients for next to nothing.

However, there are disadvantages, too. Email contacts go out of date faster than either addresses or telephone numbers, so marketers need to be particularly active in cleaning heir database. And the increasing amount of spam - unsolicited email - means that marketing emails will need to stand out if they aren't to be deleted before being read.

Couponing is used in print media to elicit a response from the reader. An example is a coupon which the reader cuts out and presents to a super-store check-out counter to avail of a discount.

Integrated Campaigns. For many marketers, a comprehensive direct marketing campaign employs a mix of channels. It is not unusual for a large campaign to combine direct mail, telemarketing, radio and broadcast TV, as well as online channels such as email, search marketing, social networking and video.

INTERNET MARKETING

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Internet marketing, also referred to as web marketing, online marketing, Internet advertising, or eMarketing, is the marketing of products or services over the Internet.

The Internet has brought many unique benefits to marketing, one of which being lower costs for the distribution of information and media to a global audience. The interactive nature of Internet marketing, both in terms of providing instant response and eliciting responses, is a unique quality of the medium. Internet marketing is sometimes considered to have a broader scope because it refers to digital media such as the Internet, e-mail, and wireless media; however, Internet marketing also includes management of digital customer data and electronic customer relationship management ECRM) systems.

Internet marketing ties together creative and technical aspects of the Internet, including design, development, advertising, and sales. Internet marketing does not simply entail building or promoting a website, nor does it mean placing a banner ad on another website. Effective Internet marketing requires a comprehensive strategy that synergizes a given company's business model and sales goals with its website function and appearance, focusing on its target market through proper choice of advertising type, media, and design.

Internet marketing as of 2007 is growing faster than other types of media. Internet marketing requires customers to use newer technologies rather than traditional media. Low-speed Internet connections are another barrier: If companies build large or overly-complicated websites, individuals connected to the Internet via dial-up connections or mobile devices may experience significant delays in content delivery.

From the buyer's perspective, the inability of shoppers to touch, smell, taste or "try on" tangible goods before making an online purchase can be limiting. However, there is an industry standard for e-commerce vendors to reassure customers by having liberal return policies as well as providing in-store pick-up services.

Internet marketing has had a large impact on several previously retail-oriented industries including music, film, pharmaceuticals, banking, flea markets, as well as the advertising industry itself. Internet marketing is

now overtaking radio marketing in terms of market share. In the music industry, many consumers have been purchasing and downloading music (e.g., MP3 files) over the Internet for several years in addition to purchasing compact discs.

The number of banks offering the ability to perform banking tasks online has also increased. Online banking is believed to appeal to customers because it is more convenient than visiting bank branches.

Internet auctions have gained popularity. Unique items that could only previously be found at flea markets are being sold on eBay. Specialized e-stores sell items ranging from antiques to movie props. As the premier online reselling platform, eBay is often used as a price-basis for specialized items. Buyers and sellers often look at prices on the website before going to flea markets; the price shown on eBay often becomes the item's selling price. It is increasingly common for flea market vendors to place a targeted advertisement on the Internet for each item they are selling online, all while running their business out of their homes.

The effect on the advertising industry itself has been profound. In just a few years, online advertising has grown to be worth tens of billions of dollars annually.

BUSINESS COMMUNICATION

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Are you likely to succeed in life& Would you like to make something that most people would never even try to do? Is success in your private life also important for you? Do you want to earn more and be able to spend more? Do you want to start your own business or get higher in the corporate ladder?

If you answered "yes" to at least one of the above questions, please, recall some of the highly successful people you ever met in your life. Would you agree they all have quite a lot in common? And you will probably agree that all of them were first of all great communicators.

Effective communication with other people means the ability to successfully sell your ideas, to be able to persuade people, to motivate your colleagues and inspire your friends, to entertain your audiences and memorable, and also to be able to speak impromptu.

Being a good public speaker also means mastering some technical skills like: knowing how to structure your speech or presentation, how to get to the point, how to better deliver facts and technical information, understanding when to use and then not to use (!) Power Point, what kind of body language, eye contact, vocal variety and pauses to use and when to apply and so on.

Would you agree that your life would be quite different if you were able to:

- give a presentation in front of the board of directors of your company and fell totally confident before, during and after the event;
- deliver toasts at parties, give speeches at weddings and graduations and be totally authentic and feeling good;
- create your own speeches whatever the occasion and give them with pleasure and confidence.

Imagine that everything became possible for you... Imagine you can achieve everything you want in life... Imagine that from now on you are able to speak to an audience of several hundred people confidently and powerfully.

Your name is being announced to all these people who came to listen to you today. You climb the stage, stop in the middle, and stay there silently for a split second looking in people's eyes...

The whole audience of hundreds is silent, eagerly looks at you and waits impatiently for you to deliver your fabulous and remarkable speech. And you have a message to share with all these people. You take a deep breath and in the next second you begin to speak... You fell absolutely confident with yourself; you know exactly what are you going to say next and how you will say it. You eve know that impressions, influence and consequences your speech today will have on these people. Your each and every word is precisely selected and always hits the mark. You clearly deliver your every thought. Your body moves as the speech flows. Your face is the mirror of all the emotions you are experiences yourself while telling the story. Your voice goes up and down, gets quicker and slower; you pause masterly and emphasize the importance of that you have just said. The audience is with you and every person in the room follows the way you lead them through your story.

Now it is the time for fun and you build up the punch line and here it is – the whole room explodes in laugher. A moment later it is the time for important information and facts to deliver to listeners and every person in the room gets your message as exactly as you meant it.

You finish your speech. Every person in the room is highly motivated by your message. Final inspirational words – and the audience give you a standing ovation!

How different is your life now then you are really able to do all these things in front of an audience?

So now, if you have decided to become a better public speaker, you have to know that Public Speaking is a set of skills. Persistence and consistency will be especially required if you want to master public speaking in a foreign language.

You always have to keep in mind that great speakers are not born! Moreover, they were not great at all when they first started. And only thought trial and error could they have achieved their level of success.

AMBIENT MARKETING

Sager Liudmyla, *student MK-42,*
O.R. Gladchenko, *EL adviser*

Ambient Marketing started to appear in British media jargon around 1999, but now seems to be firmly established as a standard term within the advertising industry.

Ambient marketing is a popular approach to promoting a brand, it is an aggregate of effective marketing's instruments, utilized for initiative promotion of brand, as a result a loyal audience is formed from a number having a special purpose users.

Ambient advertisements are effective means at pushing a brand message in front of consumers and can develop even better top of mind recall within target audiences. This provides the ability to advertisers to maintain brand awareness created by other advertising efforts. Ambient media can produce mass attention in centralized locations, or directly interact with consumers during normal every day activities.

The features of AM are:

– brightness - not necessarily beautiful, but an event must pay attention on itself in 90% cases;

– a report must be memorized - users must memorize an external not attribute, but that information which all was undertaken for the sake of;

– a report must be indissolubly related to the share and not lost at retelling.

Ambient marketing is in your business interest and most certainly worth considering in today's highly competitive business climate because it takes your message to an ambient customer base in an ambient form.

Examples of AM are messages : at the mail boxes or post boxes, public telephones and telephone booths, an escalator steps, lifts and elevators, on the backs of car park receipts, on hanging straps in railway carriages and etc (the picture 1). It also includes such techniques as projecting huge images on the sides of buildings, or slogans on the gas bags of hot air balloons.

Pictures 1 – The example of Ambient marketing

The reason why ambient marketing is so successful in developing brand image is because it reaches consumers in their natural environment most likely to influence their buying decisions at a time and place where it is least expected. At the same time it remains unobtrusive. Ambient media tends to successfully micro-target potential customers at precisely timed moments.

DIE WIRTSCHAFTLICHE ENTWICKLUNG OSTDEUTSCHLANDS IM INTERNATIONALEN VERGLEICH

Tereschtschenko N., *Studentin Gr.E-44,*
Saizewa I., *Leiterin*

Das Thema des Artikels – die wirtschaftliche Entwicklung der neuen Länder im internationalen Vergleich. Im Artikel handelt es sich um der Forschung der Attraktivität der Lage Ostdeutschlands. Der Autor betont die Attraktivität der Unterbringung Ostdeutschlands für die Investoren des Kapitals im internationalen Vergleich. Im Artikel wird betrachtet, wie die Politik dazu beitragen kann, dass die bekannten Kräfte entwickelten sich und entfernten die identifizierten Defizits.

Ausgehend von der Inventur der Wirtschafts- und strukturellen Kräfte und der Schwächen der ostdeutschen Wirtschaft, was im Rahmen

der Forschung entwickelt wurde, man muss wie die Qualität der Lage Ostdeutschlands im Vergleich zu gewählt mitteleuropäisch und osteuropäisch, als auch ostasiatisch bewerten. Als Referenzländer wurden dafür die mittel- und osteuropäischen Länder Bulgarien, Polen, Rumänien, Slowakei, Slowenien, Tschechien, Ungarn, Russland und die Ukraine sowie aus Südostasien die Staaten China, Japan und Vietnam herangezogen.

Für die Betrachtung der Attraktivität die Lage der Länder wählt man solche Faktoren:

- Politische Stabilität, Korruption, Persönliche Sicherheit,
- Verkehrs- und Kommunikationsinfrastruktur,
- Kapitalkosten/öffentliche Förderung,
- Lohn- und Preisflexibilität, Regulierung des Arbeitsmarktes,
- Steuerlast, lokale Kaufkraft,
- Wechselkursvolatilität,
- Arbeitskosten/Humankapital, Forschungslandschaft.

Ostdeutschland bei die insgesamt 8 Faktoren der Lage (Korruption, Verkehrs- und Kommunikationsinfrastruktur, Kapitalkosten/uffentliche Furderung, Lohn- und Preisflexibilität, lokale Kaufkraft, Wechselkursvolatilität, Forschungslandschaft und persunliche Sicherheit)bekommen die gute oder sehr gute Einschätzung.

Eine negative Bewertung erhält Ostdeutschland lediglich bei den Faktoren Arbeitsmarktregulierung und Arbeitskosten. Dabei ist zu berücksichtigen, dass verlässliche Arbeitnehmerschutzrechte häufig auch mit einer hohen Leistungsbereitschaft der Arbeitnehmer korrespondieren. Wichtigster Wachstumsträger in der ostdeutschen Wirtschaft ist nach wie vor das verarbeitende Gewerbe. Der Zuwachs der Bruttowertschöpfung belief sich hier im Jahr 2007 auf 10%. Dies war mehr als doppelt so hoch wie in den alten Bundesländern mit 4,9%. In den Vorjahren war das industrielle Wachstum in den neuen Ländern deutlich höher als in Westdeutschland. Die resultiert aus der Gestiegenen Wettbewerbsfähigkeit des ostdeutschen verarbeitenden Gewerbes, nicht zuletzt wegen moderater Lohnsteigerungen bei kräftig gestiegener Produktivität.

Insgesamt, die Lage Ostdeutschlands kann man attraktiv für die äusserlichen Investitionen halten.

WHY AROMA MARKETING?

Anastasiya Shymarina, *student MK-42,*
O.R. Gladchenko, *EL adviser*

One of the latest trends in the marketing is the Aroma marketing. It is a series of events, using the potential effect of aromas to the human behaviour, stimulating the customers to purchase goods and services.

Aromas that float in the air influence the decision of the customer in favour have one or another product, thus improving the volume of sales. It is proved scientifically that the information perceived with organs of smell influences directly and immediately the decision-making.

The experience of the Aroma marketing over the last years in many countries has proved its efficiency, especially in combination with the existing sales technologies.

And still, why the Aroma marketing?

We must not underestimate the role of the smell in the perception of information from the surrounding environment. However, we see that the smell is not so widely used for the publicity purposes as is the sight and the hearing since it cannot be activated through the mass media. Therefore the Aroma marketing is something new and unusual.

Actual possibilities of the Aroma marketing application in the business are endless.

The stores, ranging from ready to wear to supermarkets and furniture and even electronics stores, use new ways of customer seduction, having recourse to aromas. The bakeries located in the supermarkets increase the volume of sales, saturating the air with the aroma of freshly baked bread and enhancing impulsive purchases.

Supermarkets with Channel Nr. 5 saturate the air at the escalators, leading to modern ready to wear stores conceived for a well-off clientele.

Furniture traders use pine and conifer tree aromas. The stores of undergarments and wedding accessories use sensual and exciting aromas to stimulate feelings of comfort and generosity.

Travel agencies offering trips to warm seas and sunny beaches saturate the atmosphere of their offices with aromas of tropical fruit or sea breeze, thus impressing the customers and stimulating their.

For instance the fuel service company TOTAL with numerous fuel stations in many countries aromatise the fuel with the aroma of vanilla. ESSO aromatises diesel fuel with strawberry smell.

The banks with the help of aromas in the automated banking centres create the ambiance of peace and wellness, and even aromatise the check books.

The maritime, air and railway transport, and even the public transport make no exception. The Paris subway, being the first in this area, for several years already has been using the Aroma technologies to create a high quality customer service and spraying the aromas in the subway trains and stations. Two goals are reached simultaneously: unpleasant odours are neutralized and a favourable ambiance eliminating the stress during the rush hours is created.

Aroma is used in the interior design of buildings, stores, public places, conference halls, hotels, movie theatres and other places, enhancing their style with an aroma corresponding to the design and image. Different aromas may be used in spaces conceived for different usage.

The aroma of lilies may reign in the hall, the smell of ripe grapes in the other rooms, the aroma of Amazonia in the lavatory. Thus three different tasks are solved simultaneously: the unpleasant odours are neutralized, the fine interior is accentuated and an auspicious environment for customers and visitors created.

The Aroma marketing along with the price, quality and the brand name becomes a means of increasing of the competitiveness of the enterprise.

NANOTECHNOLOGY AND MEDICINE

Ravluk L.U., *DM-41,*

Nanotechnology medicine is the science and technology of diagnosing, treating and preventing disease and traumatic injury, of relieving pain, and of preserving and improving human health, using molecular tools and molecular knowledge of the human body.

Nanotechnology medicine means the employment of molecular machine systems to address medical problems, using molecular knowledge to maintain and improve human health at the molecular scale.

Nanotechnology medicine is also the comprehensive monitoring, control, construction, repair, defense, and improvement of all human biological systems, working from the molecular level, using engineered nanodevices and nanostructures.

Scientists are working now to create novel nanostructures that serve as new kinds of drugs for treating cancer, Parkinson's and cardiovascular disease; to engineer nanomaterials for use as artificial tissues that would replace diseased kidneys and livers, and even repair nerve damage; and to integrate nanodevices with the nervous system to create implants that restore vision and hearing, and build new prosthetic limbs.

In addition to medical treatments, the report examines several compelling opportunities for significant, widespread benefits from the technology, including nanotechnology's ability to address the energy crisis and demand for clean water.

Scientific understanding through the millennia has come from studying things first as they present themselves in the natural world and then from studying and understanding their subcomponents at ever smaller scales and finer levels of detail. In physics, this progression of scientific discovery eventually led to the concept of the atom, which was long thought to represent the smallest indivisible particle in nature until the discovery of subatomic particles: electrons, protons, and neutrons. Now we know that these subatomic particles are also further divisible into muons, mesons, quarks, and perhaps finally strings.

Having arrived at a "molecular plateau," the question logically arises about where bioscience will go next. Two directions of study that both rely heavily on the findings in molecular biology are emerging as particularly interesting new opportunities.

First, the emerging discipline of "systems biology" will exploit knowledge of molecular structure to build better understanding of cell function and organ function from the "bottom up" and from the "top down." That is, physiologic processes that were studied historically at progressively smaller scales will now be studied again by starting with their smallest components. In some sense, this represents a "U-turn" in scientific inquiry. It is strongly anticipated that by using information garnered at the molecular level, scientists will achieve improved understanding of function at larger scales than was previously possible. Second, the emerging discipline of "nanotechnology" is another logical outlet for biomedical knowledge at a molecular scale.

While medical science is undoubtedly still years away from this futuristic vision, the momentum necessary to fuel progress in nanotechnology is definitely present.

Zolotova S.G., adviser

ADVERTISEMENT

Svetlana Chernikh, *student MK-42*,
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Advertising is a form of communication that typically attempts to persuade potential customers to purchase or to consume more of a particular brand of product or service. Many advertisements are designed to generate increased consumption of those products and services through the creation and reinforcement of "brand image" and "brand loyalty". For these purposes, advertisements sometimes embed their persuasive message with factual information. Every major medium is used to deliver these messages, including television, radio, cinema, magazines, newspapers, video games, the Internet and billboards. Advertising is often placed by an advertising agency on behalf of a company or other organization

Advertisements are seen on the seats of shopping carts, on the walls of an airport walkway, on the sides of buses, and are heard in telephone hold messages and in-store public address systems. Advertisements are often placed anywhere an audience can easily or frequently access visual, audio and printed information.

Organizations that frequently spend large sums of money on advertising that sells what is not, strictly speaking, a product or service include political parties, interest groups, religious organizations, and military recruiters. Non-profit organizations are not typical advertising clients.

Advertising spending has increased dramatically in recent years. In 2006, spending on advertising has been estimated at $155 billion in the United States and $385 billion worldwide, and the latter to exceed $500 billion by 2010.

While advertising can be seen as necessary for economic growth, it is not without social costs. Unsolicited Commercial Email and other forms of spam have become so prevalent as to have become a major nuisance to users of these services.

Types of advertising:

Media

Commercial advertising media can include wall paintings, billboards, street furniture components, printed flyers and rack cards, radio, cinema and television ads, web banners, mobile telephone screens, shopping carts,

web popups, skywriting, bus stop benches, human directional, magazines, newspapers, town criers, sides of buses or airplanes ("logojets"), in-flight advertisements on seatback tray tables or overhead storage bins, taxicab doors, roof mounts and passenger screens, musical stage shows, subway platforms and trains, elastic bands on disposable diapers, stickers on apples in supermarkets, shopping cart handles, the opening section of streaming audio and video, posters, and the backs of event tickets and supermarket receipts. Any place an "identified" sponsor pays to deliver their message through a medium is advertising.

Covert advertising

Covert advertising is when a product or brand is embedded in entertainment and media. For example, in a film, the main character can use an item or other of a definite brand. For example of advertising in film is in I, Robot, where main character played by Will Smith mentions his Converse shoes several times, calling them "classics," because the film is set far in the future. I, Robot and Spaceballs also showcase futuristic cars with the Audi and Mercedes-Benz logos clearly displayed on the front of the vehicles.

New media and advertising approaches

Other media are overtaking television because of a shift towards consumer's usage of the internet as well as devices such as TiVo.

Advertising on the World Wide Web is a recent phenomenon. Prices of Web-based advertising space are dependent on the "relevance" of the surrounding web content and the traffic that the website receives.

E-mail advertising is another recent phenomenon. Unsolicited bulk E-mail advertising is known as "spam".

As the mobile phone became a new mass media in 1998 when the first paid downloadable content appeared on mobile phones in Finland, it was only a matter of time until mobile advertising followed, also first launched in Finland in 2000. By 2007 the value of mobile advertising had reached 2.2 billion dollars.

A new form of advertising that is growing rapidly is Social network advertising. It is Online Advertising with a focus on social networking sites. This is a relatively immature market, but it has shown a lot of promise as advertisers are able to take advantage of the demographic information the user has provided to the social networking site.

BODY LANGUAGE IN BUSINESS

Golysheva IEvgeniia, *student MK-42*,
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An interesting method for selling clients on you, your company and your services is to use nonverbal communication, subtle messages conveyed without words. These include posture, facial expressions, gestures, mannerisms and your appearance. People buy based on their senses, and everything that you can do to positively affect their senses can and will affect your ability to sell to them.

Psychologists claim that the impact you make on others depends on what you say (7%), how you say it (38%), and by your body language (55%). Since how you sound also conveys a message, 93% of emotion is communicated without actual words.

It's often not what you say that influences others; it's what you don't say. The signals that you send nonverbally suggest attitude, understanding, empathy and ethics.

The human body can produce over 700,000 unique movements. These movements have been partitioned into about 60 discrete and symbolic signals and around 60 gestures. Knowing just some of these can help you communicate better.

Take the handshake for example. A handshake can be soft, firm, brief, long, or even painful. The way you shake hands provides clues to your personality. Aggressive people have firm handshakes. People with low self esteem often have a limp handshake. Politicians typically shake your hand with their other hand covering the shake or holding your elbow. Domineering men often squeeze the hand of women during a greeting. The clever woman moves her index and little finger in toward her palm preventing a crushing handshake. This negates his dominant act and keeps her in equal control. So adopt a handshake that is firm, yet not crushing. Convey confidence and professionalism, not dominance.

Posture is another aspect of body language. A slouch can suggest lack of interest or enthusiasm. Standing straight with your weight balanced on each foot makes you look confident and relaxed. Try to stand or sit up straight; don't slouch.

Open hands with your palms visible should be accompanied by an open posture and a sincere facial expression. Your arms should be unfolded, not crossed. And your eyes should be focused on your client.

Darting eyes suggest deceit. Looking left as you speak can suggest truth. Looking right when you speak may transmit dishonesty. Looking down when speaking conveys low self esteem.

The best advice to women is to go with your feelings. Women have an innate ability to process messages simultaneously in both their right and left brain. They can sense much about others. A woman can "tell" if you aren't sincere. They can "feel" intent. Unfortunately, some women don't follow their instincts, and this has gotten them in trouble. Your "sixth sense" is the part of you that tunes in on nonverbal messages. Learn how to read and use these messages in business, and you'll substantially increase your probability of sales success.

Visualize your customer wearing a traffic signal. Positive nonverbal messages signal " green" to go ahead and approach a close on the sale. If the client's body language changes from positive to defensive or non–believing, the signal is "yellow" and caution must be observed. Slow down and advance carefully. Try to get them to exhibit openness. A defiant, arms and legs "double-cross" with a scowl on their face is a definite "red" signal. You cannot close a sales unless you have a "green" light. If you can get your prospect to mirror your movements they'll be in synch with your presentation and receptive to the sale.

If you are still unable to close, thank the person for listening. Approach sales like renting an apartment. It typically takes five showings before a rental is achieved. Likewise, it can take up to five inquiries before you close on a sale. If they're number four, the next prospect should be the one that buys. And the person who decided not to buy today, will consider you again if they are left with a positive impression of you and your company. Impress them with your professionalism and integrity. Your attitude can affect future sales. Take "turn downs" in stride.

Use your body in the selling process and keep upbeat. If you believe in your services and the quality of your work, others will too. A positive, honest message conveyed by your nonverbal communication will generate far more opportunities than you think. Nonverbal messages can move prospects from suspicion to openness and receptiveness. They can sway "fence –sitters" into buying. You can also use body language to calm hostile or dissatisfied clients.

Learn more about body language and nonverbal communication. Then look in the mirror. Watch how you appear when speaking on the phone or talking with someone else. Look for the signals of openness. Watch customers and follow their cues. Smile from within and without. They'll sense this and be receptive.

ROLE OF MARKETING IN BUSINESS

E. Grymailo, *student MK – 42,*
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What exactly is marketing and why is it important? Simply stated, marketing is everything you do to place your product or service in the hands of potential customers. It includes diverse disciplines like sales, public relations, pricing, packaging, and distribution.

Marketing is your strategy for allocating resources (time and money) in order to achieve your objectives (a fair profit for supplying a good product or service).

Yet the most brilliant strategy won't help you earn a profit or achieve your wildest dreams if it isn't built around your potential customers. Some entrepreneur may think marketing is something you do later -- after the product is developed, manufactured, or ready to sell.

Though marketing doesn't begin with a great idea or a unique product. It begins with customers -- those people who want or need your product and will actually buy it. People have their own unique perceptions of the world based on their belief system. The most innovative ideas, the greatest products, or a superior service succeed only when you market within the context of people's perceptions. People don't just "buy" a product. They "buy" the concept of what that product will do for them, or help them do for themselves.

There are many different definitions of marketing. Consider some of the following alternative definitions:

"The all-embracing function that links the business with customer needs and wants in order to get the right product to the right place at the right time"

"The achievement of corporate goals through meeting and exceeding customer needs better than the competition"

"The management process that identifies, anticipates and supplies customer requirements efficiently and profitably"

"Marketing may be defined as a set of human activities directed at facilitating and consummating exchanges"

Marketing is perhaps the most important activity in a business because it has a direct effect on profitability and sales.

FINANCIAL MANAGEMENT: SHOULD WE POLLUTE OR NOT?

Irina Momotenko, *E-44*

The financial management of a company, including financial and accounting mles can have a major impact on corporate performance in terms of growth and survival and of pollution and environmental impact. Environmental management can and does produce financial benefits, but these may only occur in the longer term. The pressure of meeting quarterly profit targets can jeopardize future growth and the ultimate survival of an enterprise. It can also jeopardize the future prospects of the enterprise in taking proper account of its environmental responsibilities.In summary, prevention is better than cure and early investment in clean technology can avoid later environmental problems and enhance profitable performance.

A financial manager could agree with this last statement but would certainly like to calculate the degree to which pollution prevention pays.

That may not be so difficult in the case of investing in a new furnace which consumes 20 per cent less energy than the existing one. It may be rather more difficult, however, in the case of a new product that causes a complete change to the product mix.

Due to the dynamics of a business, calculating whether pollution prevention pays is not an easy task. After the strategic reorientation of an enterprise to Greener products it is normally impossible to calculate what the results would have been if the change had not taken place. Better sales figures could be attributed to the new strategy without an unequivocal cause-effect relation.

As environmental regulations are undergoing dynamic development in many countries, an investment today will have to rely on a number of assumptions concerning, for example, pollution charges and environmental taxes or emission rights which will affect cost-benefit calculations. Financing costs (interest rates, credit lines) is another factor which determines whether pollution prevention pays. As a positive development, some banks provide more attractive financing conditions for Green investments compared with others. Legal provisions may also grant shorter depreciation periods for environment-related investments.

Remembering that in private enterprise the objective of financial management is to maximize returns on capital invested, a short-term view of finance puts particular emphasis on the validity of such tools as discounted cash flow. Discounted cash flow has many valid applications,

but, used nonselectively, it will always recommend minimizing expenditure in the short term, even though greater expenditure might then be necessary in the longer term. The long-term expenses will be discounted away, while the short-term expenditures will be predominant. There will always be an argument against spending money now to save money in e future on water, energy, raw materials and pollution control. The choice of scount rate is fundamental to calculations of present value of investment, and it is rare for the corporate discount rate to be the same as the social discount rate. tyn;i current and short-term returns are valued highly, society may have a longer-term perspective, valuing future returns more highly than corporations. The core of calculating returns on environmental investments is reconciling conflicting discount rates.

Controlling is perhaps the most effective function in monitoring and enforcing environmental targets in the enterprise in terms of input-output or cost-benefit indicators. The task of environmental controlling is to base its actions on a set of indicators relevant to the environment.

Financial and accounting managers should be made aware of the external community and economic effects of pollution and environmental degradation, and to consider the implications for national economic growth as well as for the growth of their enterprise and the specific financial implications of waste.

Data on environmental economics in general, and the internalization of environmental costs, together with information on damage costs, cost benefit analysis and the result of cost benefit studies, will show how the total benefits of a clean environment outweigh the costs of achieving that clean environment. A primary aim would be to establish a closer working relationship between financial managers and accountants, on the one hand, and project and environmental engineers within the corporation, on the other.

AIR QUALITY MANAGEMENT WITHIN THE INTERNATIONAL ECONOMIC RELATIONS FRAMEWORK

Marekha I.S., *E-44*,
Gladchenko O.R., *ELA*

One of the reasons of overall environmental pollution is considered to be the imperfection of its quality management system. Thus, the urgent task of today is a search for improving instruments of natural resources management mechanisms, atmospheric air in particular.

Under the conditions of transnational economic relations development, the issues of transboundary pollutants movement become an object of global scientific discussions.

An important event, that had a significant influence on international cooperation development in the sphere of transboundary pollution prevention, there was Stockholm Conference on environmental protection, which was held under the aegis of United Nations Organization. Later, the adoption of Long-Run Transboundary Air Pollution (LRTAP) in 1979 stimulated further cooperation development in the sphere of improvement of air quality management mechanisms within the European area.

The practical realization of LRTAP requirements at cross-country level is related to finding the solutions on complicated interdisciplinary problems, which are as follows: working out the models of transboundary pollutants movement and calculation them on the basis of emission balances «country on a country»; development, concordance and adoption of adequate and effective economic mechanism of the concerted scenarios.

Realization of LRTAP needs scientific systems approach to the solution of such extremely important theoretical tasks, as: formalization and investigation of atmospheric air utility function; aggregation of individual indifference curves within the frames of «air quality - consumption» system; formalization of model for social optimum of air quality and determination of its «shadow» price; research of a category «price of air quality» and its determinative factors; substantiation of effective and adequate ecological and economic air quality management instruments at a state level.

The important theoretical background before improvement air quality management mechanism there is a choice and substantiation of adequate ecological and economic instruments.

Ecological adequacy is usually interpreted as: 1) fitness of ecological and economic instruments for emission standards realization in a certain region; 2) ability to provide of ecological and economic instruments the target level of emission.

Within the system of international economic relations, to which, surely, Long-Run Transboundary Air Pollution belongs, the requirement of adequacy of ecological and economic instruments has substantially more wide contents comparing to the economic relations at individual country level. In international relations the ability to provide of ecological and economic instruments the target level of emission is the obligatory, but not sufficient condition of adequacy. Ecological and economic instruments have to, from one side, answer the principles of international economic and ecological law, and from other - not to object, by its essence, national legal norms. Not almost all of ecological and economic instruments, which are used at national level, can be adapted for the solution of international air quality management tasks.

The signs of adequacy in relation to the tasks of Long-Run Transboundary Air Pollution are owned by those ecological and economic instruments that are built on the principle of "negotiations" and system of controllable trading in emission certificates. However, the first mentioned instrument is undesirable because of substantial failings. As prior the controllable trading in emission certificates is offered.

Theoretically proved, that the price of air quality only depends on the level of income of economic transactor. If the statement given consider to be true, the possible price of emission certificates acquires substantial changes. Then, the decrease in income for the buyer of emission certificates narrows the range of efficiency of operation. For a salesman, opposite, the increase in income extends this range. Thus, the change in income level influences substantially on the view of marginal price of emission certificates.

The analysis showed that one of basic theoretical and methodological problems of forming cross-country relations mechanism in the sphere of Long-Run Transboundary Air Pollution implementation, which needs to be solved.

ADVERTISING AS A CAREER

Eugenia Shvachko, *student Mk-42,*
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Advertising is any paid form of nonpersonal presentation and promotion of products, services, or ideas by an identifiable individual or organization. It flourishes mainly in free-market, profit-oriented countries. It is one of the most important factors in accelerating the distribution of products and helping to raise the standard of living. Advertising cannot turn a poor product or service into a good one, but what it can do – and does – is to create an awareness about both old and new products and services. So the three main objectives of advertising are: (1) to produce knowledge about the product or service; (2) to create preference for it; and (3) to stimulate thought and action about it.

Advertisers. Most companies that advertise extensively have advertising managers, or brand managers. Since these people help to coordinate the company's advertising program with its sales program and with the company's advertising agency, they must have aptitudes for both advertising and management.

Media. All media uses salesmen to sell advertising space or broadcasting time. Media salesmen must be knowledgeable about business and skilled in salesmanship.

Advertising Agencies. A variety of specialists are required an advertising agency because it develops advertising programs, prepares advertisements, and places them in the media. Those interested in advertising research and fact gathering should know both statistics and consumer psychology. Competence in media planning and evaluation is essential for a career in media. The media buyer must identify and determine the most effective media in which to expose the advertising messages, and purchase space or time in these media.

Copywriting requires creative writing skills and the ability to visualize ideas. The copywriter is a developer of advertising ideas and messages

Layout, typography, and visualization are essential for those in art, both for print advertising and for television commercials. Print-production specialists must know about printing, photoengraving, and typography.

Supplies and Special Services.

Positions similar to some of those already described are offered by the following services that support advertising: marketing research organizations, television and radio producers, film producers, art studios, photographers, producers of display materials, typographers, photoengravers, and product and package designers.

NANOTECHNOLOGIES IN SPACE

Altyntsev Ievgenii, *gr.DM-41,*
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Nanotechnologies are very perspective area for researchers in any country. They can dramatically change all our future life in better way. Nearest years will be most important for all mankind, because nanotech will be input into all areas of peoples life. It will make our life more easier, safe, interesting. Every of us will have more opportunities for making his dreams and hopes real. But the first area which will use and improve the nanotechnologies will be space. This technologies of the future can invert all our imaging about our planet, about solar system, they can give us a possibility to investigate and colonize the nearest planets and make the space around our planet more accessible for any of us.

There are some examples of using nano-products in different future space projects.

Nanotechnology Fueling Rockets.

The space elevator is a device that will dramatically reduce the cost of sending cargo into orbit. Like any elevator the space elevator will have a cable, however it will need to be stronger than any existing cable. Roughly 90,000 kilometers long, the space elevator cable will probably be made from carbon nanotubes. It will be anchored at the top to an asteroid (called the counterweight) in orbit around the earth, and at the bottom by an anchor station, perhaps floating in the ocean similar to a drilling rig.

This device would eliminate the need to use rocket fuel, and dramatically reduce the cost of sending cargo into orbit (about 95% of the weight of the space shuttle at blast off is rocket fuel). Instead, solar cells on space elevator cars would convert light from a laser beam mounted on the anchor station into electricity to drive the car up or down the cable like a vertical monorail.

Setting Sail in Space.

Once you have people and cargo in orbit nanotechnology can be used to reduce the rocket fuel needed to travel to the moon or planets. Just as sailboats are propelled by wind while on the seas, spaceships can be propelled by light from the sun reflected off of solar sails while travelling through space. That means that the only fuel required would be during liftoff, docking, or landing.

However solar sails will have to be very large, spreading for kilometers, and very thin to keep their weight low. That's where nanotechnology enters the picture. Researchers at the University of Texas have used carbon nanotubes to make thin, lightweight sheets that may replace the polymer sheets that have

been experimented with to date. While there are details still to be worked out (such as how to unfurl a thin, fragile sail in orbit, along with the continual struggle to reduce weight) this method has great potential for reducing the amount of fuel needed to travel between planets.

Building Better Engines.

For those times when spacecraft need engines there's a type of engine called ion thrusters that uses less fuel than chemical rockets. Unlike chemical rockets, which push a spaceship by burning fuel and expelling the resulting hot gasses ion thrusters use electricity gathered from solar cells to generate electric fields that push ions away from the spaceship.

How Nanotechnology Can Improve Spaceships.

NASA has included a concept called self healing spaceships in their 2030 nanotechnology roadmap. Just as your skin heals a small puncture wound NASA is looking to nanotechnology to provide a way for the skin and structural components of a spaceship to seal up damage from meteors that strike the spaceship.

NASA is also planning to use nanosensors to improve the monitoring of spaceship systems such as life support. The ability of nanosensors to quickly report changed levels of trace chemicals in air could be very useful to keeping life support systems working correctly in a spaceship's closed system. A longer term proposal is to place nanosensors throughout the skin of a spacecraft to act like nerve endings in your skin. When a particular region of the spacecraft skin becomes is stressed or damaged, the main computer is alerted to take action and alter the spaceship's course, just as you would jerk your hand away from a hot stove.

What the Well Dressed Astronaut Will Wear.

Occasionally astronauts have to leave their spaceships, so researchers at Northeastern University and Rutgers University propose that we protect the astronauts by including layers of bio-nano robots in their spacesuits. The outer layer of bio-nano robots would respond to damages to the spacesuit, for example to seal up punctures. An inner layer of bio-nano robots could respond if the astronaut was in trouble, for example by providing drugs in a medical emergency.

The term bio-nano robots comes As we can see, there are a lot of projects which will change our possibilities of investigating the space. But not oly space, all areas of our life can be changed with such technologies, and they will be changed in nearest future.

ECONOMIC DETERMINANTS OF SUSTAINABLE DEVELOPMENT MANAGEMENT

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In today's business environment there is increasing concern for the need to sustainable development which adequately responses to the demands of economic growth.

The rise of scientific scrutiny to sustainable development management is reflected in a great amount of theories and hypotheses which cover a wide range of factors and techniques for sustainable development. The way we see this problem is derived from our intention to reveal economic determinants of sustainable development.

Having analyzed a set of concepts dealing with sustainable development and taken this knowledge into consideration, we are ready to admit that one of the valuable economic techniques - for sustainable development implementation is capital structure optimization within separate production enterprise. Hence, we consider optimal capital structure to be one of substantial economic determinants towards sustainable development management.

The general objective of this study is to explorer a set of factors influencing capital structure in industrial enterprises of Ukraine in the framework of sustainable development.

This article develops an empirical approach to the problem dealing with optimization of a firm's capital structure. The main idea of the approach is straightforward. As branch specialties impact possible enterprise's capital structure we estimate dependencies of debt/equity ratio on the main influencing factors which include the characteristics of production activity (Table 1). Strong correlations should be taken into account if optimal capital structure strategy is adopted.

The findings from this analysis show that the production indices of the manufacturing companies in Ukraine are significantly related to their capital structure. Thus, they have to orient primarily on their own capital in order to avoid bankruptcy. The observations obtained were being tested on one of the Ukrainian manufacturing companies. Unfortunately, studies have found distortions in capital structure of the company observed via over normative gearing. In this relation, its development was far from sustainable one, running a failure risk at a rate 0.75-1.00.

Table 1. Economic and Statistical Correlation Analysis between Production Indices and Capital Structure Parameters (Debt Ratio)

№	Production Indices	R^2 (correlation)	Economic Essence
1.	**Cost of production capital assets**	-0.9298	Highly capital-intensive production limits access to credits
2.	**Capital assets investments**	-0.9286	Renovation, as well as modernization and reconstruction, is financed mainly through own corporate capital, retained earnings in particular
3.	**Production sales**	-0.9291	Additional capital needs under favorable production conditions (increase in production sales) can be met with the help of high capitalization of earnings
4.	**Profit**	-0.9694	
5.	**Bankruptcy**	0.9819	Smashup of a business is determined by the overwhelming loan share in the structure of total capital, advanced to economic activity

Taking the results obtained together, such criterion for capital structure optimization as *minimizing the financial risks* is recommended to be used. In the way proposed the manufacturing companies will be able to finance their assets without serious financial losses. These research outputs will significantly facilitate production sector in attaining financial sustainability through determining an optimal capital structure that is going to maintain its sustainable development as a whole. We believe that it can be used in practical capital structure decisions although specific calculations must be fulfilled for each firm that needs such decision.

iPOD EVOLUTION

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iPod is a popular brand of portable media players designed and marketed by Apple Inc. and launched on October 23, 2001. As of 2008, the product line-up includes the hard drive-based iPod Classic, the touchscreen iPod Touch, the video-capable iPod Nano, the screenless iPod Shuffle and the iPhone. Former products include the compact iPod Mini and the spin-off iPod Photo. iPod Classic models store media on an internal hard drive, while all other models use flash memory to enable their smaller size. As with many other digital music players, iPods, excluding the iPod Touch, can also serve as external data storage devices. Storage capacity varies by model.

iPod came from Apple's "digital hub" category, when the company began creating software for the growing market of personal digital devices. Digital cameras, camcorders and organizers had well-established mainstream markets, but the company found existing digital music players "big and clunky or small and useless" with user interfaces that were "unbelievably awful," so Apple decided to develop its own. The product was developed in less than one year and unveiled on 23 October 2001. Jobs announced it as a Mac-compatible product with a 5 GB hard drive that put "1,000 songs in your pocket."

The name *iPod* was proposed by Vinnie Chieco, a freelance copywriter, who (with others) was called by Apple to figure out how to introduce the new player to the public. After Chieco saw a prototype, he thought of the movie *2001: A Space Odyssey* and the phrase "Open the pod bay door, Hal!", which refers to the white EVA Pods of the Discovery One spaceship. Apple researched the trademark and found that it was already in use. Joseph N. Grasso of New Jersey had originally listed an "iPod" trademark with the U.S. Patent and Trademark Office in July 2000 for Internet kiosks.

The iPod line has been upgraded many times, and each significant revision is called a "generation". Only the most recent (highest numbered) generation and refurbished units of previous generations of the iPod line are available from Apple for each model (Classic, Nano, Shuffle, Touch).

MOLECULAR MANUFACTURING

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What is Molecular Manufacturing?

If you're a Star Trek fan, you remember the replicator, a device that could produce anything from a space age guitar to a cup of Earl Grey tea. Your favorite character just programmed the replicator, and whatever he or she wanted appeared.

Researchers are working on developing a method called molecular manufacturing that may someday make the Star Trek replicator a reality. The gadget these folks envision is called a molecular fabricator; this device would use tiny manipulators to position atoms and molecules to build an object as complex as a desktop computer. As shown in this video, researchers believe that raw materials can be used to reproduce almost any inanimate object using this method.

By building an object atom by atom or molecule by molecule, molecular manufacturing, also called molecular nanotechnology, can produce new materials with improved performance over existing materials. For example, an airplane strut must be very strong, but also lightweight. A molecular fabricator could build the strut atom by atom out of carbon, making a lightweight material that is stronger than a diamond. Remember that a diamond is merely a lattice of carbon atoms held together by bonds between the atoms. By placing carbon atoms, one after the other, in the shape of the strut, such a fabricator could create a diamond-like material that is lightweight and stronger than any metal.

Researchers believe that molecular manufacturing also has the potential to revolutionize medicine. For example, sensors that are smaller than blood cells could be produced inexpensively. When released into a patient's blood stream in large numbers, these sensors could provide very accurate diagnoses. Nanorobots could be built using molecular manufacturing to perform surgical procedures in a more precise way. By working at the cellular level, such nanorobots could prevent much of the damage caused by the comparatively clumsy scalpel.

Molecular fabricators may be available to anybody, anywhere in about twenty years or so. When fabricators are available, any item whose design has been programmed into them can be produced cheaply and in large quantities. This could significantly improve living conditions in regions that do not have easy access to manufactured goods. For example, water filters could be produced to help in regions with contaminated water supplies and solar cells could make electricity available in the remotest jungle or desert.

However, molecular manufacturing could also turn our world's economies on their heads. Many manufacturing industries may be made obsolete and society could be transformed forever. Molecular manufacturing could spawn another industrial revolution that completely changes the way we do business. At the same

time, such advances could make it easy and cheap to produce powerful weapons. The ability to produce this kind of drastic change is the reason that nanotechnology is often referred to as a "disruptive" technology.

Who's Working on Molecular Manufacturing?

Though researchers are still at the stage where a lot of background work needs to be done, here are some organizations that are leading the way.

Organizations Providing the Infrastructure for Molecular Manufacturing

The Foresight Institute has developed a roadmap to guide researchers working toward molecular manufacturing.

The Nanofactory Collaboration's long term goal is to design, and ultimately to build, a working nanofactory. Their initial goal is the experimental demonstration of controlled diamond mechanosysthesis, i.e. using a mechanical tooltip to place individual carbon atoms in a structure.

The Center for Responsible Nanotechnology sees it as their mission to: "1) raise awareness of the benefits, the dangers, and the possibilities for responsible use of advanced nanotechnology; 2) expedite a thorough examination of the environmental, humanitarian, economic, military, political, social, medical, and ethical implications of molecular manufacturing; and 3) assist in the creation and implementation of wise, comprehensive, and balanced plans for responsible worldwide use of this transformative technology."

Nanorex develops 3-D modeling software that simulates nano-scale structures. Nanorex is planting the seed of MM in our schools by providing their modeling software free of charge to 'qualified' high schools and universities.

Organizations Working on Development of Molecular Fabricators

Zyvex was founded with purpose of becoming the leading supplier of tools and services to enable molecular manufacturing. They have developed nanomanipulators, MEMS design software and a process to functionalize carbon nanotubes. Zyvex is working on several projects, such as automated assembly of micro-scale components, that will add knowledge useful in working toward the long term goal of molecular manufacturing.

MIT's Center for Bits and Atoms may be the 500 pound technology gorilla in the MM jungle. One of this center's key goals is the development of molecular fabricators.

MOLECULAR NANOTECHNOLOGY

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Nanotechnology, which is sometimes shortened to "Nanotech", refers to a field whose theme is the control of matter on an atomic and molecular scale. Generally nanotechnology deals with structures of the size 100 nanometers or smaller, and involves developing materials or devices within that size.

Nanotechnology is extremely diverse, ranging from novel extensions of conventional device physics, to completely new approaches based upon molecular self-assembly, to developing new materials with dimensions on the nanoscale, even to speculation on whether we can directly control matter on the atomic scale.

There has been much debate on the future of implications of nanotechnology. Nanotechnology has the potential to create many new materials and devices with wide-ranging applications, such as in medicine, electronics, and energy production. On the other hand, nanotechnology raises many of the same issues as with any introduction of new technology, including concerns about the toxicity and environmental impact of nanomaterials, and their potential effects on global economics, as well as speculation about various doomsday scenarios. These concerns have led to a debate among advocacy groups and governments on whether special regulation of nanotechnology is warranted.

Molecular nanotechnology, sometimes called molecular manufacturing, is a term given to the concept of engineered nanosystems (nanoscale machines) operating on the molecular scale. It is especially associated with the concept of a molecular assembler, a machine that can produce a desired structure or device atom-by-atom using the principles of mechanosynthesis. Manufacturing in the context of productive nanosystems is not related to, and should be clearly distinguished from, the conventional technologies used to manufacture nanomaterials such as carbon nanotubes and nanoparticles.

When the term "nanotechnology" was independently coined and popularized by Eric Drexler (who at the time was unaware of an earlier usage by Norio Taniguchi) it referred to a future manufacturing technology based on molecular machine systems. The premise was that molecular scale biological analogies of traditional machine components demonstrated

molecular machines were possible: by the countless examples found in biology, it is known that sophisticated, stochastically optimised biological machines can be produced.

It is hoped that developments in nanotechnology will make possible their construction by some other means, perhaps using biomimetic principles. However, Drexler and other researchers[8] have proposed that advanced nanotechnology, although perhaps initially implemented by biomimetic means, ultimately could be based on mechanical engineering principles, namely, a manufacturing technology based on the mechanical functionality of these components (such as gears, bearings, motors, and structural members) that would enable programmable, positional assembly to atomic specification (PNAS-1981). The physics and engineering performance of exemplar designs were analyzed in Drexler's book *Nanosystems*.

In general it is very difficult to assemble devices on the atomic scale, as all one has to position atoms are other atoms of comparable size and stickyness. Another view, put forth by Carlo Montemagno, is that future nanosystems will be hybrids of silicon technology and biological molecular machines. Yet another view, put forward by the late Richard Smalley, is that mechanosynthesis is impossible due to the difficulties in mechanically manipulating individual molecules.

This led to an exchange of letters in the ACS publication Chemical & Engineering News in 2003 Though biology clearly demonstrates that molecular machine systems are possible, non-biological molecular machines are today only in their infancy. Leaders in research on non-biological molecular machines are Dr. Alex Zettl and his colleagues at Lawrence Berkeley Laboratories and UC Berkeley. They have constructed at least three distinct molecular devices whose motion is controlled from the desktop with changing voltage: a nanotube nanomotor, a molecular actuator, and a nanoelectromechanical relaxation oscillator.

An experiment indicating that positional molecular assembly is possible was performed by Ho and Lee at Cornell University. They used a scanning tunneling microscope to move an individual carbon monoxide molecule (CO) to an individual iron atom (Fe) sitting on a flat silver crystal, and chemically bound the CO to the Fe by applying a voltage.

RIDDLE OF THE BERMUDA TRIANGLE

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Secret of Bermuda Triangle is one of the most important problems, which symbolizing complicated relationships between human and the World ocean. The Bermuda Triangle, also known as the Devil's Triangle, is a region of the northwestern Atlantic Ocean in which a number of aircraft and surface vessels have disappeared or are alleged to have disappeared. The Bermuda Triangle covers an area from the southern Virginia coast to Bermuda to the Bahama Islands.

According to the Triangle authors, Christopher Columbus was the first person to document something strange in the Triangle, reporting that he and his crew observed "strange dancing lights on the horizon", flames in the sky, and at another point he wrote in his log about bizarre compass bearings in the area.

Here ships and airplanes seem to disappear more often than in other parts of the ocean. Usually the craft are never seen again, which is not too surprising in an area noted for hurricanes and high waves. The most famous Bermuda Triangle story is the mystery surrounding five missing Navy Avengers in 1945. The story of Flight 19 is usually summarized this way: a routine patrol set out on a sunny day with five highly experienced student pilots. Suddenly, the tower began receiving transmissions from the flight leader that they were lost, compasses were not working, and "everything looked wrong." They were never seen again, and extensive Navy investigations turned up no clues to explain the disappearance.

Triangle writers have used a number of supernatural theories to explain the events.

One explanation pins the blame on leftover technology from the mythical lost continent of Atlantis. Other writers attribute the events to UFOs.

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