IV-th Section:

EVENTS AND BOOK REVIEWS

ODESSA NATIONAL ACADEMY OF TELECOMMUNICATIONS NAMED AFTER A. S. POPOV IN THE XXI CENTURY

(The article is dedicated to the 90th anniversary of the Academy)

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Abstract. *The article analyses the main challenges of the modern epoch and the role of Odessa National Academy of Telecommunications named after A. S. Popov in solving issues that the modern world society faces.*

Summary. The aim of the article is to explain the Academy directions of development in the XXI century (in any case, in its first half) to provide world community gradual development.

This aim was set on the occasion of the Bologna Charter signing by the Academy, which proclaims that the future of the mankind mainly depends on cultural, scientific and technical development. These given directions are being built in the centers of culture, knowledge and research represented by the appropriate universities.

In order to determine the development directions of any organization and the Academy as well, it is necessary, first of all, to make an analysis of an outer environment. This analysis allows making the following conclusions:

1. Global community declares its development targets:

- Providing human rights;
- Fighting poverty and diseases;
- Putting aside inequality among people and countries;
- Providing peace and so on.

These goals are recorded in numerous documents, e.g. in

- the Charter of main social rights of working people (Social Charter);
- Green Book on European Social policy "European Social Policy, composing thoughts for the Union";

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- White Book on development, competitiveness and occupation: challenges and ways of entering the XXI century;
- White Book: European Social policy. Perspectives for the Union.

2. **None** of the above mentioned goals **has been reached**.

In our opinion, the main specific moment that determines the world instability, is the inequality among countries and people. This statement is declared in the general vast meaning.

Doctor of Economics M. G. Delyagin writes that at present epoch the inequality deepens, since information technologies' staff is splitting off into inner "Information society". It concentrates in the developed countries. The world "Information society" and progress gradually concentrate in the "most developed countries". Even the "development progress stops beyond the developed countries borders, social and financial degradation of the developing countries is observed".

3. Economic crisis when has broken out, showed the imperfection of the economic development model and the chosen ways of the social state creation.

4. Scientific and technological progress has two features, as positive as negative. Its results are often used against the common public benefit.

5. Info communications influence fundamentally all sides of the social life: i.e. economics, politics, science, education, culture, military science etc.

Taking into consideration the mentioned above, we can formulate four directions of the Academy development in the XXI century.

1.Creation of the international technological center for info communications development.

2.Development of the economic theory and its applied methods as well.

3.Conversion of the Academy into international educational and research industrial complex unit.

4.Upbringing of the civil responsibility attitude for the society development.

Let us consider only the first pair of the aforesaid directions:

Direction 1. Creation of the International technological center for info communications development.

Considering the nowadays situation with respect to the info communications development in detail, some countries are already involved in the process of info communications centers' creation. That is why the

Academy initiates the creation of the international technological center of info communications development for countries with smaller resources, asks for moral support from international organizations and invites individuals, organizations and countries to join us.

<table>
<tr><th>OSI/ISO</th><th>TCP\IP</th><th>ITT</th></tr>
<tr><td>7. Прикладной
Application Layer</td><td rowspan="2">4. Прикладной
Application Layer</td><td>3. Прикладной
Application Layer</td></tr>
<tr><td>6. Представительский
Presentation Layer</td><td rowspan="5">2. Сетевой
(UA-ITT)
Network Layer</td></tr>
<tr><td>5. Сеансовый
Session Layer</td><td rowspan="2">3. Транспортный
Transport Layer</td></tr>
<tr><td>4. Транспортный
Transport Layer</td></tr>
<tr><td>3. Сетевой
Network Layer</td><td>2. Межсетевой
Internet Layer</td></tr>
<tr><td>2. Канальный
Data Link Layer</td><td rowspan="2">1.Уровень доступа
Link Layer</td></tr>
<tr><td>1. Физический
Physical Layer</td><td>1. Физический
Physical Layer</td></tr>
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Figure 1. Comparative Diagram
in the Case of Open System Interconnected Models.

The reason for such center creation is the research work that is done at the Academy. So, we have suggested a new, three-layer model of Open Systems' Interconnection (OSI), which was used as the base for Integrated Telecommunications Technologies (UA-ITT) fundamentally. NGN model was specified. New method of codes' design was suggested. It was based on the theoretical-group approach, not on the theoretical-numerical one. As the result, we obtain more stable codes than were used in the former known approach. The quantum data transferring research for private keys' transfer is being conducted. The new kind of electromagnetic fields where div **B** doesn't equal zero was discovered, and other research work can also be mentioned.

Let us briefly consider new OSI and UA-ITT models (Fig. 1)

It is known, that extra information is added at each OSI-layer (headers, mainly) as it is shown at Figure 2.

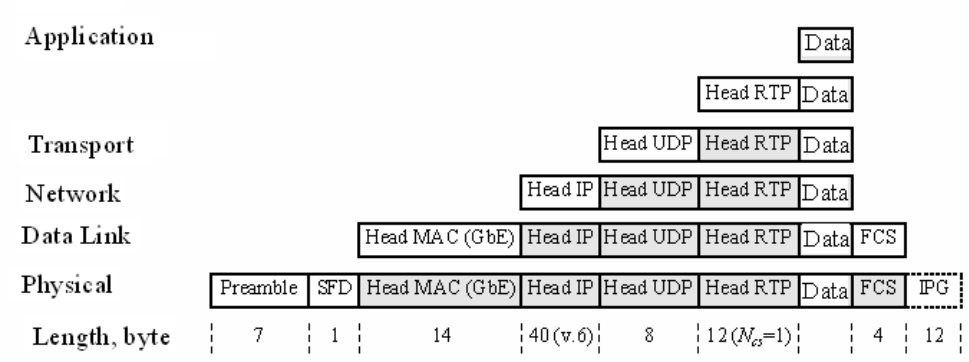

Figure 2. The process of packets (frames) forming.

In the case of short data block (typical for IP-telephony), much more extra but not useful information is necessary. It is used for packet transferring, and the transferring capacity is much less than 50% correspondingly. The cost of a useful data unit transferring increases two times or even more. But this is not all to mention. Using IP-based technology, the switching process (routing) takes impossibly much time. MPLS technology was suggested – labels switching to speed up the process, and 1 or 3 bytes of extra information were added. So, we can make an important conclusion that the speed of the switching is an important limit for information delay at speech transferring.

Let us briefly examine the main point of the UA-ITT technology suggested at the Academy.

Figure 3a) shows packet at voice transferring without the connection request, and Figure 3b) – with the virtual connection request.

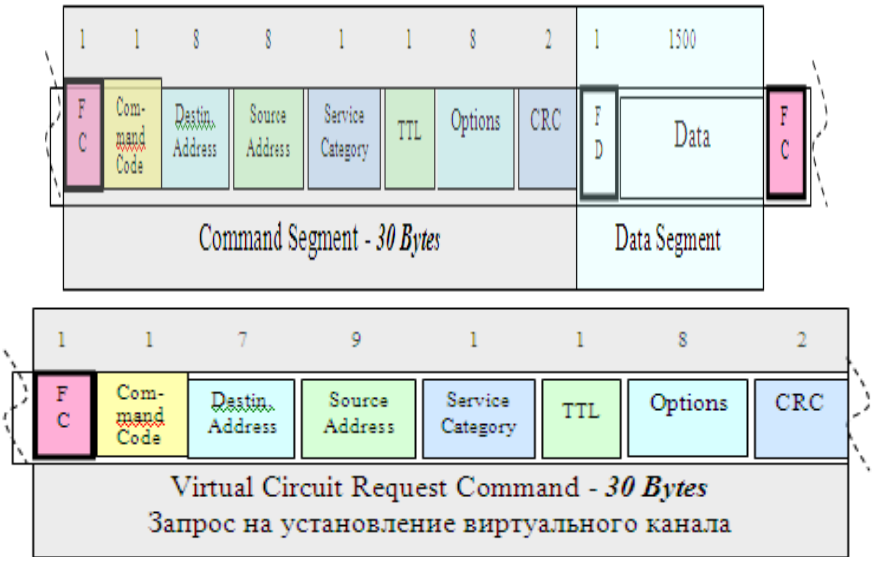

Figure 3a). Mode without setting up the connection.

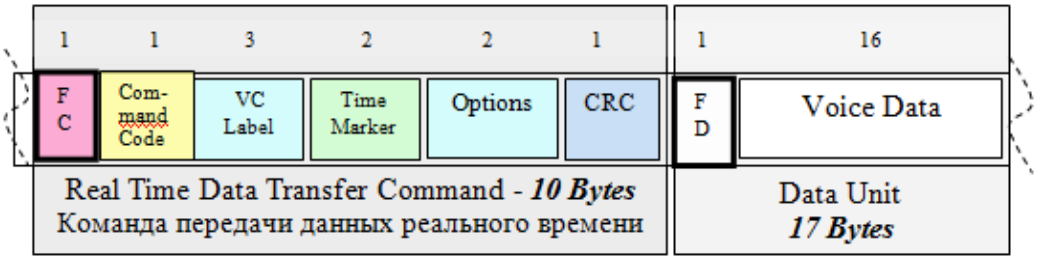

Figure 3b). Virtual channel voice traffic transfer.

What is new and useful implemented in UA-ITT technology?

1. Each user has an absolute, unique address from an address space, enough for the present level of the global network development. For example, from 4 to 16 and more bytes. The changing of an address space size is done by a request command.
2. In practice, this address is transferred over a network very seldom, because relative addresses are used in transferring.
3. Labels and virtual paths allocation (as in ATM technology) is done starting with the user. That is why we can speak about the traffic switching, but not the packet switching.
4. A new system of service organization was suggested.

Figure 4 shows comparative evaluation of ITT and IPv6 technology effectiveness.

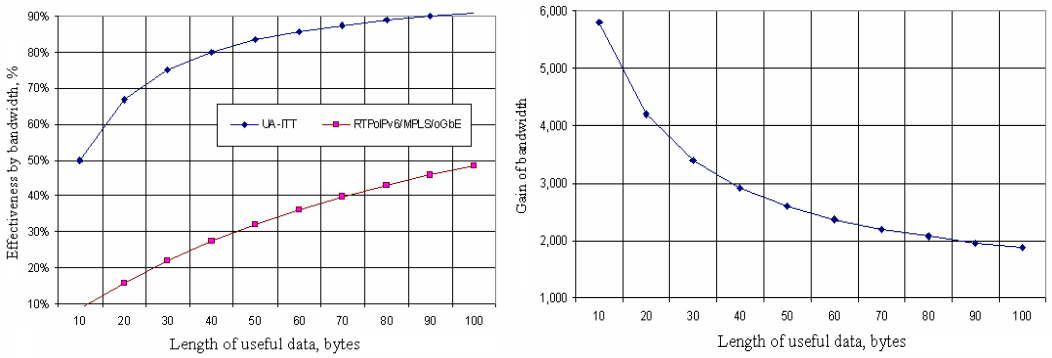

Figure 4. Comparative evaluation of ITT and IPv6 technology effectiveness.

Direction 2. Development of economic theory and its applied methods.

Long-lasting financial-economic crisis makes us think over the fundamentals of economics and find the reasons of its start. Some economists postulate the objective inevitability of crises periodical start.

Our task is to find some of its reasons and to work out the suggestions on the creation of the world economy stable development model (non-crisis economic model – NEM).

We shall start with the main (fundamental) axiom of economics:

"The demands of society (individuals and institutions) are non-limited and are not satisfied completely".

1. It is clear that the axiom stating that the needs are unsatisfied is denied, in any case, for individuals. There are a lot of life examples of personal needs limitation and even a person's self-sacrifice. Surely, we can give even more examples of non-limited needs, but to disprove the axiom is enough to have one example that contradicts it.
2. Concerning the profit of an enterprise. At one side, we can agree that the capital is greedy, which is confirmed by Karl Marx's quotation. There isn't such a crime the capital wouldn't commit to get 300% of revenues. But there are numerous other examples when companies deliberately spend part of their revenues on charity events (flexible tariffs and price policy). Leading companies support the idea of business social responsibility.
3. It doesn't always happen that the person is satisfied with the primary needs. So, even under sever challenges and awful life conditions, great pieces of art were created, scientific discoveries were made in prisons, and humans stayed humans. Not by bread alone.

We suggest several statements to consider.

1. Non-crisis economics is possible when the balance between recourses levels and demands is kept. The needs of a society (individuals and institutions) should be limited by a "reasonable sufficiency".

2. Long term business development is more effective under the stable economics and harmonious combination of a free regulated market.

A concept of a transparent (clear) free competitive market is suggested instead of free competitive market. It has two characters.

First, the consumer should understand the mechanism of goods and services prices forming, and second, he should have complete and clear information about their quality. The concept of a transparent (clear) market is possible only under reliable regulation mechanisms.

Modern sociology and political science speak about the necessity of a civil society creation. The analyzed concept is ideally suits the civil society which must clear away the negative influence of a human factor on the regulation process with the help of its institutions. It can stimulate results of the economic system functioning necessary for the society.

The other important factor to put this economic concept into life is the mechanisms of a market transparency (openness) implementation. Info communications may become the basis for it. In general, they will allow determine the working criteria for this or that enterprise without a persons' participation, and automatically publish this information, for example, in the Internet. This issue is worth separate consideration.

Direction 3. International educational research industrial complex unit and Academy conversion there.

The branch of info communications is characterized by fast changes of technologies and equipment, proposed service packets, methods of telecommunications networks creation and their management. From the other side, a lot of operators have strict demands to the knowledge and skills of their staff, giving them no time to adapt to their working place. It corrects the process of student education and creates new challenges to lecturers. First of all, we have to improve the fundamental education. The higher educational establishment should provide the high level of research activity, and student research activity as well. Second, lecturer's individual plan should include not only traditional kinds of work, but also the activity at production units. So, we set the task of natural combination of the professional's practical and fundamental education based on the latest scientific and technological advances. To put such approaches into life, the Academy received licenses for telecommunications networks design and telecommunications services provision. The Academy is the Internet services provider.

Taking into consideration the global character of info communications, the Higher Educational Establishment activity can not be limited by the national frameworks. The development of international relations should be an inevitable part of the Academy activity. So, the complex, that is being created, should:

1. Develop production, operators' activity, networks design as a testing area for students' and lecturers' practical activity.
2. Develop research works as the base for specialists' fundamental training, the growth of lecturers' skills.
3. Cooperate with international organizations (especially in ITU-E creation).
4. Support the precise study of foreign languages.

Direction 4. Society development as the object of civil responsibility education.

1. High level of proficiency, knowledge of foreign languages.

2. A principle of reasonable sufficiency in providing the human needs.

3. Business responsibility. Social programs creation (though the Academy is a non-profit organization). For example, the creation of a limited access to illegal Internet recourses, free Internet for pupils and students.

4. Outer environment protection and preservation.

5. Physical, humanitarian education, spirituality.

Conclusions

So, we see that the Academy is a real center of science and culture, as it should be, and that was proclaimed in Bologna Charter.

We hope, the Academy will make its contribution, and with other energetic Universities will provide secure, gradual progress of the mankind.