



Развитие компьютерной, образовательной и научной сети КТУ Манас

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Аннотация:

Статья посвящена обзору технологий интеграции и этапов развития технической инфраструктуры в Кыргызско-Турецком университете «Манас» за период 1995-2017гг. Университет основан в 1995 году, тогда еще с простой локальной Ethernet-сетью, 20 компьютерами, 20 академическим и административным персоналом, и около 90 студентами. А сейчас, это университет с несколькими дистанционными гигабайтными сетями и более чем 7000 пользователями. Исследование проведено с целью выяснить, как информационно-коммуникационные технологии (ИКТ) используются преподавателями и студентами в учебном процессе в данном университете. Обзор также включает анализ препятствий и необходимых условий для интеграции и внедрения технологии в университете.

Результаты данного исследования могут быть использованы в Кыргызско-Турецком университете «Манас», Министерством образования и другими университетами Кыргызстана. Кроме того, результаты могут внести свой вклад в литературу по использованию ИКТ в образовании в регионах Центральной Азии.

Ключевые слова:

Сети, исследовательские образовательные сети (REN), высшие учебные заведения, исследовательские образовательные сети в странах Центральной Азии (CAREN), исследовательские образовательные сети в Кыргызстане (KREN)

Development of a Computer, Educational and Scientific Networks at Kyrgyz Turkish Manas University.

Abstract:

This review article is about development stages of internet intersected with computer, educational and scientific networks at Kyrgyz Turkish Manas University from 1997 – 2016. Manas University established in 1997 with a simple local network within 20 computers and now it becomes a huge campus with several remoted networks and more than 7000 users.

Also review includes barriers and enabler of technology integration in the university. This study shows how internet speed, network implementation and access to educational resources effects upon the university students and academic staff success (ICT literacy).

Keywords:

Networks, research educational networks (REN), higher education institutions, Central Asia Countries RENs (CAREN), Case of Kyrgyzstan REN (KREN)

1. INTRODUCTION

Education plays a main role in a country development. Success in education depends on its participants, interactions between them and access to educational sources. By the development of information communication technology (ICT) these interactions between participants became more effective and easy. Nowadays, first simple networks turn to smart networks which provides much more opportunities like open or easy and secure acces to educational sources. However some barriers exist as well.

Within the technological developments Information and Communication Technologies (ICT) become more popular, and educational policy makers invest more in technology, to integrate it into the learning process. By investing in technology, educational policy makers are expecting that both instructors and students will benefit from it, by using it to increase the quality of education. However, there are a number of factors preventing use of technology in education, like lack of training, lack of time, lack of equipment (Beggs, 2000; Newhouse, 1999; Ertmer, 1999). According to ITU report (2013) the number of people using Internet by the end of 2013 is estimated to be over 2.7 billion (39% of the world's population). Out of this number 77% of the population is from developed countries, and only 31% from developing. Statistics reveal that there is a digital inequality in developed and developing countries in terms of ICT and internet penetration rate. Poor countries have a little or no access to the Internet, while in industrialized countries the number of people connected to the Internet is rapidly growing (UNESCO, 2005). In order to promote the development of Knowledge Societies, there is a need to overcome digital inequalities. One of the main solutions for it is educational networks, which offers many possibilities for its users.

2. PROFILE OF THE KYRGYZ TURKISH MANAS UNIVERSITY

Kyrgyz Turkish Manas University was founded in 1995 by agreement between Kyrgyz and Turkey Republics. In 1997 the university has opened with three faculties Engineering, Economics and Administrative Sciences, Letters. Now the university is a big campus with many buildings connected into one campus network, which connects 9 faculties, 2 graduate schools, 3 applied schools with a mount of 5500 students and 1500 academic and administrative staff [1].

Kyrgyz-Turkish Manas University has the following technological infrastructure: from 1997-2016, 995 personal computers, 150 notebooks, 250 printers and 100 projectors more then 200 Wi-Fi routers. Furthermore, 15 existing computer laboratories were improved, and 3 new smart laboratories were opened. All these equipment's are implemented in several campus building through optical and Ethernet networks. Internet is provided from two different independent from each other internet providers, one of them is private and second is educational network KRENA. (Manas University reports, 2016).

In this paper will be shown how much and how technologies are integrated into the process of instruction at KTMU. How it is used by instructors, as well as by students, from 1997 to

2017. Also research cover issues like what kind of barriers exist preventing efficient and effective use of this technology into instruction. Because Higher Educational Institutions play a crucial role in the transformation to Knowledge Society. Investigating the current status of ICT use in the Kyrgyz-Turkish Manas University, identifying possible barriers and enablers can be used for the future improvements in the field of ICT, and consequently in transition to Knowledge Society.

3. RELATED WORKS

The detailed work on the infrastructure of the Manas University was done by Muhametjanova (2012). In their work, author determined the barriers and enablers of technology integration. Method included students and instructors' perceive of Information and Communication Technologies (ICT) in education at the Kyrgyz-Turkish Manas University. The results show that there is still deficiency of laboratories, instructors' lack of knowledge and experience about technology, deficiency of hardware and software, and lack of qualified technical personnel. Author claims that the cost of personal computer; problem with Internet connection are still perceived barriers for students.

However, the Kyrgyz-Turkish Manas University became one of the best university in Kyrgyzstan in 2013 and was in top 5 universities in Kyrgyzstan since it was founded (RA expert reports). In table1 below shown rate of computer laboratories, student and staff number at the university. Good indicators?

4. MATERIALS AND METHOD

4.1. Purpose of the study

The purpose of this study is to investigate and reveal an ICT implementation stages, growth, barriers of technology integration into educational institution and show how it have an impact on level of use of ICT, on level of Competency to use ICT by instructors and students in Kyrgyz-Turkish Manas University; to draw general picture on the use of ICT for instruction in Kyrgyzstan whole.

4.2. Research Questions

The main research questions of this study are presented below:

- What are the enablers of technology integration into educational system at Manas University?
- What are the perceived ICT and Computer competencies of instructors and students?
- What is the level of ICT use of instructors? (in 2000 and 2017)
- What is the level of ICT use of students? (in 2000 and 2017)
- What are the students' perceptions about ICT use at Manas University?
- What are the expected ICT uses during instruction according to students?

4.3. Materials

As a research materials for this paper, the information about Internet speed, number of computer equipment, network equipment and implementation scheme of the network, number of students and staff was taken. These data was collected using reports by the academic departments and by the IT department of the Kyrgyz Turkish Manas University.

5. RESULTS

Results of the study are presented in the tables and figures below. The growth of the number of computers and laboratories per years is given in the Table 1. As it can be seen, the number of computer laboratories has increases six times from 3 up to 18 in 20 years, from 1997 to 2016, while the number of students a bit more than 2 times, allowing more computerization of the educational process.

Table1 The number of computer laboratories

	1997-2005	2006-2010	2011-2016
Computer Laboratories	3 (20 computers per each)	8	18
Computers for researches and education	494	740	995
Students	2450	3300	5500
Academic and administrative staff	650	1200	2050

According to the report of the IT department of the Kyrgyz Turkish Manas University, the growth of the internet speed in the past 20 years was as much as 16 times. In the Figure 1 below the internet speed from 1997 to 2017 is shown. In 1997, the speed of internet traffic was only 15 MBps, while with the development of fiber optic cables it grew to 235 MBps nowadays. It is obvious that internet traffic grows depend on development of information communication technologies. High speed of internet traffics eased the use of remote resources.

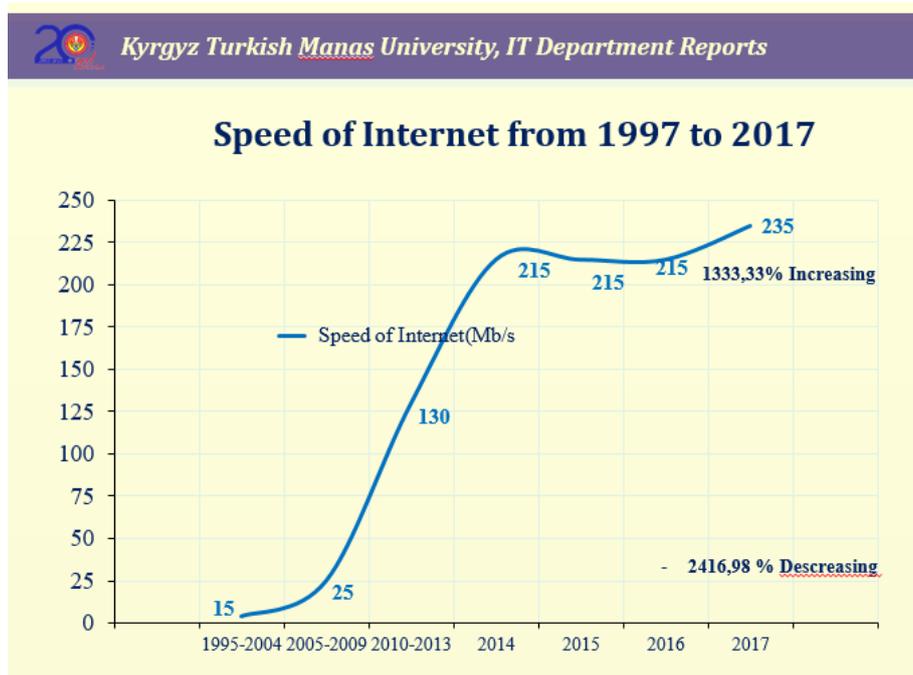


Figure 1 Internet connection and speed from 1997- 2017

The university has a campus at the one of micro districts of Bishkek city, and the main building at the center. Thus, this is taken into account when building the network architecture. Implementation of the network architecture is given in in the Figure 2.

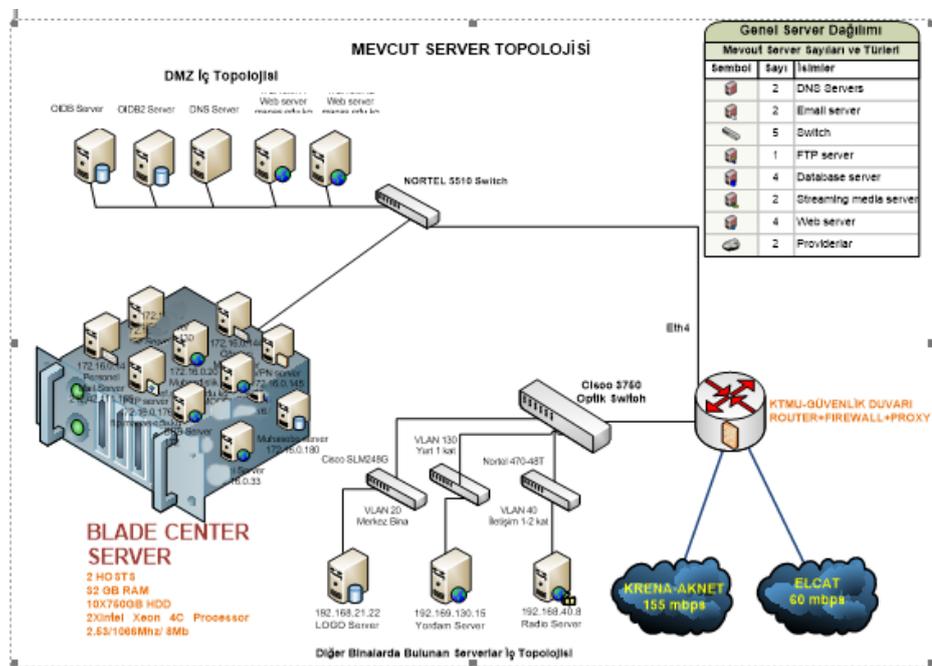


Figure 2. Network architecture and implementation

The topology of the Local Area Network is shown in the Figure 3. As it can be seen from the figure, the Kyrgyz Turkish Manas University has an agreement with two largest internet providers in the country, Aknet company and Elcat company. The

most of the traffic is supported by Aknet – 155 mbps, and other 60 mbps is obtained from Elcat company.

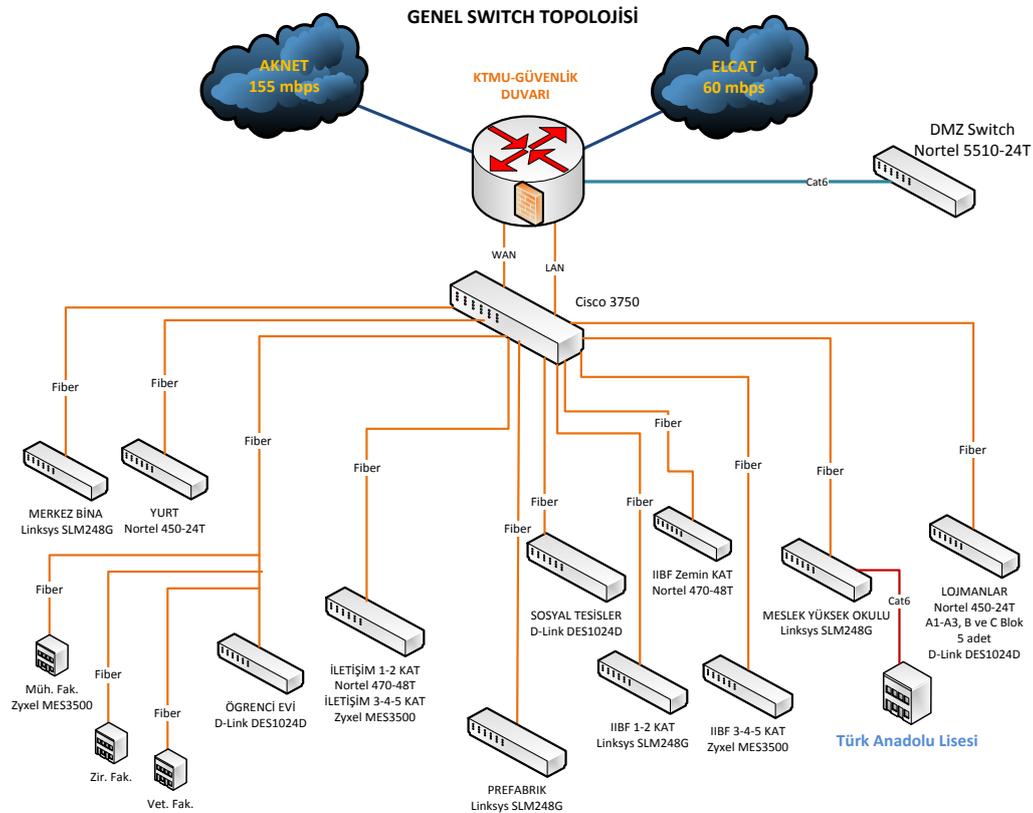


Figure 3. LAN topology

Also, in the Figure 4, the number of hardware equipment by year is presented. As it can be seen from the figure, there is an increase of the number of personal computers and notebooks used by the academic and administrative staff at the university. Also, the supplementary equipment such as printers, routers and projectors are also given a high priority. It can be explained by the growth of the new building in the university, which requires the new equipment as well.

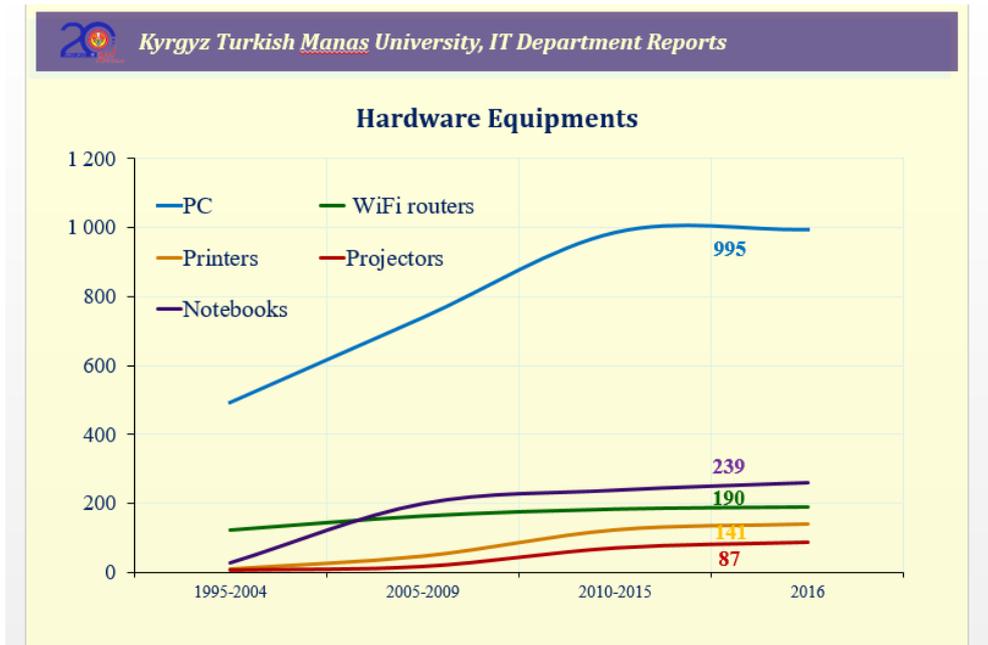


Figure 4. Hardware Equipments

Access to educational sources at the Kyrgyz Turkish Manas University is done through the number of portals, which are available online. They are located on the following web addresses:

- library.manas.edu.kg
- uzem.manas.edu.kg
- ftp.manas.edu.kg
- journals.manas.edu.kg



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Figure 5. Educational and administrative portals of the Kyrgyz Turkish Mans University

6. CONCLUSION

The paper presents the growth of the ICT usage at the Kyrgyz Turkish Manas University in the period of time from 1996 to 2016. The results of this study can be used by the Kyrgyz-Turkish Manas University, Ministry of Education, and other universities in Kyrgyzstan. Furthermore, the results can contribute to the literature on the use of ICT in education in Central Asia regions.

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