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Conference "Information Technology for Higher Education
in Afghanistan"
Part X

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Dr. Nazir Peroz
Technische Universität Berlin
Faculty for Electrical Engineering and Computer Sciences
Center for International and Intercultural Communication (ZiiK)
Fraunhoferstr. 33-36, 10587 Berlin

Conference "Information Technology for Higher Education in Afghanistan"
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Preface

The three-day conference from December 16 - 18, 2014 was the tenth in a series of conferences on Information Technology (IT) that has taken place in Kabul, Afghanistan, on an annual basis since 2005. It was organized in cooperation by the Ministry of Higher Education (MoHE) and the Center for international and intercultural Communication (ZiiK) of the Technische Universität Berlin (TU Berlin), with funding from the German Federal Foreign Office and with support from the German Academic Exchange Service (DAAD). The topic of this conference was "Development of IT Structures at the Afghan Universities".

The following guests were invited to the conference: H.E. Dr. Ashraf Ghani, President of the Islamic Republic of Afghanistan, representatives of the Afghan ministries, the Afghan Parliament and international embassies in Kabul, presidents from public and private Afghan universities, IT advisors from Afghan universities, computer science lecturers, experts and students in the field of IT and computer science as well as international representatives from e.g. World Bank, GOs, NGOs and other companies.

More than 150 guests took part in the conference. The participants talked about the current situation of IT at the Afghan universities. On the second day, H.E. President Ghani pointed out specific fields of action, actual requirements and the urgent need of IT in the Afghan society. Then the representatives of the Afghan universities gave their presentations on the development of IT at their universities. Based on the presentations and discussions of the first two days, the participating guests discussed about the topics of IT infrastructure, IT education and IT administration at Afghan universities on the third day.

As in previous years, the conference again was of public interest. Several newspapers and TV stations reported about it the entire period.

This report shortly describes the procedures of the three-day conference and outlines individual speeches and following discussions. The annex contains the results of the surveys on the current situation of IT infrastructure, IT education and IT administration at Kabul University, Kabul Polytechnic University and the Universities of Herat, Balkh, Nangarhar and Qandahar.

Comparing the IT standard at the Afghan universities from 2002, 2006, 2010 and today, as also the talks from the university presidents on the second day were suggesting, tremendous achievements have been made since. Summing up, I can say that the Afghan universities today still lack mostly IT lecturers, specialized IT personnel and IT professionals. Important contents that take into account very carefully the special demands of the Afghan society and economy are missing in the curricula of the computer science faculties. Furthermore, the Afghan universities lack quality evaluation of their IT education. They do not have enough skilled IT personnel that can manage to cope with the rapid development of IT usage. Some also lack parts of the necessary infrastructure. Whereas e.g. Kabul University and Nangarhar University will shortly have an own building for its computer science faculty, the Universities of Herat, Balkh, Qandahar, Kabul Polytechnic University and other universities lack corresponding buildings. Many universities have internet access, but, regrettably, it is so slow that often not even 20 PCs can be connected. In many universities the energy supply can only be guaranteed by diesel generators. What is missing is a sustainable energy supply concept (alternative energies).

It is of utmost importance to think about sustainability, security and efficiency before implementing IT projects at the universities. It is of no use to anyone if the projects are not well planned and thought through. Simply providing IT equipment does not help any university, if there is not enough specialized IT personnel present to make use of it.

A stop has to be put to the lack of IT lecturers, specialized IT personnel and IT professionals at the Afghan universities by implementing special programs. The important role of computer science faculties for both society and the economy needs to be emphasized.

I appreciate such initiatives from the Ministry of Communication and IT in Afghanistan that aim at promoting young talents in the field of IT for their innovative ideas by offering money prizes in the amount of USD 2,500, USD 5,000 and USD 80,000.

As H.E. President Ghani proposed at the second day of the IT conference, it would be of great importance to establish an IT council for the coordination and management of the IT projects. Furthermore, an IT department shall be created at every university and a contact person be named who is responsible for all IT matters. These responsible contact persons need to have academic background. The universities shall be obliged to submit their IT-related planning to the MoHE. Here a five-, ten- and twenty-year plan shall be clearly visible.

I take this opportunity to express my thanks to H.E. Dr. Ashraf Ghani, President of the Islamic Republic of Afghanistan, for participating via video conference. I also thank Prof. Osman Babury, Acting Minister of the MoHE, and the departments of IT and public relations as well as the Afghan universities for their cooperation and organization of the conference. My thanks also go to the German Federal Foreign Office and the DAAD for their financial support.

Nazir Peroz

First day, December 16

Welcome and Opening

Mr. Azim Noorbakhsh, Spokesman and Director of Public Relations of the MoHE, welcomed all guests to the 10th IT conference which was opened with the verses of the Holy Quran and Afghan national anthem.

Mr. Noorbakhsh moderated the conference and gave the floor to H.E. Prof. Osman Babury, Acting Minister of the MoHE and Deputy Minister of Higher Education.

H.E. Prof. Osman Babury welcomed all guests on behalf of the MoHE, especially the Deputy Minister of Communication, Mr. Ajmal Marjan, the former Minister of Higher Education, Dr. Sharif Fayez, the Deputy Ministers of the MoHE, Prof. Walizai, Prof. Sedigi and Prof. Husseinnian, the Presidents and lecturers of the Afghan Universities, representatives of the World Bank and Dr. Nazir Peroz and his team from TU Berlin.

In his speech, he covered four main aspects: the current status of the IT supply at the Afghan universities, the importance of IT and computer science in the Afghan higher education sector, the main goals of the IT Strategy Plan and the challenges with its implementation.

H.E. Prof. Babury began his talk by explaining that, since 2002, many things had been achieved in the area of IT infrastructure, IT education and IT management. Examples were the strengthening of IT infrastructure like the Afghan Research and Education Network (AfgREN) and the establishment of IT Centers at the Afghan universities, five of which most modern and set up with support from TU Berlin.

In the area of IT education, many faculties of computer science had been established and access to computer science education at public and private universities had been significantly extended. In the area of IT management, the "Higher Education Management Information System" (HEMIS) was a milestone for the modernization of the administration. Furthermore, an IT Board had been established at the MoHE and good achievements in the area of Human Resources had been made.

IT and computer science today, H.E. Prof. Babury continued, were credible tools for increasing the competition between universities and academics to enhance the quality of research and education. They also played a key role in decreasing the costs of the universities.

The impact of globalization, Afghanistan's changing place in international relations, the expansion of business and commerce, the increasing mobility in the work place, and the information technology revolution had placed increased demands on higher education. In the last few years, these had become even more critical. IT applications at the universities were one of the criteria of credibility within the quality assurance approach.

H.E. Prof. Babury said that IT had emerged as a crucial indicator in the higher education system while there was a global trend to transform the student's role from "consumer" into "creator".

H.E. Prof. Babury presented the main goals of the IT Strategy Plan of the MoHE which were to further develop and extend AfgREN and HEMIS, to establish appropriate human resource capacities, to increase access to qualitative computer science higher education (Master and PhD) and to develop required IT infrastructures like IT Centers and campus networks.

After these three points, H.E. Prof. Babury stressed the main challenges to reach these goals, which are governance, increasing the quality of computer science higher education, implementing security measures and increasing the integrity of the system in the higher education system of the country.

In the end, H.E. Prof. Babury expressed his thanks to the German Government, the DAAD and especially TU Berlin and Dr. Peroz for the organization and support of the conference series. He also thanked further parties like NATO and other stakeholders of IT in higher education of Afghanistan.

During the conference opening session, **H.E. Deputy Minister Mr. Aimal Marjan** from the Ministry of Communications and IT congratulated the Ministry of Higher Education and the team behind the ICT conference for successfully convening these annual conferences.

H.E. Mr. Marjan told the participants that ICT nowadays was an imperative need of life which could not be avoided anymore and which had to be adopted by the Afghan government and society. He mentioned that one could be proud of the fact that Afghanistan was almost at par with the other countries in the region, regarding the adoption and use of new communication technologies.

H.E. Mr. Marjan congratulated the Ministry of Higher Education for its achievements in the area of ICT in higher education institutions and stressed that students and faculty members should use the new facilities for research, as the culture of research was very weak in both public and private universities.

H.E. Mr. Marjan once again confirmed the partnership between both ministries in the area of ICT in education. He told the participants and the MoHE leadership that, as per the commitments of MCIT, 9 new universities were now connected to the national fiber grid and that they could be inaugurated right after the conference. He mentioned that MCIT was ready to install specialized ICT labs at these universities in order to boost the pedagogy methods. "MCIT is committed to help our young entrepreneurs to establish their own businesses". With these words H.E. Mr. Marjan let the participants know that MCIT had launched an ICT incubation center called "Ibtikar", where young talents were offered mentorships to help them establish their own ICT companies and be active members of the Afghan ICT private sector.

H.E. Mr. Marjan also mentioned that MCIT was committed to help implement the innovative ideas by introducing a program called "DEWAE". Here, young ICT talents could receive money prizes in the amount of USD 2,500, USD 5,000 and USD 80,000 for their innovative ideas, solutions and full implementations respectively. He said that the program would boost the culture of innovation and unleash the ICT potential of young students and entrepreneurs.

H.E. Mr. Marjan concluded by emphasizing that one could be lucky to have a savvy ICT leadership, which would promote the adoption and development of the ICT sector in the country by accepting it as a new economic sector besides mines, agriculture and trade.

Dr. Nazir Peroz, Head of the ZiiK of TU Berlin, welcomed all guests. Before starting his talk about "Afghanistan Digital 2025", he handed over the documentation "IT Structures for Higher Education in Afghanistan – Project Overview 2001-2014" from the ZiiK of TU Berlin to H.E. Prof. Babury and to Mr. Sofizada, representative from World Bank.

Dr. Peroz began his talk by stating that information and communication technologies (IT) played a decisive role for the future of Afghanistan as a high-tech location. He said that IT was the key to productivity in all fields. IT was the leading sector in Afghanistan, as measured against its gross value added. Thus, there was a strong need for the creation of jobs. According to recent estimates, Dr. Peroz continued, Afghan public services, authorities, universities, schools, administrations, enterprises and private companies were in need of approximately 500,000 employees until 2025.

He explained that a rapid development had been taking place in the country already. Institutions and private corporations had invested in Afghanistan and had established a number of IT services like eGovernment, eCommerce etc. Both public and private education facilities had been created. The TU Berlin alone had educated over 7,000 people (more than 200 IT administrators, 48 computer science Master's graduates with 25 more currently studying at TU Berlin and 4 PhD students currently registered at TU Berlin in the area of computer science). Furthermore, five IT centers had been created at the Universities of Kabul, Herat, Balkh, Nangarhar and Qandahar.

However, all started projects in Afghanistan needed a better coordination, which was crucial for the security and quality. Therefore, Dr. Peroz went on, a comprehensive IT strategy was of central importance for the digital future of Afghanistan. It should become the roof for the IT policy of the Afghan government, economy, science and society, and be regarded as the basis for designing an IT location in Afghanistan. The project „Afghanistan Digital 2025" should help to achieve this goal.

According to Dr. Peroz, the following prerequisites are needed for the further planning, development and implementation of the IT strategy:

- IT structures such as a stable energy supply system and Internet access
- effective IT services
- media competence and IT soft skills
- qualified IT specialists
- modern administrative structures
- sound management
- IT laws

Unfortunately, Dr. Peroz continued, Afghanistan had large deficits in these fields which was mainly due to the wars and civil wars that had lasted for more than two decades. They had had a huge impact on the weakening of the whole education system and infrastructure. Another reason was the lack of planning. Thorough planning would set the milestones for the development and progress of this new modern technology in Afghanistan.

Dr. Peroz told the audience that, with a share of 60 percent of the population under the age of 35, Afghanistan was a very young society. Thus, the IT strategy would also make use of this potential for a sustainable development and economic growth. During the de-

velopment and implementation of the strategy, international activities, especially in Asia, should be taken into consideration in order to help the IT location Afghanistan assert itself in the surrounding area. Those who would count on Afghanistan as IT location and enforce it, would gain competitive advantages for the future.

He said that the project „Afghanistan Digital 2025" aimed to:

- analyze the demand of the Afghan society, economy and science
- consider the cultural and traditional value system of the Afghan society
- expand digital infrastructure in order to fulfil the future requirements in a sustainable manner
- boost the competitiveness through the use of IT at all stages of the economic process
- develop and expand new labor markets in the IT sector
- cover the demand for IT professionals by offering more training and further training programs
- extend and strengthen good education programs for new IT branches at vocational training schools and universities
- use IT consistently in order to solve societal challenges, e.g. security, sustainability and climate protection, health, mobility, administration, and enhance the citizens' standard of living
- modernize the traditional branches, e.g. administration, through the use of IT
- promote talented young people through targeted programs (e.g. scholarships)
- expand research in the IT sector and promote a quicker implementation of the results
- guarantee the protection of the users' individual rights in the future Internet while using new media
- create a reliable legal framework for a better IT policy that is able to catch up with international standards

Dr. Peroz said that the implementation of this strategy and the project „Afghanistan Digital 2025" were a joint effort of public, private and academic stakeholders both abroad and in Afghanistan. Especially the young people in the country were to be engaged in this process as they were very talented and committed.

Another issue Dr. Peroz regarded as important for the economic development of the country was the establishment of a Technology Park that is supposed to help avoid electronic waste and create awareness for "green IT". Afghanistan must not become a graveyard of electronic waste, and companies needed to be founded which could gather and process it.

Mr. Salim Saay, Head of the IT department of the MoHE, spoke about "IT Development in Higher Education in Afghanistan and the Current Status of the Development of AfgREN" (Afghanistan Research and Educational Network). He gave an overview of the history of IT in higher education in Afghanistan and listed some major achievements in IT like the Cisco Academy in Kabul, the ANGEL Center at Kabul University and the IT Centers at the 5 major universities (ITCK, ITCH, ITCN, ITCQ, ITCB). He went on talking about the fiber optics network for e.g. the campus of Kabul University.

Mr. Saay went on and reported about the current state of AfgREN which is providing network infrastructure and Internet connectivity for the MoHE, the Afghan universities and other academic institutions. AfgREN is a research and educational network for Afghanistan and provides research support for higher education, high speed intranet connections between educational institutes and Internet connectivity. Furthermore, it offers facilities for distance trainings, workshops and conferences. It also provides access to international academic and research resources as well as digital libraries and virtual labs.

According to Mr. Saay, the following goals have been reached so far:

- Implementation of a fiber campus network for Kabul Polytechnic University, Kabul Education University and the Universities of Herat, Balkh, Bamyan, Juzjan, Nangarhar, Qandahar, Takhar, Parwan, Baghlan, Kunduz, Faryab, Khost, Paktya, Ghazni, Helmand, Badakhan, Samangan and Alberoni
- Implementation of a local area network for Kabul Polytechnic University, Kabul Education University and the Universities of Herat, Balkh, Bamyan, Juzjan, Nangarhar, Qandahar, Takhar, Parwan, Baghlan, Kunduz, Faryab, Khost, Paktya, Ghazni, Helmand, Badakhan, Samangan and Alberoni
- Implementation of IT centers for Kabul Polytechnic University, Kabul Education University and the Universities of Herat, Balkh, Bamyan, Juzjan, Nangarhar, Qandahar, Takhar, Parwan, Baghlan, Kunduz, Faryab, Khost, Paktya, Ghazni, Helmand, Badakhan, Samangan and Alberoni
- Establishment of a training center for the Computer Science Faculty of Kabul University, equipped with 100 PCs and connected servers

Mr. Saay stated that the network infrastructure had been project-based in the beginning and that there had been major concerns regarding its sustainability. Fortunately though, by signing a contract with the Ministry of Communication and IT, the project had gained new spirit. He said that an expansion of AfgREN to private universities was in progress and that a draft for an AfgREN policy had been completed which would define standards for the use of AfgREN.

Ms. Huma Yari, lecturer at the computer science faculty of Kabul University, reported about the "Employment of IT for the Administration in Higher Education". She stated that the employment of IT in Afghanistan and the modernization and digitalization of the administration had started. However, there was still a need to create a culture of modernization, as the Afghan administration still mainly used paper and folders for their work. She referred to the history of administration in Afghanistan and stated that the overall general IT progress was good in the larger cities but not quite in the Afghan provinces. This process needed funding and qualified personnel. Therefore, trained administrative staff in both the ministries and the universities was crucial.

Mr. Basir Ahmad Baheer, lecturer at the Computer Science Faculty of Kabul University, spoke about his topic "Towards an Interoperability Framework for Systems in Afghanistan". He presented his framework for the interoperability of systems using the example of E-governance. He focused on the question how to turn bad governance (e.g. corruption) into good governance. Mr. Baheer also asserted that increasing public awareness was an important aspect to focus on.

Second day, December 17

Video conference with H.E. Dr. Ashraf Ghani

On the second day, H.E. the President of the Islamic Republic of Afghanistan, **Dr. Ashraf Ghani**, spoke to the audience via video conference. He expressed his thanks for the organization of the conference and emphasized the role of Germany, especially TU Berlin. He was convinced of the importance of IT for the economic and scientific development of the country. Unfortunately, as he went on, Afghanistan had lost nine years in this area. It should not only import experts and knowledge but rather build its own resources. He does not want Afghanistan to just use IT passively as consumer, but rather to actively work on it and develop it further in order to enhance the economic situation of the country. Therefore, the talented Afghan youth should be committed to this progress. He stressed that technology changed every six months and that one had to be prepared for this. At this point, universities played an essential role. Concepts for 2-, 4- and 6-year education were to be developed according to the needs of the Afghan society for qualified experts, scientists and lecturers. H.E. President Dr. Ghani expressed his regrets about the poor infrastructure of Afghanistan and especially about the poor IT security. To overcome these issues, he proposed the following 8 points:

1. higher quality of education, better qualification of lecturers
2. use of Open Source software
3. increasing the number of computer science graduates with bachelor's and master's degrees
4. selection of the best international universities for Afghan students
5. creation of minimum standards for computer science faculties
6. development of IT strategies for the universities with a planning horizon of five to twenty years
7. transfer of knowledge through students
8. creating a culture of secure and legally binding laws

At the end of his speech, H.E. President Ghani suggested to establish an IT council on a higher national government level which was to focus on the development of a national IT strategy for Afghanistan in the next five to twenty years. He wished for a fruitful cooperation in this regard.

Afterwards, the presidents of the universities gave their presentations about the development of IT, necessary steps to be taken by the government, infrastructure, education, administration as well as the limitations and challenges.

As first speaker, **Prof. Habibullah Habib** spoke about the "IT Development at Kabul University" and described the current situation of the IT infrastructure, IT education and IT administration in detail. He presented information about the computer science faculty at his university, its history, current situation, academic staff and the specifications of the new building which is currently under construction. With regard to IT infrastructure, many things had changed. The university had 71 MBit/s Internet connectivity and many faculties had their own PC lab. The IT center of the university (ITCK) provided PC workspaces for university members and network services etc. for the whole campus.

Regarding IT education, Prof. Habib continued, a faculty of computer science had been established in 2009 which had 32 lecturers today including 13 Master's graduates from TU Berlin, 8 from South Africa and one from India. In addition, 2 PhD candidates were currently studying in Germany, 7 in Estonia and one each in USA and Italy.

Prof. Habib noted that the most urgent needs of the university were a stable power supply, construction of new buildings for the IT employment as well as computer networks for all faculties and departments. Furthermore, he expressed his wish to establish further PC labs for all faculties and departments and to improve the IT services. He praised the efforts of the ITCK and drew attention to the challenges Kabul University needed to face in the near future.

Mr. Jawed Rasuli attended the conference as representative of Prof. Amed, President of Kabul Polytechnic University. In his talk about "IT Development at Kabul Polytechnic University" he first gave a brief outline about the IT infrastructure at the university. He reported that the power supply was connected to the city power grid. The available internet bandwidth for the university was 8 Mbit/s and all buildings were connected through optic fiber connections. There was a total 10 PC labs. The IT center provided connectivity for the universities. The computer engineering and informatics faculty had no dedicated building so far.

Mr. Rasuli went on to describe the situation regarding IT education. The computer engineering and informatics faculty, which had been established in 2009, today had three departments and 30 lecturers.

He stated that the most urgent needs of the university currently were PhD scholarships, advanced IT trainings, a building for the computer science faculty and a stable power supply.

Prof. Amanullah Hamidzai, President of Kabul Education University "Ustad Rabani", in his speech "IT Development at Kabul Education University" emphasized the importance of computer science in both the education sector and society.

He stated that the computer science and education faculty at his university had been established in 2013 with the objective to provide computer science education for school teachers. The faculty today had seven lecturers, five of which Master's graduates from abroad.

According to him, the most important needs of the university were stable power supply, PC labs, faculty and department networks, an IT center and higher internet bandwidth.

Dr. Abdul Zaher Mohtasebzadah, President of Herat University, reported on the "IT Development at Herat University" and the situation of the IT infrastructure at his university. He said that although it was connected to the city power grid, still there were frequent blackouts every day. The internet bandwidth was 16 MBit/s and there were PC labs for the faculties as well as an IT center (ITCH). The computer science faculty did not have its own building yet.

With regard to IT education, he told the audience that the computer science faculty had been established in 2007 with support from TU Berlin. Today it had 4 departments and 20 lecturers, 11 of which Master's graduates from abroad. The lectures followed a practical methodology and were mostly held in English language.

The most urgent needs of the university, Dr. Mohtasebzadah stated, were a building for the computer science faculty, PhD scholarships and stable power supply.

Mr. Naweed Rahmani, Deputy Dean of the computer science faculty at Balkh University, attended the conference as representative of Prof. Mukamel Alokozai, President of Balkh University. He spoke about the "Development of IT at Balkh University". In terms of IT infrastructure, he explained that the university was connected to the city power grid and the internet bandwidth for the campus was 8 Mbit/s. There were 4 PC labs and an IT center (ITCB). He stated that the computer science faculty did not have its own building yet.

Regarding IT education, Mr. Rahmani let the audience know that the computer science faculty at Balkh University had been established in 2011 with support from TU Berlin. Today it had three departments with seven lecturers, three of which Master's graduates from abroad. The lectures followed a practical methodology and were often held in English language.

The most urgent needs, as Mr. Rahmani explained, were the establishment of a computer science Master's program, the creation of new departments at the computer science faculty

and a new building for it, the integration of the campus network into AfgREN and stable power supply.

Mr. Ahmad Zia Sharifi, Dean of the computer science faculty at Nangarhar University, attended the conference as representative of Dr. Tahir Enayat, President of Nangarhar University. In his speech about "Development of IT at Nangarhar University" he first spoke about the IT infrastructure at his university and explained that the university was connected to the city power grid. The internet bandwidth was 16 Mbit/s and there were 12 PC labs and an IT Center (ITCN) on the campus. A new building for the computer science faculty was to be constructed in the near future.

With regard to IT education at Nangarhar University, Mr. Sharifi told the audience that the computer science faculty had been established in 2010 with 4 departments and today it had 19 lecturers.

According to Mr. Sharifi, the most urgent needs of the university were PhD scholarships, stable power supply and a good cooperation with international universities.

Prof. Hazrat Mir Tutakhil, President of Qandahar University, spoke about the "Development of IT at Qandahar University".

Regarding IT infrastructure, he explained that the university was connected to the city power grid and had its own solar power plant. The internet bandwidth was 8 MBit/s, there were 6 PC labs on the campus and an IT center (ITCQ). With regard to IT education, Prof. Tutakhil said that the computer science faculty had been established in 2014. Since then, it had had 5 lecturers.

He stated that the most urgent needs of the university were stable power supply, higher internet bandwidth, an increase of the IT tashkeel and a higher IT budget.

Prof. Rasul Bawary, President of Khost University, talked about the "Development of IT at Khost University". He told the audience that the university had a computer science faculty since three years which also provided lectures for other universities. He said the power supply on the campus to be rather poor. He stressed the importance of applying IT for other fields and thus improving their performance. He expressed his wish for a better power supply at the university and for more computer science lecturers at the faculty.

Prof. Mir Ahmad Hamed, President of Said Jamaluddin Kunnar University, spoke about the "Development of IT at Said Jamaluddin Kunnar University". With view to IT infrastructure, he stated that the power supply of the university was poor. There were nine PC labs on the campus and the total Internet bandwidth was 4 Mbit/s.

Concerning IT education, he was pleased to tell the audience that the computer science faculty at his university had most recently sent one Master's student   recently started his computer science studies at TU Berlin. He furthermore expressed his thanks to Kabul University for its support during the development of a new computer science curriculum.

He stated that the most urgent needs of the university were stable power supply, higher internet bandwidth and more CS lecturers.

Prof. Ray Montgomery, Assistant Professor at the Information Technology and Computer Science Department of the American University of Afghanistan, presented the overall concept of his university. It had been established in 2006 and, besides degree programs in political science and business and law, it also offered IT and computer science. He went on to describe in detail the focus, specifications and benefits of the ITC education at his university which fostered problem-solving skills, team-building skills and communication skills. The program followed a practical methodology where students were to learn by doing and practicing. Furthermore, he explained that an e-learning platform (Moodle) was available for lecturers and students.

Prof. Humayun Naseri, Dean of the computer science faculty at Kabul University, presented the development of his faculty from 1994 to the present day. Enormous progress had been made since. Having started out as small department of the science faculty, it had already had 6 lecturers and 20 students in 2002. In 2009, it had gained the status of a faculty with currently 1,052 enrolled students, 32 employed lecturers and equipped with a total of 120 PCs in different PC labs.

Prof. Mohammad Hadi Hedayati, Head of the networking department of the computer science faculty at Kabul University, in his speech about "IT Services of AfgREN" reported about the concept of unified server systems within the scope of the AfgREN project. He said that Kabul University was the interconnecting point for all Afghan universities. The AfgREN project had started in 2010 with the main purpose to interconnect all faculties and offices of Kabul University and then soon had been extended to also cover other universities, schools, hospitals etc. Another very important aim of AfgREN, Prof. Hedayati continued, was to use digital services. It also provided security and authentication services, VPN services and more. Future plans included the establishment of a data center and cloud computing facilities.

Mr. Abdul Rahman Vakili, Head of IT at Herat University, presented the "Concept of Unified Server Systems for Afghan Universities". He reported about the recent six-month IT administrator training at TU Berlin from July to December 2014. Goal of this training program was to prepare the participants from five Afghan universities and the MoHE for the implementation of a unified server concept. This will allow for a better interoperability of the IT centers and help improve overall performance, as an exchange between them would then be made easier. Especially in Afghanistan, where there was a major lack of qualified IT experts, this concept was of great relevance. Furthermore, this concept will help to counter the lack of IT experts throughout Afghanistan.

Third day, December 18

Due to lack of time and changes in the schedule, the presentations of Mr. Yaqini and Mr. Alizai were given on the third day:

Mr. Akmal Yaqini, lecturer at Kabul University, presented the different stages of IT education. Today, Mr. Yaqini said, IT was used in research, education and management. He described the different forms of education like general IT training, technical training (administrators) and academic education (Bachelor, Master, PhD). Mr. Yaqini focused on academic education and underlined the importance of developing a curriculum that meets international standards and is tailored to the demands of Afghanistan, the capacity of the existing resources and the educational level of the students. He also stressed the importance of memberships in the international scientific community and the necessity of training university staff members.

Mr. Ashuqullah Alizai, lecturer at the computer science faculty at Herat University, talked about the "Relevance of E-Learning" in the field of IT. First, he focused on the benefits and advantages of such a technology for teaching and learning. Then he emphasized that before implementing such a technology, a discussion should take place about its background, requirements and possible benefits. E-learning was to be considered a process which needed to comprise aspects such as the political and economic situation, available IT infrastructure, culture, social awareness etc. For its successful implementation, an effective understanding of the technology and shared responsibilities of both teachers and students was crucial. Mr. Alizai stated that the initial costs for the technical setup and development of contents were relatively high. Major challenges, especially in Afghanistan, according to him also were stable power supply, sufficient internet bandwidth as well as pedagogical and didactic ICT knowledge.

Discussion of the results and their realization

Afterwards, the discussion on the talks of the past two days began and Dr. Peroz summarized the presentations on the development of IT at the Afghan universities and noted that though a lot of IT projects had already been successfully implemented in the past years, the universities were still in need of the following things:

Stable power supply, more buildings for the use of IT, IT centers, higher Internet bandwidths, further PC labs, further computer science faculties, special IT training programs for administrative and university staff, modernization of the administrations, further IT departments, IT representatives in the universities, and qualified academic IT experts like Master's and PhD graduates.

After the summary, a general discussion on concrete measures for the enhancement of IT infrastructures and IT education took place. The following measures were addressed:

Regarding IT infrastructure: Both the insufficiently developed university network and the lack of computer equipment were important points of criticism. In order to address the third problem of unequal treatment of the Afghan universities regarding their say and allocated bandwidth within the AfgREN-project, it was suggested that a work group of representatives from all Afghan universities be established, as AfgREN should be run jointly by all Afghan universities.

Furthermore, a policy document and a legal framework should be developed for the AfgREN services and fiber optic cables were to be installed in order to connect more public and private universities and to create further campus networks.

All participants of the conference appreciated the proposal to create a unified IT system for the IT centers. Due to an overall lack of qualified IT experts, this would allow a better exchange and improve the overall technical performance of the campus networks.

Regarding IT education: The participants of the conference agreed on the point that the quality of education was essential for the development of Afghanistan. Three forms of education were discussed: computer training for university staff, IT administrator trainings and academic education. Here it was also suggested to establish a work group that concentrates on the quality and curricula of all education programs. With regard to the increased number of computers and other electronic devices in Afghanistan, the necessity of raising environmental awareness and integrating it into the curricula was discussed.

At the end of the conference, H.E. Prof. Babury gave a closing speech. In this speech, he emphasized the importance of the management, e.g. extension of the IT Board and its policy. Further IT centers were to be established according to the example of the five IT centers created by TU Berlin. These IT centers were to give support to universities in neighbor provinces. Prof. Babury stated that the education at the computer science faculties was crucial for the development of Afghanistan. Here, the vision and proposals of H.E. Dr. Ashraf Ghani were to be implemented with goals and specific plans for the next five to twenty years. Prof. Babury expressed his thanks to the guests of the conference and the team of the MoHE for the organization of the event. He also thanked the Federal Republic of Germany, DAAD, TU Berlin and especially Dr. Peroz for their support.

Prof. Mir Ahmad Hamed closed the conference with a prayer.

Appendix I

Kabul University

IT Infrastructure

Situation of electrical power supply
- 45 % availability
- diesel generator used as backup solution

Internet connectivity and bandwidth
- 71 mbps (operational)
- maximum download 69.97 Mbps, maximum upload 9.37 Mbps

Number of PC labs
- 28 in different faculties including the ITCK with 40 computers on average
- 4 PC labs in the computer science faculty with 50 computers each
- one brand new PC lab in the computer science faculty with 100 computers

IT Center (ITC)
- opened in 2003
- supported by Technische Universität Berlin (TU Berlin)

Building for Computer Science (CS) faculty
- currently under construction (UNAPS), handover and opening very soon
- capacity of 1,000 students

ITC/CS library
- in ITCK (130 books)
- in Computer Science Faculty (2,000 books on 70 topics in IT)

IT Education

CS faculty or department?
- faculty status since 2009
- from 1997 until 2009 department of the Science Faculty
- 8-semester bachelor's program
- faculty curriculum developed by faculty members and international partners
  (e.g. TU Berlin) according to international standards and Afghan requirements

Number of lecturers and students in the CS faculty (female/male)
- 33 lecturers: 10 female (bachelor's/master's degree 4/6), 23 male (bachelor's/master's degree 6/17)
- 23 master's graduates and 10 PhD candidates
- 760 students: 148 female/612 male

Number of graduates from the CS faculty
- 617

Number of people trained in the IT Center
- over 5,000 lecturers, students and staff members participated in various IT training sessions
- 400 students from other faculties participated in an administrator training in order to assist their faculty's staff with day-to-day operations
- 65 currently in training
- trainings for IT administrators from other universities (IT Manager Training Program)

- 41 computer science faculty members, 1,548 students and 221 staff members received computer trainings in the English Language and Computer Learning Center (ELCLC)

IT Administration

Number of employees in the IT Center
- 20

Number of administrative staff used to IT equipment
- approx. 600

Which software is used in the administration? (i.e. database for students, lecturers etc.)
- Microsoft Office
- no specific application for administrative tasks
- no student or lecturer management information system
- all records paper-based

University web site? Features?
- not even providing basic requirements of a university website because of poor design (e.g. incompatibility with a variety of media (e.g. Mobile, iPad), little user interactive and boring interface) and poor functionality (e.g. no existing normalized database for storing the website data, localization problems)
- ITCK team is working on a professional website that is supposed to meet the requirements of Kabul University

Use of HEMIS?
- no

Most urgent needs

- create stable power supply
- construct buildings for IT use
- plan networks for all faculties and their departments
- create PC labs for all faculties
- improve IT services

Kabul Polytechnic University

IT Infrastructure

Situation of electrical power supply
- mostly stable but no UPS for server and other computers
- sometimes problems with government electricity during winter

Internet connectivity and bandwidth
- too low, only 8 MB up- and download
- often repeated connection errors (disconnection from Afghan Telecom LTD)
- all buildings connected with fiber optic cables
- inside building networking (LAN)

Number of PC labs
- 10 in total: 4 in the IT Building (120 PCs each), 5 in the Computer Engineering Faculty (approx. 220 PCs), 1 in GIS Department (40 PCs)
- approx. 750 PCs in KPU

IT Center
- built in 2004 by KOICA

Building for CS faculty
- no

ITC/CS library
- planned

IT Education

CS faculty or department?
- Computer Engineering & Informatics Faculty with 3 departments
- faculty status since 2009
- from 2007 til 2009 department of the Electro Mechanic Faculty

Number of lecturers and students in the CS faculty (female/male)
- 30 lecturers: 7 female/23 male
- 700 students: 120 female/580 male

Number of graduates from the CS faculty
- 160: 30 female/130 male

Number of people trained in the IT Center
- more than 600 per year (students, admin and academic staff)

IT Administration

Number of employees in the IT Center
- 7 members: 1 IT Director, 1 Network General Manager, 1 Software General Manager, 1 Hardware General Manager, 1 Classes General Manager and 2 technical persons

Number of administrative staff used to IT equipment
- 80 %

Which software is used in the administration? (i.e. database for students, lecturers etc.)
- Microsoft Office
- Engineering programs Aoudad, GIS, Sab, Save, Revet

University web site? Features?
- CMS MCIT's
- up-to-date
- sometimes host problems
- plans for implementing web base database for the whole staff and students (graduates and under-graduates) in the features

Use of HEMIS?
- used only for students' registration since the implementation of the software

Most urgent needs

- PhD scholarships
- advanced IT training
- building for CEI faculty
- backup system for electricity

Herat University

IT Infrastructure

Situation of electrical power supply
- connected to city power grid
- frequent black outs

Internet connectivity and bandwidth
- 16 Mbps bandwidth for all faculties on the campus
- 3,5 Mbps for NOC and the CS and engineering faculty
- additional 2 Mbps for the education faculty (off campus)

Number of PC labs
- 26 (except for ITCH)
- 3 in CS faculty with 30 PCs in total
- 734 PCs in total (except for ITCH)
- ITCH: 1 with 70 PCs

IT Center
- established in 2009
- supported by TU Berlin
- provides 2 different kinds of trainings
  ◦ user application (3 levels)
  ◦ administrative
- provides 3 different kinds of support to HU students and staff
  ◦ training support
  ◦ administration support
  ◦ technical support

Building for CS faculty
- no own building though already founded in 2004

ITC/CS library
- in CS faculty: 1,297 books provided by TU Berlin

IT Education

CS faculty or department?
- faculty status at HU since 2007 (approved by the Ministry of Higher Education)   (2004-2007: functioned as faculty)

Number of lecturers and students in the CS faculty (female/male)
- 20 lecturers: 10 female/10 male (bachelor's/master's degree 11/9)
- 488 students: 128 female/360 male
- includes 4 departments:
  ◦ Networking and Communications
  ◦ Software Engineering
  ◦ Database and Information Systems
  ◦ Computer Engineering Faculty (not active yet)

Number of graduates from the CS faculty
- 1,070 (bachelor's degree)

Number of people trained in the IT Center
- 1,674

IT Administration

Number of employees in the IT Center
- 29: 12 female/17 male

Number of administrative staff used to IT equipment
- 74 out of 96: 25 female/49 male

Which software is used in the administration? (i.e. database for students, lecturers etc.)
- open source software

University web site? Features?
- developed by the MoCIT, CMS Joomla (http://www.hu.edu.af)

Use of HEMIS?
- used to register students introduced to the faculty through the KANKOR examination

Most urgent needs

- budget for purchasing certain IT equipment (e.g. two UPS for servers) and other small maintenance parts for PC pools and servers
- budget for annual salaries
- budget for fixed costs and fuel costs for the only backup generator of ITCH (ITCH secures a massive campus network and thus needs certain hardware equipment => lack of budget)
- budget for additional costs that might arise from promoting the implementation of the campus network

Balkh University

IT Infrastructure

Situation of electrical power supply
- governmental power supply
- generator for each campus
- solar power pilot project (NATO)
- solar power for computer science faculty (World Bank)

Internet connectivity and bandwidth
- two campuses connected to fiber cable
- currently 8 Mbps (AfTEL – NATO)
- previously 8 MB (VIZADA - NATO)

Number of PC labs
- 4: ITCB, Iranian PC lab, Faculty of Economics, Faculty of Social Sciences

IT Center
- opened in 2013
- supported by TU Berlin

Building for CS faculty
- not yet, currently situated in the Engineering Faculty

ITC/CS library
- in ITCB (funded by DAAD, over 50 books)
- in CS faculty (funded by DAAD, over 200 books)

IT Education

CS faculty or department?
- faculty established in 2011
- includes 3 departments:
    ◦ Communication and Operating Systems
    ◦ Software Engineering
    ◦ Information Database Management Systems

Number of lecturers and students in the CS faculty (female/male)
- 7 lecturers: 1 female/6 male (bachelor's/master's degree 4/3)
- 360 students: 150 female/210 male

Number of graduates from the CS faculty
- 57 (bachelor's degree)

Number of people trained in the IT Center
- 1,500 students enrolled in basic usage of systems and internet
- 40 trained system and network administrators for the faculties
- 225 trained lecturers and staff members in basic IT office usage

IT Administration

Number of employees in the IT Center
- 12: 6 female/6 male

Number of employees used to IT equipment
- 16

Which software is used in the administration? (i.e. database for students, lecturers etc.)
- 90 %

University web site? Features?
- managed by education section of ITCB
- does not support Persian and Pashto
- difficult to change the templates of single pages
- difficult to change the whole template of the website
- has been down since September 2014

Use of HEMIS?
- not anymore
- execution started in 2012, worked put poorly because of low bandwidth

Future plans

- implement a computer science master's program
- establish a new department in the CS faculty
- find/establish an own building for the CS faculty
- implement management systems for the CS faculty
- increase the internet bandwidth
- integration of the campus network into AfgREN
- stable power supply

Nangarhar University

IT Infrastructure

Situation of electrical power supply
- connected to city power (availability 70-75 %)
- diesel generator used as backup solution

Internet connectivity and bandwidth
- 16 Mbps Internet bandwidth in total allocated for five sites
  ◦ main campus: 12 Mbps, distributed to 10 faculties
  ◦ CS faculty: 1,5 Mbps
  ◦ medical faculty: 1 Mbps shared with teaching hospital
  ◦ education faculty: 1,5 Mbps

Number of PC labs
- 12 in total

IT Center
- established in 2011
- 2 PC labs with 32 PCs each
- supported by TU Berlin
- provides 2 different kinds of trainings
  ◦ user application (3 levels)
  ◦ administrative
- provides 3 different kinds of support to NU students and staff
  ◦ training support
  ◦ administration support
  ◦ technical support

Building for CS faculty
- currently located in Jalalabad City (as previously allocated to the Science and Technology University)
- 1 million dollar already provided for the construction of an own building on NU campus by the provincial administration of Nangarhar, but still lack of budget for the purchase of furniture and equipment for PC lab, library and departments

ITC/CS library
- planned

IT Education

CS faculty or department?
- faculty status at NU since 2010 (2005-2010: department in the Engineering Faculty)
- includes 4 departments:
  ◦ Networking and Communications
  ◦ Software Engineering
  ◦ Database and Information Systems
  ◦ Computer Engineering Faculty (not active yet)

Number of lecturers and students in the CS faculty (female/male)
- 19 lecturers: 0 female/19 male (bachelor's/master's degree 4/15)
- 493 students: 3 female/490 male

Number of graduates from the CS faculty
- 423 (bachelor's degree)

Number of people trained in the IT Center
- 203
- 143 in training: 30 female/113 male

IT Administration

Number of employees in the IT Center
- 10

Number of employees used to IT equipment
- 80 %

Which software is used in the administration? (i.e. database for students, lecturers etc.)
- both propriety and open source software

University website? Features?
- developed by the MoCIT, CMS Joomla (http://www.nu.edu.af)

Use of HEMIS?
- not implemented yet

Most urgent needs

- for ITCN: voltage regulator, generator or solar energy solution, UPS

Qandahar University

IT Infrastructure

Situation of electrical power supply
- use of self-produced solar energy (60 kW)
- connected to city power grid (very unstable)
- also use of power generators
- ITCQ and other PC labs only connected to city power grid

Internet connectivity and bandwidth
- AfTEL fiber optic: 8 Mbps since 2013 (AfTEL – NATO)
- previously satellite connection: 20 Mbps (NATO)

Number of PC labs
- 6 in total
- 1 in ITCQ (established 2014)

IT Center
- opened in 2013
- supported by TU Berlin

Building for CS faculty
- not yet, currently located in the ITCQ building

ITC/CS library
- planned

IT Education

CS faculty or department?
- faculty established in 2014

Number of lecturers and students in the CS faculty (female/male)
- 5 lecturers: 0 female/5 male (bachelor's/master's degree 2/3)
- 92 students: 1 female/91 male

Number of graduates from the CS faculty
- none until now

Number of people trained in the IT Center
- 15 university staff members trained for basic network trouble shooting

IT Administration

Number of employees in the IT Center
- 11

Number of employees used to IT equipment
- basic computer knowledge: 90 % of the administration staff, 100 % of the lecturers

Which software is used in the administration? (i.e. database for students, lecturers etc.)
- Microsoft Office
- no specific database or application used for students or lecturers (their records are saved in excel workbooks)

University web site? Features?
- currently down, but will be up soon
- usually up-to-date and informative
- some application forms available
- hosted by the Ministry of Communication (MoC)

Use of HEMIS?
- used for students' registration since 2013

Most urgent needs

- sustainable power supply
- increase of internet bandwidth
- increase of the IT tashkeel
- enlarge budget for IT

Appendix II
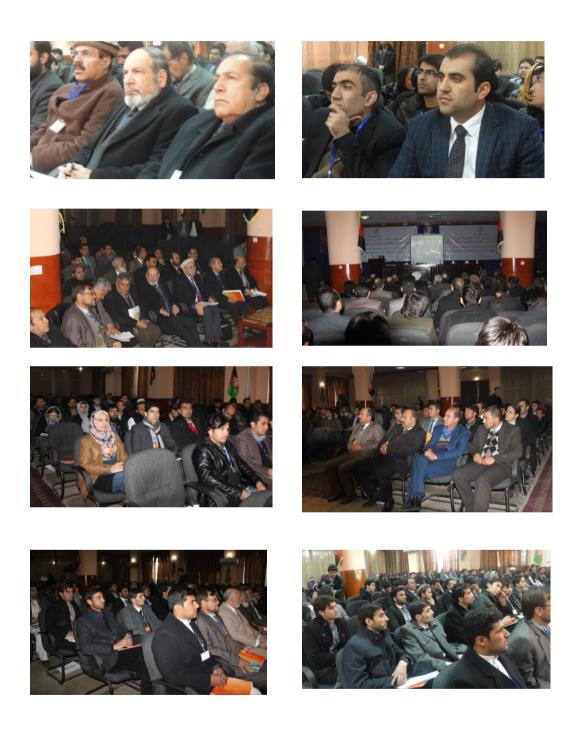
Pictures of the 10th IT Conference: First Day

Pictures of the 10th IT Conference: Second Day

Pictures of the 10th IT Conference: Third Day

Pictures of the 10th IT Conference: Third Day – Awarding of Certificates