ZiiK – Report Nr. 13

Information Technology
in the Field of Higher Education in Iraq

Conference
Berlin,
September 28th to September 30th 2009

Technische Universität Berlin
Center for International and Intercultural Communication (ZiiK)
Faculty of Electrical Engineering and Computer Science
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Acknowledgement

I would like to take the opportunity and heartfully thank all those people who helped organizing the conference and made it a successful event.

At first I would like to give my thanks to Prof. Dr. Hans-Ulrich Heiß, who has supported us throughout the whole successful conference.

And I would like to especially thank Prof. Dr. Gabriele Wendorf, Vice President at the TU Berlin for her opening and greeting words.

My thanks also go to the Iraqi Ambassador in Berlin, His Excellency Mr. Alaa Al-Hashimy, to the Iraqi Cultural Attaché Prof. Al-Abbasi, to the president of the University of Technology of Baghdad, Prof. Kahtan Al-Khazraji as well as all deans and representatives of all 10 Iraqi universities present.

I would also like to thank the German Academic Exchange Service (DAAD) in general for their support, and here especially Mr. Lars Gerold, head of the Iraq Department; alongside with Dr. Schultze, representative of the German Foreign Office, for their attendance, greetings and opening words.

Last but not least I would like to thank all contributors, all moderators, and behind the curtains all interpreters, all minute writers, and all people involved in the whole organization of the conference – without their interest, their help and dedication this conference would not have been possible let alone be such a success.

Nazir Peroz
Introduction

Sustainable and stable IT supply – these were the central topics discussed and covered throughout the three days of the Conference „Information Technology on Higher Education in Iraq“, held on September 28th–30th, 2009 at the TU Berlin.

Financially supported by the German Academic Exchange Service (DAAD), the Center for international and intercultural Communication (ZiiK) at the Faculty for Electrical Engineering and Computer Sciences at the TU Berlin had invited fifteen representatives of ten Iraqi universities - Al-Qadysia, Al-Mustansiriya, Babylon, University of Technology Baghdad, Basrah, Karbala, Mosul, Thi Qar, Tikrit and Sulaimaniya, all affiliated within the area of IT, to participate at this conference.

The aim was to come together and talk about the current situation regarding the IT structures at all respective universities, to discuss various subjects related, to listen to different presentations and contributions in the frame of three different thematic working groups (IT in Teaching and Research; IT Infrastructure in Higher Education, Modernizing Administration), and to finally develop a catalog of measures aiming to realize a sustainable and secure IT supply for the academic field in Iraq.

Within these three working groups, experts contributed and highlighted the various issues attached to the quite broad areas of IT infrastructure, quality assurance in teaching and research, security risks and counter strategies, as well as the impact of IT in modernizing the administration.

Together with the moderators, discussions were conducted and ensured a vital exchange of information, strategies and concepts.

Compared to many other countries in the arabic world, Iraq does have a solid system for education, further education and higher education. However, due to many years of war and destruction, the basic structures have been impaired, e.g. regarding qualified personnel, a stable and reliable power supply, functional building services engineering, (IT) network structures as well as a demand-oriented IT supply system at the institutions of higher education.

Just to give a short overview about the schedule and the course of the conference, I will briefly mention all major points which will all be proceeded in detail in the chapters below.

On the first day, Prof. Dr. Kahtan Al-Khazraji, President of the University of Technology of Baghdad, gave an overview about the current situation regarding IT at the different universities in Iraq.

Then, Prof. Dr. Hans-Ulrich Heiß, Dean of Study at the Faculty for Electrical Engineering and Computer Sciences at the TU Berlin explained about the recent and current developments at this faculty.

To round it up from a historical perspective, Prof. Dr. Horst Zuse, showed the History of Computer Technology.

As a last presentation, I layed out the grounds and importance of a sustainable and secure IT supply system in the area of higher education.
The second day was dedicated to a more specific perspective. At first, all representatives of the ten universities invited gave a short but detailed overview about the current situation of IT at their respective universities. The common ground was quite simple: the academic field in general and the system of higher education especially is in need of strategies and concepts that account for and support the teaching and education, as well as the planning, procurement, implementation, operation and management in all areas of IT. After the presentations, all participants joined one of the workshops to further discuss the mentioned topics, and to draft measures and concept ideas.

On the third and last day, the findings from all workshops were presented to the audience, and some issues further discussed. In the end, the cooperation projects and goals of the ZiiK within the frame of the German-Iraqi University Cooperation were presented.

All contributions and findings of the conference can be found in the next chapters. On behalf of the ZiiK, I would like to say that I am very happy about the success of the conference, and the beginning of the new cooperation.

Nazir Peroz
Monday,  
September 28th

Welcome and Opening

Prof. Dr. Gabriele Wendorf opened the conference by welcoming all participants and expressed her elation that the Technical University (TU) Berlin was 1 of 5 universities selected among 27 nationwide to be supported by the DAAD in order to establish a twinning program between Iraqi and German Universities.

She pointed out that the Zentrum für internationale und interkulturelle Kommunikation (ZiiK) has a vast experience in teaching and research, including in developing countries like Afghanistan and that this would be useful for the Iraq project. Information and communication technology is of major importance today and is one of seven fields of specialization at TU Berlin. According to Prof. Wendorf the conference should be the start of two years of cooperation, exchange of information and common work. As closing words Prof. Wendorf addressed all best wishes to the upcoming project and project members.

His Excellency Mr. Alaa Al-Hashimy welcomed everybody and said that he appreciated the cooperation and enumerated the three important pillars for a successful cooperation. These are a database, a good team and a goal. Further he explained that in Iraq, there are highly skilled people with a positive attitude, but that they suffer from technical isolation.

Therefore they have to make use of this opportunity to open doors for establishing an Iraqi qualification and for Germans and Iraqis get to know each other.

Dr. Andrea Schultze (Research and Academic Relations department, Federal Foreign Office) welcomed everybody on behalf of Mr. Kobler, Head of directorate general for culture and communication and former ambassador in Baghdad. She affirmed that despite the recent political change in Germany the support for Iraq will continue and that global partnerships and networks are very important in the age of globalization. Given the many worldwide conflicts, including the situation in Iraq, the foreign office believes that the investment in education will also help to secure peace.
She quoted U.S. President Kennedy as saying: "There is only one thing that is even more expensive than education: no education."

Dr. Andrea Schultze, Federal Foreign Office

The global network of Goethe schools, DAAD scholars and Humboldt schools wins over the hearts and minds of people in manner without comparison, provides a dialog, and lays a foundation for international relations.

In his efforts to strengthen Germany’s support for science Federal Minister for Foreign Affairs Dr. Steinmeier created the Semiramis program. It has as its core the aim of building a German-Iraqi university and of providing scholarships for Iraqi students to study at German universities. To compete in the global village Iraq needs an up-to-date-infrastructure. An improved IT infrastructure would require qualified, well-trained staff. She honored the ZiiK’s longstanding experience in building such infrastructure and approved the project’s funding by the federal foreign office. She thanked all participants and Iraq for its interest in Germany.

Lars Gerold, Head of Iraq Department, DAAD

He expressed his pleasure about the new German-Iraqi strategic academic partnership, which started in February 2009.

The new contract was signed by Federal Minister for Foreign Affairs Frank Walter Steinmeier and the Iraqi Prime Minister Nuri al-Mailiki and allows for up to 100 scholarships for Master and Ph.D. students each year. Also, an increase in German education in Iraq is desired.

Mr. Gerold explained that the most important project is the partnership between German and Iraqi universities in which the TU is participating. He declared his joy at the positive feedback coming from different regions of Iraq and asserted that TU Berlin is the best partner for Iraqi universities when it comes to Information Technology. The conference will be the starting point for a long cooperation aimed at supporting Iraqi information technology infrastructure in a sustainable way.
Main Lecture

Current Situation of IT in Higher Education in Iraq

Presenter:
Prof. Kahtan Al-Khazraji,
President of the University of Technology Baghdad

In the beginning of his lecture Prof. Al-Khazraji addressed acknowledgement to all conference organizers and guests.

About Iraq
To start, Prof. Al-Khazraji gave an overview about main facts of Iraq. The state has a population of 29.682.000 people. The country reaches an area of 437.072 km².

Iraq’s capital is Baghdad, which is furthermore the largest governorate with a population of 7.15 million people. Referring to this fact the second largest governorate is Nineva with a population of 2.81 million people. The average population growth rate is 3%.

Modern Iraq was historically known as Mesopotamia. It fostered history’s first civilizations and could be mentioned as the leading region of the world for about 3000 years. The most important ancient civilization has been the Sumerian (3500 B.C. to 2000 B.C.), the Babylonian (18th century to 539 B.C.), the Assyrian (1350 B.C. to 612), the Arab-Islamic civilization (637 to 1920) and the modern Iraq (1929 to 2009).

Higher Education in Iraq
After the introductory words concerning Iraq Prof. Al-Khazraji referred to the current situation of Higher Education in Iraq. Iraq has traditionally placed a high value on education. The country’s long intellectual history dates back to the ancient Mesopotamian civilizations. Iraq enjoyed a period of remarkable accomplishments during the early Arab-Islamic empires of the ninth century.

Iraq’s modern higher education sector dates back a century, when a college of law was established in Baghdad in 1908. A number of other colleges and academies were established in the city between the 1920s and the 1950s. In 1960 all were combined and chartered as the University of Baghdad, today one of the biggest and most renowned Iraqi universities.

Universities in Iraq
Nowadays there are 26 universities and 47 technical institutes, more than 200 colleges, 1000 departments and 33 specialized institutes or research centers. In addition all universities account a number of academic staff on over 20.000 people with a proportion of women of 44%. Furthermore the total student enrollment exceeds 255.000.

Almost 50% of the students are enrolled at the 5 Baghdad universities (Mustansiriyah, Technology, Nahrain, Islamic, Baghdad University).
The major fields of study offered by the Iraqi universities are:

- Education
- Arts
- Law
- Social Sciences
- Administration
- Economics
- Natural Sciences
- Medical Sciences
- Veterinary Medicine
- Agriculture
- Engineering and Technology

All in all the qualifications cover over 60 fields of specialization.

Iraqi higher education has a strong orientation towards technical education. Therefore there are 37 Technical Institutes with approximately 60,000 students and 9 technical colleges with a total of 7,500 students, which leads to a total amount of 67,500 students of whom are 22% are women. The teaching staff reaches 3,250 employees. Furthermore engineering is very well developed in Iraqi universities. The University of Technology in Baghdad is considered as the leading center for engineering studies, it is the unique Technical University in Iraq with 13 different colleges (originally named as departments) offering different engineering fields. In addition, 12 other universities offer engineering studies.

Until the wars and sanctions of the 1990s, Iraq had a long, proud tradition of distinguished universities. But in 1990 the time of degradation, devastation and real damage began (1990-2003). In March-April 2003 the invasion led to the destruction of the infrastructure of higher education institutions in Iraq, including buildings, laboratories, libraries, furniture, equipment and books.

With a quotation of an Iraqi professor the impact of the invasion becomes more obvious:

“The university had been looted. My office had been stripped of air conditioning, the desks had gone, the refrigerator had disappeared, the wall has a different color...”

The war caused extensive damage to some technical institutes and colleges but looting and arson caused most of the damage. Table 1 (in the appendix) gives an overview about the dimensions of the universities’ damage.

**Current state of IT in Higher Education in Iraq**

IT equipment was one of the main targets of the looters during and even after the invasion of 2003. Only 3,000 computers out of more than 15,000 existing at universities before March 2003 were left after the looting. In the Commission for Computers and Informatics, which was looted and burned during the war, only 3 out of 600 Pentium IV PCs were left.

Currently the existing number of computers at universities is around 200,000.

Accessories that enhance IT teaching such as software and peripherals are very limited. There is no up to date survey that indicates the real needs of IT equipment for all universities in Iraq. In addition the telecommunication systems are very poor.

In general at each university there exists one computer center. The old well-established universities have good staff but there is a lack of well-trained staff in the more recent established universities. There are other IT-related centers, for example at least one Internet center in every department or college. There is reasonable use of IT equipment without online access in the libraries. Mainly there is a growing opinion respectively anticipation using technology at the Iraqi universities.

There is a limited number of electronic...
teaching/learning aids like videos, CD ROMs, data show etc. in each university. The classrooms are quite traditionally furnished with black or white board. E-books and journals are very limited. Access to Internet in major Iraqi universities (Baghdad, Technology, Nahrain, Mosul, Basrah and in the north part of the country) is available, but with limited bandwidth and speed. In the other universities the service is limited to some extent. There is no intranet in general, besides some attempts.

Conclusions
In general in all Iraqi universities the applications of IT in the fields of teaching, research, administration, organizational structure as well as mechanisms, that are used to provide adequate support to teachers, students and staff are very limited and need to be developed by all means. For a country like Iraq, where the needs are so great and the challenges so numerous, the revitalization of higher education is a pressing priority.

In the end Prof. Al-Khazraji thanked, switching to German language, all conference attendants primarily the members of the DAAD organization for funding this German-Iraqi encounter and supporting the development of the bilateral academic partnership.

Overview:
The Faculty for Electrical Engineering & Computer Sciences at TU Berlin

Presenter:
Prof. Dr. Hans-Ulrich Heiß, Dean of Study at the Faculty IV, TU Berlin

There are currently around 28,000 students enrolled at the Technical University Berlin, 300 Professors and 400 persons teaching staff on the professorial level. The scientific staff numbers 3,000, the technical staff 2,000. There are 2,000 student assistants, mostly engaged in teaching. The annual budget of the TU consists of a governmental funding of 260 million Euros plus 90 million Euros from the European Union and private institutions.

The TU is divided into seven faculties, including a humanities section embedded at the university as demanded by the British government after World War II to provide an ethical background for the technological sciences.

Faculty IV
The Faculty IV itself is subdivided into the following institutes:
- Energy and Automation
- High Frequency and Semiconductors
- Telecommunications Systems
- Computer Engineering and Microelectronics

3,500 students are currently studying at the Faculty, of whom 1,600 study to become Computer Scientists, 800 study Computer Engineering and 1,100 Electrical Engineering. Out of 60 Professors 20 are paid by external sources. Of the Scientific staff 300 of 450 receive external funding.
Technicians involved in administration number 130. 16 students receive their Ph.D. in this faculty each year. Research at the Technical University is clustered around the following strategic research topics:

1. Information and communication
2. Design of living spaces
3. Health and nutrition
4. Traffic and mobility
5. Energy
6. Water
7. Knowledge management and transfer.

Around these topics research institutions are clustered, which are in one or other ways affiliated with the university structures. All together this structure of up to 2.000 researchers provides excellent opportunities for students enrolled at the Faculty IV.

The Bachelor (6-7 semesters) and consecutive Master Programs (3-4 semesters) have a strong scientific orientation with an additional emphasize on employability. Besides the traditional training in programming and software engineering, students are also educated in soft skills like team work, presentation techniques and writing abilities.

The quality of education is guaranteed by measures of quality assurance like regular teaching evaluation and progress control. Counseling is organized in a mentoring program in which each freshman is assigned a professor as his individual mentor. The curriculum is organized in modules. The Master program is mostly research oriented. It provides specialization and depth in the chosen field of practice.

In addition the students are able to access the extensive learning opportunity offered by the ZiiK.

Prof. Dr. Hans-Ulrich Heiß, Dean of Study at the Faculty IV, TU Berlin

The ZiiK – Zentrum für internationale und interkulturelle Kommunikation

The Center for International and Intercultural Communication at the faculty IV provides international students with specific tutorials and student counseling. The ZiiK has been offering special courses in the area of "computer science in developing countries" for 15 years. Since 2001, the ZiiK has been developing and realizing supply-systems and strategies in the field of higher education in developing countries, especially in Afghanistan.

A special program has been established in 2002 in cooperation with the German Academic Exchange Service (DAAD) and the Worldbank.

The Afghanistan project supports the development of IT curricula, assists in setting up IT centers and provides training for lecturers.

Furthermore, 25 Afghan Master students are currently enrolled at the Technical University as part of this cooperation project.
Development and History of the Computer

Presenter: Prof. Dr. Horst Zuse, TU Berlin

In the beginning of his lecture Dr. Zuse gave general information concerning the development of the computer. IBM PCs exist since 1981 and this company is the only one that could survive the crashes in the 1980s. On January 24th, 1984 the Macintosh was introduced. The HP 35/45/65 computer, which came up in 1972 have been a sensation, but came up very expensive (app. 1000 DM). These computers had a great influence. They entailed the end of the slide rule (old calculation instrument) and the end of the tables of logarithms. But already in 1971 the first Email-computer has been established. And since 1964 the IBM 360 existed with a hardware that could fill an office.

The word computer originates in a person who did calculate, expensive calculations, solving engineering problems and relief. Already Charles Babbage (1792 - 1871) had the first idea of a modern computer, more the first idea of programming. During the Second World War the cipher machines Lorenz SZ42 came up, which were used for coding wireless messaging. Furthermore Dr. Zuse mentioned computer projects in the 1940s like “Colossus” by Toni Sale (1943-45), MARK I in the USA (1944), ENIAC with 20,000 vacuum tubes (1944) and COBOL by Grace Hooper in 1946, that coined the term computer “bug” by an incident with a fly in a relay of the MARK I.

Konrad Zuse and the computer
After this general information concerning computers, Dr. Zuse led over to the “Zuse impact” referring to the invention of PC and started with an insight in the life of Konrad Zuse.

Konrad Zuse was born in Berlin on June 22, 1910. Konrad Zuse made his school leaving examination in 1928 in Hoyerswerda / Saxonia, studied mainly machine construction and architecture in Berlin until 1934. In between he used his ability of drawing for a job with Ford, where he has been responsible for the graphical transcription of ads. Finally he decided to study civil engineering, was awarded his diploma in 1935, and obtained a position with the Henschel Flugzeugwerke (Henschel Aviation Company) in Berlin in 1935. In 1934, driven by his dislike of the time-consuming calculations he had to perform as a civil engineer, Konrad Zuse began to formulate his first ideas on computing.

With this foundation Konrad Zuse defined the logical architecture of his Z1, Z2, Z3, and Z4 computers. From the beginning it was clear that his computers should be able to read an arbitrary meaningful sequence of instructions from a punch tape and the machines should work in the binary number system (0-1-principle).
The Z1 computer
The emergence of the Z1 with 3,000 metal sheets can be determined in the period of 1936 until 1938. In 1937 Zuse finished the memory of the Z1. Remarkably it is the first computer of the world, the first freely programmable, binary-based machine in the world; totally financed by private funds. In the period of 1987 and 1989 Zuse reconstructed the Z1.

Konrad Zuse with the rebuilt Z1 in the Deutsche Technik Museum in Berlin (1989)

The masterpiece Z3
On May 12th, 1941 Zuse accomplished the Z3, the masterpiece of his computer inventions. Dr. Horst Zuse outlined that his father built the machine Z3 from 1939 to 1941 in Berlin with some friends and a small support by the government. The Z3 was a reliable working machine for very complicated arithmetic calculations, which is freely programmable and is based on a binary floating point number and switching system. During the Second World War Zuse hunkered down in Hinterstein (1945 - 1947), where he hid parts of the Z4, which he had developed between 1942 and 1945, in a barn of the Hotel Steinadler. At the same time Konrad Zuse formulated the remarkably sophisticated programming language “Plankalkül”. In 1948, representatives from IBM visited Konrad Zuse in Hopferau. But only a short option contract was concluded between Konrad Zuse and IBM of 30,000 franc and a renting time of 5 years. In 1949 Prof. Eduard Stiefel from the ETH-Zürich (Switzerland) heard about the computer Z4 in the Bavarian cottage and inspected the Z4 computer. He wanted to rent the computer for his new Institute for Applied Mathematics.

At the same time Konrad Zuse founded the Zuse KG with five employees in 1949. The first task of the Zuse KG was to restore the Z4 for delivery to the ETH-Zürich, which paid an amount of 40,000 Swiss Francs (around 100,000 DM at that time) in advance for the Z4. In the course of this contract the Zuse KG has been founded and the commercial computer production started. Zuse KG enjoyed a good reputation. For example popular companies like Leica or Leitz used the Z5 for their lenses measuring. In 1957 the Z22 came up as the first computer based on vacuum tubes. The jump in machine numbers from the Z11 to the Z22 signified the change of technology (first electronic computer). The Z22 was also the first Zuse KG computer to use a fixed-point arithmetic unit. The machine was successfully delivered to universities, companies and research institutes. In 1955 the Z64, a full automatically drawing machine, a Graphomat with accuracy of 1/20 mm, has been the last contribution of Konrad Zuse to the computer development.

The Zuse Graphomat Z64
The Graphomat Z64 was a very reliable and well-accepted machine in industry and research institutes. The high accuracy of drawings, the reliability, the low maintenance costs, and the enormous variety of applications were highly appreciated. All in all, from 1949 to 1969 (Zuse KG was no longer owned and controlled by Konrad Zuse), the Zuse KG produced about 250 computers with a value of 100 Million DM.

Konrad Zuse’s major activities after 1964 were his autobiography, his (oil) paintings, the computing universe, the reconstruction of the Z1 and the Helix-Tower.

For detailed information please refer to the following webpage: [http://www.epemag.com/zuse/](http://www.epemag.com/zuse/)

**IT Supply Systems in the Field of Higher Education**

*Presenter:*

**Dr. Nazir Peroz, ZiiK, TU Berlin**

Dr. Nazir Peroz focused his lecture on the basis for a secure and sustainable IT supply system for Higher Education. IT has changed our world and has also entered the field of Higher Education. IT influences learning, curricula, research and management, communication, searching for literature and private life.

Poor countries and countries involved in wars are often left behind these developments, but a modern institution of higher education needs a sustainable and secure IT supply system in the areas of teaching, research, and administration.

Dr. Peroz explained that his experience is based on more than 20 years of education in the field of „Computer Science for Developing Countries“ at TU Berlin and more than 7 years of activities in the reconstruction of academic structures in the field of IT in Afghanistan. This Afghanistan project included the construction of an IT center, the education of students and staff members, the introduction of a Bachelor of Computer Science and also of a Master of Computer Science, the establishment of libraries and the hosting of conferences.

Dr. Nazir Peroz, Head of ZiiK, TU Berlin

Dr. Peroz declared that Iraq is not Afghanistan. Iraq has a good education system and a good financial basis. But nevertheless there are deficits due to the current situation. Therefore the higher education needs a national IT strategy. For sustainability, security, and compatibility of the new technologies quality standards are important.

Due to the lack of personnel, infrastructure, education, experts, administration, and management and to account for culture (like language) a plan for an IT strategy for higher education is necessary. This plan has to give an overview about existing resources and missing resources, necessary knowledge, the use and the target group.
Dr. Peroz then presented the following features of a secure and sustainable IT supply system, which have to be provided by an adequate IT policy: Infrastructure, Education, Management and Funding.

The infrastructure components are:
- Buildings, electricity, hard- and software, network, libraries and funding.

The components of education and a good curriculum are:
- Regulation, lecturers, students, teaching materials, cooperation and funding.

The components of management are:
- Administration, personnel, infrastructure, expertise, cooperation and funding.

The components of funding are:
- The government, donor countries, NGOs, companies, foundations and private donors.

Together all features and their components build the functional IT supply system. If all parts come together, it would enable a sustainable and secure IT supply system. Whether this will work depends on the IT policy. This requires a legal framework, responsibility, the establishment of efficient IT infrastructure, education and further education, the advancement of talented young people, modernizing the administration and modernizing the coordination. Following these strategies the aims of quality, sustainability, compatibility and security can be reached. Dr. Peroz emphasized that there is need for IT engineers and for administrators that can manage the system. One issue is how to motivate the staff.

The main goal of the conference is to define the needs of Iraqi universities in order to establish IT systems in the field of higher education.
Tuesday, September 29th

IT in Teaching and Research

Presenters:
Dr. Mahmud Al-Shammry, University of Technology Baghdad
Dr. Mohammed Al-Salam, University of Technology Baghdad
Dr. Shroouq Al-Janabi, Alkadisiy University
Dr. Kamaran Faraj, Sulaymaniya University

Moderator:
Prof. Dr. Klaus Obermayer, TU Berlin

After the opening of the 2nd conference day by Prof. Dr. Obermayer, Dr. Al-Shammry started his presentation with the quotation: “Universities should treat learning always as consisting of not yet wholly solved problems and hence always in a research mode.” (Humboldt, quoted by Elton, 2005, 110)

According to Dr. Al-Shammry's expectation, in the future, all educational institutions will have a virtual as well as a physical location - Iraq at the moment has a physical one, but the virtual one is still in progress - and students can now access most of the information they need via their web browser at any time and in any place. Information technology frees educational institutions from the constraints of space and time, and enables the delivery of educational services anywhere and anytime. In the IT age, students do not lack information, but rather the time to find, to analyze, to understand and to apply information. It changed education from a closed, rigid and teacher-oriented process, to an interactive educational experience centered on the learner. The problem of the Iraqi higher education system teaching is that around 80% of the total teaching hours are theoretical, neglecting the practical aspects. Dr. Al-Shammry estimated that about 95% of students have a PC, and so they are looking forward to using technology at Iraqi universities. At the same time, there is no clear vision of a technology-oriented education, views are quite conservative and traditional, and there aren’t high expectations for innovative uses of technology. Over 30% of students are not confident with using technology, don’t have access to the Internet, or do not recognize the value of new technology to education.

Institutional use of technology has the following goals: to make systems and services robust, accessible and visible, to provide clear explanations about technologies that students are expected to use, to base the use of technology on needs and to give students the necessary tools and methods for using technology.

He underlined that he backed up his ideas by statistics on the use of technology by Iraqi students, including mobile phones and MP3 players, and emphasized that technology is already highly embedded in people’s (and especially in students’) lives (see Plate 17).
But still knowledge and skills are missing. Therefore, he is awaiting the partnership program and support of the German partner.

The second presenter, Dr. Al-Salam, focused his presentation on the development of a curriculum. He proposed that in developing a curriculum for under-graduate study in Information Technology, one of the first steps would be to identify and organize the material that would be appropriate for that level. He explained that the Curriculum Committee sought to accomplish this goal by convening a set of knowledge-area focus groups, and by assigning to each one the responsibility of defining the body of knowledge associated with one of the following knowledge areas: Information Technology Fundamentals, Human Computer Interaction, Information Assurance and Security, Information Management, Integrative Programming& Technologies, Networking, Programming Fundamentals, Platform Technologies, System Administration, System Integration & Architecture, Social and Professional Issues and Web Systems and Technologies.

For these areas of knowledge curriculum programs have to be designed. Dr. Al-Salam presented a table of some Iraqi Universities showing the syllabus for the first 4 years of undergraduate studies in the different Information Technology areas. The syllabi of the following universities were compared: Dayala University, Al-Basrah University, Al-Mousul University, Al-Nahrain University, University of Technology (Baghdad), Al-Mustansirea University, and Baghdad University. It can be seen that the programs at each university are different.

Dr. Al-Salam summarized the problems regarding the syllabus preparation and implementation in Iraqi universities in the following manner:

1. The Information Technology programs at Iraqi universities include the following specializations: Computer Science, Computer Engineering, Software Engineering and Information Technology, but all universities have different views about information technology and their specialization.
2. There is a lack of understanding of the syllabi, and not least about the actual meaning and purpose of a “syllabus”.
3. All the universities choose their own syllabus without any standard rules or concepts.
4. Many lecturers don’t provide their syllabus to the students, and there is a lack of transparency.

Finally Dr. Al-Salam made the following recommendations to avoid these problems:

1. The current approaches need to be reviewed by German experts to give their suggestions in order to avoid conflict between IT specialization programs. These should be reflected in the programs offered by universities in the IT specialization.
2. There must be specialist-led training courses to show teachers how to make a course syllabus. These courses must include meaning, concepts, rules of preparation and rules of implementation of course syllabi.
3. German universities may be able to help Iraqi universities to review their syllabi.

The third presenter, Dr. Al-Janabi, said that Iraqi universities were looking
forward to collaborations with universities in other countries, to joint research projects and joint supervision and examination, as well as to contributing to staff development, especially for people that graduated during the sanctions period. She stressed the need for support to improve research skills (post doctoral, Ph.D. students), free access to information resources and learning facilities including libraries and databases, and twinning agreements with well-established German universities to exchange expertise, enhance faculty training, and provide scholarships.

![Dr. Shroouq Al-Janabi, Al gadisiy University](image)

Further needs include the establishment of tele task rooms, e-classrooms, integrated infrastructure, training and development centers, Learning management system LMS (e-portal) and e-libraries. She summarized her talk with the phrase: „Without real help we cannot do a lot.“

The fourth presenter, Dr. Faraj, described the objective of the conference: to exchange information with representatives of Iraqi Universities about the status of IT and its implementation, especially in the fields of Teaching and Research, Infrastructure, Modernizing Administration, Cooperation and Exchange Programs.

He expressed his gratitude to all the organizations, universities and authorities to give them opportunity to express their scientific ideas. Then, he presented a short summary of the curriculum of the four government-supported universities of the Kurdistan Region. Further, he outlined the importance of Information Technology for teaching and research, including, for example, the increased ease with which researchers can publish a paper.

![Dr. Kamaran Faraj, Sulaymaniya University](image)

He explained the main causes for popularity of IT in teaching and research, these are: Time efficiency, space efficiency (globally), working efficiency (computers are reliable). Finally, he asked for help to improve the IT-system in Iraq as there is a shortage of Iraqi teachers. He asked for training, for the possibility of PhD students getting a second supervisor from Germany, and for them to have the opportunity to do post-doctoral work in Germany.
IT Infrastructure in Higher Education

Presenters:
Dr. Ibtesam Al-Saedi, University of Technology Baghdad
Dr. Abbas Abdulhussein, Babylon University
Dr. Bassam Mustafa, Mosul University
Prof. Abdulkareem Alkhaled, Basrah University
Prof. Amer Al-Mallah, Mustansiriyyah University

Moderator:
Prof. Dr. Klaus Obermayer

Dr. Al-Saedi said she is honored to have this opportunity to talk about IT infrastructure at Universities in Iraq and explained that the education system in Iraq used to being considered to be among the best in the Arab region until the 1980s. She problematized the fact that the education sector has been a prime victim as a result for a series of wars and the UN sanctions from 1990 until 2003 hindered all attempts at innovation and paralyzed technological and scientific development in Iraq, while other countries were making fast and steady steps in the field.

The embargo on importation of knowledge and technical products, and the emigration of academics and experts left the Iraqi universities with outdated or no facilities and equipment, and with a lack of modern tools and disciplines such as Information Communication Technologies (ICTs). A recent situation analysis of the education sector identified major issues and problems facing higher education, namely:

- Inadequate infrastructure, with outdated or no facilities and equipment,
- A lack of modern tools and curricula for important disciplines such as information and communications technology;
- A lack communication channels among faculties, both inside Iraq and with foreign scholars, and
- A weak relationship between higher education and the labor market.

This series of unfortunate events was a burden that universities had to carry all these years. Sadly, with inadequate infrastructure and a lack of qualified human resources, the universities could no longer follow the rapid changes in the theoretical and practical aspects in the ICT field.

Many foundations tried to help the Universities in Iraq. For example, UN-ESCWA proposed Technical Cooperation between MHESR and Cisco Systems. The main goal of the project is to establish 5 regional networking academies in Baghdad (2), Basrah (1), Mosul (1), and Arbil (1) and each of these is responsible for establishing a specified number of local academies in several universities. The program was postponed many times because of the unstable state in Lebanon and a lack of infrastructure but succeed in training many people in IT Essentials and Network.
The Iraqi government is now opening the door to global partnerships in rebuilding not only its infrastructure and its economy, but also its intellectual capital. For example: Iraq has launched a five-year, $1 billion higher education plan to boost the nation’s science and technology workforce while promoting knowledge-based sustainable development.

The plan was announced by Iraq Prime Minister Nouri al-Maliki who was in the United States of America to sign an implementation agreement and establish an American Universities-Iraq Consortium. The plan will be implemented in two phases:

1. A scholarship initiative to send up to 10,000 Iraqi students abroad each year over the next five years. Under a $54 million pilot programme, 500 students will go to the USA in the 2009-2010 academic year. The degrees include engineering, health, science and technology as well as education.

2. The second phase of the plan involves an overhaul of the entire Iraq education system from K-12 to higher education. The focus will be on rebuilding university infrastructure, including new laboratories and establishing Internet connections.

To get more benefit from all these programs with the USA and other countries, the following important points need to be taken into account: When these students complete their studies and return back to Iraq, it is necessary for them to find a suitable environment to work in their universities to not lose the major priorities for the aims of higher education in Iraq and ensure full benefit.

Dr. Al-Saedi emphasized the need to work parallel in all directions instead of waiting until phase 1 is completed to start the second.

In the present world, which is dynamic and knowledge based, universities have a much wider role to play in creating, preserving, organizing, transmitting and applying knowledge. Modern educational technologies developed from information technology will certainly differ in terms of access, interaction, curriculum and instruction methods. Communication and information systems have played an important role in disrupting or promoting technologies. But the information and communications technology infrastructure is to influence and shape the nature of higher education institutions and the practices of faculty and administrators.

The important keys of IT infrastructure are:

- Hardware
- Network
- Leadership and skills (information leadership, acceptance of delegation and organizational risk / responsibility, innovation use of information)
- Budgets, policy (access to information, information privacy, information security and ownership of faculty course materials)

Physical structures that form any foundation include critical Parameters:
People use IT

People support IT

1- People Support IT: Most of the staff in the Iraqi IT Centers gets their experience depending on their self-training rather than the standard training courses. Even those who join training courses don't learn enough, because the trainers do not have a sufficient expertise.

2- People Use IT:
If we go ahead and install an IT project for certain university campus, the project will fail if we don't support it with trained staff. We have to draw a plan to work with the following major IT factors in parallel:

- Hardware
- Software
- Connectivity
- People

Dr. Al-Saedi then handed over to Dr. Abbas Abdulhussein, who continued the presentation.

Dr. Abdulhussein stated at the very start, that the IT infrastructure in Iraqi universities is either incomplete or inadequate. But to know more thoroughly, what that means it is important to clarify what IT infrastructure is.
Dr. Mustafa described the current state of being and the needs for the future regarding IT infrastructure at Iraqi universities. He mentioned the following aspects of ICT:

- There is a need to licensed software. Many existing packages, such as Matlab, AUTO CAD and others, need subscription.
- Windows OS is mostly used as platform. There is not much experience in dealing with Operating Systems based on open source.
- There is a lack of professional designers for software packages. There is a need for experienced designers.
- The curriculum is not supported or does not meet the requirements.
- Bad management for human resources prevents developing some of the graduates who have programming skills.

Providing access to these resources by legitimating users complicates this aspect immensely with authentification and security issues.

There were attempts from some Universities to implement international online programs for workshops and lectures at the University of Baghdad through broadcasting Internet system from 2005 to 2007.

Dr. Bassam Mustafa handed over to Prof. Alkhaled from Basrah University, who went on to explain, that practically the entire teaching body needs in-service training in order to meet international standards.

The lack of professional persons in all aspects of education, training and management is to be overcome. The academic curricula at most levels and disciplines are outdated, if not obsolete and require reform.

There are ideas for regional networking based on a trisection of Iraq into north, middle and south. To focus on some important priorities and implement some of them in parallel seems to be a viable way to start the project.

There is an urgent need to High Speed LANs connecting all PCs at each university. A Gigabit Ethernet is suitable for most of the Universities.

Information infrastructure includes library databases such as library catalogs, periodical collections with full-text articles, CD-ROM resources, remote library access, Internet resources, and websites.

Consequently, upgrading these resources and creating web sites is desired. Furthermore there is need for student information systems, and student administrative systems for tracking financial aid, and credits completed.
After 2003 many foundations started to establish ICT-Infrastructure for different universities. There are even video-conference-utilities at some of the universities, but still the very same basic problems like difficulties accessing the Internet.

More complex networks connections should be implemented for some Universities like Baghdad University, which may need Gateways, Bridges, Routers, Switches and Hubs. An urgent need was expressed to establish WANs (Wide Area Networks) connecting all the universities and research Centres. At this point of the presentation Prof. Alkhaled handed on to Prof. Al-Mallah.

Prof. Al-Mallah explained that the administrative staff and the university leaders need retraining to rehabilitate the system from being heavily centralized to a more autonomous decentralized one. This training must be done inside and outside Iraq. Opening more training centers inside Iraq is an additional task.

Further implications and ideas are to be discussed in the working group on IT infrastructure.

**IT for modernizing Administration**

**Presenters:**
- Dr. Salih Karaawi, University of Technology Baghdad
- Prof. Dr. Hilal Al-Qurayshi, University of Technology Baghdad
- Dr. Saeed Ali, University of Tikrit
- Kareem Jebur, Thiqar University

**Moderator:**
- Prof. Dr. Klaus Obermayer

At first Dr. Karaawi showed a map of Iraq to point out that in each big city there is a university; in Baghdad there are even five. Further Dr. Karaawi mentioned that Iraq is proud of its traditional role as a regional centre of learning, as was demonstrated in 1963 when one of the most prestigious universities of the country was named after the traditional “Mustansiriyia” school that had been founded in Baghdad in 1280. This might have a great impact on science and culture.

Iraq’s first and largest university, Baghdad University, was founded in 1957, uniting several colleges that had been established earlier, including the College of Law (founded 1908), the Higher Teachers’ Training College (1923...
During the last 20 years, the official policy of establishing a university in each governorate has led to a considerable quantitative expansion, with 14 new universities. Two of them, those in Thi-Qar and Kirkuk were established as recently as 2002 and Wassit in February 2003 (see table 2 in the appendix for an overview).

In today’s Higher Education in Iraq IT also takes center stage. But the growing IT usage arouses an IT management modernizing strategy. Modernizing the IT strategy is very important for Iraq. There are several ways to realize IT management. Some are underlining the training of the IT staff, others thinking of software connection, hardware and so forth. Supporting both ways would be the best. IT management is the base, but is limited on fields and purposes for universities. It differs from university to university. Some universities have several IT centers or services and networks, but others are poor of these components. There are several attempts to build networks and IT centers.

Nowadays all universities are under authority of Ministry of Higher Education and Scientific Research. Therefore some universities are thinking of decentralization, because the administrative structure is highly centralized. The management of IT resources and communication systems is poor.

Dr. Karaawi referred to prepared tables (tables 1-5 in the appendix), which show the relation of universities towards IT, IT centers and services. Information has been collected of several universities to show the number of colleges, the location and number of IT service centers. For example, in Thi-Qar just recently an IT center has been established and IT services can be offered. And for example, Al-Qadysia has one IT service center. IT center could be used for Internet services or being specialized for intranet and LANs for specifications. This fact considers the bandwidth of the center the bandwidth of the system and for example number of computer that are connected.

Some universities have a bandwidth of 256kb/s download, but others already have up to 256mb/s.

Before starting his lecture, Dr. Ali emphasized that in his presentation some universities are not included as well as some changes occurred that couldn’t be integrated. Table 1 (in the appendix) shows this overview of universities in Iraq and their number of established IT services.

Dr. Ali mentioned that even if the number differs from one university to another most of them established three IT centers. But there are some universities that do not have Internet access or IT centers.
It is obvious that there is a huge lack of service features in the field of IT and it could be outlined that the implementation of IT is difficult in the field of apprenticeship and instructors.

Referring to this fact the most relevant problem is the small number of IT centers and the very limited and instable access to the Internet.

Related to the table 3 (in the appendix) it is obvious that the University of Technology in Baghdad as well as the universities of Mosul, Sulaimaniya and Basrah do have software-systems in all six fields (Data Base, Store Management, Payroll System, Manpower, e-Archive, e-Library) of IT-management. Other universities try to establish software systems step by step while some don’t have any software systems implemented.

As closing words Dr. Ali expressed his wish towards the German partners to visit Iraqi universities for a better understanding of the situation and to visualize the current problems and the demand in the field of IT.

In the beginning of his presentation Mr. Jebur referred to table 4 (in the appendix). This table contains an overview for selected universities and the implemented IT colleges. Therefore the University of Technology in Baghdad has colleges for Computer Engineering and Information Technology, Control and Systems Engineering and Computer Science. The University of Al-Mustansiriyia and University of Basrah have already implemented the College of Computer Engineering, College of Science - Computer Science Department and the Education College - Computer Science.

In addition to the mentioned colleges the University of Mosul has colleges for Software Engineering and Computer Engineering implemented. The University of Babylon, Karbala, Kirkuk and Sulaimaniya could just realized only one College for Computer Science.

Further he catered to table 5 (in the appendix) that gives an overview of the mentioned universities and the relevant information concerning the implementation of IT centers at each university. For example, the University of Technology (UoT) in Baghdad could realize an IT center that consists of some places within the UoT Campus and university of Baghdad. The University of Basrah implemented a Computer Center, which is divided in two institutions. One place is at the Computer Center-Garmat Ali Campus and the other at the University presidency office at Aljumhooriya Campus. But all in all the implementation of IT centers at the universities is still under establishement.
Dr. Al-Qurayshi responded to the difficulties and restrictions in the field of establishing an IT infrastructure that could be concluded. First: The information in all universities might be incorrect or false. Therefore the output won’t be useful for planning. Thus the conditions and methods to collect all required information are challenging. There are just few or less Iraqi experts in the field of IT and technology administration, as it is clear from the tables, and there is shortage in technical staff due to very few training courses.

Second: Hardware and infrastructure related to IT like networks, PCs, components and devices are limited. There is also a limitation of management for control and transmission as well as a management for processing the information from one side to another. Another difficulty is the number of users, who aren’t able to manage all systems or information and the high number of staff and employees that prefer dealing with information by paper and handwriting.

Nearly all computer centers in the universities have the aim to build up training centers or sometimes Internet centers including dealing with information, processing, construction and software as well as training beginners. In addition the software usage differs from one university to another. Some of the universities do not have the possibility to process the information from one center to another. This fact will cause some problems within the usage of the network and management processing as well as data warehouse and data mining, which is related to the network. A Database for universities and data processing between universities is needed if suitable communication system is available. Universities in Iraq also have to deal with a limitation of Wireless LAN (some limitations on the frequencies of communication channels). And concerning the IT within the universities there is a need of security and firm insurance systems.

Dr. Al-Qurayshi ended his presentation with suggestions that included the following points:

- Technical support (Solutions for documents management and information sharing to improve workflow, Secure monitoring System for information transfer between universities)
- Financial support
- Training of members and students
- Construction of a network between other universities concerning training and communication
- Supplement of E-learning, conference and E-library.
WORKING GROUPS

IT in Teaching and Research

Participants:
Dr. Al-Janabi, Dr. Al-Shammry, Dr. Al-Salam, Dr. Faraj, Mr. Khyeat, Prof. Dr. Britta Schinzel (University of Freiburg), Ms. Abbas (Interpreter)

Keynote:
Prof. Dr. Uwe Nestmann, TU Berlin

Moderator:
René Herlitz, ZiiK, TU Berlin

Mr. Herlitz welcomed everybody and presented the program for the working group. The current situation in IT teaching and research should be analyzed first, and information should be gathered following the presentations in the morning. As a second step, these information should be discussed to gain a future perspective, and, lastly, a catalog of measures should be set up.

Prof. Dr. Nestmann then presented the current situation of teaching and research in the field of IT in Germany, and especially at the TU Berlin, emphasizing on three major topics: facts, procedures and guidelines. As facts he presented the institutions by which the design of academic programs in Germany are restricted. These are internal decision bodies, professional organizations, the Council of university presidents, the Accreditation agency, the local state government and federal government. The decisions made here turn into rules, policies and habits. These rules pass different levels, these are f. ex. the federal state, then the TU Berlin with its own guidelines of rights and duties for all students and the guideline for exams for all study plans, and, at least the school of EECS. He explained the ancient diploma system and illustrated the differences between that to the new uniform system of bachelor or master degrees.

Prof. Dr. Nestmann also spoke about ongoing debates on this issue. At the TU there are the three bachelor programs. Computer sciences, computer engineering and electrical engineering. He mentioned the reduction of schooldays in Germany to twelve years for a high school admittance. Dr. Al-Shammry explained that in Iraq, they have a system of six years, three years and another three years, so in a sum a total of 12 years before getting to the university.

Prof. Dr. Nestmann discussed the different possible doctor titles in computer sciences, depending on which institution issues them. Mr. Khyeat wanted to know if the doctor title in Germany was equivalent to that in UK.

Dr. Al-Shammry mentioned that now Iraq is going to have a federal system, and he wanted to know who has the final say in Germany; the federal or local policymakers. Prof. Nestmann explained that many decisions are taken by the local level. Then he discussed the properties of the bachelor’s programs. Its goals are:

1) teaching the scientific foundations of the discipline and
2) reaching employability.

So the challenge is how to „squeeze” both goals into a 3-year program. After this, he showed the Bachelor’s program in Computer Sciences at the TU Berlin that is pretty much standard in all German Universities. He said that for a technical university they had surprisingly much theory.

Mr. Khyeat asked if there was any introduction course into computers.
Prof. Nestmann explained that in the beginning there is a short introduction but they don’t teach windows, students have to learn it by themselves. Some students may be very good before coming to university, some are not. The preparation course is an experimental course to learn how to do science and research, where to find information, how to use scientific tools and how to learn thinking. Students get only a short introduction to Java of one week from a student organization, this was a surprising fact for the Iraqi participants. Prof. Dr. Nestmann explained that they considered it more important to teach functional programming, but that there were different, also contradictory opinions between more conservative and younger lecturers. Dr. Al-Salam mentioned that in most Iraqi universities, they don’t learn Java. Dr. Al-Shammry wanted to know how the project course worked, and if students chose their own project or if it was chosen by the lecturer. Prof Nestmann explained, mostly lecturers gave the projects, but students had only some limited help. Dr. Faraj thought the teamwork aspect particularly important.

Prof. Dr. Nestmann further explained the difference between the two different systems of higher education in Germany, Fachhochschulen (FH, university of applied science) and Universities. FHs are more directed at the labor market, whereas Universities are more scientific. FHs cannot grant doctorates. Prof. Dr. Nestmann mentioned that the two systems are now becoming quite similar because of the implementation of the Bachelor system.

Mr. Khyeat wanted to know what “social aspects” course, meant. Mr. Herlitz replied it covered, for example, issues such as data privacy or the influence that computer have on the society. Prof. Dr. Nestmann presented the so-called minor subjects which aim to help the student understand terminology and learn different ways of analyzing to be prepared for multidisciplinary work. Examples of fields of minor subjects are IT for developing countries and empirical methods for social sciences.

Prof. Dr. Nestmann also outlined aspects of the master’s program, including its research orientation, specialization and depth, broad range of topics, integration into research activities of faculty. Part of the Master courses are in English. Admissions policy of this program includes the requirement of an appropriate bachelor degree, the TOEFL and a German language test for non-native speakers. The Master’s Program is very flexible and open, in contrast to the Bachelor. Students can get credit points also from
other universities in Berlin. The specialization areas in the Master program (system engineering, dependable systems, intelligent systems, communication-based systems). Iraqis did not understand why CS in Germany was more frequently studied by males, as they said in Iraq it is the opposite way round. Prof. Dr. Nestmann then presented support activities for students such as diverse offers of consultation and supervision. He explained that there is a lot of online teaching and learning. This doesn’t replace face-to-face teaching but is highly effective. There is also quality management, that aims at the identification and modeling of “process knowledge”, it means how to handle affairs in the context of educational affairs and concerns, for example how to deal with exams. The TU follows the so-called „Humboldtisches Bildungsideal“, which proposes that teachers should not only be teaching but also doing research. Considering the aspects of learning versus teaching, Prof. Dr. Nestmann argued that the knowledge of students should not only be based on their teachers, students should also learn by themselves. The most important thing is to never stop improving.

After the break, Mr. Herlitz summarized the problems of Iraqi teaching and research. Dr. Al-Salam stated that the curriculum in Iraq is prepared first by the college or certain departments, then, there is a small scientific community that meets, and the result of their discussion will be brought to the level of the community of the whole university. If they agree, the ministry cannot intervene. This procedure cannot take place annually, changes have to be planned far in advance. He said they have flexibility for teachers who can change 20% of their syllabus (each year). Dr. Al-Shammry interposed that still a lot in the field of education is centralized. Students have a choice „on the paper“ but he does not get what he wants, its according to the marks he gets in school.

Mr. Herlitz mentioned that the other issue is the always changing technology and the adoption of the curriculum. The curriculum should be designed in such a way as to help you find a job. Even if there are a lot of IT centers, the staff has to be qualified. Probably there is a need for IT-training. CS is very often thought theoretically without no training, people can have difficulties finding jobs.

Dr. Al-Shammry explained that universities don’t give their students the required practical experience. The syllabus in many universities is decided without much intense discussion. Nowadays, through the internet connection with many foreign universities it’s getting better. They can compare their syllabus to others. Dr. Al-Shammry reported about the networking academy project of the UN in cooperation with CISCO. It is related to networks and designed to benefit CISCO management. They are training Iraqi staff to take up work in their company.

To summarize, Mr. Herlitz gathered the problems for IT in teaching and research. One important problem is that well-qualified staff leaves the country because of security reasons. There is also a lack of equipment. There are libraries, but not good ones, not up-to-date. Information resources in general are bad. All agreed that there is a need of a good training center and a continuous education center.

Dr. Al-Shammry claimed for license packages. Dr. Faraj explained that they have to compare their curriculum to others. Dr. Al-Shammry stated that the conditions for research are not good. Teachers are overloaded with lectures. There is not enough encouragement and a negative environment for researchers.
There was a lack of course planning, as well. Further on, he complained that there are very highly qualified people, but they can hardly find jobs because of corruption in Iraq.

Dr. Faraj added that some also have problems writing research papers in English. Therefore, it would be useful if they could send people to be trained in other countries. When they come back, they can train Iraqi people as a „train the trainers“ program.

Dr. Al-Shammry proposed to teach teachers how to design a curriculum.

Dr. Al-Salam mentioned that most universities don’t have a protocol analyzer lab, and he proposed that one university could run a lab that could be used by all others.

Mr. Herlitz asked why libraries are out of date and Dr. Al-Shammry answered that the only financial source is the government and the ministry gives little money for libraries.

Mr. Herlitz finally asked the participants, who could take responsibility to realize the measures discussed. Dr. Al-Shammry replied that there is a great need for a clear vision and a strategy for IT in Higher Education -for both on the short- and on the long-term. To end, Mr. Herlitz thanked everybody for having contributed in bringing forward the project.

IT Infrastructure in Higher Education

Participants:
Dr. Al-Saedi , Prof. Al-Mallah, Dr. Abdulhussein, Dr. Mustafa, Prof. Alkhaled, Mr. Daniel Tröder (TU Berlin), Mr. Rami Sowan (Interpreter)

Keynote:
Prof. Dr. Odej Kao, TU Berlin

Moderator:
Daniel Tippmann, ZiiK, TU Berlin

Daniel Tippman opened the workshop by welcoming the participants. Prof. Dr. Odej Kao introduced himself and started his keynote speech by emphasizing that he has recently been in a situation similar to the one the Iraqis are facing regarding the lack of organized IT infrastructure. His position was set up to organize and implement a new IT infrastructure at the TU. Prof. Dr. Kao said he wanted to show what has been done in the years since the implementation of this strategy.

When the tubIT was created there was a need to provide IT services to all institutions at TU Berlin concerned with teaching and research. The services the tubIT offers are for everyone, but large parts of the IT infrastructure remains in the faculties. The corporate goal was to locate basic services in a central facility (tubIT) and to let the faculties arrange what they need in addition to that. Prof. Dr. Kao mentioned that social scientists for example have different needs than computer scientists.
One of the biggest benefits all tubIT users have is the close connection between management and IT.
The TU started to put all services online, as for example change of address, checking grades, and other easy tasks, which make up 90% of the services the university administration provides. Only 10% need to be done face to face.

Prof. Dr. Kao pointed out that the existing typical conflicts between different types of users are normal. Researchers are very keen to have the newest technology, while the management on the other hand insists first of all on a stable system.

**Sufficient IT Technology**
The students at TU Berlin automatically get an account once they sign in at the university. With that they can use all the provided services.

Prof. Dr. Kao pointed out that IT brought about great changes in the academic world: The fact that researchers rely more and more on the world wide web as a research tool creates an urgent need to render the results of research accessible and visible on the web.

The LANPlan implemented in TU Berlin is to spread the network in decentralized units consisting of 9-10 zones, so that in case of failure or interruption of services, the inaccessibility will remain local.

Then Prof. Dr. Kao mentioned some basic features of infrastructure, that have to be taken into account when planning a sustainable and secure IT-strategy and the participants exchanged information on how many of these features are already implemented in Iraqi Universities.

**Buildings**
The technological infrastructure demands a dustfree environment with temperatures constantly around 20 degrees and not too much humidity. This means that stable power supply first of all is very important for IT infrastructure, because air-conditioning (to get rid of dust and humidity) and cooling (to fulfil the demand for constant temperature) both demand stable power supply. This is obviously a problem, since there are massive fluctuations and even interruptions in the power supply in Iraq. The power supply ranges currently between six and ten hours.

The information regarding the other features can be summed up as follows: There is grounding in most universities, cooling is provided, but usually only by split units which are less efficient than other types of cooling devices. The universities have UPS. Some universities seem to have power-stabilizing devices, while others do not. The universities are not yet interconnected.

Also campus networks (LANs) are not yet installed. Since more accurate data about the infrastructure of Iraqi universities is missing, problems remain regarding the definition of the “status quo”.
Network
Prof. Dr. Kao insisted, that some thoughts should be spend on the question whether some of the possible services like mail- or Internetservices could be effectively outsourced. Some of those services might not necessarily need to be provided directly by the University. The objection that the situation in Iraq might not be sufficiently comparable to the situation in Germany, because in Iraq some services cannot be relyably provided there has to be taken into account.

After a short discussion about band-width and money the workshop participants seem to agree on the fact that the government is supposed to build a nation-wide network in Iraq. Prof. Dr. Kao suggested talking to the government and emphasised again that the outer (national and international) network is the starting point of all smaller internal networks.

Ever-changing technology
Prof. Dr. Kao continued his introductory presentation by talking about the rapid changes taking place in IT how all the planning can turn out to be useless after a couple of months, when new services are suddenly available and the use of them suddenly rises exponentially. He expressed that everybody in IT is always at the same point: Always having to start from the beginning.

After Prof. Dr. Kaos talk the workshop started to systematically gather information on the current state of being regarding IT infrastructure in Iraq. In the following paragraphs this information are provided in a condensed form.

Hardware
Hardware is generally cheap in Iraq. The hardware is not so problematic. There are a lot of desktop computers, but not so many laptops.

Personnel and Training
The consensus among the participants was that there is almost no professionally educated IT-personnel in Iraqi universities. Whoever is currently doing the maintenance work is not properly trained. Practically all universitis have computer centres and all IT centers have some personell, but the participants agreed upon the fact, that the staff’s training is very poor and that there is a need for training for the leadership and the employees.

Software
The participants mentioned the software used in Iraq is standarized software like MS Office, as well as specialized software for certain colleges like MATLAB, AUTO-CAD etc. Problems of legalization of software were emphasised and cases mentioned, when for example trying to register software online, but Iraq does not even appear as an option on the list of countries to choose from. Daniel Tippmann took the chance to recommend the use of open source software and elaborated on the advantages of open source:

- Independence from big companies,
- Usage-rights do not run out after a specific period of time,
- Students can learn with the source code and
- Source code can be altered to achieve desired results.
The only disadvantage of open source is that people need to be trained using it. The workshop participants agreed that the current use of open source software is very limited.

In the course of the workshop the participants tried grading the needs following their importance:

1. Training (all)
2. Internet-Connectivity
3. University network
4. Network services.
5. Software installations
6. Hardware (Server, Hardware, Networks)

It was also mentioned that the need for stable power supply is very pressing, but cannot be solved within this cooperation. After a short discussion about timing, whether all things are to be implemented at the same time or rather continually building one on top of the other, one strategy was favored: “evolution of service”, which means that the staff should gather some experience and grow with the hardware.

**IT Strategy**

In the course of the talk the need for an overall IT strategy emerged more and more clearly.

As Daniel Tippmann made clear that the Technical University Berlin is only one university, which can offer help with certain things, but not with others and - most important - not with all the measures that need to be undertaken, as the power supply for example, which needs to be addressed on a regional and national level.

He made clear, that this conference was meant as a starting point to collect information about the state of being, the needs and the goals of the Iraqi universities regarding IT.

Dr. Al-Saedi indicated the support from the Ministry of Higher Education in Iraq for example for the training. She also referred back to the idea of in-service trainings:

“We should prepare our personnel to study and work at the same time.”

Prof. Alkhaled called for caution saying, that there is a need for a masterplan. The working group participants agreed, that it is necessary to have both, a short-term and a long-term plan. Dr. Al-Saedi then explained that the Iraqi government is quite willing to fund education in Iraq if it is following a promising plan.

Dr. Abdulhussein suggested forging a concept out of the information that was gathered so far. Daniel Tippmann explained, that this conference is the very start of the project and we will see how far we can get, but there is some funding to implement some of these things.

The working group agreed to put up a plan together with the two other workgroups and decided to be Dr. Bassam Mustafa the presenter of the outcome of the workshop.

![Daniel Tippmann, TU Berlin](image)
IT for modernizing Administration

Participants:
Dr. Karaawi, Prof. Al-Qurayshi, Dr. Ali, Mr. Jebur, Ms Wanda Hummel (ZiiK, TU Berlin), Mr. Christoph Herbst (ZiiK, TU Berlin), Mr. Kiefah Muhaisen (Interpreter)

Keynote:
Dr. Horst Henrici, TU Berlin

Moderator:
Ralph B. Magnus, ZiiK, TU Berlin

Mr. Ralph Magnus welcomed all participants of the working group and added that the conference and workshop provide a great opportunity to exchange ideas and to develop a strategy for next two years together.

IT, Mr. Magnus declared, is a key factor for supporting universities’ daily life, the employees, students and the daily life in general. The question is: Which approach is the right one?

First of all it is necessary to build up a strategy for people that have to profit from it. And this is what this workshop is about; the input from both sides to work this strategy out.

Mr. Magnus tried to activate the discussion with a little game. Therefore he led over to an overview of administration components.

Working Group III: IT for modernizing Administration

There are for example the administrative services, different central databases and other central internal services for students. In addition another administrative component is the university network, central public services that are provided for external usage (e.g. at-home-applicants, employees working at home) and local services and databases.

Now every participant had to signalize the current stand of each component by putting a colored (red, yellow or green) Post-it note to the different administrative components. Referring to this fact a green note meant that this service is already integrated.
respectively accessible for everyone. The yellow note implied an attempt of integration, but missing a smooth working flow. Last but not least the red one identified target groups respectively the future.

Dr. Karaawi mentioned that the services are available, but an established network is missing, which makes the services useless. Mr. Magnus led over to a beamer presentation that contained plate 2 (in the appendix). In the course of his presentation Mr. Magnus developed this illustration. Concerning the “current situation”-bar he reminded to the morning session. Information has been gathered, discussed and analyzed. Further the actual needs have been partly pointed out.

In addition it is important to collect suggestions and discuss actions for consolidation of all information to formulate a strategy. And of course, this strategy is related to a possible future situation. Therefore two questions arouse: What could be? What should be?

Mr. Magnus mentioned that this workshop consists of following things: Identification of the problems, analyzing the facts, strategy building, roadmap / conclusion to lead to the future situation. Therefore the whole discussion is departed into three parts: current situation, strategy and future situation.

In the following Dr. Horst Henrici gave an overview about the current situation at TU Berlin. The TU Berlin is in charge of approximately 28,000 students, which are administrated by just 100 administrative employees. The students are coached from matriculation until they graduate.

At the moment the TU Berlin is in a situation of radical change on high standard. The alternation of generation is characterized by more young professors, new fields of study, new degree programs and also changes in the administration.

Dr. Henrici emphasized that this lecture will show the new administration and mainly the best working sectors need to be presented. Therefore he called the audience’s attention to the first slide of his presentation showing a picture of the new Campus Center of the TU Berlin, which has been accomplished almost one year ago. The Campus Center constitutes a holistic approach, which means an offering of more than one communication channel for the customer.

Das Campus Center
der Technischen Universität Berlin

The next slide of Dr. Henrici’s presentation shows the following overview of services covered in the Campus Center (see plate 3 in the appendix).

The campus Center includes the services: International Office, Student Advisory Service, assistance of international students, Career Service, “Studienkolleg”, accreditation and matriculation, telephone service and checkup. Primarily the targets groups are pupils, interested parties, applicants, students and alumni. Mr. Jebur expressed a question concerning the available housing for the students. Dr. Henrici mentioned that there exists a network called “Studentenwerk” which is placed over all universities in Berlin and nine universities in Brandenburg that is responsible for these topics. Housing opportunities with special conditions for students are
offered, but limited. All in all the “Studentenwerk” is centrally administrated. One-to-one care for the students concerning housing would blow up the administrative capacities. The only exception is arranged for international students and exchange programs. Afterwards Dr. Al-Qurayshi wanted to know how many students apply. Dr. Henrici told that almost 4000 applicants could be counted for fall term.

Further Dr. Henrici added that TU Berlin is the third largest university in Germany, but by the help of high standardized processes it become also possible to handle individual cases. Mr. Jebur asked if the students start usually with general studies or with specific courses. Dr. Henrici replied that all people that have absolved the school leaving examination are able to start directly professional studies. And Dr. Ali wanted to know if the “Studienkolleg” has something to do with learning languages like German. Henrici answered: “Not primary, but there exist a German course just for preparation for study.” Back to his presentation Dr. Henrici pointed out that IT is the primary condition to coordinate all these processes. But nevertheless it isn’t the treacle. It will be completed by personal contact with the students. Once saving in the field of personnel has been contemplated by the usage of IT, but also has been depraved. Rather all communication channels should complement one another.

**Three areas of the Campus Center**

Afterwards Dr. Henrici showed the following scheme, which represents the three areas of the Campus Center:

1. The area in the middle of the Campus Center consists of the information terminal with a “campus pilot”. This person takes the concern of the student and assigns the right contact person. Additionally the students can help themselves at terminals without personnel. Related to these facts there are three advantages: the student is forwarded to competent staff, personnel could be economized and the students save waiting time.

2. The front office area realizes the so called “one-stop-government”. One process is handled from A to Z with attendance of the student (e.g. application for leave). But this concept just works with “slight” procedures, not with procedures like admission.

3. The consultation area consists of flexible temporarily working places, e.g. course guidance or academic international office.

In conclusion the Campus Center needs a central coordination to bunch all activities.

**Architecture of the Campus Center**

Subsequently Dr. Henrici referred back to the first slide of his presentation - a picture of the Campus Center. He explained that the determined goals also have been realized architecturally. For example, the rooms are bright, newly designed and modern to cherish the students. Further the ceiling fulfills
a certain purpose. It is an “acoustic ceiling”, which allows a manageable volume even in the case of highly frequent customer appearance. In addition the Campus Center offers monitors and seats instead of a counter.

**Processes within the Campus Center**

At the information terminal each student gets a waiting number and an approximate waiting time, oriented on earlier processing times. All activities are transparent for the students by the application of glass and artificial partitions. The acceptance of waiting times could be increased. The students can see that the administrative staff is working. Besides “old school” processes like sending documents by post, it is possible to print certificates by oneself. Dr. Henrici emphasized that the administration of admission already works paperless and the electronic database will be amplified with more self-service functions. The coverage of all 16000 applicants for 4000 university places each fall term with index cards would be impossible. Therefore Dr. Henrici put a yellow note on applicants within the introduction game. Applicants are supposed to use online application forms and can follow the development via Internet without enlisting the administrative personnel. Otherwise all requests couldn’t be handled. Related to this fact the website is converted to the web content management system called Typo3.

**Telephone Service Express**

After Dr. Henrici explained some processes within the Campus Center he referred to a special project that started two years ago and is financed by the Federal Government. This project contains a telephone service, a kind of hotline, which provides standardized answers to standardized questions. Of course, this information is allocated in the Internet, but the personal contact still needs to remain. Mainly student assistants manage the telephone service. This is cheaper and the consulting is on a par with the students. For example, in August 2009 more than 1000 calls and 5000 mails have been answered. This means a kind of quality management for the administrative staff to avoid wrong advices of the student assistants. Dr. Henrici offered the attendees to ask him about quality management and instruments afterwards. Further he explained the OTRS Ticket System that has the advantage to follow the processing of emails accomplishes the email answering. The email address of the consulting service is invisible to prevent spam. The students just complete an online contact form, which will be forwarded to the responsible contact person. Emails are also processed by ready-made answers for standardized problems. Just 20% of the mails are managed individually and transferred to experts. Subsequently Dr. Henrici showed a clip of the Campus Center made by students to procure a little imagination. Afterwards he thanked for interest and attention and asked for questions.

Ralph M. Magnus moderating the discussion in Working Group 2

**Questions**

Dr. Karaawi asked for a “before and after” comparison of the situation at the
Dr. Henrici described the prior situation like in a bank. The students stood in one queue and communicated through a bulletproof glass with the service staff and just could hope that his problem might be solved.

Dr. Al-Qurayshi was interested in the number of employees responsible for all students whereas Dr. Henrici answered that there are around 70 staff members for almost 30,000 students. Dr. Al-Qurayshi wondered if there were no waiting times. Dr. Henrici brought forward the argument that they work in shift systems and employ student assistants.

Dr. Karaawi referred to the electronical documentation system and asked about the security measures. Dr. Henrici explained that the system and all databases are not directly connected to the Internet. In general there exist two networks that used for processing.

Mr. Magnus ended the discussion and reminded on the presentation the next day. The attendees should choose a person that will represent all results. The group chose concordantly Dr. Karaawi who agreed.

Analyzing the current situation

Mr. Magnus led over the three steps within the main discussion. The first step is to analyze the current situation. He wanted to know what the problems are and what causes the lacks. A brainstorming should help to collect problems. Therefore the following problems could be pointed out related to the current situation:

- There are strategies without concrete roadmaps for implementation.
- The power supply is poor. Sometimes there are blackouts in laboratories, not only in IT.
- An infrastructure to build up IT systems is missing. Therefore there is a lack of infrastructure to provide all the components like computer, staff etc.
- An expertise in the specific fields of IT is missing. Dr. Al-Qurayshi mentioned that information of students is missing. There is a great lack of confident numbers from universities to plan. And they do not have enough experts.
- The acceptance of IT by some heads is missing. The role of IT is not distinctive. Related to this fact Dr. Al-Qurayshi added that the people have the fear of lost data.
- In Iraq the people are not patient. They want to get from 0 to 100 in one step (no step by step).

Dr. Al-Qurayshi mentioned that an experiment would show that there would be no acceptance at least on one side. Dr. Karaawi added that the culture is also hindering the acceptance for IT. Mr. Magnus intervened and wanted to know if the personal abilities to build up an IT infrastructure are available assuming the general infrastructure exists. Dr. Al-Qurayshi answered that this differs from university to university. Some have qualified staff, but the personnel in Iraq do not suffice to manage this task.

Dr. Henrici applied that it is important to build up synergies. In the past this problem also came up in Germany. There did not exist any software and the money was insufficient. But a few universities founded an association and collected all requirements to design software. Therefore the HIS GmbH programmed a software for about 95 universities.

- There are very different working places and useful cooperations are missing.
- Training programs that are related to the targets are
required.

- Possibilities to apply the learned are missing.

Mr. Jebur added that it is important within the IT sector to practice the learned knowledge. Otherwise the knowledge will be lost. About 90% of knowledge is based on practical appliance, e.g. like car driving.

**Future Situation**
To analyze the future situation we have to ask: what should be?

- A network between the universities has to be built up.
- A committee or head organisation, which promotes the development, has to be set up.

Dr. Al-Qurayshi mentioned that some kind of committee still exists, but it’s just a false front without any content. It is only responsible for trainings. First relations between the universities just started in Berlin during the conference.

Further Dr. Henrici added that this committee in Germany is decentralized, but Dr. Karaawi replied that decisions are made centrally in Iraq.

- There is a need for a common strategy among all universities regarding IT for academic administration.
- A working infrastructure has to be built up.
- Target related training programs have to be initialized to create all necessary competences.

**Strategy for Academic Administration**
All in all the strategy for an academic administration might include the following steps:

- Establishing step by step a communication network between universities.
- Including TU Berlin as advisor to moderate the goals.
- Identification of actual demands and related profiles.
- Modify specific training programs to build the necessary competences to plan implementation and maintain IT system with that dimensions.
- Setup of competence centers at the universities.
- Setup of a university information exchange network.

Dr. Ali explained that the problem is mainly based on the infrastructure. Basically the structure exists, but the training is still missing. Concerning the IT sector a lot of infrastructure is missing, e.g. computer centers, IT centers and modern computers. Additionally there is a lack of exchanging data between the universities. Some projects depend on this problem, but there is also a lack of servers, devices for communication, less access to the Internet to provide services.

Mr. Jebur said that instead of setting up a strategy it would be more efficient if German experts would come to Iraq to point out the problems. The problem might be that the universities do not know exactly the problems respectively are incapable to explain. With the experience of the Germans time and energy could be saved.

Dr. Al-Qurayshi asked Dr. Henrici for the quality management strategy the TU Berlin realized. He thought that it might be successful to copy this strategy. Dr. Henrici explained that the first step should be the identification of software and hardware demand as well as the demand of personnel.

He emphasized that it is still a question of motivation of the employees. These
people have been working with pencil and paper for more than 30 years. Dr. Ali remarked his findings. He added that they need an IT center with training, a training to know how to motivate other people and parallel the set up the necessary infrastructure to advance the cooperation.

After Dr. Henrici thanked for the attention and Ralph Magnus summarized the findings of this meeting and assured the presentation of the results the next day.
Wednesday, September 30th

Summary of Working Group Results

Moderators:
René Herlitz, Ralph B. Magnus, Daniel Tippmann, ZiiK, TU Berlin

Presentation of Working Group 1

Presenter:
Dr. Kamaran Faraj, Sulaimani University

On Tuesday working group 1 had been discussing the situation of IT in education and research at Iraqi universities. Dr. Faraj structured the summary of the results of the working group according to the work schema that had been used on the previous day.

The first step was to gather information on the current situation and discuss differences and similarities between the various universities. The second step was to develop a vision on what the future situation should look like in the area of IT in education and research. The final step was to have suggest possible measures on how to get from the current situation to the situation described in the vision.

Working group 1 had identified the following problems in the current situation of IT in education and research at Iraqi universities:

- A lack of qualified staff,
- A lack of equipment,
- Out-of-date libraries,
- A lack of information resources and legal software,
- A high demand for IT practitioners in the job market, but a strong theoretical orientation of CS studies,
- The legal framework does not support the demand to hire the most appropriate personnel for vacant job positions at universities,
- Financial resources are not distributed based on demand, and
- Absence of a clear strategy and vision.

All these constitute challenges to the development of IT education at Iraqi universities. Dr. Faraj continued to present ideas for a vision that working group participants came up with. There is a need for:

- IT training centers,
- Continuous education centers, and
- An improved regulatory framework.

These and other items should be integrated into a clear vision in which measurable goals are set.

Dr. Faraj continued to summarize the suggestions made for measures towards reaching the goals set:

- Further IT training of lecturers and staff,
- “Train the Trainers” programs

Dr. Faraj, outlining considerations from WG 1
abroad,
  
• Training for curriculum development,
• Implementation of a specialized lab at one university, that can be used as a reference model for the remaining universities, and
• Formulation of short- and long-term strategies.

Dr. Faraj concluded that the vision and the strategies need to be further elaborated and it needs to be specified which organization can accomplish which task in the improvement of IT education at Iraqi universities.

Presentation of Working Group 2

Presenter: 
**Dr. Bassam Mustafa, University of Mosul**

The second working group had discussed the current situation of IT infrastructure at Iraqi universities. The working group followed the same schema as working group 1. The identified challenges were:

- The power supply is far from being reliable and stable.
- IT rooms are not dust free.
- Rooms are not airconditioned to temperatures suitable for IT usage (around 20 °C).

The power supply was concluded to be the most urgent problem since it is a prerequisite for aiming to solve the other challenges. It was pointed out, that the problem of power supply is to be addressed on a national basis and is therefore not part of the university cooperation.

The participants of working group 2 gathered a collection of measures. The measures were then rated according to their importance as follows:

1. Training of lecturers, technical personnel, administrative employees, and students,
2. Internet connectivity of all universities,
3. University networks,
4. Network services,
5. Software installations,
6. Hardware.

Although accurate data about the infrastructure at Iraqi universities is missing, it can be summarized that most universities have the possibility of obtaining hardware.

Dr. Bassam Mustafa, presenting the outcome of WG 2

The priorities in the compiled list might differ from university to university, since both, the status quo and the demand, differ at each university and therefore the strategy to follow needs to be adopted according to the individual needs.
Presentation of Working Group 3

Presenter: Dr. Salih Karaawi, University of Technology Baghdad

Mr. Magnus introduced Dr. Karaawi, who presented the results of the third working group that had discussed the situation of IT in academic administration. Dr. Karaawi explained that the current administration at Iraqi universities is based on old tools and not reflecting the actual possibilities of technology. Administration should be the backbone of the universities and this should also be reflected in the technologies used for administrative tasks. Therefore it must be a part of the strategy to transform the old administration into an effective and modern one by introducing the advantages that IT can offer.

Dr. Karaawi, presenting ideas of WG 3

Dr. Karaawi summarized the current situation in the academic administration in Iraqi universities as follows:

- The main problem is the missing infrastructure.
- There is no specific trainings for planning, implementing and maintaining IT structures
- Information is not exchanges between the universities.
- There is a lack of reliable information and statistics about the universities.
- The power supply is not reliable enough to implement the necessary IT systems.
- Acceptance for IT and the role of IT by some of the persons in the position to take decisions is low.

As the next step, the working group participants had discussed their vision for the future. They saw a need for:

- A close cooperation between all Iraqi universities under guidance of a suitable head organization,
- An intense exchange of information and knowledge,
- Well trained personnel regarding the planning,
- Implementation and maintaining of IT systems in the required dimension,
- A common IT strategy among all Iraqi universities,
- Suitable network connectivity for all Iraqi universities, and
- Quality assurance for the administration.

In order to reach this vision, it was concluded that a strategy must be followed in a step-by-step process, which includes:

- Establishing a continuous communication,
- TU Berlin in the role of an adviser,
- Identifying the actual demands and the related profiles,
- Implementing specific training programs to build the necessary competencies to plan, implement and maintain
IT systems in the required dimension,
• Setting up competence centers at the Iraqi universities, and
• Establishing a university information exchange network.

After the presentation of Dr. Karaawi the morning session concluded with a short discussion of these results.

The presenters and moderators on conference day 3

Presentation of the Cooperation Project

Presenter: Dr. Nazir Peroz

Introduction
Dr. Peroz welcomed all guests, colleagues, and the President of the Baghdad University of Technology, Prof. Dr. Kahtan Al-Khazraji.

Due to the request of many participants, he is describing some ideas for the future german-iraqi University. He points out his opinion that especially with this meeting and exchange, they are creating a way to make this common university possible.

The main goal of the cooperation between ZiiK at TU Berlin and Iraqi universities is to work towards a sustainable and secure IT supply for all Iraqi universities, that includes the four dimensions quality, sustainability, security, and compatibility. To reach this goal, a national IT strategy needs to be elaborated.

The ZiiK of TU Berlin can support this process in its areas of expertise. These expertise areas are:
• Development of IT strategies,
• Modernization of legal frameworks,
• Networking of university campuses,
• Establishment of IT centers,
• Design of faculty PC labs,
• Compilation of books for a standardized IT libraries,
• Development of a national IT curriculum,
• IT training of IT specialists and IT users,
• Computer science education for lectures and students, and
• Modernization of the administration through the use of online services.

Dr. Peroz summarized an essential need of Iraqi universities by citing the presentation of Dr. Amer Al-Mallah from the previous day: “As a proposal, if we can start to install a typical complete IT infrastructure model for a certain university campus and train our staff with technical support, then we can share this model between all the universities' campuses later on.”

Based on this recommendation by Dr. Al-Mallah and on the discussions and results from the working group, a catalog of suggestions for cooperation was proposed. This catalog was structured into the categories education, infrastructure, and management.

Education
The ZiiK at TU Berlin will provide training of qualified technical personnel. For this purpose 15 participants from different
Iraqi universities will be invited. Each university present at this conference and five additional universities will have to select candidates to be sent to a selection process. The selection of the participants will take place in Iraq in late 2009 or early 2010 and will be supported by the Ministry of Higher Education, the DAAD, and ZiiK staff from TU Berlin. The training will start in April 2010 for a period of 7 months. The trained staff will be responsible to coordinate the establishment and operation of the IT center and to further train staff at their respective universities.

Infrastructure
The training will be done in TU Berlin on a hardware that simulates a future IT center of an Iraqi university. The structure of this model IT center can then be copied at the Iraqi universities. Furthermore an IT library, that will contain both literature in the field of computer science and literature on IT administration, will be established.

Management
In order to support the cooperation process between all participants, TU Berlin will develop a cooperation platform for universities. This platform can be used to discuss problems and to update the other on the current IT situation. IT requirements, e.g. the need for new books, a computer center, or the demand of further training, can be communicated to TU Berlin and other partners through this platform. This will also help to set up a network between all 28 universities, so that the platform will combine national and international communication. One of the most important components of the IT structure is the development of IT concepts and an IT curriculum. Therefore TU Berlin will organize a conference on developing IT concepts and IT curricula in cooperation with its Iraqi partners in 2010.

A further conference is planned for 2011. The aim of this third conference within the cooperation is to formalize the network established and maintained through the online platform by founding a national computer science society (e.g. Society of Computer Science in Iraq, SCSI). The establishment of such a foundation will be inevitable to build up and share a solid expertise in the field of IT.

The idea of such an association for computer science is not new. In Germany the Gesellschaft für Informatik (GI) exists, which is structured into different departments and expert groups, just like a university.

The GI currently has more than 22,000 thousand members sharing their expertise in these groups. Dr. Peroz has been heading the expert group on “Computer Science and Developing Countries” for 25 years.

Outlook
In addition to these concrete measures, an action plan needs to be elaborated within this partnership in the next years. This action plan should contain plans on how to cooperate within the Bachelor, Master, and Ph.D. education with the goal to offer these programs in computer science on an international standard at Iraqi universities. A first step for this is the gathering of information about the IT situation at each university. For this purpose, an IT checklist will be distributed to all partners within the coming weeks. Dr. Peroz concluded that the action plan should be elaborated in cooperation with the Ministry of Higher Education in Iraq, all partner universities, TU Berlin, and the DAAD. The goal of this action plan is that cooperation projects are not all working in different directions and sometimes even against each other, but rather follow a common road towards a joint goal.

Questions and Discussion
Dr. Al-Saedi wanted to know which people would join the training.
Each university will be asked to select candidates to be sent to a selection process. ZiiK will provide the requirements for the candidates within the next weeks. Another Iraqi participant suggested a division of the training in each with two months instead of six months, because some staff is better than other and therefore more people could join the training. Dr. Peroz declined this suggestion and explained that two months would be too short in any case. Ms Hummel further explained that the selected persons from each university could act as a multiplier in the future by training other administrators. Dr. Peroz formally concluded the conference by thanking all conference attendees, all Iraqi guests from the partner universities, the ZiiK staff, the translators and the minute takers. He wished this project to be a successful one that is strengthening german-iraqi academic partnership and wished the communication to continue mutually as education is the most powerful and elementary key to development worldwide.
Appendix

Conference's Program

September 28th, 2009 [FR 7528]
Moderation: Prof. Dr. Hans-Ulrich Heiß, Dean of study at the Faculty IV, TU Berlin

1:00pm  **Welcome and Opening**
- Prof. Dr. Gabriele Wendorf, Vice President of the TU Berlin
- His Excellency Mr. Alaa Al-Hashimy, Iraq Ambassador in Berlin
- Dr. Andrea Schultze, Department for Research and Academic Relations Policy, Foreign Office, Berlin
- Lars Gerold, Head of Iraq Department, DAAD, Bonn

1:45pm  **Current Situation of IT in Higher Education in Iraq**
- Prof. Dr. Kahtan Al-Khazraji, President of University of Technology Baghdad

2:45pm  **Overview: The Faculty for Electrical Engineering & Computer Sciences at TU Berlin**
- Prof. Dr. Hans-Ulrich Heiß, Dean of Study at the Faculty IV, TU Berlin

3:30pm  **Break**

4:00pm  **Development and History of the Computer**
- Prof. Dr. Horst Zuse, TU Berlin

4:45pm  **IT Supply Systems in the field of Higher Education**
- Dr. Nazir Peroz, Head of ZiiK, TU Berlin

5:30 pm  **End**

September 29th, 2009 [FR 7528]
Moderation: Prof. Klaus Obermayer, TU Berlin

9:00am  **IT in Teaching and Research**
- Dr. Kamaran Faraj, Sulaymaniya University
- Dr. Mohammed Al-Salam, University of Technology Baghdad
- Dr. Shroouq Al-Janabi, Algdasiy University
- Ali Khyeat, Kerbala University
- Dr. Mahmud Al-Shammry, University of Technology Baghdad

10:00am  **IT Infrastructure in Higher Education**
- Dr. Ibtesam Al-Saedi, University of Technology Baghdad
- Prof. Abdulkareem Al-Khaled, Basrah University
- Dr. Amer Al-Mallah, Mustansiriyah University
- Dr. Abbas Abdulhussein, Babylon University
- Dr. Bassam Mustafa, Mosul University

11:00am  **Break**

11:30am  **Modernizing Administration**
- Prof. Dr. Hilal Al-Qurayshi, University of Technology Baghdad
Dr. Salih Karaawi, University of Technology Baghdad
Dr. Saeed Ali, University of Tikrit
Kareem Jebur, Thiqar University

12:30pm Lunch Break

2:00pm Working Groups (WG)

WG 1 Teaching and Research
[FR7039] Keynote: Prof. Dr. Uwe Nestmann, TU Berlin
Moderation: René Herlitz, TU Berlin

WG 2 IT infrastructure
[FR 7528] Keynote: Prof. Dr. Odej Kao, TU Berlin
Moderation: Daniel Tippmann, TU Berlin

WG 3 Modernizing Administration
[FR 7514] Keynote: Dr. Horst Henrici, TU Berlin
Moderation: Ralph B. Magnus, TU Berlin

3:30pm Break

4:00pm Working Groups

5:30pm End

September 30th, 2009 [FR 7528]
Moderation: René Herlitz, Ralph B. Magnus, Daniel Tippmann, TU Berlin

Summary of all Working Groups’ Results

9:00am Presentation WG 1
9:30am Presentation WG 2
10:00am Presentation WG 3
10:30am Break
11:00am Discussion of the future catalog of measures and presentation of the cooperation project
12:30pm Lunch Break

Organized by
Center for international and intercultural Communication / ZiiK
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Conference Participants

**Dr. Abbas Abdulhussein** is Head of the Computer Science Department at Babylon University. He graduated from the University of Technology with a B.Sc. in computer science, and continued his education at the University of Babylon where received a M.Sc. in computer science; in 2004 he earned his Ph.D. from the University of Technology with a dissertation on expert systems development.

**Prof. Abdulkareem Alkhaled** is employed at Basrah University where he works as an assistant professor at the Computer Science Department at the engineering college; among other commitments, he is the Director of both the Basrah University Computer Center and of the Basrah University Internet Center. He graduated from the University of Basrah with a B.Sc. in electrical engineering, and received a M.Sc. and a Ph.D. from the University of Technology in Baghdad. His scientific interest include biomedical electronics and photo voltaic solar energy systems.

**Dr. Saeed Ali** is the Dean of the Faculty of Computer Science and Mathematics at the University of Tikrit; before joining the College of Computer Science and Mathematics he held positions at Qadisiyah University and Mosul University as well as at the College for Education and at the College of Women Education at University of Tikrit. His B.Sc. and M.Sc. education took place at the University of Mosul; in 1997, he graduated with a Ph.D. in mathematics from the Education Ibn al-Haytham, Baghdad. In addition to his 20 years of teaching experience Dr. Saeed Ali has also published 19 articles and three books.

**Ali Khyeat** studied in Baghdad, where he received his master of computer science. He is working at Kerbala University as a lecturer for computer science and as a manager of data base units in the presidential office of Kerbala University. His scientific interests lay in the field of operating systems and security. Kyeat Ali is preparing for a Ph.D.

**Dr. Shroouq Al-Janabi** has been working in various positions at the Computer Science Department at the University of Al-Qadisiy that she heads since 2008. She received a B.Sc. and M.Sc. from the Babylon University, and graduated with a Ph.D. from the Institute for Postgraduate Studies, Baghdad in 2007.

**Prof. Dr. Kahtan Al-Khazraji** is the President of the University of Technology in Baghdad. Former tenures include Dean at the Babylon College of Engineering, Dean at the Kofa College of Engineering and professor at the University of Baghdad. Prof. Dr. Kahtan Al-Khazraji earned his M.Sc. as well as his D.Sc. in Germany; the latter at the Max-Planck Institute in Stuttgart in 1974. Prof. Dr. Al-Khazraji has published widely including 20 books.

**Prof. Amer Al-Mallah** is Deputy Dean of the College of Computer Science of Mustansiriya University. He studied at the University of Technology in Baghdad, where he received his Ph.D. in the area of computer science. He is member of the Iraqi Committee for Information Technology and editor of a scientific journal. Having more than ten years of teaching experience, Prof. Al-Mallah focuses mainly on computer security.
Prof. Hilal Al-Qurayshi is the Head of the Computer Science Department at the University of Technology, Baghdad where he was also employed as the Head Assistant of the the Computer Science Department and the Head of the Registration Department. He holds a B.Sc. in statistic science from Al-Mustanseria University, Baghdad, and a Ph.D. in information systems from the High Institute of Sophia, Bulgaria.

Dr. Ibtesam Al-Saedi is assistant professor for electronic engineering at the University of Technology Baghdad. Apart from her affiliation with the University of Technology, Prof. Dr. Ibtesam Al-Saedi was visiting professor at the University of Freiburg, Germany, and scientific staff at the department of Microsystem Engineering and at the faculty of Applied Science at the University of Freiburg in 2007/08; she was awarded with research grants from the German Academic Exchange Service (DAAD). She earned a B.Sc. in electrical engineering, and a M.Sc. and Ph.D. in engineering instructional technology from the University of Technology, Baghdad.

Dr. Mohammed Al-Salam works at the University of Technology in Baghdad, where he is the Deputy Dean at the Computer Engineering and Technical Information Department. He received his B.Sc. and M.Sc. from the University of Baghdad and earned his Ph.D. in Electronic Engineering at the University of Technology, Baghdad. In his research and teaching he focuses on air-bone computer, DSP software and hardware as well as on e-learning and information system management.

Dr. Mahmud Al-Shammry studied in Baghdad and Warsaw, Poland, where he graduated with a Ph.D. in the area of communication technology. He is now Dean of Computer Engineering and Information Technology at the University of Technology in Baghdad. His research-interests lay in the field of telecommunication, including virtual realities and computer networking.

Dr. Kamaran Faraj has worked as a lecturer at Sulaimani University since 2002. He was educated at Kingston University and Middlesex University (UK) where he received a B.Sc. in INT and mathematics; his M.Sc. in computer systems networking he earned from Southbank University. In 2009, he graduated from Sulaimani University with a Ph.D. in computer science.

Prof. Dr. Hans-Ulrich Heiß is Dean of Study at the Faculty for Electrical Engineering and Computer Sciences at the Technische Universität Berlin, and professor at the research group KBS (Communication and Operating Systems). He studied computer science and graduated with a Ph.D. from Karlsruhe Universität, Germany. He was post-doc fellow at IBM Watson Research Center in Yorktown and visiting professor at the Helsinki University of Technology, Finland. After his habilitation he held a temporary professorship at Technische Universität Ilmenau and at the University of Paderborn, Germany. His scientific interests include operating systems, distributed systems, parallel computing, security and performance analysis.

Dr. Horst Henrici has studied law in Bremen, Germany, Thessaloniki, Greece, and Würzburg, Germany. He made his legal clerkship in Hamburg, and wrote his promotion for his LL.D. at the University of Bremen. From 2002 to 2005 he held the position as legal advisor, and was then Head of the study and examination administration at the Brandenburg University of Technology Cottbus. After that he was Head of the Department for Admission and Immatriculation at the Technische
René Herlitz has been working in the area of computer science and development cooperation since 2001. Initially within his studies of computer science and geography at the Humboldt-Universität zu Berlin and the Working Group on Computer Science and Developing Countries of the German Society of Computer Science (GI). Since 2004 he has been active in various projects of the Center for International and Intercultural Communication (ZiiK) of Technische Universität Berlin, currently as a lecturer at the faculty of Computer Science.

Kareem Jebur studied computer science and mathematics at Thiqar-University, where he received his master-degree in information technology. He is now lecturer of computer science. In his research and teaching he focuses mainly on computer security.

Dr. Salih Karaawi has held various positions at the Department of Control and Systems Engineering at the University of Technology, Baghdad and is now the Deputy Head of this department. Having received a B.Sc. and a M.Sc. from the University of Technology in Baghdad, he earned his Ph.D. in computer engineering in Poland from the Polytechnic in Gdansk with a dissertation on diagnosable evaluation in hierarchical multicomputer environment.

Ralph Benjamin Magnus studied at the Technische Universität Berlin. In 2007 he graduated with a diploma in computer science. Professional experience in software development, among other things, he gained as a developer at the Institute of Aeronautics and Astronautics. Since 2008 he is employed as scientific assistant at the Center for International and Intercultural Communication (ZiiK), Technische Universität Berlin. He works on research in the field of ICT4D (Information and Communication Technologies for Development). In the context of projects localized at the ZiiK he is also responsible for the implementation of teaching with the focus on software engineering.

Prof. Dr. Odej Kao is professor for computer science heading the research group of complex and distributed IT systems at the Technische Universität Berlin. In addition, he is Director of the IT Service Center (tubIT) at the Technische Universität Berlin. Born in Macedonia he received his diploma and Advanced Ph.D. from the Faculty of Computer Science and Mathematics at the Clausthal University of Technology, Germany. Before holding the position of Managing Director of the Paderborn Center for Parallel Computing at the Universität Paderborn he was visiting professor at Tamkang University, Taiwan and Massey University, New Zealand.

Dr. Bassam Mustafa is employed as an assistant professor for computer science at the University of Mosul. In 1977, he earned a M.Sc. in computer science from Mississippi State University, USA, and graduated from the University of Mosul with a Ph.D. in computer science in 2003.

Prof. Dr. Uwe Nestmann is professor for computer science at the Technische Universität Berlin heading the department of theory of computer science and distributed systems. He graduated with a Ph.D. from the Institute for Computer Systems at the University of Erlangen-Nuernberg, Germany. After research stays in
Edinburgh, Rocquencourt and Aalborg University, Denmark, the council of the Swiss Federal Institutes of Technology in Lausanne nominated him professeur assistant. His scientific interests include formal semantics of concurrent systems, foundations of computing science, and calculi for mobile processes, security, group communication and global computing.

Prof. Dr. Klaus Obermayer received his diploma in physics from the Universität Stuttgart. After his dissertation at Technische Universität München he spent five years in the USA, holding positions at Beckman Institute at the University of Illinois, Rockefeller University and Salk Institute for Biological Studies. In 1994, Prof. Obermayer returned to Germany and worked at the Universität Bielefeld. He is now Head of the Neural Information Processing group at the Technische Universität Berlin that focuses on topics in computational neuroscience, machine learning and artificial neural networks, and applications to biomedical image and signal processing.

Dr. Nazir Peroz studied computer science at the Technische Universität Berlin. After receiving his diploma he was a research assistant for five years. 1992 he graduated with a Ph.D. from the Technische Universität Berlin. He is advisor for foreign students and lecturer in the field of Computer Science and Developing Countries. Since 2002 Dr. Peroz is head of the Center for International and Intercultural Communication of the Technische Universität Berlin. In his research he focuses on Computer Science and Development Cooperation. He is speaker of the Working Group on Computer Science and Developing Countries of the German Society of Computer Science (GI).

Daniel Tippmann studied sociology and communication science in Berlin and Cologne. He worked as a system administrator at the computer center of the Freie Universität Berlin before joining the ZiiK at the Technische Universität Berlin. In 2005, he traveled to Afghanistan for one semester to support the setting up of a PC lab at the Faculty of Computer Science at Herat University, training IT administrators and giving lectures. As scientific coordinator and lecturer, he is now responsible for the administration of the projects and the teachings, which focus on computer science and society.

Prof. Dr. Horst Zuse is member of the Faculty of Electrical Engineering and Computer Science at the Technische Universität Berlin since 1975. He studied in Trier and Berlin, where he received his doctorate in 1986. After his dissertation he worked at Thomas J. Watson Research Center and in diverse research projects such as ATLAS and METKIK. In 1998 he habilitated in the field of practical computer science. Prof. Zuse was visiting professor at the University of South-Western Louisiana (USL), USA and at the Lausitz University of Applied Sciences, Germany.
Tables

Table 1: Universities, Colleges and IT-Service, Overview

<table>
<thead>
<tr>
<th>University</th>
<th>Place /City</th>
<th>No. Of Colleges</th>
<th>No. Of IT-Services</th>
<th>Notes</th>
</tr>
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<tbody>
<tr>
<td>UOT</td>
<td>Baghdad</td>
<td>13</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Al-Mustansirya</td>
<td>Baghdad</td>
<td>13</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Karbala</td>
<td>Karbala</td>
<td>12</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Thi-Qar</td>
<td>Nasirya</td>
<td>3</td>
<td>-</td>
<td>New Established</td>
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<tr>
<td>Basrah</td>
<td>Basrah</td>
<td>14</td>
<td>2</td>
<td></td>
</tr>
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<td>Mosul</td>
<td>Nainawa</td>
<td>23</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Babylon</td>
<td>Babylon</td>
<td>19</td>
<td>2</td>
<td></td>
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<td>Tikrit</td>
<td>Salahdeen</td>
<td>16</td>
<td>2</td>
<td></td>
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<td>Al-Qadysia</td>
<td>Dywania</td>
<td>14</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Kirkuk</td>
<td>Alameem</td>
<td>6</td>
<td>3</td>
<td></td>
</tr>
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<td>Sulaimani</td>
<td>Sulaimaniya</td>
<td>25</td>
<td>2</td>
<td></td>
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<tr>
<td>Salahaldeeen</td>
<td>Arbeel</td>
<td>18</td>
<td>2</td>
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</table>

Table taken from ppt.-Presentation „Modernizing Administration“, Data from 2003

Table 2: Iraqi Universities

<table>
<thead>
<tr>
<th>till 2003 Governorate/ City of Location</th>
<th>till 2003 Name of University</th>
<th>Year of Foundation</th>
<th>No. of Colleges</th>
<th>No. of Research Centers</th>
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</thead>
<tbody>
<tr>
<td>Anbar/Ramadi</td>
<td>Anbar</td>
<td>1987</td>
<td>11</td>
<td>-</td>
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<tr>
<td>Babylon/Hilla</td>
<td>Babylon</td>
<td>1988</td>
<td>11</td>
<td>2</td>
</tr>
<tr>
<td>Baghdad/Baghdad</td>
<td>Al-Nahrain</td>
<td>1988</td>
<td>6</td>
<td>1</td>
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<tr>
<td>Baghdad/Baghdad</td>
<td>Baghdad</td>
<td>1957</td>
<td>24</td>
<td>5</td>
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<tr>
<td>Baghdad/Baghdad</td>
<td>Commiss. Computers &amp; Informatics</td>
<td>1972</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Baghdad/Baghdad</td>
<td>Islamic Studies</td>
<td>1989</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>Baghdad/Baghdad</td>
<td>Al- Mustansirya</td>
<td>1963</td>
<td>10</td>
<td>5</td>
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<tr>
<td>Baghdad/Baghdad</td>
<td>Technology</td>
<td>1960</td>
<td>13</td>
<td>1</td>
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<tr>
<td>Basrah/Garmat Ali</td>
<td>Basrah</td>
<td>1967</td>
<td>14</td>
<td>6</td>
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<tr>
<td>Dahuk/Dahuk</td>
<td>Dahuk</td>
<td>1992</td>
<td>9</td>
<td>-</td>
</tr>
<tr>
<td>Diyala / Ba'qubah</td>
<td>Diyala</td>
<td>1995</td>
<td>6</td>
<td>-</td>
</tr>
<tr>
<td>Erbil/Erbil</td>
<td>Salah al-Din</td>
<td>1981</td>
<td>15</td>
<td>-</td>
</tr>
<tr>
<td>Kerbala / Kerbala</td>
<td>Kerbala</td>
<td>1987</td>
<td>4</td>
<td>-</td>
</tr>
<tr>
<td>Missan</td>
<td>Wasit</td>
<td>2003</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Muthana</td>
<td>Al-Muthana</td>
<td>2003</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Najaf/Najaf</td>
<td>Kufa</td>
<td>1987</td>
<td>7</td>
<td>-</td>
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<tr>
<td>Ninewa/Mosul</td>
<td>Mosul</td>
<td>1963</td>
<td>18</td>
<td>7</td>
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<tr>
<td>Qadissiya/Diwaniyah</td>
<td>Qadissiya</td>
<td>1987</td>
<td>9</td>
<td>-</td>
</tr>
<tr>
<td>Salah al-Din /Tikrit</td>
<td>Tikrit</td>
<td>1988</td>
<td>11</td>
<td>-</td>
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<tr>
<td>Sulaymaniyyah/Sulaymaniyyah</td>
<td>Sulaymaniyyah</td>
<td>1968</td>
<td>18</td>
<td>-</td>
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<td>Taameem/Kirkuk</td>
<td>Kirkuk</td>
<td>2002</td>
<td>4</td>
<td>-</td>
</tr>
<tr>
<td>Thi-Qar/Nasiriyah</td>
<td>Thi-Qar</td>
<td>2002</td>
<td>4</td>
<td>-</td>
</tr>
<tr>
<td>Wassit/Al-Kut</td>
<td>Wassit</td>
<td>2003</td>
<td>3</td>
<td>-</td>
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</table>

Total: 201 28

Table taken from ppt.-Presentation „Modernizing Administration“, Data from 2003
Table 3: Software Systems in Iraqi Universities

<table>
<thead>
<tr>
<th>University</th>
<th>Software Systems</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Database</td>
</tr>
<tr>
<td>UOT</td>
<td></td>
</tr>
<tr>
<td>Al-Mustansiriyia</td>
<td></td>
</tr>
<tr>
<td>Karbala</td>
<td></td>
</tr>
<tr>
<td>Thi-Qar</td>
<td></td>
</tr>
<tr>
<td>Basrah</td>
<td></td>
</tr>
<tr>
<td>Mosul</td>
<td></td>
</tr>
<tr>
<td>Babylon</td>
<td></td>
</tr>
<tr>
<td>Tikrit</td>
<td></td>
</tr>
<tr>
<td>Al-Qadysia</td>
<td></td>
</tr>
<tr>
<td>Kirkuk</td>
<td></td>
</tr>
<tr>
<td>Sulaimaniya</td>
<td></td>
</tr>
</tbody>
</table>

Table taken from ppt.-Presentation „Modernizing Administration“, Data from 2003

Table 4: ICT-Colleges at the Universities

<table>
<thead>
<tr>
<th>University</th>
<th>Colleges (IT)</th>
</tr>
</thead>
<tbody>
<tr>
<td>UOT</td>
<td>• Computer Engineering And Information Technology</td>
</tr>
<tr>
<td></td>
<td>• Control and Systems Engineering</td>
</tr>
<tr>
<td></td>
<td>• Computer Science</td>
</tr>
<tr>
<td>Al-Mustansiriyia</td>
<td>• Computer Engineering</td>
</tr>
<tr>
<td></td>
<td>• College of Science – Computer Science Department</td>
</tr>
<tr>
<td></td>
<td>• Education College – Computer Science</td>
</tr>
<tr>
<td>Karbala</td>
<td>• College of Science – Computer Science Department</td>
</tr>
<tr>
<td>Thi-Qar</td>
<td>• Science of Computer and Mathematics</td>
</tr>
<tr>
<td></td>
<td>• College of Science</td>
</tr>
<tr>
<td></td>
<td>• College of Education – Computer Science</td>
</tr>
<tr>
<td>Basrah</td>
<td>• College of Engineering</td>
</tr>
<tr>
<td></td>
<td>• College of Science</td>
</tr>
<tr>
<td></td>
<td>• College of Education – Computer Science</td>
</tr>
<tr>
<td>Mosul</td>
<td>• Software Engineering</td>
</tr>
<tr>
<td></td>
<td>• Computer Engineering</td>
</tr>
<tr>
<td></td>
<td>• Education College – Computer Science</td>
</tr>
<tr>
<td>Babylon</td>
<td>• Computer Science</td>
</tr>
<tr>
<td>Tikrit</td>
<td>• Computer Science and Mathematics</td>
</tr>
<tr>
<td>Al-Qadysia</td>
<td>• Computer Science and Mathematics</td>
</tr>
<tr>
<td>Kirkuk</td>
<td>• Computer Science</td>
</tr>
<tr>
<td>Sulaimaniya</td>
<td>• Computer Science</td>
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Table 5: IT-Centers at Iraqi Universities

<table>
<thead>
<tr>
<th>University</th>
<th>IT-Center</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>UOT</td>
<td>IT &amp; Communication Center</td>
<td>Some places within UOT campus and University of Baghdad</td>
</tr>
<tr>
<td>Al-Mustansiryia</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Karbala</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Thi-Qar</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Basrah</td>
<td>Computer Center</td>
<td>There are two places:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1. Computer Center - Garmat Ali Campus</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. University presidency office - Aljumhooriya Campus</td>
</tr>
<tr>
<td>Mosul</td>
<td>Computer Center</td>
<td>Applications for the center</td>
</tr>
<tr>
<td>Babylon</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Tikrit</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Al-Qadysia</td>
<td>Under Establishment</td>
<td></td>
</tr>
<tr>
<td>Kirkuk</td>
<td></td>
<td></td>
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<tr>
<td>Sulaimaniya</td>
<td></td>
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</tr>
</tbody>
</table>
Pictures

Picture 1: Iraq on the map

Picture from ppt.-presentation of Prof. Dr. Kahtan Al-Khazraji, UoT, Baghdad

Picture 2: War-Damages

THIS WAS A SMALL LIBRARY CONTAINING MORE THAN 500 TITLES

Picture from Ppt.-presentation of Prof. Dr. Kahtan Al-Khazraji, UoT, Baghdad
Plates

Plate 1: IT-Strategy For Academic Administration

Plate taken from Presentation of Ralph B. Magnus „IT Strategy For Academic Administration“

Plate 2: IT Strategy For Academic Administration
Plate 3: Services of Campus Center at TU Berlin

<table>
<thead>
<tr>
<th>Service</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Own mobile phone</td>
<td>100%</td>
</tr>
<tr>
<td>Own MP3 player</td>
<td>40%</td>
</tr>
<tr>
<td>Download music</td>
<td>30%</td>
</tr>
<tr>
<td>Use instant messaging</td>
<td>95%</td>
</tr>
<tr>
<td>Use social network site</td>
<td>Limited (lack of network)</td>
</tr>
</tbody>
</table>

Plate taken from ppt.-presentation of “Teaching and Research in Higher Education”