Information Systems in Israel

A Study Visit to Six Universities
Anders G. Nilsson

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Sometimes we hear that Israel is one of the countries in the front-line when utilizing Information Technology (IT) for better support of existing business processes as well as to enable new and innovative business concepts in organisations. We have still a rather limited knowledge here in Sweden about the Israeli way for working with the academic discipline of Information Systems on a university level.

This was my background for making a study visit to Israel during three months from the beginning of November 2007 until the end of January 2008. It was accomplished as foreign academic services with a short-term sabbatical leave from my employer Karlstad University in Sweden.

A similar study visit was carried out to Australia during 1992 financed by a post doc grant from Stockholm School of Economics for finding out the experiences of the Information Systems discipline at ten universities in the Sydney and Brisbane regions (Nilsson, 1992). A re-visit to Australia was done for a sabbatical period during eight months 1999-2000. An important mission was then to work out an “Agreement of Cooperation” for academic and educational exchanges between the University of Wollongong (Australia) and our Karlstad University (Sweden).

The main purpose of the visit to Israel was to investigate research and education in the subject Information Systems (IS) and the connection to the faculties they belong to at the six traditional universities in Israel:

- Bar-Ilan University (BIU), in Tel-Aviv
- Ben Gurion University of the Negev (BGU), in Beer-Sheva
- The University of Haifa
- The Hebrew University of Jerusalem
- Technion – Israel Institute of Technology, in Haifa
- Tel-Aviv University (TAU)

I was officially situated at Hebrew University during my three months stay in Israel and had an office space at the Business School there. My colleague professor emeritus Phillip Ein-Dor mediated all necessary contacts with major IS academics at the six universities in Israel. He has an excellent overview as being the chair for a chapter of Information Systems for academic teachers and researchers in Israel.

This report is organised in the following way. The first section is about Information Systems (IS) as an academic discipline. We try to do a program declaration for the IS discipline and argue that Information Systems should be regarded as a relationship subject. The second section is about the Information Systems discipline at each of the six universities in Israel. We make brief descriptions of education, research and outside cooperation at the various IS institutions. The third section is about some lessons learned from the site visits to the six universities in Israel. We highlight valuable experiences when comparing the IS discipline between Israel and Sweden.
1 Information Systems – Academic Discipline

Information Systems as an academic discipline has from the very beginning in the mid 60’s emphasised its nature as a relationship subject. The mission is here trying to integrate knowledge from computer science (computers and information technology), behavioural science (people and learning), and business administration (work tasks and activities in organisations). In other words, the mission is to investigate how people or users develop and apply IT solutions to support and improve their work tasks in social and business life. There is an interplay or concert between people, computers and work tasks as shown in Fig. 1 (Nilsson, 2006; Nilsson & Pettersson, 2001).

![Diagram of Information Systems as a relationship subject](image)

Fig. 1. Information Systems as a relationship subject.

Information Systems (IS) is the scientific discipline studying human interaction with IT systems in different types of daily operations. IT systems could be designed by producing in-house systems, by purchasing ERP-systems or by building component based systems (Nilsson, 2008). The IS subject focuses on developing knowledge of the use of information technology (IT) in family home life, business community and society at all. In this knowledge creation there are always questions about how using modern information technology enables us to help private companies and public organisations to:

- support business operations;
- create new business opportunities; and
- promote a more proactive service management.

Finding the answers to these questions is what we consider the primary mission of the Information Systems discipline. Developing business operations should be regarded as a knowledge boost, where technology is subordinated to the needs and demands of human beings i.e. based on a user-oriented perspective (Nilsson, 2004).
2 Information Systems – Six Universities in Israel

This section is about the Information Systems discipline at each of the six universities in Israel. Brief descriptions of education and research at the IS institutions are made. These outlines follow the sequence or order that I visited the six different universities. I had as a rule to present a paper on my view of the IS discipline at an organised departmental research seminar in the universities (Nilsson, 2004). I had also professional discussions with the leading IS academics at the visited institutions. As a gift I handed over our book on “The Karlstad University Approach to Information Systems” to each of the universities I visited (Nilsson & Pettersson, 2001).

2.1 Information Systems at Hebrew University

My contact persons at the Hebrew University of Jerusalem were Professor Ronen Feldman and Dr. Michal Feldman. Interesting contributions from these researchers are published in Epstein, Feldman & Mansour (2007) and Feldman & Sanger (2007). The visit to Hebrew University was on a regular basis during the period of 3 November (2007) until 31 January (2008).

Hebrew University was one of the two first established universities in Israel during the year 1925 inaugurated by Professor and Nobel Prize winner Albert Einstein, founder and supporter of Hebrew University. The university has around 24,000 students including 12,000 undergraduates, 7,600 master’s degree students, 2,600 doctoral candidates and 1,300 overseas and pre-academic students. Hebrew University is characterised as a multi-disciplinary institution of higher learning and research (e.g. for human rights and gender studies).

The Jerusalem School of Business Administration or shortly the Business School has education and research in the specializations for accounting, finance, information systems, strategy, marketing, operations management and organizational behavior. The business school has a strong interplay in education and research between the 30 full time faculty members, of which 16 are professors. There are approximately 70 adjunct teachers who are professional and vocational specialists. The Business School has approx. 1,400 university students and runs also a professional Executive MBA education in strategy and quality management. The school has also established a minor group for research and education in project management.

The Information Systems (IS) discipline is represented by a small group of 2 senior academics (of which 1 is professor), 2 post doc researchers, 4 PhD students and 2 master students. The senior academics are originally coming from the computer science field and have now special research profiles in text mining and game theory connected to the IS subject. These researchers have established cooperation with the other business fields of marketing and operations management at the school. The ordinary education in Information Systems has interesting connections to other education programs in the Business School. Major teaching in IS courses is done by professionals from outside industry for topics that the ordinary academics have no direct competence for the moment.
As a very interesting concept for business community involvement in teaching programs are the two established platforms: Virtual Shopping Laboratory for marketing research and electronic commerce and Enterprise Resource Management (ERM) Laboratory based on the SAP system. The management of the ERM laboratory is a cooperative strategic operation with the guidance of a representative of the SAP Company; the SAP system is today used by various leading Israeli companies. The platform was developed with the aid of the Compaq Computer Company (in Israel) and Microsoft, and is the first of its kind in the academic field in Israel. The facility is used for teaching in the Information Systems and Operations Management specializations, and is also used as a research platform.

2.2 Information Systems at Tel-Aviv University

My contact persons at Tel-Aviv University were Professor Phillip Ein-Dor and Professor Dov Teeni. Interesting contributions from these researchers are published in Ein-Dor & Segev (1981; 1993) and Teeni, Carey & Zhang (2007). The visits to Tel-Aviv took place at two different occasions on 13 November (2007) and 28 January (2008).

Tel-Aviv University (TAU) received 1969 full accreditation for higher education and was before that a university college branch to Hebrew University. About 26,000 students are enrolled at Tel-Aviv University and 3,000 of them are studying at the Faculty of Management officially labelled Leon Recanati Graduate School of Business Administration. The faculty or business school is running traditional university programs as well as Executive MBA programs for the industry. Within this business school an academic group for the discipline Information Systems (IS) is situated.

In the IS discipline the goal is to have 6-8 senior academics to be active teachers in the graduate programs (approx. 120 students) and for supervising PhD candidates (approx. 15 students). The Information Systems group delivers general IS courses such as in systems analysis/design and databases, but has several special courses in data-mining, human computer interaction (HCI) and healthcare and IT. Concerning IS research each academic has its speciality but in this respect we can mention some competence profiles in IS & Economics, HCI, IT & Care as well as connection of IS issues to operations management.

The IS group has international cooperation with a couple of universities in USA; Case Western Reserve University and Claremont Graduate University. The IS group has also outreach collaboration with “The Marcel and Annie Adams Institute for Business Management Information Systems” in Israel who provides support for research activities, teaching, and dissemination of information on the development and application of computerized information systems.

Professor Phillip Ein-Dor founded in 2005 and currently the Chair of ILAIS which is the Israel chapter of the international Association of Information Systems (AIS). The ILAIS network is an essential meeting place for IS academics and is very influential on education and research activities in Israel. Around 50 of the estimated total of 150 IS academics in Israel are active members of the ILAIS network. See more information on ILAIS at: http://ilais.openu.ac.il/wp/
2.3 Information Systems at Ben Gurion University

My contact persons at Ben Gurion University of the Negev were Professor Peretz Shoval, Professor Nava Pliskin and Dr. Tsipi Heart. Interesting contributions from these researchers are published in Hanani & Shoval (1986); Heart, Pliskin & Foley Curley (2007) and Kabeli & Shoval (2004). The visit to Ben Gurion University took place during 10-12 December (2007).

In the end of 1969 Ben Gurion University was started by the Government as a self-dependent academic institution, labelled “University of the Negev”, to bring higher education and development to the south region in Israel; the city of Beer-Sheva at the desert area of Negev. It was actually established as an extension to both Technion and Hebrew University with academic support, supervision and sponsorship from them. Today Ben Gurion University has over 17,000 students with some 30% studying for advanced degrees.

The discipline of Information Systems discipline is divided between two departments within the Faculty of Engineering Sciences. Since the beginning the IS discipline was a part of the Department of Industrial Engineering and Management (IEM) which belongs to the business field in academia. The split of the IS discipline was made during the year 2000 where a group of researchers established a new Department of Information Systems Engineering (ISE) which belongs to the technical field of academia. In other words, it went out that the IS discipline got two slightly different missions of giving education services to business oriented students as well as technical oriented students.

The new ISE group consists of 12 senior academics, 4-5 PhD students and a couple of post-doc students. As a matter of fact the ISE group is the largest senior academic team in Information Systems around the six universities in Israel. The group states that the discipline of Information Systems is concerned with the effective analysis, design, development, use, and management of information systems in organizations. They are responsible for a B.Sc. Curriculum ISE program with both compulsory courses (e.g. systems analysis and software engineering) and elective courses (e.g. ERP systems in industry and multimedia information systems). The ISE group is also responsible for a M.Sc. Curriculum program and for the PhD program in Information Systems. Further on, the ISE department is granting a B.Sc. degree in Software Engineering (SE) which is a joint program with the Computer Science (CS) department. The research in the department includes wide spectra of issues and themes such as data modelling, ISD methods, expert systems, human-computer interaction (HCI), user modelling, decision support systems, electronic commerce and distributed databases. The ISE department is also equipped with stat-of-the-art laboratories for teaching and practice such as for Information Security, Data Mining and Medical Informatics. For the latter area they have a working collaboration with the medical faculty of Hebrew University at Hadassah Hospital in Jerusalem.

The IS group of today at the IEM department consists of 6 senior academics and 2 PhD students and their subject is labelled Information Systems and Technology. The group has a management perspective when delivering Information Systems courses to
students active in education programs for e.g. industrial engineering, management science and operations research. The research activities comprise a lot of topics such as information systems strategy, evaluation of information technology and remote application services. For the moment the IS group is starting up a laboratory for enterprise systems research (LESR) as a constructive bridge between industry and academia. The LESR laboratory is partly financed by Oracle but should consist of a representative set of many ERP systems on the today’s market (also from e.g. SAP, Microsoft and IBM).

Recently the Deutche Telecom has decided to finance a new research laboratory and several projects at Ben Gurion University as a whole for the IS and CS disciplines. This large-scale joint venture headed by the ISE department will be a good platform for making a “bridge” to the CS and IEM departments.

2.4 Information Systems at Technion

My contact person at Technion or Israel Institute of Technology was Professor Dov Dori. Interesting contributions from this researcher are published in Dori (2002). The visit to Technion took place on 15 January (2008).

Technion situated in Haifa was one of the two first established universities in Israel during the year 1924 inaugurated by Professor and Nobel Prize winner Albert Einstein, after some years of intense pioneering activities for Technion. This technical university has about 13,000 students from 35 countries including 9,000 undergraduates, 2,500 master’s degree students, 900 doctoral candidates supported by an academic staff of over 500 professors. The students need to have excellent marks from high schools or from psychometric tests in order to be enrolled in the various education programs at Technion.

As crude estimations the university funding from the Government is approx. 60% of the budget; the rest is tuition fees from students (around 2,000 USD per calendar year) and donations or sponsoring from outside funders mainly from Jewish organisations abroad. This seems to be a normal financing model for the universities in Israel. Being a traditional institute of technology, Technion has very close connections to private industry which is of strategic importance for the fundraising policy. The Swedish Royal Institute of Technology (or KTH) has a working collaboration relationship with Technion; one professor from KTH is a member of the university management board. Technion has recently put on the agenda to promote interdisciplinary research in a larger scale.

One of the 18 faculties at Technion is labelled Industrial Engineering and Management. Within this faculty is an academic group called Information Systems Engineering (ISE) who is responsible for the Information Systems discipline at Technion. The ISE group is delivering courses for approx. 200 students a year. The academic staff comprises 7-8 senior academics, 15 PhD students and around 20 master students. The research is dealing with topics for conceptual modelling, systems engineering, information retrieval, data bases, game theory, artificial intelligence (AI), distributed systems and algorithms, information retrieval, and verification and validation. There
is some overlap of research interests with computer science conducted at the Faculty of Computer Science, a separate faculty on campus with 75 academics.

From the site visit at the ISE group in Technion emerged a very interesting concept of realising an Enterprise Systems Modelling (ESM) Laboratory. The idea is to organise the laboratory around several project meetings instead of conducting traditional computer labs. The student teams are tasked with solving advanced problems by way of facing different scenarios for information modelling. The applied IS approach is Object-Process Methodology (OPM, see Dori, 2002), a methodology that combines the structure and behavior of systems in a single graphic and textual model. The advantage with using methodologies and models from the IS subject is that they are very general for all kinds of industry applications. The experimental teaching is simulating realistic project works in industry; students interacting through marketing, production and economy teams. The concept of implementing an ESM concept is based on a pedagogical principle for active learning of students which could also be implemented in distance education programs. The results from the laboratory experiments could be used by PhD students in their research work.

2.5 Information Systems at University of Haifa

My contact persons at University of Haifa were initially Dr. Daphne Raban and then Dr. Irit Hadar. Interesting contributions from these researchers are published in Raban (2007) and Soffer & Hadar (2007). The visit to Haifa University took place on 16 January (2008).

The University of Haifa was established in 1963 under the joint auspices of Hebrew University and Haifa Municipality. In 1972, it gained academic accreditation as a separate university institution. Some 16,500 students are studying toward an academic degree of which Bachelor’s 10,500; Master’s 5,000; Doctoral 800 and Diploma 200 students. University of Haifa has as a tradition to be a multicultural academy for many ethnical groups and immigrants. The motto from the founders is coexistence and peace for human beings. Haifa University has six faculties where one of these is Faculty of Social Sciences.

The newly created Department of Management Information Systems (MIS) is a self-dependent academic unit within Faculty of Social Sciences. The MIS group has currently 7 faculty members and up to 10 PhD students. The MIS and computer science departments share 600-700 students in IT education programs where they have around 50% of the students each. The MIS group has cooperation with other departments within the faculty and university such as statistics, economics, marketing, management and archaeology (for marine studies). The group defines the concept of “management information systems” as computerized systems that facilitate the successful operation and management of organisations.

In the Graduate School of Management there are also some active IS researchers with knowledge interest in for example the subjective value of information in organisations. Otherwise there is a rich interest in various research issues in the MIS group such as information systems modeling, enterprise modeling (ERP), meta-modeling, requirements engineering, software engineering, business intelligence, data mining,
multimedia information delivery and medical informatics. The MIS academic discipline is based on an IS core of theoretical foundations for systems analysis and design from a user point of view in order to integrate the various research interests.

The MIS group wishes to have a stronger industry connection in their education and research programs. Outreach activities with different companies are a great challenge for the future. As small steps towards this direction is the plan for having the students doing the last exam assignments in MIS at local companies as well as establishing an enterprise systems laboratory in a smaller scale with local Israeli IT vendors.

2.6 Information Systems at Bar-Ilan University

My contact person at Bar-Ilan University was Professor Roy Gelbard. Interesting contributions from this researcher are published in Bittmann & Gelbard (2007) and Gelbard & Carmeli (2007). The visit to Bar-Ilan University took place on 28 January (2008).

Bar-Ilan University has since its inception 1955 grown up to a large academic institution with over 31,000 students in total of which approx. 1,700 are PhD students and 7,000 students are enrolled for professional development besides the ordinary undergraduate and graduate students. Around 700-800 of the academic staff are professors in various fields. The main campus of the university is situated in Ravat-Gan outside the Tel-Aviv city centre.

The Graduate School of Business Administration is an academic unit within the Faculty of Social Sciences at Bar-Ilan University. This Business School includes four areas of Finance, Marketing, Organizational Behaviour (including Management and Strategy) and Information Systems (IS). Except ordinary student education the Business School is focusing on two programs for International MBA and Executive MBA. The Business School consists of around 20 senior academics and there are a lot of multidisciplinary activities in education and research.

The IS group is a division within the Business School comprising three senior academics, two supplementary instructors and five PhD students. For the senior academic staff there is historically an overlap with one full professor from Tel-Aviv University. The research in IS is established around some themes for knowledge management and Internet, systems analysis and business modelling, data mining and clustering together with data storage, information value and enterprise systems (ERP systems).

The group is delivering IS courses in the Business School education programs but have no pure and specific IS curriculum program. Most of the teachers in IS are coming from the industry; they often have a doctoral degree and like to come as guest lecturers to the university for giving an industry perspective to the students. One of the instructors who is also a PhD student are very active for building up an enterprise systems laboratory built on the SAP concept. The IS group has some cooperation with international academic organisations e.g. Monash University in Melbourne, Australia.
3 Information Systems – Some Lessons Learned

This section is about some lessons learned from the site visits to the six universities in Israel. We highlight valuable experiences when comparing the Information Systems (IS) discipline between Israel and Sweden. The comparison is done from three different levels:

1. IS discipline from a university level
2. IS discipline from a faculty level
3. IS discipline from a subject level

The first level deals with the IS discipline seen from being in different university contexts in Israel and Sweden, respectively. The second level is about the IS discipline and the connection to the different faculty contexts they belong to. The third level penetrates the IS discipline and the different traditions we have in Israel and Sweden from a subject oriented perspective.

3.1 Comparison on a University Level

It is interesting to compare on an overall level the university situation in Israel and Sweden. In Israel 6 traditional universities have a full accreditation for higher education with bachelor, master and doctoral programs for a population of 7 million people. In Sweden we have 15 accredited universities for a population of 9 million people. Even if we take into the consideration that Sweden have more foreign students the academic studies seems to be more frequently used in Sweden compared to Israel.

From another point of view the fundraising policy for universities seems to be better off in Israel at least compared to the Swedish conditions. Firstly, in Sweden academic education is free of charge based on a democratic principle. In Israel a student pays a tuition fee of approx. 2,000 USD per calendar year which seems to be a common policy for university studies. Secondly, private donations and company sponsorships is in the Israeli society a very established concept for fundraising of infrastructure and academic work in universities. Up to 40% of a university budget is financed by external funding as a supplement to the Government funds. A lesson learned is that Swedish universities have to reconsider their financing policy and especially to be more aggressive in finding new ways for both donations and sponsorships to support academia. The trend is that external funding of education and research is being more important for every year in financing the Swedish university system.

The academic work in Israeli universities seems to be based on more traditional principles compared to Swedish conditions in general. We can give some examples or signs of this statement. In Israel the academic staffs that are fully employed usually have a doctoral degree. Therefore the education and teaching is conducted by so-called senior academics. The situation is somewhat different in Sweden where the education system is based on junior academics or adjuncts in a large extent. The goal of today in Sweden is to have teaching performed up to 60% by senior academics with a doctoral degree. Another sign of a traditional principle applied in academia is that publishing in form of scientific journal articles connected to a citation index system is the normal procedure for “good” research in Israel. In Sweden we have in
the recent time a lively debate on this strategic matter. The tradition has so far been more of a mixed publication policy with journal contributions, conference articles and books (or book chapters). Further on a traditional sign of good scientific work is to let the senior academics have a sabbatical period which is guaranteed for 1.5 year every 7th year of university works in Israel. In Sweden we abandoned the Government funding of sabbaticals of professors in the late 90ths when we launched the new system for academic promotion to full professors for senior lecturers.

An interesting concept for PhD studies in Finland and Sweden is so called national research schools financed by the Government or by scientific grant funding organisations. The leading idea is to organise a network of doctoral students from many universities and university colleges in a joint structure for PhD studies around some concrete themes such as “Management and IT” or “Applied IT and Software Engineering”. The great advantage of such a PhD program is the team approach for research and that the doctoral students support each other in their dissertation processes. The situation for PhD studies in Israel is more of the traditional way of isolated research performed by doctoral students. It would be a challenge for Israel to learn and implement research schools in the Scandinavian way which we have good experiences on regarding both motivation and throughput in the PhD system!

A curiosity worth mentioning is the strike by senior academics for three months (mid October until mid January) that was going on during my study visit to Israel. The undergraduate and graduate students were blocked from their university studies for such a long time because of a complicated conflict on salary compensation between the teacher union and the Government. The strike was at the end settled in the last minute so that the students would not loose a whole semester of their university studies. We in Sweden have a lot to learn and experience from this university strike in Israel on how to handle extreme situations for students and academic staff. It was over 20 years ago that we in Sweden faced strikes for a couple of weeks in the academic or university world.

3.2 Comparison on a Faculty Level

The discipline of Information Systems could be organised and structured in different ways on a faculty level. Principally, the Information Systems area belongs to a business school faculty, engineering faculty or social science faculty. For the six universities in Israel the faculty context situation for the IS discipline is as follows:

- **Business School (Faculty):** Bar-Ilan University, Hebrew University of Jerusalem, and Tel-Aviv University
- **Engineering Faculty:** Ben Gurion University of the Negev and Technion, Israel Institute of Technology
- **Social Science Faculty:** University of Haifa

I also found this mixed pattern or situation when making the earlier study visit to Australia during my post-doc period (Nilsson, 1992). Some universities in Australia had the IS discipline organised in two different faculties of commerce (business) and information technology (engineering). This was actually a similar case in Israel for the Ben Gurion University which for historical reasons has two academic units for Information Systems with business oriented and technical oriented profiles, but within the same engineering faculty.
In Sweden, the Information Systems discipline of today is organised and structured within the same pattern of faculty context as the Israeli universities. The first IS departments in Sweden were organised in a more complex faculty structure belonging to two different faculties at the same time (engineering plus social sciences) in the same university or even at two different universities simultaneously. At Karlstad University in Sweden the IS discipline is today belonging to a business faculty and is nationally classified in the social science field of the university system. A lessons learned from structuring the IS discipline in different faculty contexts nationally and internationally is that Information Systems is regarded as very hard to grasp or even perceived as “mysterious” for outside academics or our colleagues from other fields!

There has always been a close connection between the two IT disciplines of Computer Science (CS); started 1949 as a proposal from IBM, and Information Systems (IS); started 1965 as a user-oriented extension of the CS discipline. At the six universities in Israel it is a very strict distribution or division of responsibility between the two IT disciplines usually belonging to separate faculties. The CS discipline in Israel represents in general bigger academic units than the IS discipline. For example at Technion the Computer Science discipline is organised as an own faculty with approx. 100 staff members. Traditionally the overlaps between the CS and IS disciplines in education and research are software engineering and data base design. But these overlapping areas are seen or regarded from two different perspectives: a technical oriented discourse versus a user oriented discourse.

In Sweden the disciplines of Computer Science and Information Systems usually are belonging to different faculties in the university systems. But for Karlstad University in Sweden we have organised so that both IT disciplines are belonging to the same faculty of “Economic Sciences, Communication and IT” – most comparable to a business faculty on an international level. A reason behind this is that both CS and IS disciplines at Karlstad University are characterised as applied sciences and are very practice oriented in education as well as research activities.

A challenge for universities has always been to create fruitful and workable multidisciplinary environments for the academic work with education, research and collaboration with outside industry. A loadstar for Karlstad University in Sweden is to be a modern and professional university through a multidisciplinary strategy. Such a university strategy is challenging because of the need for combining many perspectives often based in different academic traditions. Another essential obstacle or barrier to overcome is the demand for integrating various frameworks to a holistic approach for a constructive way of working between the disciplines. This integrative work often takes a longer time than expected because of a large difference in perspectives taken. The Information Systems discipline in Karlstad University has for years been conducted joint education and research apart from Computer Science foremost with Business Administration, Pedagogy, Media- & Communication Science and Psychology. The situation for multidisciplinary initiatives at the six universities in Israel seems to be very good from an Information Systems perspective. IS academics having fruitful joint ventures with Marketing, Management and Computer Science researchers within and between business and engineering fields. My overall impression is that we in Sweden have a lot to learn from the smooth and professional way Israeli academics are working with multidisciplinary issues in education and research.
3.3 Comparison on a Subject Level

In the beginning of this report we argued that the Information Systems discipline has a character of being a relationship subject in academia. The key issue for the IS discipline is to study how people (users) develop and utilize computerized solutions for supporting various work tasks in companies and organisations (see Section 1 above). A vital discussion point with the IS academics during my professional visits and seminars at the six universities in Israel was the question on how to define the core of the Information Systems discipline. What we seem to agree on was the theoretical foundation of systems analysis and design of IT artefacts from a user oriented position. As an example of basic core research is the development of the traditional ISAC approach for information systems development in the 70ths (Lundeberg, Goldkuhl & Nilsson, 1979; 1981). From such a standpoint on the IS core we can study and analyse a lot of relevant applications from other academic fields, for instance economic sciences, health care sciences and behavioural sciences. Principally, we can connect all kinds of education and research initiatives according to the IS definition (see Fig. 1 in Section 1) to four types of relationships between:

- computers, people & work tasks (e.g. enterprise systems architecture design)
- computers & work tasks (e.g. business-driven IT design)
- computers & people (e.g. user-oriented interaction design)
- people & work tasks (e.g. project management of IT or other artefacts)

At Karlstad University in Sweden we have organised the Information Systems discipline in four scientific groups or teams each responsible for one of the four kinds of relationships – see the denominations in the brackets above. From the professional discussions with the academics in Israel I understood that this was a very good idea to structure the academic work in general for the IS discipline. This approach could be a workable concept for a future direction of the Information Systems subject at the Israeli university system. Another challenge to consider for the various IS groups at the six universities in Israel is to try to unite more the diversified research activities in order to have a clearer focus and profile in IS based on a joint definition of the core for the Information Systems subject.

A great discovery for the developing and “flourishing” the Information Systems subject that I found in Israel was the distinctive idea to establish the ILAIS network in mid 90ths for IS academics from universities and university colleges (see Section 2.2 above). We have tried several times in Sweden to establish workable networks between all professors of Information Systems from academia – but we have not succeeded as professionally as performed in the Israeli chapter of AIS. The ILAIS network is an essential meeting point or encounter for the influential academics in the IS field. The network structure is well-organised and therefore facilitates many valuable interactions between IS academics. The lesson learned from Israel is to try to re-build a workable network structure for IS academics in Sweden again! But the challenge for the ILAIS network in Israel is to strengthen the academic contacts with the business industry and public organisations for fruitful collaboration and cooperation. In Sweden we have a good tradition in our Information Systems subject to work with outreach activities in the surrounding society striving for a high ambition to support national as well as local industry with professional IT solutions.
We will end up this report with some suggestions for potential collaboration in Information Systems (IS) between Karlstad University in Sweden and the six visited universities in Israel.

1. **Enterprise Systems Modelling (ESM) Laboratory**
   The idea for cooperation was proposed from the Technion side who has worked out a ready-made concept for running a professional ESM Laboratory in education and research (see Section 2.4 above). The IS group at Karlstad University will move during June 2008 to a newly constructed high-tech building with professional facilities for pursuing different kinds of laboratory exercises. One interesting idea for a joint venture could be to have mutual distance learning interactions between student classes in Israel and Sweden which is possible because of a minor time difference of only one hour.

2. **ERP Systems Laboratory**
   The idea for cooperation on ERP Systems Laboratories was mentioned from many site visits; namely from Bar Ilan University, Ben Gurion University, Hebrew University and University of Haifa. The strategy for Karlstad University in Sweden is to build up a professional laboratory for Enterprise Systems (ERP) and Electronic Commerce in the new high tech building on campus. There are a lot of potential collaboration themes such as comparable data on ERP use in large-scale organisations, parameter settings by IT experts and business decision styles in SME’s.

3. **Combining Research in ERP Systems with Text & Data Mining**
   The idea for cooperation is to make an attempt to classify the functionality in ERP systems from various vendors in Israel and Sweden using professional tools for text and data mining worked out by researchers from Bar-Ilan University and Hebrew University. Also we could utilize professional schemas for a general classification of information systems worked out by researchers from Tel-Aviv University. This would represent a unique research of its kind for alternative ways of clustering functions and applications in ERP packages on the market. The major contribution from this research direction is a new set of analysis models for a better understanding of the constituents of ERP systems.

**Short Bio of the Author**

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Dr. Nilsson is tenured professor and has a chair of Information Systems at Karlstad University in Sweden. He received his Ph.D. in Business Administration with a major in Information Management from Stockholm the School of Economics in 1991. His main research area is models and methods for change work on three different levels in organisations regarding corporate strategies, business processes and IT systems. Dr. Nilsson is an internationally recognized expert in business modelling and enterprise systems (ERP systems). In the 1970’s, he was a member of the research team for
designing the well-known ISAC approach for information systems development (ISD) (Lundeberg, Goldkuhl & Nilsson 1979; 1981).

References


Information Systems in Israel

Sometimes we hear that Israel is one of the countries in the front-line when utilizing Information Technology (IT) for better support of existing business processes as well as to enable new and innovative business concepts in organisations. We have still a rather limited knowledge here in Sweden about the Israelian way for working with the academic discipline of Information Systems on a university level.

This was my background for making a study visit to Israel during three months from the beginning of November 2007 until the end of January 2008. It was accomplished as foreign academic services with a short-term sabbatical leave from my employer Karlstad University in Sweden.

The main purpose of the visit to Israel was to investigate research and education in the subject Information Systems (IS) and the connection to the faculties they belong to at the six traditional universities in Israel:

- Bar-Ilan University (BIU), in Tel-Aviv
- Ben Gurion University of the Negev (BGU), in Beer-Sheva
- The University of Haifa
- The Hebrew University of Jerusalem
- Technion – Israel Institute of Technology, in Haifa
- Tel-Aviv University (TAU)

This report is organised in the following way. The first section is about Information Systems (IS) as an academic discipline. We try to do a program declaration for the IS discipline and argue that Information Systems should be regarded as a relationship subject. The second section is about the Information Systems discipline at each of the six universities in Israel. We make brief descriptions of education, research and outside cooperation at the various IS institutions. The third section is about some lessons learned from the site visits to the six universities in Israel. We highlight valuable experiences when comparing the IS discipline between Israel and Sweden.