United Nations
Economic and Social Commission for Western Asia (ESCWA)

NATIONAL PROFILE FOR
THE INFORMATION SOCIETY IN PALESTINE

NATIONAL PROFILE FOR THE INFORMATION SOCIETY IN PALESTINE

Given the current political conflict and the lack of security, the Palestinians have continuously been denied the opportunity to advance or catch up with the technological changes in various areas. All Palestinian sectors, in particular the economic, are operating under constraints. External constraints include the freedom of movement of people and goods across Palestinian Territories by way of air, sea and land routes. Local constraints include the scarcity of natural resources, in particular land and water, and the limited size of the local market. A high birth rate, together with a high redundancy of the labor force and weak performance of public institutions, the Palestinians thus, are still consumers of products of their neighbors. Palestinian residents in the West Bank and the Gaza strip are about 3,762,000 this year, and are expected to increase at a rate of 3% per year to reach around 5,091,000 people in the year 2015.[1]

Plans adopted by the Palestinian National Authority (PNA) have not specified the role of Information and Communications Technology (ICT) in the Palestinian society. The Ministerial council issued a decision dated 26/01/2004, to form a national grand committee to work on a national strategy in the field of ICT in full cooperation and coordination with the private sector, the civil society, the academia, and the NGOs. This year, and in the Hebron meeting of the Palestinian Cabinet on the 19th of May 2005, the ICT strategy was endorsed officially by the PNA. The Palestinian Authority has tried to promote the development of the ICT industry by way of setting up governmental bodies, supporting the establishment of relevant NGOs and associations, and enacted several laws to encourage investment in IT.

1. *Policies and Strategies*

National information society policies and strategies

There is inadequate legislation designed to encourage investment. The absence of a clear vision of the future of Palestinian economy has led to a weakness in planning and implementing economic policies.

The PNA has started to improve the infrastructure of the Palestinian industry, in cooperation with UN and other international organizations. The ministry of national economy promoted the founding of the Palestinian Information Technology Association (PITA) and established many agencies and departments in the industrial sector. These efforts, however, didn't go far enough in developing an IT industry because of the absence of clear national strategies for ICT promotion. The role of the government has been largely ineffective to carry out many of its tasks until now. The recent endorsement of the ICT strategy should start a process towards the development of a number of IT initiatives in different fields. The vision is to bring Palestine to the level of most developed information societies in the region, leveraging upon ICTs to improve the quality of life of its citizens and contribute steadily to its economic growth.

Sectoral plans for building the information society

The Palestinian Socio-Economic Stabilization Plan for 2004-2005 (SESP) calls for sustained budgetary and emergency/humanitarian assistance, and encourages longer-term capacity-building and infrastructure development as circumstances permits, particular for the private sector. The Palestinian Medium Term Development Plan (MTDP) 2005-2007, has tackled different sectoral development needs, in consultation with the private sector and the academic sector for the emerging information economy in Palestine.

The Ministry of Education & Higher Education (MoEHE) has been working to build an education system responsive to social, cultural and developmental needs. MOEHE and the Ministry of Telecom and Information Technology (MTIT) have finalized recently a draft for the "Palestine Education Initiative PEI" that aims mainly to improve the existing ICT utilization in the PNA education system and improve public

---

[1] Palestinian Central Bureau of Statistics. www.pcbs.org

and private collaborations. This initiative was declared in during the PA participation in the World Economic Forum in the Dead Sea in Jordan on the 21st of May 2005.

Involvement of WSIS objectives

The Palestinian Authority participated from the beginning in the preparations for the WSIS, and is totally convinced about the importance of being an active stakeholder in achieving WSIS objectives. The PNA is currently working hard for its participation in the upcoming Tunis meeting in November 2005, and is not sparing any contribution from the private sector, NGOs and other PA institutions.

Progress towards fulfillment of national policies and strategies

The completion of the ICT Strategy for Palestine, and its endorsement by the Cabinet, is considered a great achievement for the ICT sector and the Palestinian community. More achievements are expected in the near future, like the Palestine Education Initiative, and other initiatives that the PNA is keen to achieve.

PITA[2] being a membership-based organization facilitates policies, mechanisms and environment for public-private partnership locally and internationally. Palestine Information & Communications Technology Incubator (PICTI), also an independent non-profit incubator of PITA, provides facilities and supports the commercialization of ideas of enterprises.[3] This includes technical and non-technical IT related institutions.

2. *Legal and Regulatory Frameworks*

National Intellectual Property rights, Privacy status and status of freedom of speech

The Palestinian Authority has taken initiative to modernize and re-draft a number of old laws to suit the digital era. The new laws will cover Intellectual Property Rights (IPR) protection law in industrial property, patents, designs, trademarks and copyrights. The ministry of national economy is currently working on an IPR draft law, as well as the trade marks law. These draft laws are being prepared according to international best practices and are WTO compatible.

Telecom regulatory framework

The regulatory framework of telecommunications in Palestine is relatively a new with Telecommunications Law enacted in 1996. This law was neither reviewed nor approved by the legislature and was enacted in the absence of almost all stakeholders other than the government. MTIT is updating this law and other telecom sector laws and forming a separate independent regulatory authority. MTIT is monitoring and regulating the sector's performance and manage the Government Computer Center (GCC).

Regulating the Internet

Palestine does not have regulatory laws in Internet-related services. An independent Palestinian National Internet Naming Authority (PNINA) was formed in mid-2003 whose mission is to formulate the necessary registration policies for the PS domain and to set appropriate policies for enhancing Internet usage in Palestine. The organization is entrusted in managing all administrative, registration, technical and financial aspects of the .ps domain based on the international standards and best practices in this regard. In the year 2004 only, 634 domain names were registered at PNINA on the .PS domain.

Privacy and security laws and regulations for applications

There is inadequate legislation to combat software piracy, let alone enforcing the current software proprietary laws.

---

[2] The Palestinian Information Technology Association of Companies (PITA) http://ww.pita.ps

[3] Palestinian Information Communications Technology incubator http://www.picti.org/

Other ICT-related laws and regulations

The ministry of national economy, together with other PA relevant institutions, is consulting with different local and international organizations on the development of its legal systems. Since 1998, the Ministry of National Economy has started preparations to join the World Trade Organization (WTO). It aims to achieve this goal and to be an active member state in the Multilateral Trading System (MTS). Thus, it has started setting laws, regulations and procedures that ensure making the access possible. This year, the PNA has requested officially to become an observer to the WTO. This request is still under investigation by the relevant WTO authorities.

3. *ICT Infrastructure*

Telephone penetration

The PNA took over the West bank and Gaza-strip in 1994. There were severe deficiencies in wireless and cable communications. Surveys noted only 5.5 telephone sets per 100 inhabitants. In 1995, a public shareholding company, Palestinian Telecommunication Company (Paltel[4]) was established, with 10-year exclusive telecommunication license. According to Paltel, cable fixed line telephone services are supplied to over 96% of Palestinian residents. The total number of the fixed lines at the end of year 2004 reached about 332,000 lines (Table 1), with about 193,211 lines in the West Bank and the remaining at Gaza Strip. In year 2004, Paltel managed to install about 41,934 new lines in West Bank and Gaza. The mainline penetration is about 9 per 100 inhabitants. Service cost remains relatively high for consumers in comparison with neighboring countries.

Table 1. Source: Arab Advisors[5],[6]

	Indicators	2001	2002	2003	2004
Fixed line	subscribers	292,000	301,600	315,800	332,500
	Growth (%)	7.3	3.3	4.7	5.3
	Mainline penetration (%)	8.9	8.6	8.7	8.8
Mobile	Total subscribers	419,000	545,500	660,000	854,000
	Penetration rate (%)	13		18	22
Payphones	Number installed	3,240	2679	2466	…
	Penetration	0.098	0.077	0.068	…

The mobile operator is Jawwal, a subsidiary of Patel, providing GSM network covering 99% of the Palestinian territories. It is also competing with 4 other Israeli cellular operators, with Orange and Cellcom being its primary competitors. Jawwal currently exceeds 47% of the total mobile market with almost 500,000 subscribers.

Internet backbone

The Internet has become the preferred medium of information exchange for Palestinians. One of the indirect results of the ongoing Israeli occupation has been an increase in Internet connectivity. The Internet has also been serving as a venue for electronic activism since the start of the current Intifada, in late 2000.

Paltel does not have its own International Direct Line (IDL) gateway, but, through a national Israeli operator called Bezeq and 2 privately owned facility-based carriers. Some areas are covered by Paltel or Bezeq exclusively, others by both operators at the same time.

---

[4] Palestinian Telecommunication Company (Paltel) www.paltel.ps

[5] Arab Advisors Group; April 26 2004. Palestine's Patel and Jawwal maintain their momentum under difficult and unstable economic and political conditions.

[6] Arab Advisor Group, Palestine Communications Projections Report. October 2004

Palnet provides wireless services, with services in the Palestine and branches in Israel. Its services include Dialup/ISDN, ADSL connections, frame relays and leased-line connections web hosting and Domain Name services (Table 1). Palnet Network is based fiber-optic digital communications network through digital backbone network. Its ISDN formed 85% of the total lines in mid-2004. ADSL equipments been contracted to Alcatel in 2004 and its services started in May 2005. Fiber optic projects are underway with a leased distributed Fiber Optic (DFO) between Gaza and West Bank and between Middle and South area.

Table 2. Paltel leased line for 2004

Type	No. of lines
TDM	567
Frame Relay	468
PVC	452
Total	1487

According to Paltel, the number of Leased Lines to businesses, governmental, academic institutions and Internet Service Providers reached 1487 by the end of 2004. This constitutes an increase of 22% compared to the total number of Leased Lines in 2003. Table 83 shows the type of Leased Line and number of working lines for the year 2004

ISPs and ASPs

The first commercial Internet Service Provider (Palnet Ltd.) was created in 1995. Palestine Online Co.,[7] established in 1997 is also a national ISP providing Internet services with Dial-Up/ISDN lines, wireless connection, domain registration, SMS, leased-line connections and web hosting and web services directories.

The Government Computer Center (GCC)[8] is part of the Ministry of Telecommunications & Information Technology. GCC is a government Internet service provider (ISP) that provides Internet connectivity to Palestinian government ministries, institutions, and educational providers of core services to our government customers such as broadband Internet access, email, web hosting, and .ps secondary domain registration. We connect through the national telecommunications provider in Palestine, Paltel. It also does monitoring of inappropriate material or network attack.

Access

There is no direct Palestinian connection to the Internet infrastructure. Internet services are available in all cities and a large proportion of villages through an Israeli service provider. Access to Internet costs about 1 US dollar per hour and Service cost, through dial-up connections varies from 10 and 20 USD. Majority of Palestinians cannot afford Internet services. Internet users in Palestine are about 300, 000 only 10% of the total population.

There are at present, over 20 companies offering Internet services, with 80% of them situated in the Ramallah and Jerusalem areas. The quality of the service is rated "good", with companies employ leased lines provided by Paltel, covering the West bank and Gaza. They serve as many as 25,000 registered subscribers, but may have many individuals sharing the same account.

Since the beginning of 2004, PALTEL implemented the Subscription Free Initiative (SFI) allowing Palestinians to link directly to the Internet for free with the only cost being the phone bill. SFI will allow subscribers to call (via local call with special internet rate) any licensed ISP of their choice with or without any subscription requirements. This weakened the Internet service providers' existence in the local

---

[7] Palestine Online portal http://www.p-ol.com/english.htm

[8] Ministry of Telecommunications and Information Technology, Government Computer Center (GCC) http://www.gcc.gov.ps/application/home/main.php?cmd=main

Palestinian market, and is expected to further affect its operations and may pose a threat their existence during the coming years.

PC dissemination

A recent 2004 survey, published by the Palestinian Central Bureau of Statistics (PCBS), indicated that 26.4% of families surveyed have computers at home. Data showed that 29.5% of household the main reason for having computer is to use for the teaching and study of family members (not children) while 27.2% for teaching children of family. Additionally, It also showed that 78.7% of the families who do not have computers because of its high cost and 42.3% of families don't have the know-how for using computers. The total number of PC users over 10 years of age was 35.7%. As for the Internet, the PCBS study showed that 9.2% of the Palestinian households have connection to the Internet and that the total percentage of Internet users who are older than 10 years old reached 33.3%.

In 2004, Paltel launched the PC Fund Initiative, which is a non-profit private association, and a multilateral development finance initiative. The fund aims to provide every Palestinian home with a Personal Computer. Subscribers who qualify for the program are invoiced with monthly installments on their phone bill. The Fund is a "Revolving Fund" that will act as a source of financing for the purchase of computer hardware and software to unprivileged Palestinian community, mainly lower income employees and households. Beneficiaries are expected to pay back the funds granted to them in accordance to a preset criteria, venue and time frame. The Fund is starting with allocated one million dollar seed money from Paltel and intended to grow indefinitely by bringing in different local and international contributors and partners to it.

4. *ICT Capacity-Building*

Awareness and dissemination

The PNA sponsors a number of IT conferences in collaboration with the private sector and different universities to promote the utilization of IT in Palestine. Universities generally have limited resources, but remain the main centers for promoting the diffusion of ICT services.

Many local and international agencies are providing community services to the general public, such as computer and Internet training. One such example is the so-called 'futurekids' project, an international project, working in more than 65 countries, that provides schools and learning centers with complete technology curricula, and helps schools use technology to transform education.

Information Technology Provision and Training at the Welfare Association[9] have initiated 38 ICT related projects:

- Cooperation with Birzeit University to place disabled Palestinians in computer and IT training courses;
- A regional academy for Cisco Systems computer networking qualification training was established at Birzeit University and five local academies were set up, two in Gaza and three in the West Bank;
- WA and Microsoft Corporation partner to establish accredited training academies at 7 universities;
- A computer technology department was established at Al-Quds University (Jerusalem);
- A CISCO-supported advanced computer training and certification program was sponsored at Birzeit University;

---

[9] Welfare Association, Information Technology Projects. http://www.welfareassociation.org/

- WA is supporting the establishment of a Center for Excellence at Birzeit University for training computer graduates in advanced skills;

- Computer-based technology was used to upgrade al-Azhar University library in Gaza.

Computer Clubs and Internet Cafes help to spread computer literacy. However, are concentrated in main cities such as Ramallah, Nablus, East Jerusalem, Hebron and Bethlehem. According to PCBS survey for the year 2004, 9.1% of Persons (10 years and over) use computers at the Internet cafés, 47% at home, and 21.7% use computers at schools or universities.

An example is the Intel Clubhouse was established in Ramallah in 2003 to develop computer-based design skills of youth from poor and underserved areas. The clubhouse is an environment for children and youth to use computers and interact with supervisors who are experts in a wide range of fields of specialization. The Clubhouse also provides resources and tools necessary various IT training.
IT for Children and Youth: Future-kids: Training for children aged 5-18 on computer-based technology, and training school teachers (Al-Bireh, West Bank).

IT4Youth in Rural Areas; a program implemented by Welfare Association and funded by the International Youth Foundation through USAID to provide access and training for youth in 8 West Bank villages. IT4Youth is a $4-million, four-year pilot project in the West Bank aimed at enhancing the learning skills and employability of Palestinian youth. Over the past year, computer labs have been installed in 14 rural schools – with more than 20 computers in each lab. As a result, over 2,000 young people have been trained in computer based information technology (IT). A recently built IT center, which will extend the reach of the program to out-of-school youth will provide vocational training and assist Palestinian youth in finding employment. The program, when fully operational, expects to reach 6,000 young people annually. Its goal is to create hope among the most disadvantaged, vulnerable young people in Palestine, through improving the learning skills, creativity, and employability of those between the ages of 10 and 24.

Many companies are turning to organizing trade shows and other marketing activities to increase public awareness. PITA, as an association for the ICT companies in Palestine, is assisting in the organization of these ICT exhibitions and lobbying for its success, locally as well as internationally (like GITEX and others).

Computers in schools

The literacy rate for 15 years of age and over has increase to 92% in 2003[1]. The new Palestinian curriculum contains a technological component, with technology being to be taught in grades 5-12. All secondary schools and some elementary schools too are now equipped with a computer laboratory. In 2002, there were some 400 computers laboratories to contribute to spreading computer literacy. The Ministry of Education and Higher Education distributed 2588 computers and 293 printers to Palestinian schools during 2004.

Palestinian Academic Network (PLANET) links universities, colleges as well as schools with the Web. It also links most of the Palestinian ministries, and offers connectivity between cities and within cities.

Another program is the IT4Youth program, which is a four-year local pilot project aimed at enhancing the learning skills and employability of Palestinian youth, ages 11 to 24, through computer-based information technology. The program was developed as a partnership between the International Youth Foundation and the Welfare Association. The program partners with local institutions such as the Ministry of Education and Higher Education, local village councils, schools, and the Futurekids Training Center. Since September 2000 until July 2004, the program targeted an estimated 7,000 rural students and youth, 25 computer skills teachers, 50 teachers without Internet technology knowledge, and 300 parents and adult community members in a cluster of eight villages in adjoining areas of Jenin and Nablus.

The Ministry of Labour offers computer training to technicians and professionals from all disciplines in an effort to strengthen ICT integration in different professional sectors.

Vocational training

There are many vocational schools providing long and short-term training programmes, but vocational programmes in schools do not incorporate IT-related courses (Table 3). Some technical colleges and continuing education centre (CFE) offers training workshops, seminars in computers (Table 85). [10]

Table 3. Palestinian students receiving Vocational training

Division	Number of students
Agriculture	331
Commerce	655
Industry	1634
IT related field	Nil

Source: Ministry of education, 2002.

There is a tendency to see vocational training to suite the needy or academically disadvantaged social groups in Palestine. There are a small number of students attending technical colleges compare to University Education. There is a low academic standard in these colleges due to many reasons, among which are poor equipment and inadequate staff. However this number has increased by 2% between 2004 and 2005. Furthermore, the higher education system does not automatically allow those who have completed their vocational/technical training to enroll in university courses to develop their skills.

Jawwal works currently to establish "Jawwal's Academy for Technical Training" at Abu – Kash/Birzeit. The academy that will be built on almost 28 dunums will include the most advanced centers in the telecommunication field, advanced information center, resting area, storages, customer service centers, etc.

Table 4. Vocational IT training

IT related field of Studies	Students enrolled
Computer studies (programming/data processing)	887
Computer and electronics Engineering	358
Other	5019
Total	6264

Note: Students enrolled in college programmes with it content, 2001/2002.
Source: ministry of education 2002

In the West Bank and Gaza, employment opportunities are diminishing due to restrictions on movement, closures, and increasing delays at checkpoints. By working over the Internet, IT graduates can transcend these restrictions and earn needed income. Of the more than 500 men and women graduated and/or certified through ANERA's IT initiative, 75% are employed.

UNRWA Education Department has a program to upgrade technical training and management practices at eight Vocational Training Centers (VTCs) in the Palestinian territories. Over the past four years of implementation, the Computer and Information Technology Initiative (CITI) have provided a complete overhaul of computer training facilities.

As part of the Palestinian Economic Council for Development and Reconstruction (PECDAR), the National Institute for Information Technology (NIIT)[11] has brought a number of highly technical, certifiable, concentrated, and internationally recognizable training programs.

---

[10] Newsletter, August 2004, Palestine Academy for Science and Technology. http://www.palestineacademy.org/main.htm

Vocational Training in IT

- Establishment of a computer science department for female vocational trainees (Ramez Fakhri Secondary Vocational; School, Khan Younis, Gaza);

- Upgrading of industrial electronics sections of UNRWA Vocational Training Center (Gaza);

- Upgrading of computer electronics department at Hebron Polytechnic (Hebron, West Bank);

- Establishment of telecommunications department at the Lutheran Secondary Vocational School (Jerusalem);

- Support for establishment of College of Technology (Nablus).

University education

There are 12 universities in Palestine, with most courses require students to be computer-literate. Universities are in the process of redesigning their academic programmes to include Computer Science courses and providing equipment and networking facilities to all students and staff.

There are 9 universities offering IT degrees in Computer Science and Information Systems and opening up IT departments offering IT training programs for the public. Most academic programmes abide by ACM international standards. IT-related courses are still considered new, and only a limited number of students attend such courses and are mostly replicas of traditional Computer science or Computer Engineering courses.

Table 5. Students in Palestinian universities, in IT- related Fields

Field of study	Students enrolled
Science	8217
Engineering	5552
Computer/Technology	2260
Other	67639
Total	83668

Source: Ministry of Education -2002

Internet services are not generally accessible to staff and students at home. After the ADSL was launched in May 2005, it is expected that the number of students and lecturers who have access to the Internet at home will increase dramatically.

Research Development and Innovation in ICT

The Ministry of Education made efforts to setup a communications network to facilitate information exchange and promote joint scientific research. These plans have not materialized due to lack of funding and inadequate coordination between the universities. There is a shortage of specialists (PhD/MS) in Computer Science and Computer Engineering. Student/lecturer PhD ratio is least 50:1 and 30:1 of lecturers holding MS or MA. Most lecturers lack advanced training in IT, and only very few academics are involved in scientific research work. Initiatives have been taken however to coordinate scientific efforts to work on designing plans for development of scientific research.

On March 8, 2004, the first of 4 ANERA IT training centers was opened at Al Quds University in Jerusalem, for the West Bank and Gaza. ANERA's IT initiative is designed to expand employment

---

[11] National Institute for Information Technology: http://www.niit.ps/

opportunities and stimulate the local IT market[12]. The Said Khoury IT Center of Excellence and others will be based at universities namely, the Palestine Polytechnic University in Hebron, the American Arab University in Jenin, and the Islamic University of Gaza.

5. *Building the ICT sector*

ICT firms

Computer and IT companies are concentrated in cities namely, East Jerusalem and Nablus, Hebron and Ramallah. Services include software development, consultancy, Internet services, IT training and office-automation. All hardware sold is imported via Israeli intermediaries. Some firms have setup business to develop software for international clients while continuing to work for private foreign companies. About 30% of companies have participated in trade shows locally and internationally, with some software firms succeeded in wining contracts to develop software for some Arab (Gulf) and foreign clients.

After 1995 the IT sector began to take shape following the establishment of PNA institutions, non-governmental organizations, banks, and newly formed companies. During the past 3 years the number of companies increased by about 30% with a total estimated income of 120 million dollar in 1999/2000, 30% of which was in software products. Since 1995 the number of firms delivering Internet services has increased by at least 50%.

The infrastructure of the ICT sector is still being established with some difficulties relating to the political and economic climates. Major problem is the lack of software marketing expertise. Multinational ICT Representation are present in Palestine, as HP, Microsoft, Compaq, 3COM, Dell, Oracle, Timex, Motorola, IBM, Cisco, and Siemens, including private and public agencies engaging in ICT accreditation.

Table 6. IT companies field of work

Field of work	No. of Companies
Communications	2 (Paltel+ Jawwal)
Software	60
Training	67
Networking (sale and maintenance)	37
Programming/Training	24
Consultancy services	18

Source: PITA 2003[13].

Jawal, the Palestine Cellular Communications faces competition with four Israeli mobile companies in the Palestinian territories. Jawwal has roaming agreements with over 120 countries, and 235 international networks.

Investments in ICT

Despite the Israeli control of most aspects of Palestine along with the political and economic deterioration, Palestine has been able to achieve the following:

➢ Partial recovery of control over the telecommunications sector;

➢ Provision of new and modern infrastructure for the telecommunications and information technology sector.

---

[12] Anera. The IT Initiative. www.anera.org

[13] Palestine Academy for Science and Technology. www.pita-palestine.org/

The Palestinian Authority has created a framework of economic laws to encourage and support local and international investments. The 1998 law on Encouragement of Investment in Palestine provides for financial and tax incentives to various manufactures including software manufactures. These incentives extend to exemptions or reductions of tax for companies to a rate of 20%.

Prime Minister Ahmad Querie opened, May 2005, the "investment window" at the Palestinian Investment Promotion Agency (PIPA). An "Investors Manual" was prepared by PIPA, which would be in Arabic, English and French, and includes 130 investment projects with a total cost of $1.6 billion. With only two companies in the telecommunications sector in Palestine, namely Paltel and Jawwal, it is clear that there is an attractive environment for further investment in this sector.

Government facilitation

The lack of a serious government strategy to develop ICT has deprived the IT sector of the financial resources. During the years, 1996-1999, there was an economic boom under political and economic stability, but the IT sector did not take its chance to develop at the same pace like others sectors.

PITA seeks to involve the government in the IT sector to form several national and ministerial committees to set down guidelines for the development of the IT sector. Relatively, with the new government, the PNA has contributed to the ICT sector, especially finalization and endorsement of the ICT strategy for Palestine. The Palestinian Authority is expected to play a major role in the coming years to boost the ICT sector, and use it as an enabler for economic development.

Export of ICT equipment/software

The PNA's policy is to encourage IT firms to benefit as far as possible from government tenders. There are few Palestinian companies are exporting software, mainly to the Arab world. These companies have succeeded through their participation in the Gulf IT exhibitions, like GITEX and others, to sign outsourcing contracts. Much fewer companies are exporting software to the U.S and Europe, but their number is expected to increase in the near future with the encouragement of the Palestinian Authority. Until now, there are no Palestinian companies that export ICT equipment.

6. *Applications in Government Establishments*

Computerization of public administration

The PNA, however, did manage to computerize the government payroll relying on local contractors. A similar project to computerize the Treasury department was carried out by local firms although limited. The PA has started working on government-wide intranets between government agencies and ministerial offices.

The ministry of national economy (MNE) has been a leading ministry in transforming into an e-ministry. It has state-of-the-art applications, all its work has been automated, and its entire staff is computer literate and has access to the Internet and ministry intranet. In 2005, MNE was the first ministry to start the delivery of e-services to the general public, making it easier for any Palestinian to register a company or a trade license from his/her office or home.

Digitization of information

There is a growing tendency towards digitization of information in the Palestinian territories, especially with the wide spread of Non-Governmental Organizations (NGOs) and Civil Society Organizations (CSOs). Additionally, with the increase in IT awareness and more use of computers and Internet in Palestine, the digital content started posing itself on the Palestinian community as an unavoidable option.

E-government plans

The Palestinian Authority realizes the need to move towards a more effective and efficient system of governance through e-government adoption, but there is consensus among the different ministries that they need more time to launch such a project. Preparations are already ongoing in the Cabinet of ministers to start the formal planning process, and set the required committees for implementation.

E-procurement applications

Unfortunately, the required legal infrastructure for e-procurement is not yet in place. However, a number of Palestinian IT companies have developed some applications for their own businesses that allow the normal Palestinian citizen to buy electronically.

Computerization of custom processing

The Palestinian Authority has taken serious steps to modernize the customs and excise department. The PA implemented a number of projects, which are still ongoing, with regard to the modernization of the customs administration. Under the German-Palestinian cooperation, a GTZ project started in 1998 with the aim to strengthen technical and operational capacities in the newly established Palestinian Customs Administration, in line with international standards and best practice. The focus is on building a modern customs infrastructure including legislation and instructions, organizational structures, human resources development, equipment and service-oriented procedures. Under this project, a Palestinian Customs Law has been developed in line with internationally accepted principles and standards. Furthermore, computerized customs information systems have been introduced (e.g. on customs and purchase tax declarations and reconciliation), and an electronic Palestinian tariff book in Arabic became in place.

Another project is UNCTAD's Automated System for Customs Data (ASYCUDA), which complements the ongoing GTZ project and other projects undertaken by other international organizations, comprising a package of training and advisory services targeting procedural barriers, information-technology needs and competency shortfalls.

Computerization of taxation and revenue management systems

The Ministry of Finance, together with the support from the EU, has invested and is currently working to launch the "Palestinian Authority Tax Administration Computer System" (PATACS) as soon as possible with the aim that it will be integrated with other software systems in the ministry. Until now, there is no revenue authority in Palestine, and there are no revenue management systems, but there is ongoing work to establish this authority with the relevant systems.

7. *Applications in Education*

e-learning

Few years ago, e-learning was still in its infancy in Palestine. Only distance learning had an established track record, with institutions such as Al Quds Open University leading the way. But today, e-learning is taking a good attention from the educational institutions.

On the sidelines of the World Economic Forum, that took place in Jordan on the 22nd of May 2005, Cisco Systems signed a memorandum of understanding with Paltel, setting the stage for developing the telecommunications infrastructure in the Palestinian territories.

It will provide Palestinian pupils with computer hardware, software and online tutelage in subjects like Mathematics, English, the Sciences, Information Technology, and Arabic. The memorandum allows for expanded Internet, mobile and landline services in the West Bank and Gaza Strip.

Birzeit University developed "Ritaj," an Arabic word for "portal," which allows Birzeit students to register, view grades and interact with faculty on-line, both on and off the West Bank campus. This pilot

project accelerated the use of ICT and competition among different universities in Palestine. A number of projects and research are still in their early stages in different Palestinian universities to further develop e-learning, using different tools and techniques.

e-school projects

The e-school concept is still in its early stages of development among different stakeholders in the education sector. Schools are in the process of identifying their IT needs and how to integrate IT in their curricula and the operation of the schools. The ministry of education has taken the initiative to teach the 11th and 12th grade pure information technology instead of its mixed technology curricula for grades 5 to 10, which also includes up to 25% IT.

Virtual university

At the university level, courses and educational material are commonly displayed on the university's Website for the benefit of students unable to attend the university in person because of the on-going siege and constant closures. However, there is no currently known virtual university in Palestine.

8. *Applications in Commerce and Business*

Extent and maturity of e-commerce and e-business applications

While e-commerce still in its infancy, there is considerable official interest in taking legislative measures to encourage its spread. There are currently 14 listed business providing e-commerce activities in the PITA website. An example is Paltime[14], providing e-commerce services in supporting online sales. There is also business directories and in providing web solutions, web development, E-commerce application, Website and virtual domain hosting. So far, the PNA does not impose tax on e-commerce.

Availability and quality of e-banking

At present online banking services are limited in scope, and only few banks, notably the Arab bank, seem to offer them.

Maturity of regional ATM and banking networks

It is only in the past few years that Palestinians started using ATM and sophisticated electronic banking services, namely in the Palestinian cities and not villages. Banks have been encouraging the use of regional ATM, but it will need some time until this use matures and becomes part of the culture of the Palestinian people, with the required legal and physical infrastructure in place.

Maturity of Bank to Bank financial transfer system

There are no endowments or investments funds to promote and support small enterprises, although there is significant banking sector comprising 23 banks, 9 of which are locally owned. Bank-to-Bank transfers in the West Bank and Gaza Strip are slow and still inefficient.

9. *Applications in Healthcare*

Databases for national healthcare

The Health Development Information and Policy Institute (HDIP)[15] seek to improve the status of health care in the region. As an independent, nonprofit Palestinian organization, HDIP specializes in policy research and planning regarding the Palestinian health care and development system in the West Bank and Gaza Strip. HDIP provides information services, evaluations, and training in the areas of health, development policy and system management. Databases for the documentation of medical records of patients are under preparation. These include community, Clinic and Hospital databases. These three databases are continuously updated. These databases can be displayed using GIS system.

---

[14] Palestinian Manufacturing Outlet portal http://www.paltime.com/

[15] Health, Development, Information and Policy Institute. www.hdip.org

Telemedicine and medical use of teleconferencing

The restricted movement of the Palestinians has been virtually impossible for the national rehabilitation centers, to provide specialized services to people with disabilities, to work together. Another consequence is that international specialists hesitate to travel to the Palestinian areas to help with training and guidance.

With telemedicine equipment available, Palestinian rehabilitation centers have the opportunity to offer health services to patients regardless of distance through the use of videoconferencing and communication with images, sound and text over the Internet.

There are four rehabilitation centers in Palestine that are supported by the Norwegian Association of the Disabled (NHF), which for more than a decade has operated a programme to develop the rehabilitation sector in the country. At the request of the centers, the Norwegian Centre for Telemedicine (NST), Sunnaas Rehabilitation Hospital Trust and NHF recently visited Palestine to investigate the possibilities for establishing a telemedicine network between Ramallah, Bethlehem, Gaza and Jerusalem, and between the centers and the communities abroad. The preliminary study "Breaking the Wall in Palestine with Telemedicine" (link) shows that it is technically possible to develop a network for overcoming the obstacles that the rehabilitation centers face.

Maturity and implementation of Health Care Information Technology Systems

Palestine has a relatively "healthy population; a high societal value placed on health; many highly qualified, experienced, and motivated health professionals; national plans for health system development; and a strong base of governmental and nongovernmental institutions. At the same time, there are important areas of concern. These include poor system wide coordination and implementation of policies and programs, across geographic areas and between the governmental and nongovernmental sectors of the health system; many under qualified health care providers; weak systems for licensing and continuing education; and considerable deficits in the operating budgets of the Palestinian Ministry of Health and the government health insurance system"[16].

Palestinian hospitals and health care centers have started recently to give more attention to setting up their own information systems, especially with the available professional software companies that can produce State-of-the-Art information systems, and maintain their functionality. Integration of such systems on a national basis is still a big challenge for the health community.

10. *Digital Arabic Content*

Arabic vs. English content on the Web for national use

Palestinian web pages are present in both Arabic and English languages. The formation of an independent National Internet Naming Authority in Palestine (PNINA)[17] set about formulating appropriate policies to enhance internet usage and responsible register policies for the PS domain. In its efforts to spread the usage of the Palestinian identity in cyberspace, PNINA announced several initiatives that aim at boosting the registrations under the .PS during its first year of operation. These initiatives included free registration for all Palestinian schools, higher education institutions under sch.ps and edu.ps. A special second level domain (Kids.ps) will be available for registration by all Palestinian kids under 18 for free. Professional domains such as doctors.ps, lawyers.ps and writers.ps and many more will also be available for free.

It is estimated that there are between 3000-5000 Palestinian and Palestinian-related websites registered under general top-level-domains such as .com, .net and .org. The .PS will help Palestinian

---

[16] Strengthening the Palestinian health systems. RAND. Michael Schoenbaum • Adel K. Afifi • Richard J. Deckelbaum

[17] Palestinian National Internet Naming Authority http://www.pnina.ps

businesses in branding Palestinian technology capabilities to boost their recognition and perceived value; bonding the geographically dispersed Palestinians on-line with one identity and building equal business stature with other nations. This will improve Palestine's position and opportunities.

During the .PS sunrise period, PNINA was able to secure about 1,250 domain names for local Palestinian trademark owners and international companies. PNINA is registering .PS domain names through more than 20 certified registrars from Palestine and around the globe.

Local creation of software products in Arabic

With the increasing awareness on information systems in the Palestinian Authority institutions, English-only software no longer meet the decision-makers requirements, and the need for a bi-lingual software is becoming a clear necessity. Interestingly the products developed by the local software companies were of highest quality and functionality.

Obstacles for its development and ways for removing them

One of the most obvious obstacles to the universal access to the Internet in the Arab world is that the Internet has been an English-dominated medium, and languages such as Arabic, which do not use the Latin alphabet, need specific software for displaying Arabic scripts. Another major obstacle facing Arabization of the Internet is the lack of standards, particularly in the field of character sets. Transporting Arabic text over the Internet is problematic because of its non-ASCII (American Standard Code for Information Interchange) character sets.

Nevertheless, the Arabic language is being increasingly used on the Internet, despite significant obstacles. Most Palestinian websites are in English and Arabic languages. Few websites are only in Arabic, or only in English. Palestinian software companies either produce their programs or import it from an international company. The locally developed programs face no problems, and Arabic language is mostly used as the basis for the software. For the imported software, it is not always easy to integrate Arabic language interface in the program, depending on the original type of programming.