



UN-ESCWA

United Nations Economic and Social Commission for Western Asia

**NATIONAL PROFILE OF THE INFORMATION SOCIETY
IN THE SYRIAN ARAB REPUBLIC**

United Nations, 2013

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Introduction

During the last decade, interest in Information and Communications Technologies in Syria increased tremendously, with needed infrastructures for modern telecommunications being built and expanded, and enabling environment developed. Plans were being implemented in accordance with the national ICT strategy, albeit with some delay; Internet availability improved substantially; particularly affordable broadband, an e-government initiative was launched; concrete steps were taken towards liberalization/regulation of the telecom sector; and issuance of essential cyber legislations and their enforcement were underway. However, after two years into a crisis that has challenged the existing institutions and destroyed large portions of the infrastructure, while affecting the fabric of the society, wrecking the industry and forcing the adoption of a disastrous war economy, available resources are being channelled towards humanitarian relief, reconstruction, availing basic food commodities and energy supplies, and continuous repair of the power and communication networks. Hence, previous development plans were halted, including ICT projects, drastically slowing the implementation of the national ICT strategy.

1. The role of governments and all stakeholders

A. National information society policies and e-strategies

National ICT strategy¹

Title	ICT strategy for socioeconomic development in Syria
Vision	Develop the ICT sector to effectively contribute to the socioeconomic development process in Syria through collaboration of public and private sectors along with civil society institutions in devising policies, strategies and action plans promoted and backed by the state.
Year adopted	2004
Status of implementation	Partially implemented; evaluation was carried out; currently under revision to produce a new strategy by end of 2013.

Two programmes were at the core of the national ICT strategy, namely Telecom Sector Restructuring and Information Technology (IT) Sector Building, as well as five initiatives, namely e-Government, Technology Parks, Sectoral Centres of Excellence, ICT Capacity Building and Knowledge Society. Results of an evaluation of the national ICT strategy implementation², which was carried out by the Ministry of Communications and Technology (MoCT) are summarized in the following table:

Programme/Initiative	% Impl.	Achievements (with ratios)*
Telecom Sector Restructuring	70%	Creation of the Telecom Regulating Commission (100%), Adoption of the Telecom Law (100%), Syrian Telecom Company replaces the Syrian Telecom Establishment (50%), Liberalisation of Telecom Sector (12%), Infrastructure expansion and modernisation (80%)
IT Sector Building	19%	Licensing ISPs and ASPs (50%), e-Signature Law (100%), e-Transactions Law (90%), e-Payment Law (80%), Cyber-crime Law (100%), Personal Information Security Law (50%), IT Profession Regulation (24%), Software Incubators (100%)
e-Government	24%	Data centre at the National Agency of Network Services (25%), ICT standards (75%) and guides (75%), Revision of the Contracts Law (50%) needed for e-procurement

¹ UNDP-Syria and MoCT, *ICT strategy for socioeconomic development in Syria*, January 2004.

² Ministry of Communications and Technology (MoCT), Internal document, March 2012.

Technology Parks	3%	-
Sectoral Centres of Excellence	0%	-
ICT Capacity Building	30%	ICT faculties (100%), Interactive Schools and Syrian Virtual University (75%), Training on ICT standards (100%), Master's in Telecom Regulation and India-Syria Excellence Centre for IT (75%)
Knowledge Society	30%	Community access centres (100%), Community portals (100%)

(*). Only projects in which tangible progress was made by March 2012 are mentioned.

It should be noted that the Technology Parks Initiative did not move beyond the stage of drafting terms of reference for envisaged technology parks, and the Sectoral Centres of Excellence Initiative did not materialize in any sector such as health, education or industry. The India-Syria Excellence Centre for IT, being a training centre was launched as part of the ICT Capacity Building Initiative. Obviously, the current crisis had a negative effect on all initiatives, particularly those that were late to take off.

Since implementation plans for the national ICT strategy were drawn up until 2013, a revised strategy is under study, taking into account the realities on the ground and the increasingly difficult socioeconomic situation. A benchmarking of the Syrian national strategy with those of Egypt³ and Jordan⁴, taking into consideration guidelines from ESCWA⁵, OECD⁶ and ITU⁷, seem to make the new strategy focus on:

- ICT infrastructure development;
- Providing broadband access to all citizens;
- Promoting digital Arabic content;
- Capacity building in ICT;
- Developing e-government services;
- Maximizing the economic benefits from ICT;
- Building confidence and security in the use of ICT;
- Development of appropriate legislations and regulatory frameworks;
- Stimulating innovation in ICT;
- Increasing the level of regional and international cooperation;
- Encouraging investments in ICT.

In the revised strategy, expected by end of 2013, the two core programmes mentioned above should evolve into “Development of Telecom and Postal Services” and “Development of IT Sector”; the two initiatives that did not show tangible progress will be cancelled; the e-Government and Capacity Building initiatives will continue; and the Knowledge Society initiative will focus on developing Digital Arabic Content.

The eleventh five-year plan

The draft eleventh five-year plan for the years 2011-2015 was not adopted, due to the crisis and changing priorities. Flexible short-term plans were considered more realistic. Large investments were discouraged although administrative reform remained a priority, with an important role for e-government. As for ICT, the focus remained on: regulating the telecom sector to ensure fair competition; developing and repairing the infrastructures for communications; providing a modern enabling environment for ICT applications, particularly e-transactions and e-services; building an ICT economic sector; and upgrading the efficiency of government performance through e-government. However, implementation of these short-term plans is often disrupted, delays are common and new projects could be cancelled for lack of funds.

³ MCIT, *Egypt's ICT Strategy 2007-2010*, (2007), mcit.gov.eg/Upcont/Documents/Egypt-ICT-Strategy.pdf

⁴ int@i, *National ICT Strategy of Jordan 2007-2011*, (2007), intaj.net/sites/default/files/National-ICT-Strategy-of-Jordan-2007-2011.pdf

⁵ ESCWA, *Guidelines for the Formulation and Implementation of ICT Strategy*, (2007), escwa.un.org/information/pubaction.asp?PubID=356

⁶ OECD. *OECD Guide to Measuring the Information Society*, (2011), browse.oecdbookshop.org/oecd/pdfs/free/9311021e.pdf

⁷ ITU, *ITU Connect Arab Summit Final Communiqué*, (2012), www.itu.int/ITU-D/connect/arabstates/

ICT strategy exists	Yes
Year of adoption and latest update	2004
Government agency in charge	Name in English: Ministry of Communications and Technology Name in Arabic: وزارة الاتصالات والتقانة
Pace of implementation	Average – Limited since beginning of 2012

e-Government strategy⁸

Syria issued its first e-Government Strategy in October 2009, and was included in the draft 11th five year plan (2011-2015) for implementation. The Strategy has three priorities:

- Electronic Services Delivery;
- Public Administration Reform;
- Development of Enabling Environment.

A set of objectives and indicators were identified for each strategic priority, and a management structure has been proposed for implementation. The proposed 5 year e-government action plan required the allocation of 1 billion USD to achieve the proposed targets within 5 years. However, lack of funding and the crisis have led to adjusting the target to match available funding.

e-Government national policies: The main e-government policies are:

- National data banks must be available electronically, with a clear roadmap to promote exchanging data electronically among government institutions;
- The identified 30 key services should have top priority during implementation, and the prioritization framework should define e-Services priorities at agency level;
- The multi-channel approach should be adopted, i.e. citizens select the channel of their choice to get the e-service (Internet, mobile phone, fixed phone, Citizen Service Centres or ATM machines);
- A National Reference Enterprise Architecture model must be developed and adopted; shared components and shared services must be given highest priority, regulation must be put in place to ensure wide usage by agencies.

Strategy monitoring and evaluation: UNDESA/UNPAN 2012 e-government survey report⁹ has shown the following improvements in e-government in Syria:

- Overall ranking of Syria has improved from 133 in 2010 to 127 in 2012;
- The e-services sub indicators has improved from 0.0413 in 2010 to 0.2288 in 2012, and consequently Syria ranking on e-services has improved from 171 in 2010 to 148 in 2012;
- The e-participation sub indicator has improved from 0.0143 in 2010 to 0.0263 in 2012, and consequently Syria ranking on e-participation has improved from 176 in 2010 to 139 in 2012;
- Two monitoring and evaluation reports have been issued by the Syrian Government, covering the availability of e-services and the readiness of the national data banks.

B. Public/private partnership (PPP) or multi-sector partnership (MSP)

A draft law that governs public-private partnership has been reviewed at the level of the Prime Ministry and was sent to Parliament for adoption in 2011. However, the current crisis delayed its debate and issuance as law. The proposed draft law details conditions under which a private partner could invest in the building, operation, management and maintenance of the country infrastructure or in providing public services, among other things.

⁸ moct.gov.sy/moct/?q=ar/node/61

⁹ unpan3.un.org/egovkb/global_reports/12report.htm

In spite of the fact that there isn't a general framework for PPP in Syria, a number of ICT ventures between Syrian Telecom (ST) and renowned telecom companies exist and date back to the past decade or even earlier. Three such joint ventures are presented below¹⁰:

1- ST-Samsung (Syrian Korean Company for Manufacturing & Marketing Communications Equipment)

The capital of the ST-Samsung is 4.5 million USD with a sharing ratio of 51% for ST and 49% for Samsung. The company manufactures rural exchange systems, private branch exchanges and optical network access (ONA) ports with voice and data (broadband). 215,000 ONA ports were installed in 2011 and 2012 to expand the existing rural telephone network.

2- Syrian German Telecommunication Company (SGTC)

The capital of SGTC is 4 million USD with a sharing ratio of 25% for ST and 75% for GTC. The company manufactures mainly wireless communications equipment (WLL) with Wideband Code Division Multiple Access (WCDMA) technology. These equipment were used to install 94,044 lines in 2011 and 2012.

3- Syrian Company for Electronic Payment (Tasdid)

Tasdid is a joint venture between Syrian Telecom, the Global Company of Emirates (GET), Syriatel and other Syrian and Arab companies. Its capital is 100 million USD with a sharing ratio of 25% for ST and 75% for GET and the other private companies. Tasdid has more than 100 employees and provides electronic payment services of water, electricity, telephone and government services bills. It carried out the settlement of 1,131,652 bills in 2011 and 1,291,410 in 2012, via different payment methods (Internet, voice response, automated teller machine ATM).

C. Role of non-governmental organizations (NGOs)

Non-governmental organisations, particularly the Syrian Computer Society (SCS), have been extremely active in building the information society in Syria, mostly in connection with the use of ICT for development, promoting digital Arabic content and fostering innovation and SMEs.

Syrian Computer Society (SCS)¹¹

SCS was established in 1989 to promote ICT and related sectors in Syria, particularly scientific, technical, cultural and professional aspects, leading to the building of knowledge economy. In March 2012, SCS had 5842 working members and 6971 supporting members. It seeks to encourage the use of ICT in various sectors of the economy in Syria and to disseminate knowledge on ICT and applications through the organization of conferences, symposia, lectures and exhibitions, production of television programmes and periodical publications. The latter include the "Informatics Culture" a quarterly review publishing research papers translated to Arabic from reputed international journals, and the "Informatics Magazine" a monthly publication providing the latest information on ICT in a simplified style attractive to most strata of the society. SCS publishes translation of specialised books that are useful to university students in ICT faculties.

SCS has an Internet Service Provider since the year 2000 (the first private ISP) and is currently active in a number of projects such as the ICT Incubators (in Damascus, Homs and Latakia), Arabisation of ICT terms (in collaboration with MoCT and ITU), Promotion of software industry (CMMI – in partnership with MoCT and SEI-Egypt), Training on ICT Standards (in cooperation with MoCT and EU), Expansion of telecentres in rural and remote areas (in collaboration with MoCT and Syria Trust for Development); Small and micro financing (in partnership with Syria Trust for Development); and eSyria, a multifaceted national e-content blog. Details on these projects are provided in the following chapters of this report.

The Syria Trust for Development¹²

The Syria Trust for Development is a pioneering non-governmental and non-profit organisation established to empower individuals and communities in Syria to fulfil their role in building their society and shaping

¹⁰ ste.gov.sy/index.php?d=47

¹¹ Syrian Computer Society (SCS), scs.org.sy

¹² Syria Trust for Development, syriatrust.sy

their future. It supports and incubates local initiatives, encouraging active citizenship, entrepreneurship and volunteerism, building capacities, sharing knowledge, and establishing partnerships with individuals and civil society organisations to advocate development issues, and expand the space and role of civil society in planning and decision making in the country. The Trust strongly encourages its partners; local communities, public and private sectors, Civil Society Organisations and international institutions to take ownership of its programmes by actively participating in their identification, design and implementation. It has incubated since 2001 several development projects such as Firdos, Shabab, Massar, Rawafed and Syrian Development Research Centre.

Over the past decade, Syria Trust partnered with governmental organisations and other NGOs, including SCS and MoCT, in implementing ICT-based development projects that are relevant to the Syrian society, such as the Access Centres project (Section 3C). Unfortunately, the crisis that Syria is going through has imposed on the Trust and its partners different kind of projects in the field of relief and humanitarian aid.

Syrian Enterprise and Business Centre (SEBC)¹³

SEBC is a non-profit making institution established in 1996 that benefited from 10 years of cooperation with the European Union (EU) in developing the business sector in Syria. It supports Syria's socioeconomic development with a focus on developing the private sector and evolution into market economy. It has implemented so far initiatives, programmes and projects for more than 65 million Euros in partnership with the EU, the Syrian Government, International organisations, League of Arab States (LAS), Syrian civil society and the business sector. SEBC carries out all its activities through its offices in Damascus and Aleppo, supported by several business incubators, affiliated training centres and standalone initiatives.

SEBC plays an important role in developing and supporting the Syrian information society. Through the Syrian focal point of Enterprise Europe Network, it grants Syrian businesses access to information and information technology in more than 50 countries. In the past years a number of initiatives were launched, including ISRAR (Initiative for Syrian Regulatory and Administrative Reform) to improve and simplify the Syrian business environment, through use of ICT, eliminating and streamlining business laws and regulations, simplifying administrative procedures for business licenses and enhancing the quality of business regulation in Syria. The MED Digital project¹⁴, aimed at the promotion of digital marketing by SMEs in the Mediterranean Countries, was launched in 2010 and implemented by SEBC with funding from EU. It has also partnered with the Syrian Government in implementing Citizen Service Centres in Damascus and its countryside, which facilitate obtaining various administrative documents (see e-government section). Incubation services, including coaching and consulting were offered to entrepreneurs in the ICT field, and distinguished start-ups graduated from the business incubators operated by SEBC.

2. ICT infrastructure

A. Market structure and regulatory landscape

The issuance of the Telecommunication Law in June 2010 implied the regulation of the telecommunications sector and restructuring its market in Syria. Under this law, the process of development of the sector's general policies and strategies are assigned to the Ministry of Communications and Technology, while the regulation is assigned to the newly created Telecom Regulatory Authority (SyTRA), and the infrastructure is assigned to operators, Syrian Telecom (ST) and the mobile operators. Furthermore, the operation of networks was separated from the provision of services. ST is transformed into a government-owned company, while remaining the owner and sole operator of the fixed telephony network for five years, and in charge of developing the ICT infrastructure. BOT contracts awarded to the two private operators of mobile telephony (Syriatel and MTN) should have been transformed into licenses, with the entry of a third operator into the market in 2011. However, due to the crisis that started in March 2011, the latter action was halted as well as related changes.

¹³ Syrian Enterprise and Business Centre (SEBC), sebcsyria.com

¹⁴ sebcsyria.com/web2008/art.php?s_keyword=MED+Digital&articlesPageSize=&art_id=1838

Mobile phone services	Controlled Duopoly
Fixed phone services	Monopoly for 5 years maximum
Internet services	Competitive in retail

B. Penetration of ICT services

At the end of 2011, the computer penetration rate is estimated at 10 PCs for every 100 citizens¹⁵. The percentage of fixed broadband subscribers was 0.6% (1.1% in 2012) and that of active mobile broadband subscribers (3G) 1%¹⁶ (1.6 in 2012). Although the percentage of individuals using the Internet in 2011 is estimated by ITU at 22.5% in 2011¹⁷, a more realistic figure would be close to 14%.

The number of fixed lines available at the end of 2012 was 4,423,000, which means there are approximately 20.3 lines for every 100 citizens¹⁸, and the number of mobile phone lines by the end of 2012 was approximately 13 million (i.e. 59 mobile lines for every 100 citizens)¹⁹. While the mobile phone coverage was 99% of the population by end of 2011, it has gone down dramatically by end of 2012 due to the crisis with increased acts of violence leading to the destruction of telecom infrastructure and power sources.

There are currently 15 Internet service providers (ISPs) offering Internet connection services. Tarassul, owned by the public operator ST is the largest, holding 67.12% of market share, followed by SCS ISP at 5.80% of market share and each of the other ISPs below 5%²⁰. The number of Internet dial-up subscribers at the end of 2012 was about 400,000 subscribers, i.e. a rate of 1.8%. The number of broadband lines is increasing rapidly with the availability of ADSL ports and 3G services. The number of broadband ADSL subscribers was 242,194 at the end of 2012 against 121,340 at the end of 2011, which reflects a growth rate of nearly 200% per year.²¹ This is equivalent to a penetration rate of 1.1 for every 100 citizens, which is very low compared to current rates in developed countries (23%) or even developing countries (4.2%). Greater efforts need to be deployed by ST to catch up on the delay in introducing broadband services and the high cost of the service.

By the end of 2012, the number of 3G Internet service subscribers had reached 363,236 as detailed in the following table by type of usage and company²². This is equivalent to a penetration rate of 1.66 for every 100 citizens, which is higher than the penetration rate of ADSL.

3G Internet services	MTN	Syriatel
Postpaid lines	63,178	90,013
Prepaid lines	52,116	157,929
Total	115,294	247,942

After unification of tariffs for international interconnection, the cost of such a connection to a fixed network is 0.05 SDR/minute²³ or 0.075 USD/minute, and to a mobile network 0.08 SDR/minute or 0.12 USD/minute. The cost of dial-up and ISDN-64K Internet connection is 0.07 USD/20 minutes and that of ISDN-128K is 0.14 USD/20 minutes²⁴.

¹⁵ Based on the ITU estimate of the percentage of households with computer as reported in *Measuring the Information Society 2012*, p. 209, namely 40.5%, and the average number of household residents, namely 4.

¹⁶ Syrian Telecom, Internal report, March 2013.

¹⁷ ITU, *Measuring the Information Society 2012*, p.211.

itu.int/en/ITU-D/Statistics/Documents/publications/mis2012/MIS2012_without_Annex_4.pdf

¹⁸ The population of Syria was approximately 21,900,000 at the end of 2012, as per the Central Bureau of Statistics. Hence, this is the value that is taken implicitly in this report.

¹⁹ Syrian Telecom, Internal report, March 2013.

²⁰ SyTRA, Internal memorandum, March 2013.

²¹ Syrian Telecom, Internal report, March 2013.

²² Syrian Telecom, Internal report, March 2013.

²³ SDR: Special Drawing Rights, an international virtual currency value based on a basket of major currencies (the U.S. dollar, euro, Japanese yen, and pound sterling) and calculated daily by the International Monetary Fund (IMF). Currently, 1 SDR = 1.5 USD.

²⁴ The exchange rate of the USD to the Syrian Pound (SYP) has been fluctuating enormously due to the current crisis, particularly since mid-2012. In this report the rate is taken as 1 USD = 50 SYP during 2010-2011 and 1 USD = 60 SYP in 2012, although by March 2013 it has become approximately 1 USD = 85 SYP (official rate) and 1 USD = 115 SYP (parallel market).

The cost of ADSL subscriptions and number of subscribers are indicated in the following table²⁵, according to the selected speed. It should be noted that the bulk (47%) of the ADSL subscribers selected the 512K speed, taking into consideration cost to performance ratio. The cost of post-paid 3G Internet connection is currently 167 USD per month for unlimited usage, 42 USD for 10GB and 25 USD for 4GB.

Speed	256K	512K	1M	2M	4M	8M	Total
Number of subscribers*	56950	83254	29330	4477	1143	443	175597
Monthly fare (USD)**	10	15	23	40	73	141	

(*) The number of subscribers is for July 2012

(**) The fare is calculated using the exchange rate of 1USD=60SYP

C. Initiatives/projects for ICT infrastructure and development of new services

Syrian Telecom (ST) has implemented a number of projects that were included in the proposed eleventh five-year plan (2011-2015) and continues to do so, expanding fixed telephone lines and increasing the number of ADSL ports to enhance Internet access. The installation of 434,000 telephone lines in remote and rural areas is being pursued, with delays due to the crisis. The installation of 500,000 ADSL ports has been contracted and 200,000 ports are planned for next year. The project for expanding the Internet backbone using DWDM technology could not be launched in 2012 because of sanctions, but is still planned for 2013. A project has been added to reconstruct and develop destroyed infrastructure during the current crisis. The expansion of the public ISP (Tarassul) and establishing an ISP in Aleppo are also planned for 2013, as well as the expansion and enhancement of client services.

D. ICT connectivity

The overall ICT connectivity in Syria is rather low as can be inferred from the ICT development index (IDI), published by the ITU, which was 3.15 in 2011 (against 2.94 in 2010), with a stationary rank of 96²⁶. Although huge efforts were deployed to increase Internet connectivity during the past five years, the delay in providing Internet services in Syria, particularly broadband, led to the low connectivity. Furthermore, the current crisis, destruction of large parts of the telecom infrastructure and lower investment in ICT in the public and private sectors will certainly lead to a lower IDI in 2012 and 2013. In spite of good mobile telephony coverage, digital inclusion remains low, as can be inferred from percentages of households and businesses with Internet access as well as the limited use of broadband (see section 2B).

On the other hand, although most Government institutions use ICT in their daily work, particularly administrative and management applications, connectivity between various branches and with the Internet is limited. Schools have very few PCs to carry out their core activities of teaching and learning (2 PCs for 100 students), and Internet connectivity for that purpose is very low (less than 5% of schools)²⁷. Public universities are in a better position, with ratio of PCs to students varying between 1% at the Faculty of Arts and Humanities, and 55% for the Faculty of Informatics Engineering of the University of Damascus²⁸. They also have an academic network, the Syrian Higher Education and Research Network (SHERN), and better access to the Internet for professors and students, noting that professors get free ADSL subscriptions at home. Private universities have even better means and connectivity, but they deal with a much lower number of students. Hospitals, libraries, post offices and museums have limited access to ICT, particularly the Internet, to carry out their professional activities. The telecentres or access centres are still few (see section 3C), cover a small portion of rural and remote areas and have limited means (e.g. most of them have dial-up or no connection to the Internet).

²⁵ Syrian Telecom, Internal records.

²⁶ ITU, *Measuring the Information Society 2012*, p.21,

itu.int/en/ITU-D/Statistics/Documents/publications/mis2012/MIS2012_without_Annex_4.pdf

²⁷ Ministry of Education, Planning Section records.

²⁸ Damascus University, Director of Information Systems, internal records.

E. Internet infrastructure

The Public Data Network comprises three layers that provide for the use of any Internet access technique, with 69 points of presence and around 250 remote sites (DSLAM) distributed among the country's Governorates. The number of installed fixed broadband ports (ADSL) by end of 2012 was 378,000, while the planned number of ports to be installed was 470,000. Due to the crisis, not all available ports were installed since some switches were in inaccessible areas or out of order. The expected demand for ADSL ports during the coming years, as per Syrian Telecom estimates, is shown in the following table.

Year	2013	2014	2015	2016	2017
Number of ADSL ports (demand forecast)	547,000	800,000	1,062,000	1,305,000	1,511,000

The international Internet gateway consists of interconnected high performance routers to provide connection with the Internet at the required speed, which can be upgraded as required. Connection with the Internet is provided using a number of circuits with different speeds and in various directions and routes. The Internet gateway capacity is currently around 21 Gbps²⁹ and there are no WiFi or WiMAX points to provide services for subscribers, although some pilot projects have been carried out to install WiFi points in Damascus International Airport, Damascus Fair grounds and Assad National Library. Fibre optic connections are used to link all telecom sites for voice telephony and Internet connection as well as for leased lines.

3. Accessibility to information and knowledge

A. Public domain information

Assad National Library³⁰

Traditionally, Assad National Library is the major repository of public domain information in Syria, and includes around 400,000 books in Arabic and 75,000 books in other languages, as well as 2,260 periodicals and newspapers in Arabic and 1148 periodicals and newspapers in foreign languages.

ICT has been used in the library for more than 25 years to manage and organise its holdings and facilitate research and information retrieval. A database of all Syrian laws and legislations exists and has been implemented and in use for over 20 years, is being continuously updated and is now accessible online. Another database of old manuscripts is also available online as well as the library's catalogues. A digital room in the library provides Internet services and access to digital information, including online abstracts, CD-ROMs, e-books and full digital content of periodicals such as the complete Economist magazine archive from 1843 until the end of 2012. A new website for the library (to be installed in April 2013) allows online users to access all information in digital form, including e-books and CD-ROM content.

Historical archive

A draft law on establishing a historical archive for Syria is awaiting discussion and adoption at the Parliament since 2012; the delay is due to the current crisis and new priorities. This draft law should organise the historical documents through a commission within the Ministry of Culture and facilitate access to these documents, particularly through digital means.

Prime Ministry

The Prime Ministry has a participatory website³¹, providing information about its decisions, draft legislations, adopted legislations, summaries of its meetings and important governmental websites, particularly those of the various ministries. Any citizen can comment on issues in the draft legislations to provide suggestions for improvement and indirectly participate in the decision making process.

²⁹ Syrian Telecom, Internal records, March 2013.

³⁰ AlAssad National Library, alassad-library.gov.sy

³¹ Prime Ministry, youropinion.gov.sy

Parliament

The Syrian Parliament website³² provides useful public information related to its organisation, internal work processes and regulations, the constitution as well as an e-library including draft and issued laws and decrees.

SANA

The Syrian Arab News Agency (SANA) website³³ provides news in seven languages (Arabic, Chinese, English, French, Russian, Spanish and Turkish) as well as a wealth of classified reports and information about various facets of Syria and its Government.

Central Statistics Bureau

The Syrian Central Bureau of Statistics (CBS-Syria) provides through its website³⁴ all publications and information related to its work in Arabic and in English. In particular, the statistics abstracts can be consulted or downloaded, as well as surveys and summaries of various statistics (trade, economy, population, labour force, etc).

B. Access to information and public information

The Rural Knowledge Network (Reefnet)³⁵

Reefnet acts as a portal for access points to local communities in rural and remote areas of Syria, providing useful knowledge and information to local residents and contributing to the stimulation of socioeconomic activities in the various regions. Reefnet was established in 2004 as a result of collaboration between MoCT and UNDP under the strategic programme of ICT in socioeconomic development.

The basic function of the portal is to use Internet technology to contribute to the socioeconomic development of rural areas, providing medical, legal and educational information and facilitating local government procedures and transactions. By the end of 2012, it included 96 websites for rural areas, each providing specific information on the area it covers, which relates to its history, geography, economic activities and services.

The main portal provides useful information on agriculture, health, education, heritage, law and cognitive content such as bulletins on agricultural guidance, the agriculture calendar and agricultural forum. Syrian laws are presented in all details and a legal e-forum exists through which citizens raise queries concerning legal issues they may have and get answers by volunteer lawyers. The educational content is in the form of special books that are useful for students like Al-Kafaf on grammar of the Arabic language, published with Hypertext technique. An educational forum exists through which students raise questions and get answers by volunteer teachers. The medical content consists of a variety of articles on diseases and their prevention, as well as an increasingly successful medical forum in which more than 60 volunteer medical doctors participate. Multimedia information on heritage includes the memory of the Syrian countryside, with traditional costumes, food, proverbs, songs and manufactured products, as well as a gallery of old pictures, artisanal products and a virtual souk. A digital library currently includes over 2,000 books and 4,000 articles and studies, but suffered of limited expansion during the past couple of years due to lack of funds. The largest part of this library is in text form, but the site started establishing an audio library which currently contains 60 lectures on ancient history of the region.

In early 2012 the management of Reefnet was completely transferred to the Ministry of Communication and Technology, and an agreement was signed in May 2012 with the Ministry of Local Administration to support and follow-up on local community websites.

³² Syrian Parliament, parliament.sy

³³ Syrian Arab News Agency, sana.sy

³⁴ Central Bureau for Statistics, cbssyr.org

³⁵ Reefnet, reefnet.gov.sy

C. Multi-purpose community public access points

Access centres

The Telecentres or Access Centres project is running under cooperative agreement between the Ministry of Communications and Technology (MoCT), the Syrian Computer Society (SCS) and the Syria Trust for Development. It aims at managing, operating and expanding telecentres established through the UNDP initiated strategic programme to use ICT in socio-economic development.

By 2010 MoCT and UNDP had established 40 telecentres (35 fixed and 5 mobile) for Syrian rural development. Since then SCS has increased their number and capabilities and is currently operating and managing 59 telecentres within the framework of the signed agreement. However, due to the current crisis only 25 telecentres are running normally, while 20 have stopped their activities, 4 have been ransacked, and 10 could not be equipped properly due to inaccessibility. SCS plans to establish 25 new telecentres within the coming three years to reach a total of 84 telecentres, if the current situation improves and the crisis subsides. During the past two years, the telecentres carried out a number of training courses in various areas, including: IT (103), advanced IT (107), ICDL (2138), foreign languages (50), nursing (85), children care, agriculture, artisanal/professional and others (806), taking into account the necessity of training people with special needs (10).

Fixed and mobile telecentres are established mostly in disadvantaged areas with high population density in order to render services to as many people as possible, selecting locations within municipalities or cultural centres that are suitable for the people, particularly in rural areas. SCS collaborates with public, private sectors and non-governmental organisations (including charitable societies) in organising these training courses to spread the benefit as much as possible.³⁶

The IT Plaza³⁷

The IT Plaza is a community access point with advanced ICT capabilities, which is located in Damascus and functions since 2008. It focuses on youths (5-25 years) to empower them in the use of IT and acquiring knowledge in general and ICT expertise in particular. A fully equipped training room for 20 trainees, a digital library, an Internet café and games/virtual reality room are also available. A large number of activities are held in the IT Plaza, including training courses in project management and in collecting statistical data. Visits are organised by schools, for movie showing, Korean language learning and entertainment. A number of training courses were carried out in the IT Plaza, taking advantage of its multimedia environment, and in cooperation with various national, regional and international organisations. In 2012, 54 training courses were held, and during the first quarter of 2013, 8 training courses were organised in the IT Plaza.

4. ICT Capacity Building

A. ICT in education and training

ICT in schools

Current school curricula comprise ICT as a standalone subject starting in Grade 7. It includes the basics of computing (hardware, software and applications) with elements of algorithms and programming, as well as the use of PCs in common tasks. Practical use of computers in schools remains limited although at home the students may have computers and peripherals for practice. Schoolchildren in remote and rural areas as well as poor neighbourhoods of the cities are disadvantaged in that respect since they generally do not have desktops or laptops at home. Some private and public schools (See Section 7D on e-learning in schools) have an interactive website to share information between administration, teachers and parents (e.g. scores and attendance).

Computer Intermediate Institutes

Since the 1980's Computer Intermediate Institutes (CIIs) – now called Technology Colleges for Computers and Automation – were established with a 2-year curriculum. Their number increased reaching 13 CIIs with

³⁶ Telecentres annual report 2013 and SCS annual report for 2012 (internal documents).

³⁷ MoCT, *IT Plaza*, moct.gov.sy/moct/sites/default/files/IT%20PLAZA2010_0.pdf

a more developed curricula for IT. The Ministry of Higher Education supervises eight institutes and the Ministry of Education the other five. The total number of graduates from CIIs is around 2600 per year.

Higher Education in ICT

The Higher Institute of Applied Sciences and Technology (HIAST)³⁸ was the first higher education institution to offer studies in ICT since 1983. Its elitist approach, however, limited the number of students that remained between 15 and 30 per year in Information Technology and Telecommunications. Since the year 2000 the four public universities launched higher education programmes in Information Technology with the first promotion graduating in 2003. The total number of BSc graduates of the four public universities in ICT (including Informatics, Computer Engineering and Telecommunications) has reached 750 per year. Most private universities (currently 17), offer ICT curricula and the total number of ICT graduates from these universities reached 500 per year.³⁹ Master's and PhD programmes in ICT have been launched in Damascus University during the past couple of years (currently, 30 Master's students and 10 PhD students. A joint Executive Master's degree between Damascus University and Telecom Bretagne was stopped due to the crisis.

Towards the end of 2008, the Ministry of Communications and Technology (MoCT), the Ministry of Higher Education (MoHE) and the Higher Institute for Business Administration (HIBA) established a specialized Master's programme in Communications and Information Technology Regulation. Students following this programme are selected among senior staff in ST, MoCT, mobile operators and other private companies in the ICT field. Three promotions graduated from this programme so far with a total of about 80 graduates.

B. Training programmes for capacity building in the use of ICT

ICDL training⁴⁰

The Syrian Computer Society (SCS) has been the national promoter of the ICDL in Syria since 1993, first under the supervision of UNESCO and since mid-2011 under the supervision of the European Computer Driver Licence (ECDL) Foundation located in Dublin, Ireland. The importance of ICDL training emanates from the fact that it has become a requirement for most jobs and promotion in the public and private sectors. The number of approved operational ICDL centres in Syria reached 103 after 10 new centres were accepted by SCS during 2011. Nearly 54,100 ICDLs were issued during 2010 and 2011. The adoption of ICDL Syllabus 5 is planned for the near future as well the introduction of Advanced ICDL, e-Citizen and Equal-Skills certificates.

The India-Syria Centre of Excellence for Information Technology⁴¹

Established in 2010, as a collaborative venture between MoCT and the State of India, the India-Syria Centre of Excellence for IT aims at qualifying national IT staff of the public and private sectors and training local trainers. The Centre has three training rooms that can accommodate 90 trainees, and started training activities in February 2011 after producing a training guide that details the various tracks and courses and found on the website. The three tracks or focus areas are: Information Security; Information System Development, Management and Application; and Networking, Operating Systems and Infrastructure. By end of 2012, 42 training courses (1760 hours) were delivered to more than 700 engineers and technical staff from the public and private sectors. The Centre is now being run by trained Syrian staff after the Indian experts left the country end of 2012 at the conclusion of the Indian commitment.

Sa3ed Project⁴²

Towards the end of 2007, the Syrian Computer Society (SCS), the American Organization "Mercy Corps" and IJMA3 (The Arab ICT Organization) signed a memorandum of understanding, to implement the Sa3ed

³⁸ Higher Institute of Applied Sciences and Technology (HIAST), www.hiast.edu.sy

³⁹ Ministry of Higher Education (MoHE), www.mohe.gov.sy

⁴⁰ SCS annual report (March 2012)

⁴¹ nans.gov.sy/index.php/iscit

⁴² SCS annual report (March 2012)

Project to train Syrian and Iraqi youth in IT. By March 2012, 138 young Iraqis and Syrians followed ICT training in specialized training centres in Damascus City and its countryside as well as 200 physically disabled persons and 30 trainers for the disabled. The training takes into account the requirements and needs of the society and needs of the labour market. In the next phase, 200 young people will be trained as well as 60 trainers for the disabled and 100 disabled persons.

ICT incubators⁴³

In 2006 SCS established the first ICT incubator in Damascus in collaboration with University of Damascus with the aim of encouraging innovation in ICT and supporting start-up companies led by young people who have ideas that can be transformed into useful businesses and products. When accepted, incubatees receive technical support as well as legal and commercial assistance free of charge, within a set timeframe, until they can launch their company and become independent. By March 2012, out of 32 incubated projects, 16 projects had graduated, becoming independent start-up companies, 11 failed to establish a start-up company and left the incubator, and 5 were still being incubated.

Another incubator was opened in Homs in February 2010 within the premises of the Faculty of Science, Al-Baath University in Homs and built collaborative links with faculty members in the field of ICT from Al-Baath and Al-Kalamoun (private) universities. It has been equipped to host 9 simultaneous projects and carried out training on entrepreneurship with support from Shell. Lack of financial support to selected projects led to withdrawal of incubatees. Also the crisis affected Homs at an early stage and incubation activities were stopped. A third incubator was launched in Latakia towards the end of 2010 capable of hosting up to 9 incubatees and accepted 7 projects, two of which graduated by March 2012. A fourth one was planned for Aleppo in 2011 in collaboration with the Aleppo Chamber of Industry and an agreement was signed, but execution was halted because of the current crisis, which affected Aleppo severely.

Syrian Olympiad in Informatics⁴⁴

The Syrian Olympiad in Informatics is an annual competition among schoolchildren aged less than 18 years that was launched by SCS in 2004. It aims at encouraging youngsters to take interest in computer science, explore the beneficial sides of IT, strengthen their innovative thinking, enhance their capacities of analysis and well-organized design, and promote continuous self-learning. Moreover, this competition is an opportunity for distinct student in this field to meet and exchange scientific and educational expertise. Training camps are organised, in which selected students from different governorates are brought together to be trained on computer science subjects. These camps are held annually in different areas, each attended by around 50 youngsters, are aimed at bridging the gap among students from different regions in Syria and increasing their sense of competitiveness.

The 2010-2011 Olympiad started with a workshop for 25 trainers in October 2010, followed by training camp in Damascus and Latakia focusing on the Scratch programming language. In March 2011 four training camps were held in Daraa, Tartous, Hama and Homs, in which the C++ programming language was in focus. Training was also provided online and three tests were organised in cooperation with the USA Computing Olympiad (USACO). The final competition was held in Latakia during 28-30 September 2011. Similarly, in 2012 three camps were held in Damascus, Aleppo and Latakia, but not all governorates participated, due to the current crisis. Starting in 2012, the organisation of this competition was transferred to the national Agency for Scientific Olympiad, in cooperation with SCS.

Syrian Collegiate Programming Contest (SCPC)

SCS organises since 2011 another competition to promote innovation and excellence in IT among university students based on International Collegiate Programming Contest (ICPC) organised by the Association for Computing Machinery (ACM). The first SCPC was held in Latakia in September 2011, with the participation of four universities, each represented by three teams and each team consisting of a trainer and three competitors. The Regional Committee (RC) for ICPC signed an agreement with SCS in order for the latter to organise the national contest for five years under the supervision of the RC.

⁴³ Previous reference

⁴⁴ Previous reference

National Training Project on ICT standards⁴⁵

Since the Syrian Government adopted the ICT standards that were prepared by MoCT in collaboration with the EU within the framework of the Institutional and Sectoral Modernisation Project (see section 6C), a national training project was launched in collaboration with the Syrian Computer Society.

In 2010 three training-the-trainer sessions were held: one on international standards for information security and information systems (10 trainees), the other on preparing terms of reference for tenders related to IT projects (13 trainees), and the third on planning, analysis and design of ICT projects (14 trainees). Although plans were formulated for training about 700 employees of the public and private sectors yearly over three years (2011-2013), only 129 employees were trained by August 2012. The current crisis led to reduction in training budgets in the public sector and did not encourage ministries and public establishments to send employees for training. Furthermore, reduction of activities in the private sector led to lack of interest in the training on the part of IT companies. Hence, training on ICT standards was recently moved to the e-government project, which has a budget to cover training.

5. Building confidence and security in the use of ICTs

During the past four years the Syrian Government has given lots of attention to building confidence and security to the use of ICTs, particularly in increasing the safety of electronic transactions and providing protection to networks and websites from hackers.

A. Use of electronic transactions and documents

E-transactions in Syria are not yet regulated since no law has been issued for that purpose, although a draft law has been in preparation for some time (section 6A). Hence e-transactions and formal exchange of e-documents are mostly limited to internal use, e.g. transactions within a bank or a public establishment. Preparations are underway to expand the use of e-transactions once the law is adopted, particularly for e-payment.

Law number 13/2012 established the Syrian Electronic Payment Company (SePC)⁴⁶, an entity tasked with building and managing the infrastructure for an Electronic Bill Presentment and Payment (EBPP) in the country. EBPP is changing the entire billing process by offering online and real-time presentment of bill content and payment options. Taking full advantage of the EBPP potentials, G2B, B2B, and B2C interaction processes can be simplified and unified.

EBPP will provide a mechanism to handle all payment transactions of end consumers for periodic bills (e.g. water, electricity, fixed-line phone, mobile phone) and customer initiated payments (e.g. traffic fines, pre-paid purchases, and airline ticket) through all channels of Syria's banking system. On the other hand, some establishments such as the power companies and Syrian Telecom began offering online bill payment through their websites and through ATM channels of the Commercial Bank of Syria and Real Estate Bank.

B. Online and network security

The Information Security Centre (ISC) at the National Agency for Network Services (NANS)⁴⁷ was lately established with the responsibility for safeguarding online networks and responding to mounting cyber-attacks. National Computer Emergency Response Teams (SY-CERT) are being formed for dealing with cyber-security issues with the objective of facilitating the detection, prevention and response to incidents. Increasing awareness and finding appropriate measures to combat cybercrime are also on the agenda of the SY-CERT, in addition to defining the specifications and standards for security as well as the protection of networks and Internet websites, and checking their implementation. SY-CERT should also develop standards for dealing with emergencies on the Internet, computer networks and computers, while supervising good adherence and the formation of task forces to address these cases.

⁴⁵ moct.gov.sy/moct/?q=ar/node/117

⁴⁶ nans.gov.sy/index.php/2013-02-19-07-07-34/92--13-

⁴⁷ The National Agency for Network Services, nans.gov.sy

ISC provides a number of services, including consultancy to governmental institutions (ministries, establishments and companies). One important service that it provides is the penetration test to websites; others include malware analysis and setting IT security alerts. Currently, ISC is defining the roles and responsibilities of service providers (online communication providers, hosting providers, ISPs) as specified in Law number 17/2012 entitled "Organising Online Communication and e-Crime Prevention"⁴⁸.

NANS profits from the establishment of the India-Syria Excellence Centre for IT, which is located in its premises and offers a training track on information security. In the past two years, the centre trained about 600 engineers in ICT security, providing a good understanding of the various generic security threats and vulnerabilities, the principles and practices of cryptographic techniques, means of identification and analysis of particular security problems for a given application, and ways to apply appropriate security techniques to solve known security problems.

ISC performs also the following functions:

- Formulating a national security strategy (delayed due to lack of experience in strategic planning in the field of information security);
- Evaluation of security risks in information systems;
- Providing security consultancy in the field of information systems;
- Handling network and computer emergency incidents;
- Early warning in the national cyberspace;
- Promoting a culture of information security.

C. Privacy and data protection

The Ministry of Communications and Technology (MoCT) prepared a draft law on privacy and data protection, which is based on the ESCWA cyber-legislation directives. Given the current situation and crisis, it has been delayed and still needs to go through the Prime Ministry, together with its draft executive instructions, before being discussed by the Parliament. Hopefully, the law will be passed during 2013. A parallel campaign to increase awareness about online privacy and the means of protecting data needs to be launched at the national level.

D. Countering misuse of ICTs

Law No. 17/2012 entitled "Organising Online Communication and e-Crime Prevention" indicates all the means to detect and prevent cybercrime as well as the misuse of ICTs (section 6A). It is expected that this law will decrease e-crime levels (e.g. hacking, phishing, e-mail spam and illegal access to information systems) while building expertise in the field of legal information technology and digital evidence.

6. Enabling environment

A. Legal and regulatory environment

Law on Organizing Online Communication and e-Crime Prevention⁴⁹

Law number 17/2012 became effective on 8 February 2012 and organises communication over networks by describing the duties and responsibilities of online service providers, defining relationship between these service providers, the National Agency for Network Services (NANS) and the judiciary system. The law also deals with content stored on the network, which should be in line with intellectual property rights as well as commercial and industrial rights, including patent rights. Various aspects of cybercrime are also covered by this law, including hacking, mimicking websites, intercepting information, designing and using malicious software, sending spam, online fraud, illegal online use of payment cards and privacy violation. Penalties, including imprisonment and fines are indicated for each class of e-crime. The law provides for the establishment of a law enforcement entity specialised in cybercrime using digital evidence through electronic investigation, search and seizure of ICT equipment and software.

⁴⁸ nans.gov.sy/images/stories/doc/isc_doc/info_crim_law_excu_command.pdf

⁴⁹ Previous reference

Intellectual property law

The current intellectual property law in Syria issued in 2001 protects computer software, their source code and database design. This law, however, does not tackle issues related to information technology in general. Therefore, the Ministry of Culture and the Ministry of Communications and Technology prepared a draft modified law that takes into account IT issues. The draft law should be discussed at the level of the Prime Ministry and Cabinet before being sent to Parliament for adoption. Delays in discussing the draft are caused by the current crisis and new priorities.

Electronic transactions law

The Ministry of Economy in collaboration with MoCT prepared a draft law on electronic transactions that was approved by the Economic Committee at the Prime Ministry. The executive instructions are being drafted by the Central Bank of Syria, with focus on e-payment. Once it is approved at the Prime Ministry it will be sent to Parliament for discussion and approval, hopefully before the end of 2013.

Law on regulating the telecom sector

The Telecommunications Law and its executive instructions were issued on 9 June 2010. Under this law, the Syrian Telecommunications Regulatory Authority (SyTRA) was created and the Syrian Telecom company (ST) established. This joint stock company wholly owned by the government shall replace the Syrian Telecom Establishment (STE) in all its competencies and tasks related to operation of networks. The task of regulating the sector that was previously split between the Ministry of Communication and Technology and the Syrian Telecom Establishment, will be assigned to SyTRA. These changes will jointly upgrade the level of competition in the market by increasing the number of service providers, creating new patterns for providers of services such as the virtual operators or by creating new competitive conditions among the services themselves, so that the mobile phone (with 3G Internet connection) becomes a real competitor to the fixed-phone system with ADSL in terms of pricing, prevalence and service quality.

The main actions taken by SyTRA since its creation are the following:

- Development of a licensing framework for class licenses. This framework is presented as a generic template which could be reused to develop more specialized class license documents. This has already been successfully applied to Internet Service Provider licenses and other types of licenses which are currently under approval (e.g. for ASPs and Internet cafés).
- Taking over from STE the task of ISP licensing to become compliant with the new telecom law.
- Launching consultations related to Internet services (customer service, quality of service, additional services to basic Internet access, etc.).
- Preparing a national broadband initiative in collaboration with ITU, with the aim of setting a clear roadmap to reach the penetration levels needed for social and economic development.
- Taking over all tasks related to civil spectrum management and development of new licensing procedures in line with the telecom law to replace old procedures.
- Transferring from STE to SyTRA all tasks related to type approval.
- Participation in the preparation of the third mobile operator entrance to the Syrian market.

The following table indicates the existence of specific laws for regulating ICT.

Electronic Transactions Act is in place	No (under preparation)
Electronic Signature Act is in place	Yes
Management of the infrastructure of public keys does exist	No (experimental phase)

Treaties that Syria has joined⁵⁰

The following table indicates the international agreements that have been signed by Syria.

Treaty	Date of membership
Paris Convention for the Protection of Industrial Property	1 September 1924

⁵⁰ Syrian Patent Office, spo.gov.sy/en/pdetails.php?id=3

Madrid Agreement for the Repression of False or Deceptive Indications of Source on Goods	1 September 1924
Nairobi Treaty on the Protection of the Olympic Symbol	13 April 1984
Stockholm document	13 December 2002
Patent Cooperation Treaty	26 June 2003
Berne Convention for the Protection of Literary and Artistic Works	11 June 2004
Madrid Agreement Concerning the International Registration of Marks	5 August 2004
Convention Establishing the World Intellectual Property Organization	18 June 2004
Nice Agreement Concerning the International Classification of Goods and Services for the Purposes of the Registration of Marks	28 March 2005
Hague System for the International Registration of Industrial Designs	7 February 2008

B. Domain name management

The National Agency for Network Services (NANS)⁵¹ is a government entity established in 2009 by a legislative law called Digital Signature and Network Service Law (Law number 4 dated 25/2/ 2009), which was approved by the Syrian Parliament as a step toward governmental reform of the Telecom and Internet Sector in Syria. This law assigned to NANS responsibilities and functions related to data network services⁵² such as to manage the Syrian ccTLDs (including the IDN ccTLD). ICANN authorised NANS to manage and operate ccTLD (.sy) in addition to the Syrian top level domain in Arabic (سورية), established in line with the recommendation of the Arab Team for Domain names and Internet Issues.

NANS, as a registry operator, will maintain the Registry System, Database and Servers and will provide other registrars with suitable secure facilities access to the Registry System and Database as needed for their services using robust, flexible and scalable software and a public Whois service.

Name of ccTLD registrar	Name in English: National Agency for Network Services (NANS) Name in Arabic: الهيئة الوطنية لخدمات الشبكة
URL of registrar	http://tld.sy
Number of ccTLD's registered in the country	1305-1345 (end of 2012)
Implementation of Arabic ccTLD	Yes (سورية)
Number of registrations under Arabic ccTLD	102 (end of 2012)

C. Standardization in ICT

In agreement with the Syrian Government, the EU established the Institutional and Sector Modernisation Facility (ISMF) in 2003 to assist the Syrian authorities in the development of an economic modernization by means of technical assistance. The development of standards for using ICT and applications was among the projects that ISMF launched and these standards were developed in 2008 and approved by the Prime Ministry in May 2009.

These national ICT standards covered information security and information systems, terms of reference for tenders related to IT projects, and planning, analysis and design of ICT projects. Official documents were produced in each of these areas, covering policies, guidelines and templates for all related topics, in Arabic and English. The adoption of these standards provided great support to Syrian ICT firms, particularly software companies, and increased confidence among the software development companies in the private and public sectors. These typical standards allow for methodical planning, analysis and implementation of ICT projects, taking into account their security, in order to achieve a high level of excellence in their performance⁵³.

⁵¹ National Agency for Network Services (NANS), www.nans.gov.sy

⁵² For these responsibilities and functions see the 2011 National Information Society Profile for Syria.

⁵³ MoCT, moct.gov.sy

In order to start applying these standards, the Ministry of Communications and Technology (MoCT) concluded an agreement with the Syrian Computer Society (SCS) to train State employees on the use of these standards. SCS launched the training programme in 2010. It was expected that during the term of the agreement (3 years), 2000 State employees, in addition to employees from the private sector would follow the training, but delays occurred due to the crisis that started in 2011 (see section 4B).

D. ICT investments and Government-supported facilitation measures

The investments made by MoCT and public institutions for the development of ICT during the past three years are indicated in the following table. These investments are mostly directed towards building and developing the needed infrastructure for increasing the number of phone lines, particularly in rural areas, maintenance of existing telephone network, increasing ADSL ports on telephone exchanges and providing value-added services, particularly for accessing the Internet.

	Unit	2010	2011	2012
Investment expenditure	Million USD	291*	236*	125**
Growth rate	%		-19%	-47%

(*) In 2010 and 2011 the rate of USD to Syrian Pound is calculated as 1USD=50SYP

(**) In 2012 the rate of USD to Syrian Pound is calculated as 1USD=60SYP

While the average annual increase in the investment expenditure during the period 2005-2010 was around 50%, this growth has become negative starting in 2011, mainly due to the crisis.

As for the private sector (mainly mobile communications), Syriatel investment expenditure reached about 113 million USD in 2011 and about 76 million USD in 2010⁵⁴, showing an annual growth of 48%; while MTN investment expenditure was about 58 million USD in 2011 and 57 million USD in 2010⁵⁵, showing an annual growth of 2%. No figures are available for private sector investment in IT.

7. ICT applications

A. E-government

The e-government initiative was developed in close cooperation with UNDP-Syria and approved by the Syrian Government in 2009. The e-government strategy (Section 1A) defined three strategic directions, namely: offering government services electronically, improving public administration and enhancing the empowering environment.

The e-government Steering Committee was designated in November 2009 and the executive team named in June 2010. To support e-Government implementation, the UNDP project entitled “Enhancing institutional capacity for e-Government Implementation” has been formulated in November 2010⁵⁶ and put into action in February 2011. Following is a list of planned outputs and achievements up till March 2013⁵⁷.

Output 1 - Develop and operate a monitoring and evaluation framework for e-government initiative

Achievements: Indicators for e-services developed; Indicators for National Data Banks developed; Monitoring and Evaluation (M&E) Guide produced; First and second M&E reports issued.

Output 2 - Support the Development, Management and operation of the e-government portal

Achievements: National website developed and operated (egov.sy); Information regarding all government services and processes (3200 processes and 53 online services) collected, reviewed and published; First National Portal developed and operated.

⁵⁴ [investorrelations.syriatel.sy/DownloadFile.aspx?file=Media/Docs/AnnualReports/11-18-2012-6-22-30-PM Annual%20report%202011%20IV.pdf](http://investorrelations.syriatel.sy/DownloadFile.aspx?file=Media/Docs/AnnualReports/11-18-2012-6-22-30-PM%20Annual%20report%202011%20IV.pdf) pp. 44-45.

⁵⁵ <http://www.mtn.com.sy/financial-report/20111231.pdf>

⁵⁶ UNDP-Syria, *Enhancing Institutional Capacity for e-Government Implementation*, Project Document, Nov. 2010.

⁵⁷ Project Annual Report (2012) – UNDP-Syria internal document

Output 3 - Develop the required shared services, e-Government standards and supporting tools

Achievements: e-payment service standard developed and implemented for water and electricity bills payment; Syrian Interoperability Framework (SY-GIF) developed and implemented for eight key services; National Government Secured Intranet Guide developed; Standard for Citizen Service Centre development and operation produced.

Output 4 - Provide consulting services for e-government programmes and projects

Achievements: Land Registration project developed with pilot implementation; Water and electricity bills payment system developed and operational; Initial study for e-benefit management developed; Administrative Reform document developed; e-participation project issued.

Important projects implemented within the e-government initiative are discussed below.

Land Registration Project

An initial assessment study with a detailed business analysis for the land registration authority has been developed, followed by an action plan. According to this plan, the process of digitizing existing registry was given the highest priority, which has records for around 4.5 million properties. A pilot system for the digitization of the Damascus Registry was developed in collaboration with SCS and is currently in operation, while a detailed project document for full-fledged nationwide implementation (with a planned budget of 1 billion Syrian pounds) has been produced.

Humanitarian and recovery/reconstruction coordination system⁵⁸

Considering the current conflict in Syria and the level of human suffering and physical destruction, the inventory and mapping of humanitarian (and at some stage recovery and reconstruction) needs are needed. Furthermore, the inventory of physical damages is essential for accurate interpretation of the gaps, proper targeting of any assistance and effective performance management of relief operations. Therefore, reallocation of e-government initiative resources was carried out with the following two new objectives:

- Enhance coordination among all actors working on humanitarian relief and infrastructure recovery/reconstruction in Syria;
- Improve performance monitoring to support decision making at all levels.

Hence, the system scope will cover the following activities:

- Shelter management;
- Humanitarian needs and livelihood management;
- Infrastructure recovery and reconstruction management.

The system is planned to be operational by June 2013, with a national dashboard to track the performance of previous activities.

Citizen Service Centres (CSCs)

The total number of operating CSCs is 24 (11 of them are large centres, and 13 small ones). These centres are distributed as follow, 7 in Damascus (2 large and 5 small), 7 in Homs, 1 in Aleppo and 1 in Tartous. Additionally, 8 small centres exist in other governorates, run under the umbrella of the Ministry of Local Administration. Eight new centres are under construction, but progress is very slow due to the current situation in Syria and limited budget available. More than 50 services are currently provided in these centres, not including query services. In Damascus city alone over 77,000 requests for services were carried out during 2012 in these centres, most of them were related to the civil registry (such as personal statement, family statement and birth statement).

⁵⁸ HRRCS concept document, Internal UNDP document

The General Civil Servant Register (GCSR)

This project is being implemented as part of the e-government initiative through collaboration between the UNDP, MoCT and the GCSR in the Prime Ministry. It aims at developing a G2G/G2C Web enabled application that facilitates updating the civil servant registry through making data entry distributed on ministries and production of a statement on any citizen status as civil servant, required in many governmental administrative procedures. This should become transparent for the citizens except when it is needed by the private sector or other non-governmental institutions. A pilot system is ready since end of 2012 and is currently being tested at the Ministry of Agriculture, with another ministry to be added soon. Since e-signature is not yet functional in Syria, a proxy is given to selected employees to physically sign the statement. Whenever e-signature becomes functional in Syria fully electronic processing becomes possible.

Before being integrated in the e-government project, it was possible for citizens to obtain a non-civil servant statement from the Syrian Post in a number of governorates by linking the Post to the Registry database through the public data network. At present about 500,000 such statements are requested annually in Syria, most of which will become completely transparent to the citizen once the project is applied throughout the country.

Name of Authority in Charge of ICT in Public Administrations	English Name: Ministry of Communications and Technology Arabic Name: وزارة الاتصالات والتقانة URL: www.moct.gov.sy
Name of e-government authority	English Name: Ministry of Communications and Technology Arabic Name: وزارة الاتصالات والتقانة URL: www.moct.gov.sy
Number of implemented Government e-services	2393 (mostly static information) 53 online (interactive) services
Number of planned Government e-services	-

Government-to-Government (G2G) services: Since there is no centralised secured government network, a one-to-one arrangement is made to connect different governmental service providers. Civil registration records, employment records and justice records are accessible electronically beyond governmental counters (e.g. Citizen Service Centres and few other public offices).

Government-to-Citizen (G2C) services: The central website has been replaced with a mini-portal that covers basic features such as citizen authentication. However, online (interactive) services are accessible through the portal by forwarding the services to ministries websites.

Government-to-Business (G2B) services: Few services are available online such as registering a patent or a trademark. Other services such as new business formulation and renewal are provided at Citizen Service Centres.

URL of e-government portal: (http://www.egov.sy)⁵⁹		
Information	General	Yes
	Laws	Yes (limited, partial)
	Directories	Yes
Services	Static Info	Yes
	Downloadable Forms	Yes (partial)
	Interactive	Yes (limited, partial)
e-payment		Yes (partial)
Online account		No
Bilingual		Arabic/English
Citizen Participation	Blogs	No

⁵⁹ It should be noted that the current website [egov.sy](http://www.egov.sy) is just a temporary website (or mini-portal) for publishing information and not the final e-government portal (this is due to financial and contracting issues).

	Polls	Yes
Social Media	Facebook	Yes
	Twitter	Yes
	LinkedIn	No
	YouTube	Yes
	Other	Google+
Additional Services	RSS	Yes
	Web Statistics	No
	Search	Yes
Mobile version	Support for smartphone/tablet	No
	Dedicated App	Yes (Tourism and published services)
Other features		

B. E-business

E-business in Syria is still in its infancy, due to the delay in introducing credit cards, the Internet and modern banking services. A decade ago, only public sector banks were allowed and most had classical and archaic banking services. The introduction of ATMs and debit cards in some banks, followed by the advent of private banks completely changed the business environment. With the expansion of the Internet, basic e-banking services are now offered in all banks. The effective use of e-signature and the issuance of e-transaction law will promote e-payment and will certainly change the e-business landscape and bring about modern e-business services at a larger scale.

On the other hand, the Government in collaboration with the league of Arab States (LAS) launched the Arab Academy for e-Business in Aleppo in October 2009 with the aim of building national and regional capacities in this domain. A series of specialised seminars were planned, the first of which was for the banking sector on "Prospects for transition to cashless society" and was held in Damascus in March 2011. A full plan was also prepared by the Academy to launch its Master's Programme in e-Business, but due to the crisis and to the fact that LAS suspended its activities in Syria, external financing of the project stopped. The Syrian Government, however, took over full financing of the Academy and decided to pursue its development (temporarily in Damascus) after the destruction of the building in Aleppo.

C. E-learning

E-learning in schools

After introducing ICT as a formal subject in school curricula, starting in grade 7, the Ministry of Education trained over 3000 teachers on Technology Integration in Education in 2010. Also, about 3,000 schools out of 20,000 were networked and had Internet connection by the end of 2010; and over 100,000 PCs were distributed to schools during the same year reaching a ratio of 2 PCs per 100 students for ICT practical/lab work and for enhancing computer skills⁶⁰. Moreover, the teachers are encouraged to use PCs as tools in preparing and delivering their lectures. Unfortunately, with the current crisis a large number of schools, particularly in rural and remote areas have been ransacked or destroyed.

Although e-learning is still not on the agenda, the Ministry of Education produced e-books for most subjects in what is labelled "e-bag"⁶¹. This allows the students to have all the needed books on a flash memory or CD-ROM, limiting the need for printed copies and reducing costs of reproduction that the Minister endures.

The Interactive Schools pilot project that was implemented in 2010 by the Ministry of Education, in cooperation with MoCT and UNDP-Syria could not be expanded during 2011- 2013 due to the crisis. The 5 schools in Damascus and the 15 schools in Deir Ezzor governorate that participated in the project had seen improvement in the school's administration performance and school-parent communication using ICT tools, but the crisis also affected the pilot schools in Deir Ezzor, some of which have been damaged or ransacked.

⁶⁰ Ministry of Education, Planning Section records.

⁶¹ Ministry of Education, syrianeducation.org.sy/ecurricula/

Computer to student ratio	2%
Percentage of schools with Internet access	5%

The Syrian Virtual University (SVU) ⁶²

The Syrian Virtual University is a distinguished and pioneering experience in e-learning in higher education in the region. SVU strives towards delivering quality virtual education the e-learning process providing scientific digital content and managing and regulating the teaching process. SVU has a digital library for the use of professors and students. Currently it offers synchronized lectures that enable students and their instructor to establish voice as well as written communication and share applications as well as see the instructor's desktop. With faster Internet connectivity SVU can provide visual communication allowing the student and the instructor to see each other simultaneously, thereby providing all the features of traditional education in addition to the virtual ones.

Currently SVU provides studies for Bachelor degree in Information Systems Engineering, Economics and Law, as well a postgraduate Diploma in Education and Master's degrees in Quality Management, Technology Management, and Web Sciences. Professional Master's degrees are also available in Business Administration and in Web Technologies. It is planning a programme in Media Communications and in Teaching Arabic as a Foreign Language, as well as a lifelong programme in Banking and Financial management.

D. E-health

A hospital information management system exists in three hospitals, namely Damascus National Hospital (more than 500 beds), Daraa National Hospital (350 beds), and Al-Haffeh Hospital (200 beds) in Latakia. This system includes, in addition to information and financial management, digital storage of the patients' medical records. There are also software packages that facilitate the entry and management of the daily and periodic records (in/out patients and death of patients) of all hospitals. Currently the system is being used only in the Damascus National Hospital, and has been stopped in Daraa and Latakia due to the current crisis and related problems in the country.

Moreover, the Ministry of Health has a central management system for drugstores used to distribute medicines and laboratory materials throughout the country.

All Health Directorates in the Governorates are connected to the Head Office and various branches through a network, making it possible to exchange data related to health services and epidemiological surveillance systems between this network and all hospitals of the country when necessary.

In March 2010, it was agreed between UNDP and the Ministry of Health, with support from MoCT, to implement a project for the provision of two Internet-based services, namely: Registration of the graduates of medical and health colleges and institutes; and Application for a contemporary license for medical and health practitioners. These two services used to be provided at the Ministry's head office in Damascus to all citizens of all governorates. The project was completed in August 2011 and provided these services in five governorates (Damascus, Damascus Country Side, Homs, Aleppo, and Latakia) for a short while before being halted because of the current situation in Syria.

E. E-employment

E-employment in Syria is practised in exceptional circumstances (such as the current crisis, creating security situations forcing work from home) and mainly in the private sector and international organisations. However, ICT tools exist to facilitate search for employment in the country and abroad, mainly in the form of websites to look for a suitable job, such as the Syria-online website⁶³. Also the Ministry of Labour and Social Affairs has employment offices in all governorates that are linked through a network allowing for distributed collection and data entry, while a central database processes and responds to queries.

⁶² Syrian Virtual University, svuonline.org

⁶³ Syria Online, syriaonline.com/Categories/employment.htm

8. Cultural diversity and identity, linguistic diversity and local content

Digital Arabic content (DAC) has always been a significant issue in Syria, taking a more formal trend with the formation of a National Work Team for Arabic Content (NWTAC) during the First National Conference on DAC Industry in June 2009. Stakeholders of DAC were represented on this Team tasked with the design of a framework for industrialising DAC, including standards and indicators of achievements. In a workshop held in Damascus in March 2011, NWTAC launched three initiatives in the fields of cognitive learning, standardization and accreditation, and audio-video content. These three proposed initiatives facilitate the development of a comprehensive strategy for the production of DAC, providing a framework for all active forces in the public and private sectors as well as in local communities to contribute to the development of digital content. However, due to the crisis, no follow-up was carried out and a Second National Conference on Arabic Digital Content Industry scheduled for second half of 2011 was cancelled.

A. Use of ICT in support of cultural and linguistic diversity

The use of ICT to support digital Arabic content is considered a priority area in ICT incubators of the Syrian Computer Society, and a number of selected projects focus on Arabic content and Arabic language processing (e.g. text to speech, speech to text, and understanding Arabic content) for different environments like iOS and Android.

A number of cultural websites exist covering a variety of interests and needs of cultural segments in the country. They cover cultural activities such as art, poetry, literature and theatre, in addition to activities of cultural centres⁶⁴. Furthermore, libraries and publishing houses have been using websites to publicise their publications to visitors⁶⁵.

The use of social media, mainly in Arabic, has increased exponentially in the past few years, particularly with the advent of the crisis in Syria. Information exchange, news, discussions, photos and video clips increased dramatically and groups mushroomed at a high rate on social networks, particularly on Facebook. However, no statistics are published by Facebook on number of users in Syria or volume of content. But other social networks, such as Twitter and YouTube provide some statistics that show the explosive increase in users and content related to Syria⁶⁶.

B. Local and national digital content development

Reefnet

The Rural Knowledge Network (Reefnet)⁶⁷ is an important reservoir of national digital content, distributed on regions as discussed in Section 3B.

eSyria⁶⁸

The project "eSyria" was established within the framework of the Syrian Computer Society's initiatives for the development of the Arabic digital content especially on the Internet, and it targeted one sector of the blogging and service content.

Further to what was reported in the 2011 national profile for Syria, the following was achieved during 2011-2012 to enrich the portal, 13 governorate websites and specialised service websites (websites directory, e-books, weather, cultural agenda, airports):

- Three new websites were developed and activated on "Food and Health", "Syrian Music" and "Ideas and Business";
- 5600 articles were added to governorate websites;

⁶⁴ esyria.sy/dir/?ParentCatID=92

⁶⁵ For example: redapress.com, www.darlanawader.com, alkalam-sy.com

⁶⁶ Social Bakers, socialbakers.com

⁶⁷ Reefnet Portal, reefnet.gov.sy

⁶⁸ Syrian Computer Society Annual Report (March 2012)

- 220 articles were added to the cultural agenda website, as well as 1200 new cultural personalities and 578 centres offering cultural activities;
- 1032 articles on food and 705 on health were prepared for the newly developed website;
- 990 video clips and 168 articles were prepared for the newly developed website on Syrian music;
- 688 articles were prepared for the newly developed website on ideas and business.

With developed expertise and more than 60,000 items prepared and posted during the past 6 years, a number of changes are proposed enhance the efficiency of the portal and related website while providing better service to the population. The portal will be re-designed to facilitate search for information and shorten the steps to reach needed materials. The gradual reduction of the number of correspondents (currently 91) is justified since the bulk of the content is available and only new material needs to be added. Social networks will be used to promote the websites and their content.

Translation of ICT terms⁶⁹

This Arab project was supported by the ITU and is on the ESCWA Regional Plan of Action for building the Information Society (RPoA). It should materialise in the form of an online database with free access, a CD-ROM and a printed dictionary. The target number of ICT terms is 12,000 and it will be trilingual (Arabic-English-French). SCS agreed to implement it in coordination with the MoCT under the supervision of ITU. It was launched in Damascus at the end of 2009 and several phases have been completed so far, namely:

- The targeted English ICT terms were selected and agreed upon;
- 75% of English terms had explanations prepared;
- 42% of Arabic equivalent terms have been decided upon;
- 44% of English explanations were translated into Arabic.

The project should be completed in 2014 and needs financing from SCS since the ITU has stopped its financing.

C. ICT software, tools and R&D programmes in Arabic language processing

Three start-ups graduated from the Damascus ICT incubator (2 in 2011 and one in 2012) whose products are tools for Arabic language processing. “Arabi” provides a tool for automatic vocalisation of Arabic texts in addition to transforming text to speech. “Votek” provides a library for Arabic speech recognition and interactive services. “Abjad Hawaz” provides a search engine for Arabic text that determines semantically and contextually similar words. Another tool still in the incubator converts Arabic books into special applications for iPhone and iPad.

Natural Language Processing (NLP) for the Arabic language remains an important axis of research and development in the Higher Institute of Applied Sciences and Technology (HIAST). During almost two decades (1990-2007) focus was on topics such as optical character recognition (OCR), knowledge base of the Arabic language, syntactical Arabic corpora and text to speech system. With gained experience and knowledge in the field, new research projects were launched during the past few years focusing on the Interactive Arabic Dictionary⁷⁰, morphological analysis⁷¹, grammatical and semantic analysis tools and applications⁷² and question answering systems⁷³. Some of the research is carried out in collaboration with other universities and research centres in the Arab region, such as the Interactive Arabic Dictionary with King Abdulaziz City for Science and Technology (KACST) in Riyadh, KSA. New research topics are being carried out, such as: Semantic search engine, text diacritization and speech synthesis, Arabic ontology construction, semantic Web and Arabic translation assistance tools.

⁶⁹ Previous reference

⁷⁰ almuajam.hiast.edu.sy

⁷¹ Riad Sonbol, Nada Ghneim, and Mhd Said Desouki. “An Application Oriented Arabic Morphological Analyzer”. Damascus University Journal of Engineering Sciences, Vol. 27 - No. 1, 2011.

⁷² W. Safi, N. Ghneim, *Automated Essay Grading System*, The 2nd International Engineering Sciences Conference, Aleppo University - Syria, 22-24 November, 2011.

⁷³ W. Safi, O. Dakkak, *Towards a Complex Question-Answering System*, The 2nd International Engineering Sciences Conference, Aleppo University - Syria, 22-24 November, 2011.

D. Arabic domain names

(See section 6B on Domain name management).

9. Media

The Media Law was issued as Presidential Decree number 108/2011⁷⁴ and replaces previously issued laws regarding Radio Stations (1951), Publishing (2001), Private Radio Stations (2002) and Communication with the Public (2011). It constitutes a drastic change to the status of media in Syria, opening the door for licensing all forms of media work (audio-visual, print and digital) initiated by Syrian citizens who satisfy specified conditions. This Law is in-line with the Government stated position on enhancing and developing media work, including its independence and freedom as per the Constitution.

A. Media diversity, independence and pluralism

The Media Law stipulates the establishment of the National Media Council (NMC) as an independent agency to ensure enforcement of this Law. Freedom of expression for all media workers is guaranteed by the Law in all what relates to executing their tasks, as well as the freedom to access information. It is considered as a reform step towards building an enabling environment to carry out media work that guarantees application of the Universal Declaration of Human Rights and related international legislations and agreements.

It should be noted though that the crisis that Syria is going through since 2011 partly delayed the application of the Media Law, in spite of the fact that NMC has taken the required steps to execute the tasks that are entrusted to the Council.

By the end of 2012, the number of periodicals (newspapers and magazines) licensed to the private sector in Syria reached 250, which are varied in terms of content (political, economic, social, cultural, etc.) and periodicity (daily, weekly, monthly and quarterly). However, two years into the crisis have reduced the number of actual publications to less than 25%, many of them becoming purely electronic.

The number of private radio stations that obtained broadcast licenses is 18, 17 of which are operational. Besides, there are four State-owned radio stations (The General Programme, the People Voice, the Youth Voice and Syriana). Also, seven public television channels and two private operate in the country, with three broadcasting through ground stations (Channel 1 and Channel 2) and six through satellite (including one private and an education channel in collaboration with the Ministry of Education)⁷⁵. Requests for new television stations (general and specialised) have been made and are under study by the NMC.

Over 30 media websites have been approved by the NMC. According to eSyria statistics⁷⁶, at the end of March 2013, the number of Syrian websites was 5517 sites in the different categories, and these include 345 media websites and 114 newspaper and magazine websites.

Media	Number	Language	Ownership			
			Private	Multiple	Governmental	Foreign
Newspapers	88*	Arabic	83*		5	
Electronic Newspapers**						
Magazines	162*	Arabic (156) English (6)	137		25	
News Agencies	1	Arabic, cn, en, es, fr, ru, tr			1	
Radio	22	Arabic	18***		4	
Television	8	Arabic	1		7	

(*) Licensed newspapers/magazines

(**) No reliable statistics available

(***) 18 licensed, 17 functional

⁷⁴ nmc.sy/nmc/public/media-law

⁷⁵ NMC internal report

⁷⁶ www.esyria.sy/dir

B. The media and its role in the information society

The media in Syria was for a long time government controlled and was limited in its ability to tackle political and governance issues as well as problems whose solutions may clash with the ideology of the governing party. During the past decade and with the ascent of the information society, the rise in Internet penetration in the Syrian society and loosening of restrictions on the media, its landscape and role changed drastically. The private sector entered with strength in financing media ventures and a large number of newspapers and magazines appeared on the market in Arabic and in English, covering political, social and economic domains among others. Radio stations also emerged with focus on youth, social development and musical entertainment. Hence, the role of the media in Syria has been changing quickly in the past few years, particularly with the new Media Law and the regulation of media work through NMC.

C. Convergence between ICT and the media

Following the Conference of the Councils of Arab Ministers of Communications and Technology, and Information (Damascus, 2008), the Arab Participatory Decade between Media and Communications (2009-2018) was launched. Syria, attaching great importance to the issue of convergence and integration between ICT and the media set up mechanisms for implementing the Participatory Decade in a working paper that was approved by related Arab Team. A national committee was formed to follow up on the implementation of the Participatory Decade in the Arab region. This Committee, in cooperation with the Syrian Computer Society (SCS), developed a specific website⁷⁷ for follow-up, which includes indicators of achievement. A workshop entitled "Limits of Relationship between Information and Communications" was organized in Latakia towards the end of 2010 and was attended by 200 experts and international/regional organisations, with the objective of introducing the Participatory Decade to all concerned and to review needed actions to be taken.

On 16 March 2011, three initiatives related to the Participatory Decade were launched by the national team for digital Arabic content and the Arab team for the advancement of the Arabic language, namely: cognitive learning, Audio-visual content and Standardisation and certification. No actions were taken on these initiatives due to the impending crisis.

10. International and regional cooperation

A. Financing of ICT networks and services

In 2008, UNDP signed an agreement with MoCT and the Planning and International Cooperation Commission (PICC) for the "Strategic ICT Programme for Socio-Economic Development" in Syria, splitting the financing of the projects between UNDP (55%), MoCT (27%) and PICC (14%). Under this programme, 1,400,000 USD were used for Reefnet and Telecentres projects between 2008 and end 2010, leading to the establishment of the Reefnet portal and regional websites (section 3B), as well as 40 telecentres in rural and disadvantaged areas (section 3C). Advanced training was delivered to technical personnel in ISPs (180,000 USD) and strategic consultancy was provided to MoCT with regard to ICT for socioeconomic development (190,000 USD). The Government Services Reform and Modernisation (GSR) programme included large segments related to ICT and was also co-financed by UNDP (1 million USD) and MoCT (10 million USD). The e-Government initiative had a budget of 858,400 USD, 53% of which were spent by end of 2012. The implementation of 15 Interactive Schools in Deir Ezzor and 5 in Damascus required 329,500 USD until end of 2010.

The State of India financed the India-Syria Excellence Centre for IT between 2010 and end 2012 in the form of equipment and experts. MoCT provided the building, including three training rooms with a capacity of 90 trainees. The centre provides advanced training information security, information systems, networking, operating systems and infrastructure (see section 4B).

The League of Arab States (LAS) agreed to co-finance, with Syrian Government, the establishment of the Arab Academy for e-Business in Aleppo starting in October 2009. A series of specialised seminars were planned, the first of which was for the banking sector on "Prospects for transition to cashless society", and

⁷⁷ Meeting of Arab Ministers of Information and Arab Ministers of Communications, amict.org

was held in Damascus in March 2011. A full plan was also prepared by the Academy to launch its Master's Programme in e-Business, but member States did not send their contributions forcing the Syrian Government to provide a loan for the Academy to pursue its activities. No meeting of the Board of Trustees was held and LAS formally stopped its financing in 2012 due to the crisis.

ITU partially financed the project Translating ICT Terms (section 8B) from 2009 until end of 2012. SCS is continuing the financing and implementation of the project, which is expected to be completed in 2014, with its own resources.

In 2008, the Republic of Korea and the Syrian Government agreed on establishing the IT Plaza with financing of 1 million USD for equipment and trainers from Korea. The Government offered the building and the IT Plaza was inaugurated on 13 March 2008. Section 3C provides more details about its activities.

In the past five years, a number of cooperation agreements, including financing, were signed between MoCT and each of Russia, Azerbaijan, Armenia, Cyprus and Turkey, but their execution stopped due to the crisis.

B. Infrastructure development projects

In 2007 the European Investment Bank (EIB) agreed to finance telecom projects in the amount of 100 million euro. Between 2007 and 2012 the third rural project aimed at adding 33,400 telephone lines in 4,300 villages was implemented for 54.5 million euro. The financing of two other projects ("The Last Mile" a fibre optic network extension and a GIS project) with the remaining 45.5 million euro was declined by the Bank as a result of European sanctions due to the crisis.

C. WSIS follow-up

Most projects carried out by MoCT, SCS and ST are in line with WSIS outcome, Geneva Plan of Action and the Regional Plan of Action (RPoA) for building the information society in Western Asia. Various draft laws related to ICT and applications, such as the e-Transactions Law and the Law on Organising Online Communication and e-Crime Prevention were the result of coordination with ESCWA Cyber-legislation Initiative and were reviewed by ESCWA experts.

D. Participation in Internet governance activities

At the regional level, Syria was very active within LAS with regard to Internet governance and was leading the Work Group on Arab ICT Strategy and the Work group on Domain Names and Internet Issues. Through the second WG, the groundwork was prepared for the establishment of the Arab IGF. However, due to the crisis and LAS political stand, no invitation was sent to Syrian representatives and experts to WG meetings nor to launching of the Arab IGF. The Minister of Communications and Technology was no more invited to meetings of the Council of Arab Ministers of Communication and Information Technology. LAS even blocked invitations by ITU Arab Regional Office to Syrian experts.

11. Building the ICT Sector

A. ICT firms

At least 200 ICT firms exist in Syria⁷⁸ dealing with hardware, software and telecommunication, including services. A grey market exists for software development, which cannot be estimated precisely. However, a study on software development industry⁷⁹, which was commissioned by MoCT and SCS estimates the number of software companies in Syria at 150 companies in 2010. Most probably this number has decreased in 2013 due to economic crunch caused by the current situation.

While the telecom market can be clearly mapped, with ST, Syriatel and MTN as the main actors, the IT market is not regulated nor organised, hence the difficulty of estimating its size in volume of trade and in

⁷⁸ This estimate is based on the fact that 192 Syrian communications, hardware and software companies participated in the Cham Exhibition 2011 for Informatics and Communication Technologies. Many micro companies do not participate in such exhibitions and no statistics about ICT firms are available at present.

⁷⁹ Arab Development Centre, *Reality of software industry in Syria*, November 2011 (Arabic).

investment or turnaround. The above mentioned study considers software industry in Syria to be very weak, with lack of certification for software companies, no regulation of the IT profession and no serious intellectual property legislation to protect them. Furthermore, limited research, development and innovation render Syrian software companies uncompetitive on the regional and international markets.

An attempt to strengthen software companies in Aleppo was to establish the Software Industry Committee within the Aleppo Chamber of Industry in 2006 after a group of software companies succeeded in making the Chamber then the Government recognise “developing software” as an industry. However, its website indicates that the committee is no more active since mid-2009⁸⁰. The number of Committee members seems to have stopped at 13.

B. Government facilitation

A number of opportunities exist for the ICT sector to develop and to grow at a faster pace, whether in telecom services or in software development. The liberalisation/regulation of telecom and recognizing software development as an industry should give a boost to ICT as a sector. Increasing the pace of implementation of the e-Government project should provide an incentive for the software industry to grow and increase the quality of its products. It should also turn the high potential demand for software into an active driving force for the IT industry. With the smartphone and tablet exponential growth, software development should move towards programming such tools in addition to building portals, websites, Arabic language search engines and digital libraries.

Government should also provide incentives for ICT firms to invest and expand their activities in the country while attracting foreign companies to establish branches in Syria, transferring knowledge and expertise at the national level. Digital Arabic content development provides a good opportunity for software and service companies to grow or partner with other companies in order to implement large projects.

C. Contribution of ICT sector in the national economy

The contribution of the ICT sector to the national economy is estimated at 4.25% since the telecom sector in Syria (which constitutes about 90% of the ICT sector) produced about 2.1 billion USD in 2012, while the GDP is estimated at about 54 billion USD in 2012, shrinking by more than 20% from 2011, when it was around 64 billion USD⁸¹.

D. R&D and investments in the ICT sector

Arabic Language Processing

See Section 8C.

High Performance Computing

The Ministry of Higher Education, Syrian universities and various institutes carrying out research (such as HIAST and HIBA) participated in the EUMedConnect project⁸², allowing them to benefit from this Euro-Mediterranean network for research with available throughput of 34 Mbps, bypassing local ISPs and avoiding traffic problems. This network facilitates collaboration in R&D with other Arab countries as well as European countries. This is highly desirable and even essential in programmes/projects such as Arabic Language Processing (ALP), High Performance Computing (HPC), Grid Technologies (EUMedGrid project⁸³) and Nano Technology. HIAST remains most active in R&D in the ICT field in Syria, carrying out projects internally (involving graduate students) and externally in collaboration with Arab and European research institutions in the areas of ALP and HPC⁸⁴.

A HPC centre was established at HIAST in order to increase knowledge of various high-performance computing technologies, provide a multi-technology platform to assist in the implementation of engineering

⁸⁰ Aleppo Chamber of Industry, *Software Industry Committee*, sic-syria.com

⁸¹ Index Mundi, indexmundi.com/syria/economy_profile.html

⁸² EUMedConnect Network, eumedconnect.net

⁸³ EUMedGrid Support, eumedgrid.org

⁸⁴ hiast.edu.sy/node/152 and hiast.edu.sy/hpc

and research applications requiring high computational power, and provide training on high-performance computing technologies. A Syrian HPC Initiative is led by HIAST aiming at establishing a National Grid Network linking all university and research centres, establishing HPC graduate studies, building a HIAST cloud to make good use of the internal resources in various computing tasks. As part of the HPC Initiative, HIAST organized an advanced workshop on “HPC Technologies for Scientific Research”, in Damascus, 11-12 July 2012⁸⁵.

Software Industry Development Project

This project started in 2009 and finalized end of 2012 aims at building the capacity of Syrian software companies in improving and modernizing their working mechanisms through a process improvement approach as defined in the Capability Maturity Model Integration (CMMI)⁸⁶ leading to better and competitive products. This should allow these companies to export software products and services, and to become reliable partners for cooperation in international projects.

The project partners were MoCT, SCS, ITIDA-SECC (Egyptian Information Technology Industry Development Agency - Software Engineering Competence Centre) and software development companies in Syria. ITIDA-SECC is internationally authorized by the Carnegie Mellon Software Engineering Institute (SEI) to grant CMMI accreditation certificates.

The project agreement focused on qualifying eight local companies according to CMMI levels in an initial stage ending in 2012. Although all eight companies went through the process, three of them obtained the third CMMI level and one obtained the second CMMI level and the remaining four obtained the first CMMI level. The cost was 500,000 USD, paid by the MoCT (16%), SCS (45%) and the beneficiary companies (39%)⁸⁷.

The project should continue with SCS in charge of implementation. However, due to the crisis, software companies have reduced their activities and their interest in CMMI certification has waned.

Investments in the ICT sector

See Section 6D for local investments and 10A for foreign investments.

ICT research facilities	Exist
ICT industrial clusters	Do not exist, are not planned
ICT incubators	Exist

⁸⁵ hiast.edu.sy/node/3309

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