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NATIONAL PROFILE OF THE INFORMATION SOCIETY IN YEMEN, 2013

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**NATIONAL PROFILE OF THE INFORMATION SOCIETY
IN YEMEN**

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Introduction

Yemen's economy faced a series of challenges over the last few years the most important are the continued depletion of oil resources which the economy depends upon, the scarcity of water resources, the weakness of basic services, and the increase in the population growth rate.

During 2011 Yemen witnessed a prolonged popular uprising in its different provinces demanding changes of the ruling regime. This was accompanied with an aggravation in the economic and social conditions leading to greater deterioration of the political scene, accompanied by the loss of control over security and the partial damage of infrastructure. Most of the projects pertaining to the investment program in the state's general budget and many loans and aids provided by various donors were all suspended.

New ICT and media tools have all contributed to the change witnessed in Yemen. Yemen was able to achieve a number of developmental steps in the ICT sector including policies, strategies, and plans.

I. THE ROLE OF THE GOVERNMENT AND ALL STAKEHOLDERS

A. NATIONAL INFORMATION SOCIETY POLICIES AND E-STRATEGIES

Yemen's efforts within this domain can be summarized in the following points:

- The approbation of **Law No. 13 for year 2012 concerning the right to information access** which aims at securing and facilitating the citizen's right to access information, the enhancement of the elements of transparency and widening the opportunity for a conscious and responsible participation, in addition to enabling the society to develop its abilities to benefit from information. This law is one of the most important policies adapted by the legislative authority (the House of Representatives) making Yemen the second Arab state to approbate a general policy pertaining to the right to information access. Although this law is an advanced step on the path towards an information society, implementing this law is still hindered by several obstacles and challenges resulting from the immaturity and incompleteness of the institutional frameworks concerned with organizing information and offering services related to this domain to the various sectors. This necessitates the acceleration of the development of the policies and legislations which prepare the administrative and institutional environment in this domain and to activate the relevant services in all the sectors to meet the demand for information in them.
- The General Program of National Conciliation Government included a number of policies in the ICT sector viewing this sector as a vital one in Yemen's infrastructure and economy. In this respect the government program is working at achieving the following goals in the ICT sector:
 - The expansion of the proliferation range of fixed phone services extending connectivity of this service to rural, distant, and borderline regions, in addition to the completion of the developmental projects for the fixed line network the most important of which is the transfer to the Next Generation Networks (NGN) which support broadband networks and multimedia including audio, visual, and internet services;
 - The expansion of the proliferation of internet access services through broadband technology (both wired and wireless) quantitatively and qualitatively in the cities and rural regions offering high speed services;
 - The development of the national transmission network through the expansion of the fiber optics network and the development of a high speed broadband network, enhancing the establishment's ability to offer its services the ICT operators and providers. Also begin the fiber optics to the x (FTTx) project extending it to houses and government agencies and offering more options than the other broadband services;
 - The construction and development of the Yemeni ICT infrastructure necessary for offering e-government services;
 - The expansion and variation of the international backbone for Yemen through marine fiber optic cables, including the expansion of the capacities available to Yemen in the "FLAG Falcon" submarine cable. This cable currently has a capacity of 128 STM-1 circuits. Submarine connectivity points will also be added through Bab Al-Mandeb in addition to the completion of the expansion of the Submarine Line Terminal Equipment (SLTE) Eden-Djibouti;
 - Issuing a new license for the development and implementation of a fourth generation (4G) mobile phone network;

- The expansion of over-land international connectivity points with both the Kingdom of Saudi Arabia and the Sultanate of Oman;
 - The development and implementation of an international terminal for satellite telecommunications services (VAST);
 - Support for the internet in schools initiative, the development of education using ICT technology, and support for efforts in computer literacy;
 - The revision of the ICT law and the completion of its approbation to restructure the Ministry of Telecommunications and Information Technology so that it would take over sovereign issues relating to the Yemeni Republic's ICT sector;
 - The foundation of a commission for the organization of the ICT sector which draws and implements the state's policies concerning this sector in a competitive environment between all operators using market mechanisms to instigate competition, proliferating services at suitable prices, the administration of the frequency spectrum, providing licenses for the development, implementation, and provision;
 - Restructuring the Public Corporation for Wired and Wireless Telecommunications (Yemen Telecom) so that it would operate on commercial principles whilst the state retains the entirety of its capital.
- The Interim Stability and Development Program (2012-2014) adapted by the Yemeni government and presented to the Yemen Donor Conference in 2012 includes a number of policies for the development of the ICT sector many of which have already been mentioned under the previous point concerning General Program of National Conciliation Government, what remains to be added here is the plan for a comprehensive development of the postal and financial services and upgrading the postal law;
 - The document of the National Information Policy approbated in March 2011 is an important national initiative adopted by the National Information Center with extensive participation from both the governmental and the private sector. It relates to the national information policies and strategies. The national information policy's purpose¹ is: "the realization of informational development in a manner that would enable the Yemeni society to go through modern development and advancement towards an information society, and the establishment of a national information framework that would ensure the production and the provision of information in a manner that would meet all the needs of the various domains of social activity, and which would also support the digital content industry; the introduction of the of electronic applications in the various social actions, transactions, and services; the foundation of an advanced institutional system within the informational domain which would be capable of managing informational advancement through modern and scientific methods and approaches; and the realization of an active role for information and information technology in the support of national reformations and the consolidation of good government". The documents of the policies and the strategies were completed in cooperation with ESCWA;
 - The Ministry of Telecommunications and Information Technology adopted "The Strategic Vision for Telecommunication and Information Technology in the Support of the Development Plan in Yemen 2001-2005 Document" which was approved by the government as a part of "The National Strategy for the Support of Integrated Development Plans in Yemen (2001-2025)". This strategy

¹ The extended consultative meeting concerning the national information policy documents, National Information Center, Sana'a, 17th January 2011.

aims to turn Yemen into a producing and consuming country for the applications of telecommunication and information technologies. This strategy also aims to provide and facilitate telecommunication services and information technology, improving the quality and reducing the cost of these services. In 2002, the Ministry of Telecommunication and Information Technology also announced the initiative of the National Program for Information Technology Initiative (E-Government), which has the purpose of the development of the infrastructure of information and telecommunication technology;

- As for the policies particular to the foundation and organization of the institutional frameworks in the ICT sector and its services the most important of those are:
 - The establishment of the **National Information Center** (under Republican Mandate 155 for year 1995) as an institution which bears the task of the establishment, recommendation, and the observation of the development policies in the informational domain (applications – informational content);
 - The establishment of the **Ministry of Telecommunication and Information Technology** in the government formed in 2003, whose fields of specialization include the technical aspect of the information technology domain in addition to responsibility for the domain of telecommunication policies and the aspect of their organization;
 - Since issuing Law No. 28 for year 1995 relating to statistics, the Central Statistics Organization -which is a subsidiary of the Ministry of Planning and International Cooperation - directs the policy of statistical work in Yemen;
 - The foundation of **the Office of the Commissioner-General of the Information** under law No. 13 for year 2012, the office has the task of the development and organization for programs and policies pertaining to the individual exercising his right to information access.

Generally speaking, it can be said that the policies developed and approved are insufficient to achieve the desired transformation to the information society in Yemen especially that the development and implementation of these policies is very slow due to the economic circumstances which Yemen suffers from placing other priorities before the government. It is therefore necessary to develop ICT related policies and development projects on a larger scale with more coordination and integration between the relevant parties. The best course of action is to adapt a national framework plan on the highest level which would sponsor and support the various sectoral initiatives determining the responsibilities and duties of each party in order to reach this goal of an information society.

Table 1- National Policies and Strategies in the Domain of Informatics, Information Technology and Telecommunications					
Policy/Strategy	Availability	Date of Approbation	Responsible Governmental Body	Content	Level of Execution
National Information Policy	Yes	2011	National Information Center (NIC)	Content + Service	Good
Strategic Vision for Telecommunication and Information Technology	Yes	2002	Ministry of Telecommunication and Information Technology (MTIT)	Telecommunications + Infrastructure	Good
Right to Information Access	Yes	2012	Office of the Commissioner-	Services	Limited

			General of the Information		
Strategic Statistics Plan	Yes	2007	Central Statistical Organization (CSO)	Statistics	Good

B. PUBLIC/PRIVATE PARTNERSHIP (PPP) OR MULTI-SECTOR PARTNERSHIP (MSP)

The private sector in Yemen has been a primary partner in offering mobile phone services covering large inhabited regions since the year 2000. The private sector also operates telecommunication services and internet cafes whose number increased from 16,234 at the end of the year 2009 to 17,473 in the year 2012.

The public/private partnership dominantly takes the form of short term contractual partnership with companies working in the software/hardware domain, it does not rise to a partnership in which the private sector takes an active role in the ICT research and development issue, a clearer framework of the partnership between both sectors is needed.

C. ROLE OF NON GOVERNMENTAL ORGANIZATIONS

The presence of representatives of civil society organizations in the membership of a number of the high national assemblies and committees is one of the measures used by the government to allow civil society organizations to participate the various development activities (economic, political, and social).

Despite this, the NGOs contribution to the ICT sector's developments remains limited, the number of active organizations active in this domain does not exceed ten organizations so far, their activities remain mostly confined to ICT training and literacy activities.

The weak and limited nature of ICT related NGO activities, other civil society organizations which don't work in the ICT sectors had a more direct and remarkable role in the formulation of general information policies such as law No. 13 in the year 2012 pertaining to the right to information access.

II. ICT INFRASTRUCTURE

A. MARKET STRUCTURE AND REGULATORY LANDSCAPE

Yemen did not yet organize a commission for the regulation of the telecommunication sector, therefore the Ministry of Telecommunication and Information Technology is the sector's regulator although the ministry, since its foundation more than eight years ago, had declared its intention to restructure the Telecommunications Corporation and to develop a regulatory commission for the sector

So far, the Public Telecommunications Corporation which is owned by the Ministry of Telecommunication and Information Technology is still the sole provider for fixed-line telephone services. Internet services are also still confined to two providers one of which is the Telecommunications Corporation and the other being Yemen International Telecommunications Company (TeleYemen), both providers are subordinates to the Ministry of Telecommunication and Information Technology.

The Mobile phone market has been freed, the private sector has been a primary partner in it for a long time, its role became even greater after three permits were issued to operate mobile phone networks to three private sector corporations in 2001, these are: Sabafon², MTN³, and HiTS-UNITEL (Y)⁴ which has been active as a third provider for a GSM system since November 2007. A fourth company, Yemen Mobile⁵ (which is a corporation that was established under the auspices of Public Telecommunications Corporation, has been active since 2004 as a mobile network provider using the CMDA technology.

Table (2): The Organization of Telecommunication and Internet Services in the Republic of Yemen

Mobile services	Competitive
Fixed-line services	Monopoly
Internet services	Duopoly

B. PENETRATION OF ICT SERVICES

Yemen has been witnessing a considerable development in the number of mobile phone clients which rose from 8,312,773 at the end of 2009 to 11,085,344 in 2010, then to 12,349,860 in 2011 before reaching 13,893,265 in 2012⁶. Mobile phone density increased from 36.96 client per 100 individuals within the year 2009 respectively to 47.88 at the end of the year 2010, then to 51.82 in the year 2011, then to 56.65 per 100 individuals at the end of 2012⁷.

This great increase in mobile phone clients is the result of the competition between the four providers, and their expansion so as to cover all the provinces of the republic, in addition to the variety of the services provided and the competitive service prices. Formal statistics of 2012 point out that MTN has taken over 35.81% of the total number of mobile phone clients in Yemen. It is followed by Yemen Mobile which has

² See website: <http://www.sabafon.com>

³ See website: <http://www.mtn.com.ye>

⁴ See website: <http://www.y-gsm.com>

⁵ See website: <http://www.yemenmobile.com.ye>

⁶ The Annual Book of Statistics for year 2012, The Central Statistics Organization, April, 2013

⁷ The Annual Book of Statistics for year 2011, Ibid

29.51% of the clients, followed by Sabafon which has 28.79%. HiTS-UNITEL (Y) came last with 5.90% of the total number of mobile phone clients.

As for the fixed line network⁸, the capacity of phone stations reached as much as 1336824, 1353839, 1360373, and 1364582 in the years 2009, 2010, 2011 and 2012 respectively. Whilst phone density witnessed a limited growth of 4.43, 4.52, 4.51 and 4.50 phone lines per 100 individuals within the same years.

Index/ Years	2009	2010	2011	2012
Population ¹⁰	22,492,035	23,153,982	23,832,569	24,526,703
Capacities (Lines)	1,336,824	1,353,839	1,360,373	1,364,582
Phone Density (Phone Lines per 100 individuals)	4.43	4.52	4.51	4.50
Free Phone Lines (Lines)	341,343	307,576	285,061	260,775
Number of Active Phone Lines (Lines)	996,981	1,046,263	1,075,312	1,103,807
Increase in Active Phone Lines (Lines)	36,393	49,282	29,049	28,495
Number of Main Operators	49	48	49	49
Number of Subsidiary Operators	226	236	237	238
Total Number of Mobile Phone Clients	8,312,773	11,085,344	12,349,860	13,893,265
Mobile Phone Clients per 100 individuals	36.96	47.88	51.82	56.65

In 1996, internet services in Yemen were launched with a sole provider, Yemen International Telecommunications Company (TeleYemen). In April 2002, Public Telecommunications Corporation began to operate as a second provider for internet services. From that time on, this service has been exclusive to the Public Telecommunications Corporation and to Yemen International Telecommunications Company which is owned by the Public Telecommunications Corporation although the government did announce that it prepared new encouraging regulations and conditions for granting licenses to internet providers.

The number of internet subscribers has reached 455,429 subscribers at the end of 2009. In 2010, their number increased to 581,822 subscribers, then it increased to 810,750 in 2011 before reaching 857,970 in 2012. Statistics point out that the number of internet users increased so as to reach 2,260,660 at the end of 2009, 4,072,264 in 2010 before reaching 4,831,603 in 2011.

⁸ The Annual Book of Statistics for year 2011.

⁹ The Annual Book of Statistics for year 2012, Ibid. The Annual Statistical Review, 2012, The Public Telecommunications Corporation.

¹⁰ The Population Projections for the Yemeni Republic during (2005-2025), National Population Council and the Central Statistics Organization, June 2010.

Table 4: Internet Indices in the Republic of Yemen within (2009-2012) ¹¹				
Index/ Years	2009	2010	2011	2012
Total Number of Internet Subscribers	455,429	581,822	810,750	857,970
Number of Internet Subscribers per 100 Individuals	2.02	2.51	3.40	3.50
Total Number of Internet Users	2,260,660	4,072,264	4,831,603	--
Number of Internet Users Per 100 Individuals	10.05	17.59	20.27	--
--No Data Available				

C. INITIATIVES/PROJECTS FOR ICT INFRASTRUCTURE AND DEVELOPMENT OF NEW SERVICES

The Yemeni government adapted a number of initiatives and projects which support ICT infrastructure, those initiatives and projects have already been presented in section 1A when discussing the General Program of National Conciliation.

D. ICT CONNECTIVITY

As shown clearly in table 3, government measures over the past few years contributed in the expansion and development of ICT services as all the statistics relating to fixed line and mobile phone clients indicate. What can be added is that the number of public phone centers have increased from 15,245 in 2009 to 15,768 in 2010, then to 16,075 in 2011 before reaching 16,374 in 2012. The number of internet cafes increased from 989 in 2009 to 1004, 1034, and 1099 in the years 2010, 2011, and 2012 respectively. The segments of the users of ICT technologies and tools expanded to include people of all levels in the public, private, and educational sectors.

E. INTERNET INFRASTRUCTURE

Since 1995, Yemen is connected to the external world through fiber optics and via a marine cable extending through a distance of 226 Km to Djibouti then to a number of Arab, south east Asian, and European countries. At the end of December 2006 the Ministry of Telecommunications announced the launch of the wireless internet service (Wi-Fi) through hot points in Sana'a and Aden as a first phase. The Ministry of Telecommunication and Information Technology has several projects¹² at the time being the most important of which are:

- The IP/MPLS network project aiming at upgrading the national transmission network and which will form the backbone connecting all the networks and services provided by the access network such as WIMAX, VPN, FTTx, XDSL, and VoIP. The implementation and operation of 6 core routers has taken place in the first stage with a transmission capacity of 10 G, work is underway on the implementation and operation of 45 Edge Routers.
- The Next Generation Network (NGN) project.

¹¹ Websites for the National Information Center, the Ministry of Telecommunications and Information Technology, and the Central Statistics Organization, 2013.

¹² The documents of the consultative meeting on e-government, the secretariat ministry of telecommunication and information technology, Sana'a, 19th December 2010.

- The WIMAX network project which aims at offering broadband wireless internet services to connect business sector networks with government institutions. In April 2013, the Public Telecommunications Corporation announced the completion of the trial operation of the WIMAX wireless internet in its first stage which includes the capital, Sana'a and Aden¹³.
- The Public Telecommunications Corporation represented by TeleYemen signed a partnership agreement with OmanTel concerning marine cables to expand and develop transmission capacities for telecommunication between the two countries.

Yemen Mobile¹⁴ offers 3G services which are, at the time being, confined to Sana'a and Aden in addition to the oil fields while TeleYemen¹⁵ offers a number of telecommunication services such as direct international phone, international calls cards, internet, hired channels, direct international telecommunication via satellite (Inmarsat), the BGAN and the Vsat services.

¹³ See: <http://www.sabanews.net/ar/news307517.htm>

¹⁴ See: <http://www.yemenmobile.com.ye>

¹⁵ See: <http://www.teleyemen.com.ye/ar/About/briefhistory.aspx>

III. ACCESSIBILITY TO INFORMATION AND KNOWLEDGE

A. PUBLIC DOMAIN INFORMATION

Locally hosted sites within the Yemeni internet gateway (Yemen Net) reached 796 sites at the end of 2012. There is also a considerable increase in the number of Yemeni sites hosted by foreign hosts. These sites vary between commercial, governmental, educational, and organizational sites.

Many of these bodies publish reports concerning government and institution performances, these activities form one of the aspects of publicizing information. By law No. 13 for year 2012 discussed in section 1A the various authorities of Yemen are bound by law to publish and provide information about their various activities.

In addition to this, the National Information Center (NIC) provides the researchers, the students, and the investors with the information they may need, this information is collected from a variety of sources including government sector institutions. These services are free. In 2012 the NIC launched the digital library services in Yemen.

Yemen has attained the second place in the Freedom of Information Index in the Arab states according to the fifth annual report published by the Amman Center for Human Rights Studies¹⁶. The report indicates that the National Information Center which specializes in the execution of the state policy in the information domain, allows for requests for information through its website, and offers that information to those who demanded it via E-Mail, the center receives hundreds of thousands of requests each year¹⁷.

B. ACCESS TO INFORMATION AND PUBLIC INFORMATION

Citizens have access to the information available by the official websites of the government agencies, law No. 13 for year 2012 considers this access one of the rights of Yemeni citizenship. Some of the defects of this law, however, are that it does not commit those agencies to publish and provide information on their website, it also has no clauses to provide access for people with special needs.

Yemeni bodies which have websites of their own increased considerably, but only few of them distinguish themselves in size and quality. The National Information Center website <http://www.yemen-nic.info> excels in this aspect.

Under cabinet decisions 332 and 412 for year 2008. The secretariat of the prime minister's office began the construction of a website for the Yemeni government (<http://www.yemen.gov.ye>) describing the tasks, activities, and services of the government and its various authorities on the internet, aiming at the affirmation of transparency in government work and offering information to the general public.

C. MULTI-PURPOSE COMMUNITY PUBLIC ACCESS POINTS

The total number of telecommunication centers and internet cafes mounted to 17,473 at the end of 2012, there are 16,374 telecommunication centers and 1099 internet cafes. One of the most important services offered in these centers and cafes is the internet service accessibility with a price that does not exceed 1 Yemeni Rial (YER) per minute (roughly \$0.05 per minute). Very few of these centers are in the Yemeni rural areas, so there is very slight chance for the citizens in these areas to access the internet.

¹⁶ See: http://www.achrs.org/images/stories/news/pdf/access_information.pdf.

¹⁷ See: <http://www.sabanews.net/ar/news213271.htm>.

Table 5: Telecommunications Centers in the Republic of Yemen During (2009-2012) ¹⁸				
Index/ Years	2009	2010	2011	2012
Telecommunications Centers	15,245	15,768	16,075	16,374
Internet Cafes	989	1,004	1,034	1,099
Total	16,234	16,772	17,109	17,473

At the time being, the National Information Center offers information services to the public in addition to operating four coordination offices so as to make its services accessible to the public within the provinces. In coordination with the center, a number of main Yemeni provinces began forming information centers in the Provincial Quarters (the first phase included 4 provinces). This is an encouraging beginning which may pave the way for the formation of community access centers.

¹⁸ Websites for the National Information Center, the Ministry of Telecommunications and Information Technology, and the Central Statistics Organization, 2013.

IV. ICT CAPACITY BUILDING

A. ICT IN EDUCATION AND TRAINING

Yemen approbated a national strategy for promoting literacy and teaching the older citizens since 1998. Literacy centers in Yemen increased in the past few years until their number reached 3369 in 2010/2011¹⁹. Statistics indicate²⁰ that basic literacy and skills program witnessed a growth in the number of people benefitting from them whose number reached 41063 between 2004/2005-2009/2010 with an average annual growth rate of 5.4%. Despite the efforts to promote literacy and to teach the older citizens basic illiteracy is still high, the national strategy for promoting basic literacy and teaching the older citizens approbated in 1998 is relatively outdated and therefore there is no indication for the use of ICT tools in its programs.

In the domains of public education, technical education, and higher education Yemen has approbated several strategies whose totality has the aim of incorporating information technology in education in its various types and on its different levels. Yemen was included in the World Bank's The Education for All – Fast Track Initiative in 2004²¹.

The internet service has been introduced to 60% of the Yemeni schools, there are 605 schools equipped with PCs. Computer studies has been introduced to all secondary level grades. The evaluation of the curriculum of this subject is underway so as to be circulated within the various schools of the provinces. The Ministry of Education equipped more than 500 schools in all the provinces with complete computer labs, it also spread 355 PCs on a number of schools as part of a plan which aims at the distribution of more than 90,000 PCs on the secondary level schools²². Statistics indicate that 92.30% of the private schools in Yemen teach computer studies at the various educational levels beginning from the first grade. 732 teachers have been trained in the fields of computer use.

The Education Development Project is being implemented in the Ministry of Education as a the third phase of the Fast Track Program. 105 schools and 40 educational offices in the various provinces benefited from the PCs, printers and faxes distributed under this phase of the program²³.

The General Education Improvement Program (GEIP) which is a German-Yemeni development program is being implemented to improve the education sector in Yemen. In 2013 the Ministry of Education launched a program to teach English over the internet using Skype software, this is the first program of its kind for learning English in the Arab world.

As for community colleges, there are 7 public ones²⁴. Within the school year 2010/2011, 1768 students studied in the various majors relating to information technology and telecommunications²⁵.

As for higher education, there are 29 universities which are active in Yemen in the academic year 2010/2011, 9 of these are public and 20 are private. A number of faculties within these universities teach a

¹⁹ Annual Book of Statistics, 2011.

²⁰ Education Indices in the Yemeni Republic 2009-2010, the Supreme Council for Education Planning, August, 2011, p. 23.

²¹ See: <http://www.edpau.org>

²² The Ministry of Education Website: <http://www.moeyemen.net>.

²³ See: <http://www.edpau.org>

²⁴ Learning Indices in the Republic of Yemen for academic year 2008-2009, the Supreme Council for Education Planning, August 2010, p. 53.

²⁵ The Annual Book of Statistics, 2011

number of information technology and telecommunications related majors, a number of private universities provide their students with special halls for surfing the internet for free, such initiatives are rare in public universities.

The Information Technology Center was formed in 2007 as a part of the formation of an information technology institution that would link all the Universities in Yemen via a unified information network.

The Ministry of Higher Education and Scientific Research has approved the distance learning service in a number of Yemeni universities. Sana'a University, Aden University, The University of Science and Technology, the University of Modern Sciences and several other universities provide this service.

B. TRAINING PROGRAMS FOR CAPACITY BUILDING IN THE USE OF ICT

The Ministry of Telecommunication and Information Technology has formed "The Innovators Development Center" which works on the crystallization of innovative ideas in the fields of telecommunications and information technology and transforming them to productive projects and an information technology industry. The General Telecommunications Institute organizes training programs which include computer applications, International Computer Driving License (ICDL) programs.

Through The Institute for Informatics Science, The National Information Center offers annual training programs in the fields of information and their applications.

The National Institute of Administrative Science, which is a subsidiary of the Ministry of Civil Service, contributes through its various branches in the provinces to the training of the staff working in government institutions in the fields of information technology and telecommunications. Development centers organized by several universities (such as the University of Sana'a and the University of Aden) and by the private sector all contribute to the human resources development efforts through the training centers specialized in information technology.

In the year 2011, the Central Organization for Control and Auditing (COCA) was equipped with an advanced technical training center with all the equipment and furniture necessary²⁶.

²⁶ See: <http://www.coca.gov.ye>

V. BUILDING CONFIDENCE AND SECURITY IN THE USE OF ICTS

A. USE OF ELECTRONIC TRANSACTIONS AND DOCUMENTS

Despite of Yemeni institutions' interest in introducing LANs to the various sectors (and these were as many as 270 networks by the middle of 2012), the operational networks for the purpose of electronic transactions and activities and the electronic exchange accompanying these is limited for the time being. What can be pointed out among these is the following:

- Using electronic correspondence in running the daily transactions in a limited number of institutions, among these is the National Information Center and the Social Fund for the Development (SFD);
- The Ministry of Finance launched the Public Finance Modernization Project (PFMP) which was sponsored by the World Bank, through this system the ministry is working on:
 - o The completion of the propagation of the Accounting Financial Management Information System (AFMIS) to five more locations making the system fully operational in them in 2011 making the total number of locations in which the system is operational 9 including 7 ministries and two government agencies;
 - o The extension of the Loans and Grants Management Information System (LGMIS) to 21 units;
 - o The completion of 60% of the task of simplification the procedures of the Ministry of Finance.
- The Ministry of Industry receives transactions relating to foreign bodies through the internet.
- Network connection for the Civil Registry Authority with its branches in the provinces and the completion of the automatic issuing system in all the provinces, and the preparation of 48 mobile stations for the purpose of automatic issuing service. Also the formation of a mobile electronic archive for all the documents since the establishment of the Civil Record.

Yet still, there are no electronic transactions in the real sense, and there is no organization for the authentication of electronic transactions.

B. ONLINE AND NETWORK SECURITY

With the exception of the Regulation of Electronic Payment, Financial and Bank Transactions issued under law No. 40 for the year 2006 and some texts in law No. 13 for the year 2012, there are no integrated and applied regulations available in the domain of electronic transactions and network security, nor are there any laws which guarantee their security.

The Ministry of Interior announced its intention to present an initiative for the approbation of a law to counter cyber crimes, but this initiative did not emerge yet.

NIC has recently announced its adaptation of an integrated proposal for information security in Yemen including CERT.

C. PRIVACY AND DATA PROTECTION

Law No. 13 for the year 2012 pertaining to the right of information access included a number of texts about data protection and privacy although it does not discuss internet privacy and its protection. Otherwise, there are very limited measures concerning information security.

D. COUNTERING MISUSE OF ICTS

As already mentioned, there are no laws which regulate the use of information technology and to counter its misuse, the Ministry of the Interior announced an initiative relating to its efforts to prepare a bill for combating cyber crimes, this initiative is still at its first phases, and in 2009 it established a general administration for cyber crimes investigation.

VI. ENABLING ENVIRONMENT

B. LEGAL AND REGULATORY ENVIRONMENT

The legal and regulatory environment in Yemen is currently insufficient for the activation of this sector's role.

The Law of Telecommunications and Information Technology Bill which was approved by the government under resolution 393 for year 2008 and transferring it to the parliament in preparation for its approval. The parliament in its turn transferred the bill to the specialized committee since 2009 and it has not been approved to date.

Law No. 13 for the year 2012 concerning the right access information has already been discussed.

NIC has also prepared a bill for the law of information administration which was approved by the government and transferred to the parliament under resolution 431 for the year 2008, the parliament in its turn transferred the bill to the specialized committee since 2009 and it has not been approved to date.

At the current situation, the applicable laws in the field of information and telecommunications include:

- The Telecommunications Law issued in 1991, some of its sections were modified in 1996;
- Republican Mandate 155 for year 1995 for the formation and organization of the National Information Center, and the later amendments to this mandate;
- The Statistics Law issued in 1995;
- The Documents Law issued in 2002.

Domain of the Law	Level of Availability
e-transactions law available	Law No. 40 for year 2006 pertaining to payment systems and electronic financial and banking processes, it mostly concentrates on banking processes, there is no integrated e-transactions law
e-signature law available	No
Management of PKI available	No

As for the international conventions relating to the protection of intellectual property:

In 2002, Yemen attained and observer status in the World Trade Organization (WTO), and it became a member in World Intellectual Property Organization (WIPO). In November 2006, Yemen signed in to join The Paris Convention for the Protection of Industrial Property, and in April 2008, it signed to join The Berne Convention for the Protection of Literary and Artistic Work.

In July 2012 law No. 15 for year 2012 was issued pertaining to the copyright protection law to replace law No. 19 for the year 1994 which was into effect in the previous period of time. The legislative reforms necessary for joining the WTO and which conform to the Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPS) are currently underway in Yemen, therefore the following laws were placed into effects recently:

- Law No. 40 for the year 2006 concerning the Electronic Payment, Monetary and Banking Transactions;
- Law No. 23 for the year 2010 concerning Trademarks and Geographical Indications;
- Law No. 28 for the year 2010 concerning Industrial Designs;
- Law No. 2 for the year 2011 concerning patents, utility models, design of integrated circuits, and undisclosed information;
- Law No. 15 for year 2012 concerning Copyright Protection.

Treaty/ Convention	World Trade Organization	Paris Convention for the Protection of Industrial Property	Patent Cooperation Treaty	WIPO Copyright Treaty	Madrid Agreement	Hague Agreement	Patent Law Treaty	Agreement on Trade Related Aspects of Intellectual Property Rights)
Current Status	Observer	Member	-	-	-	-	-	-
Date	2002	2007	-	-	-	-	-	-

B. DOMAIN NAME MANAGEMENT

Yemen International Telecommunications Company (TeleYemen) manages the top-level domain names (.ye), but until now, there is no legal authority to manage and organize domain names in Yemen.

Name of ccTLD registrar	الشركة اليمنية للاتصالات الدولية (تليمن) Teleyemen					
URL of registrar	http://www.teleyemen.com.ye/					
Total Number of ccTLD registered in the country for the years	Year	2008	2009	2010	2011	2012
	Total Number of ccTLD registered	No Data	No Data	85	50	84

C. STANDARDIZATION IN ICT

Standardization is a task that did not receive its due attention from the parties responsible, only the fees for radio frequencies and devices and the national plan for frequency allocation were prepared by the Ministry of Telecommunication and Information Technology.

D. ICT INVESTMENTS AND GOVERNMENT-SUPPORTED FACILITATION MEASURES

The already mentioned laws and legislations indicate a direction towards improving the legal environment organizing the fields of informatics and telecommunication in Yemen, yet further measures supporting the information society are very limited or still at their beginning, needing further efforts from all the partners to find a common vision that would enhance this direction towards building the information society.

VII. ICT APPLICATIONS

A. E-GOVERNMENT

Most Yemeni establishments, in both the public and the private sectors, began to use the automation systems and information networks, a number of these institutions succeeded in this aspect of development work, such as the Biometric fingerprint system in the Ministry of Civil Service, the accounting and financial transactions system in the Ministry of Finance, and the financial analysis system, the loan and aids grants management system, the foreign exchange system and the other systems which transferred the Yemeni central bank's transactions to automatic environments.

To list some of the institutions and ministries which have introduced automation systems to their spheres of work: the National Information Center, the Central Organization for Control and Auditing, the Central Organization for Statistics, the Ministry of Planning and International Cooperation, Yemen Customs, the Ministry of Foreign Affairs, the Ministry of the Interior, the Ministry of Technical Education & Vocational Training, the Ministry of Education, the Supreme Judicial Council, the Ministry of Local Administration, the Ministry of local administration, the Ministry of Tourism, the Civil Registry Authority which linked its branches in the provinces through a computer network and constructed an automatic mobile archive. A network connection for land, marine, and air borders has been connected via a network for the Immigration and Passport Authority.

Although many institutions are developing the systems they are using and are heading towards purchasing ones which are as advanced as possible and in a competitive environment, the absence of standards through which the introduction and use of these systems takes place within institutions results in cases of incompatibility between the systems and applications used, and the lack of integration between these institution means there is little possibility for using these systems together for a more integrated e-service.

Since announcement of the National Information Technology Program Initiative (E-government) in 2003, and the opening of government's website, this effort stumbled due to the lack of coordination, the absence of role definitions within the various government institutions, and the absence of an environment that would incite these transformations. The great majority of the institutions are still below the desired automation level in their systems and applications. Most of the information systems available in these institutions lack the element of compatibility which reflects negatively on the possibility of network connection between them.

Nevertheless, many commissions, ministries, and authorities developed their own websites and published data and information relating to their activities through these websites.

Some government institutions offered extra forms which the citizens are to fill and transmit in order to attain a certain service, such as the form that is to be filled to attain certain information from the National Information Center through the center's website, these request are replied to electronically as well. There is also the form used in the Supreme National Authority for Combating Corruption which is dedicated to the complaints forwarded to the authority, and the forms relating to the employment procedures offered in the Ministry of Public Service, while Yemen Post offers an e-payment service for phone and electricity bills through a website.

All in all, electronic services offered to the citizens are still at their beginnings, there are no complete transactions or procedures which can be performed electronically, most government institutions offer information about the services offered by them and the forms that must be filled in order to attain this service.

Table 9: The Evaluation of the Yemeni Government's Portal Website		
Field	Elements	Evaluation
Information	General Information	Yes
	Laws	Limited
	Guidelines	Limited
Services	Interactive Services	No
	Downloadable Forms	Limited
	Static Information	Yes
	E-Payment	Limited
	User Registration	Yes
	Bilingual	No (Arabic only)
Citizen Participation	Polls	Limited
	Blogs	No
Social Media	Facebook	No
	Twitter	No
	LinkIn	No
	YouTube	No
	Other	No
Additional Services	RSS Channels	Yes
	Web Statistics	Yes
	Search	Yes
	Multilingual	No
Mobile version	Support for smartphone/tablet	No
	Dedicated App (iOS or Android based)	No

Based on the United Nations e-government survey for the year 2012 Yemen took the 167th position among 193 nations included in that report. Cabinet decision 201 for the year 2012 was issued recently pertaining to the formation of the supervisory committee over the government portal and e-government defining its mission and main objectives after this decision stumbled several times previously.

Table 10: Parties Responsible in the Domain of Informatics, Information Technology, and Telecommunications		
Activity's Domain	Governmental Body Responsible	General Administration's Computerization with the participation of all bodies
Content and Services	National Information Center (NIC)	
Government Gateway	Cabinet General Secretariat (CGS)	
Information Technology and Telecommunications	Ministry of Telecommunication and Information Technology (MTIT)	

B. E-BUSINESS

There are e-banking services offered by most of the Yemeni banks with limited use of e-payment. Other than this, e-business portals and e-commerce are unavailable, this is due to the newness and immaturity of electronic applications in Yemen, in addition to the scarcity of legal texts which organize this aspect.

Some orders in some Yemeni establishments take place through e-mails, but only as far as orders and specifications are concerned, as for payments, they take place via the banks.

An initiative which is still in its early stages has been declared by some Yemeni banks so as to open some electronic funds transfer at point of sale (FTPOS).

Domain	Availability	Law Number
E-Banking Services	Yes	Law No. 40 year 2006
E-Commerce Law	No	--
E-Transactions Law	No	--
Other Electronic Services Laws	No	--

C. E-LEARNING

E-learning has been introduced into Yemen in a limited manner, the General Telecommunications Institute offers distance learning services in cooperation with Jordan Telecom Company, a number of learning institutions offer the International Computer Driving License (ICDL) over the internet since 2005, there is an active branch for the Cisco Networking Academy since 2003 <http://www.yca.edu.ye>.

As of 2012, the Ministry of Education began to offer curricula to students through its website in addition to some services pertaining to the teachers²⁷.

The concept of virtual universities has not been yet applied in Yemen. Many universities use information management systems, and a number of faculties relating to information technology and telecommunications offer their students the chance to use the internet and to reach e-learning sources for free. Some universities offer the information relating to their curricula and the student results over their sites on the internet, also some universities offer the possibility for specialized conferences for its students over the universities' websites.

student to PC ratio	53:1
The Percentage of Schools with Internet Access	60%

D. E-HEALTH

There are some electronic applications used by the Ministry of Public Health and Population to detect and monitor the spread of any diseases as the ministry receives detection data from stations spread all over the provinces and which are entered into computers. Despite having a website for the health institutions in addition to the Ministry of Public Health and Population's website, but this is accompanied by a lack of

²⁷ See: † <http://www.yemenmoe.net>

locally published medical information, telemedicine and medical electronic applications such as patient diagnosis and the like are currently unavailable. What is currently available is a limited accessibility to some sources of information such as the World Health Organization Database. Some hospitals use information systems to preserve records, and the management of patient care, in addition to the pharmacy systems.

E. E-EMPLOYMENT

The Ministry of Civil Service and Insurances uses computerized systems to distinguish the competing applicants for government sector jobs, in addition to other systems relating to human resources development. It offers the service of presenting the results of these differentiations on its website (<http://www.mocsi.gov.ye>) after entering the registration code into the site. Information technology has been considerably used as an employment search tool, a number of private sector establishments announce the openings they have through these sites, teleworking is currently unavailable.

VIII. CULTURAL DIVERSITY AND IDENTITY, LINGUISTIC DIVERSITY AND LOCAL CONTENT

A. USE OF ICT IN SUPPORT OF CULTURAL AND LINGUISTIC DIVERSITY

There is a limited use for information technology in the circulation of Yemeni historical and cultural information. As the number of websites escalated over the last few years, only a few of these websites offer historical and cultural information (no more than 13% of what is published in the sites). Arabic is the prevalent language of these websites (85% of what is published in them is in Arabic) whilst the remaining percentage is published in English and then French. Many social media websites are active in Yemen, Yemeni individuals and establishment had a remarkable presence there especially in the events which took place in Yemen in 2011 and later.

In December 2008, the Electronic Guide and the Information Unit Service in the National Museum was launched, this service offers a view of the museum's various acquisitions through electronic screens distributed over the museum's showrooms. The information unit in the museum functions as an integrated technical unit including a database on the archeological pieces and the other acquisitions and all the literature relating to the Museum. The National Information Center adopts an initiative to assemble, automate, and preserve all the Yemeni researches and studies in a database that would allow their retrieval and use of the beneficiaries of such a service.

B. LOCAL AND NATIONAL DIGITAL CONTENT DEVELOPMENT

The National Information Center's main task is to develop and expand the information content in Yemen, making this content available to the public and private institutions. The center receives raw data and a diverse range of reports from the various government institutions, these are then studied and analyzed and transformed into information in addition to transforming the incoming data into digital formats and then making them available. The center currently has several databases in several domains, a part of which is made available on its website.

Several local authorities headed to developing the digital content, the Hadramut province's success in using web applications in running some of their operations and presenting the local council's activities to the public via web-published material (<http://www.hadhramaut.info>).

The Ministry of Local Administration is working on a project to link the information systems of the local provinces over a network, this project includes computerized systems of the development projects and the local resources, the geographic and demographic information system, the administrative units' activities information system, the local council affairs, elections, the employment forces data, the organization of plans, the budget, and other things.

C. ICT SOFTWARE, TOOLS, AND R&D PROGRAMS IN ARABIC LANGUAGE PROCESSING

In 2002, the Ministry of Telecommunication and Information Technology opened the first phase of [The Telecommunication and Information Technology City \(TITC\)](#) which had the development and advancement of software, for the purpose of supporting the Yemeni market and its requirements. In 2009 and 2010, the ministry worked on the development of new components for the city in the capital, Sana'a, and on the formation of a similar city in Aden. The ministry is also working on the formation of the Technology Development Fund (TDF) in order to encourage the qualified elements and aiding them to transform the constructive ideas they have into a financially lucrative product.

Most Yemeni companies make use of applications and purchase software through contracting local and foreign software development companies. There are cases when companies develop their own software through information technology professionals in their employment.

Republican Resolution 2 for year 2002 was issued directions to form the High Council for Scientific Research. The University Law No. 18 for year 1995 includes support for knowledge through scientific research. In the same framework, the Information Technology Center was formed in the framework of creating an information technology institution to connect the Yemeni universities with a unified information network. Schedules for the priorities of scientific research and the national policies for scientific research were also prepared.

D. ARABIC DOMAIN NAMES

There is no use for Arabic domain names, there is a direction towards attaining an Arabic top-level domain name.

IX. MEDIA

A. MEDIA DIVERSITY, INDEPENDENCE AND PLURALISM

The government owns 4 satellite channels. The private sector and political parties own 8 channels. The state has two main radio channels, in addition to 12 local ones.

There are 36 formal state-owned newspapers and magazines, 43 45 owned newspapers and magazines, and 170 privately owned or independent newspapers and magazines, in addition to 41 newspapers and magazines owned by the civil society.

Most of the state owned and party owned newspapers publish on their own websites using local or foreign hosts. Several news and media related sites and portals supervised by media establishments were developed, these are sometimes owned by organizations and political parties in both the ruling parties and the opposition ones.

Media outlets	Number	Language(s)	Ownership				
			Private	Party Owned	Civil Society	Government	Foreign
Newspapers	206	200 Arabic 6 English	106	36	26	38	0
Electronic newspapers	48	Arabic English	16	14	8	6	4
Magazines	56	Arabic	17	3	9	27	0
News agency	1	Arabic English	0	0	0	1	0
Radios	16	15 Arabic 1 English	2	0	0	14	0
Televisions	12	Arabic	8	0	0	4	0

B. THE MEDIA AND ITS ROLE IN THE INFORMATION SOCIETY

Written media dedicates only limited space for information technology issues and awareness about the Yemeni information community. Most newspapers and magazines publish a rate of one subject per issue, some newspapers and magazines dedicate an entire page or even several pages for information technology subjects (regularly on a weekly basis). One magazine specializing in information technology and telecommunications is issued monthly. Affairs are relatively better n electronic media.

Audio and visual media (TV and radio) dedicate only 10% of its broadcast time for scientific and educational programs.

C. CONVERGENCE BETWEEN ICT AND THE MEDIA

Various media sources in Yemen increasingly use information technology and telecommunications within the last few years, this was done to transmit to a greater audience. Most of the newspapers have websites, TV and radio stations also transmit directly on the internet through their own websites.

X. INTERNATIONAL AND REGIONAL COOPERATION

A. FINANCING OF ICT NETWORKS AND SERVICES

International and regional cooperation with Yemen to finance information technology and telecommunications projects is currently limited. What is worth noting is the “Electronic Guide and Information Unit” in the National Museum offered by the Japanese government, and teaching science and mathematics for the first secondary grade over the internet in 20 schools within the capital and other provinces, which was offered by the donors and the private sector.

As for the investment environment, despite the offered government facilitation and legislations which are among the best in the Arab World, the investments are below the limit hoped for due to the fact that the investment environment still faces difficulties before becoming stable and drawing investors.

B. INFRASTRUCTURE DEVELOPMENT PROJECTS

Table 14: Some of the Projects to Develop Infrastructure Which are Either Developed or Proposed

Project Name	Developing Institution	Development Period	Notes
Information System and the Database for the National Indices for the Information Society	National Information Center	Beginning from 2011	Currently seeking funding sources
The Yemeni E-Library Project	National Information Center	Under implementation since 2011	Funded locally and in a limited manner
The National Information Network Project	National Information Center	Being implemented since 2001	Funded locally and in a limited manner
The Digital Map Project	Ministry of Telecommunications and Information Technology	Being implemented since 2001	Funded locally
Geo-data Warehouse Project	Ministry of Telecommunications and Information Technology	Being implemented since 2006	Funded locally
Development of the Transmission Network Project	Ministry of Telecommunications and Information Technology	Being developed since 2006	Funded locally
Network connection of the Information Technology Center	Ministry of Higher Education	Being developed since 2005	Funded locally and from foreign sources

The need to encourage and endorse these initiatives and projects is clear, most of them have low rates of achievement due to the scarcity of funding allocated to them, and this is what the Yemeni institutions rely on in their efforts to activate the cooperation with international bodies and donor states.

C. WSIS FOLLOW-UP

It is difficult for the time being to offer exact statistics about the information society in Yemen as there isn't enough data concerning the performance indices of the information technology & telecommunications.

There is no particular body collecting this data. NIC is adapting an initiative to build a national database and information system on the information society indices.

Currently, there are no local websites which specialize in best practices and success stories to exchange expertise in an easily accessible manner.

D. PARTICIPATION IN INTERNET GOVERNANCE ACTIVITIES

The Ministry of Telecommunications and Information Technology participates in the Global Internet Governance Forum including the policies and consultations offered by the ICANN.

XI. BUILDING THE ICT SECTOR

A. ICT FIRMS

The private sector in Yemen shares in the telecommunications services through the four mobile phone companies active in the country. The private sector also operates the telecommunications centers and the internet cafes.

There are, however, no organizing legal framework for the software development industry, the period of 2010-2012 saw a limited activity by the companies active in the software industry.

At the time being, the private sector companies active in hardware sell imported products, there are no local companies which manufacture computer hardware and accessories.

B. GOVERNMENT FACILITATION

The government offers loans through funds for the encouragement of small industries, but there are no procedures or executive regulations in the direction of supporting institutions so as to adopt technological solutions. There are facilitations for investors through the Investment Law.

C. CONTRIBUTION OF ICT SECTOR IN THE NATIONAL ECONOMY

So far, there is no real information technology industry in Yemen so as to have an actual contribution to the national economy. There is no accurate information about the expenditure in the informatics field, the information technology sector has 29,000 employees, this forms a meager percentage of the Yemeni working force.

D. R&D AND INVESTMENTS IN THE ICT SECTOR

In the R&D field, the Ministry of Telecommunications and Information Technology is preparing a study concerning the foundation of the Technology Development Fund (TDF) to encourage qualified people with creative ideas to turn these ideas into actual projects.

Field	Availability
ICT research facilities (existing or planned?)	No
ICT industrial clusters (existing or planned?)	Limited
ICT incubators (existing or planned?)	Limited

E. INVESTMENTS IN THE ICT SECTOR

Despite the improvement of the investment environment in Yemen, foreign investments in ICT are still below the desired level especially after the events of 2011. As already mentioned in section 10B, most of the investments in this domain are locally funded.

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