



**TELECOMMUNICATION
AND IT SECTOR
IN MOROCCO:
ASSETS & PROSPECTS**

PART I

**OVERVIEW OF THE MOROCCAN
TELECOMMUNICATION
AND IT SECTOR**

THE REGULATORY FRAMEWORK EVOLUTION

As a result of an ambitious policy aiming at reforming and modernizing the telecommunications sector, it took only few years to the Kingdom of Morocco to be qualified as a leader in its region. The Kingdom of Morocco has always been considered as a best practice example in terms of liberalization processes in the region.

In order to grant the liberalization process all chances to succeed, the Moroccan Government has taken significant measures allowing all market actors as well as potential investors the necessary visibility.

In 1997, the Kingdom of Morocco established an efficient and transparent legislative frame¹ which provided the basis for the development of telecommunications networks and services and paved the way to the creation of the National Telecommunication Regulatory Agency (ANRT). ANRT is a public institution endowed with the financial autonomy and in charge of the regulation of the telecommunications sector.

This new frame was favourable to the development of the telecommunications market, mainly through the expansion of the mobile phone network. Accordingly, it increased the phone penetration rate from 6.49% in 1999 to more than 57% in 2006, and boosted the turnover generated by the sector², taking it from 773 million Euros in 1999 to 2364 million Euros in 2006.

In order to accompany the development of the telecommunications market, to walk in step with regional and international tendencies, and to give operators added visibility, the legislative frame³ was modified and completed in November 2004 and in **April 2007**. This revision granted ANRT new prerogatives, including the right to ensure fair competition as stipulated by the Law pertaining to liberty of prices and competition and manage “.ma” domain name and **electronic certification**.

New competencies and missions for ANRT:

The competencies of ANRT have been enhanced, especially concerning the observance of fair competition in the telecommunications sector. Its scope of intervention in the settlement of litigation has been extended to include competition and the sharing of infrastructures. Furthermore, its sanctioning powers have been extended to include the non-observance of the obligation to provide information. Monetary sanctions, whose amount varies in accordance with the gravity of the breach, have been included. Thus, fines equivalent to a maximum of 1% of the turnover, net of taxes, and free from interconnection fees, could be levied in case of any violation of the

¹ The subject matter of Law no 24-96, relative to the postal service and telecommunications, promulgated on August 7, 1997.

² Turnover generated by the Moroccan telecoms operators

³ This is the subject matter of Law no 55-01, promulgated on November 8, 2004.

regulations in force by any operator. The license held by the operator may be suspended or even revoked.

In the field of **the “.ma” domain management methods revision**, the ANRT was in charge of:

- Proposing to the Government the legislation and the regulation relating to the use of the Internet domain name with extension “.ma”, allowing to identify Internet addresses corresponding to the domestic territory;
- Awarding “.ma”, domain names, defining the methods of their administrative, technical and commercial management under transparent and non-discriminatory conditions and representing the holders of these addresses towards governmental or non governmental international authorities in charge of the international management of the Internet domain names.

As regards **to electronic certification and cryptography**, the project of law n°53/05 relating to the electronic exchange of legal data would be the legal reference which establishes equivalence, under certain conditions, between the electronic signature and the handwritten signature.

Main initiatives for developing the SECTOR

Liberalisation of the telecommunication sector

The expansion of the sector of telecommunications in Morocco during last years was allowed by the policy of liberalization undertaken since 1999. New operators are entered on market, so that the Moroccan market is structured today around three global operators (IAM, Medi Telecom and Wana Coporate), which hold each one a fixed licence and a mobile licence (2G and 3G), and several operators GMPCS and VSAT.

Implementation of specific regulatory actions:

The liberalization of the fixed services in the telecommunications sector was achieved thanks to a ‘roadmap’ where the different stages of the process have been outlined. The Government’s general guidelines note adopted in November 2004 specifies the liberalization plan for the period 2004-2008 and gave a visibility to the various actors of the sector on the principal lawful evolutions.

In 2004, the national plan of frequencies was published in accordance with the road map 2004-2008 to give more visibility on the use of this scarce resource.

All the actions registered in the road map were implemented within the time limits. Thus, the process of the telecoms sector liberalization was completed with the granting in 2005 of two new generations fixed licences and three mobile licences of 3rd generation to IAM, Medi Telecom and WANA Coporate in 2006.

In addition, the calendar for the regulatory levers enrolment (unbundling, numbers portability, pre-selection and interconnection) was respected.

New mechanisms of universal service

Law n° 55-01, adopted in November 2004, made important modifications in the set up of universal service in Morocco.

- The universal service definition was extended to include the supply of the added value services, of which Internet.
- A new approach of the operator's contribution to the mission of universal service, founded on the obligations and the mechanism of "pay or play", was adopted.

Whereas the period 2004-2008 is completed, the ANRT prepared a new actions plan over the period 2008-2011, on the basis of study of the principal international tendencies and an analysis of the ICT sector in Morocco. This will enable a better integration of the Kingdom of Morocco in the information society in accordance with the orientations of the E-Morocco Strategy.

General framework : e-Morocco strategy

The Moroccan government established a national strategy in favour of the ICT, entitled "E-Morocco".

Through this policy, the government signed the "Progress Contract 2006-2012" with the professional sector represented by the "APEBI".

To achieve these goals, the government defined a number of measurements around the following issues:

- The support for the innovation and the creation of added value ;
- The incentive to Research and Development ;
- The reduction of costs on wages for the new created jobs ;
- Facilitation of the access to the financings for SME of the ICT sector ;
- Accelerated deployment of the electronic administration ;
- The attraction of foreign investments and the support of export
- The Pact of Positive Mobilization;
- The development of human resources and training ;
- The creation of reception zones dedicated to ICT activities ;
- The completion of the legal arsenal to create electronic confidence
- The development of the Internet in Morocco
- Continuation of the liberalization process of telecoms.

Offshoring Program

The Moroccan government initiated the “Emergence” program which targets 7 engines of growth for the economic development of Morocco in the coming years. Among these 7 engines the offshoring appears as a big domain for which the objective is to reach a turnover of 1.5 billion EURO and to create more than 100.000 employments by 2015 developing a competitive and attractive offer for the investors.

On May 7, 2007, the Prime Minister published a circular on the implementation on the Moroccan offshoring offer, which defines the conditions and procedures of granting of the advantages in the Morocco offshoring offer. The circular defines two great fields of offshoring, namely the Business Process Outsourcing (BPO) and Information Technology Outsourcing (ITO). The Morocco offshoring offer is built around three principal axes, which are also integrated in the e-Morocco strategy:

→ Training :

- Creation of a “fish pond” of human resources with (I) the initiative of “**10 000 engineers per year**”, (II) an action plan for the training development in the offshoring aiming **more than 20.000 graduate by 2009**.
 - The set up of assistance to the companies for the initial and continuous training ;
- The creation of dedicated zones with offices ready at competitive prices, equipped with infrastructures to the international standards, services and a single interlocutor.
- The installation of an inciting tax framework.

Other initiatives

Through the e-Morocco strategy, the Moroccan authorities launched a great number of action plans, among which :

- The **PACT** program, adopted by the Board of Management of the Universal Service of the ANRT in November 2006, aims the generalization of the access to telecommunications at all the areas of Morocco. This program is based on a preliminary census of the non covered zones. The ANRT thus counted 9.200 localities not served by telecommunications networks, that is to say approximately 2 million Moroccans without access to the telecommunications services. The implementation of the PACT program must be spread out over the period 2007-2011.
- The **GENIE** program aims at generalizing the ICT in education. This program, which lies within the scope of the universal service, plans the equipment of the school establishments with computer equipment but also the training of the teaching body as well as the development of the educational contents. This program will make it possible to equip 2.824 school establishments with

computer equipment at the beginning of 2007, and in the long term the totality of the school establishments (8 600), concerning more than 6 million students (either 20% of the Moroccan population).

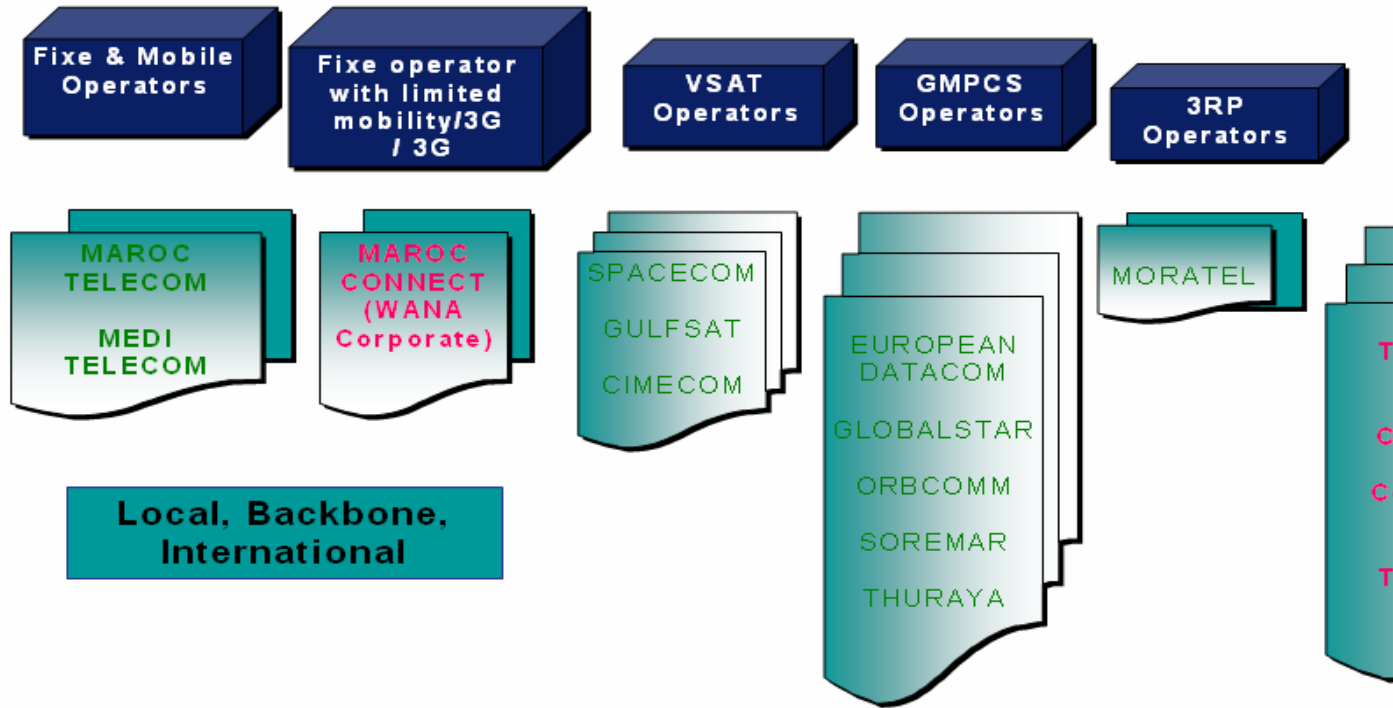
- The **10.000 engineers** initiative aims at doubling the annual number of qualified engineers in Morocco at horizon 2010. The objective is to pass from 4.300 engineers trained per year, including 1.870 in information technologies, to 10.000 by 2010, including 4.000 in information technologies.
- The **E-government program** "IDARATI" (national program of electronic administration), was launched in 2005 and will be spread out up to 2008. It aims at offering a qualified and affordable services to citizens, to improve the productivity of the administration, to modernize the public life, to increase the transparency and to guarantee a good governorship of the administration. It targets a large audience: citizens, general public, companies and administrations.
- The computing network for education and research "**MARWAN**", set up since 2005, is connected to the European Network of Education and Research GEANT2 through EUMEDCONNECT project, with a link of 155 Mbps. They are 97 colleges which are connected to this network with speeds either of 2 Mbps, or of 34 Mbps, for an annual budget of 10.3 million DH.
- The National Program for the promotion of the ICT within companies (**PROTIC**), launched over the period 2005-2007, under the aegis of the UNDP, aimed to reach "50.000 companies on the Net at horizon 2008". It aims at developing the investment and the ICT usage by the Moroccan companies, as a major vector for their development and for the growth of Morocco share in the world economy and, in fine, to reduce the digital divide within the Moroccan companies.
- The National Agency for small and medium-sized company (ANPME) set up a **program of levelling data-processing** for SME.

MILESTONES FOR THE TELECOMS SECTOR IN MOROCCO

- **1997** : Law carrying reform of the telecommunications sector (29-06)
- **1998** : Creation of an independent Authority for regulation
- **1999** : Award of a licence for a 2nd GSM network for 1,08 billion US\$
- **2000** : Opening of 35% of the capital of the incumbent (2,3 billion US\$)
- **2001** : Grant of 8 satellite licences
- **1999-2002** : 12 licenses awarded for operating various types of telecom networks in Morocco.
- **2004** :
 - New telecommunications law (55-01)
 - Introduction of 15% of the capital of the incumbent in the Stock Market (Casablanca and Paris)
 - Vision for the sector development (2004-2008).
- **2005** :
 - Opening of all telecoms market segments to competition
 - Sale of 15% of the capital of the incumbent (1,4 billion US\$)
 - Grant of two licences for fixed networks
- **2006** : Attribution of three licences for third generation mobile services
- **2007** :
 - Competition in the Fixed/Internet/International segments
 - Launch of 3rd generation mobile services
 - Market structured around three global operators
 - Sale of 4% of the capital of the incumbent Maroc Telecom.

THE ACTORS IN THE TELECOMMUNICATIONS SECTOR IN MOROCCO

Main actors in the sector



PART II

**THE MOROCCAN
TELECOMMUNICATION
AND IT SECTOR
IN FIGURES**

THE INFORMATION TECHNOLOGY OBSERVATORY

Aware of its significant role devolving to it in terms of following up on the telecommunications and information technologies sector, the National Telecommunications Regulatory Agency has set up observatory tools to monitor the evolution of the markets. This is insured through observatories of fixed-line services, mobile and Internet services, and also with an observatory of information technologies.

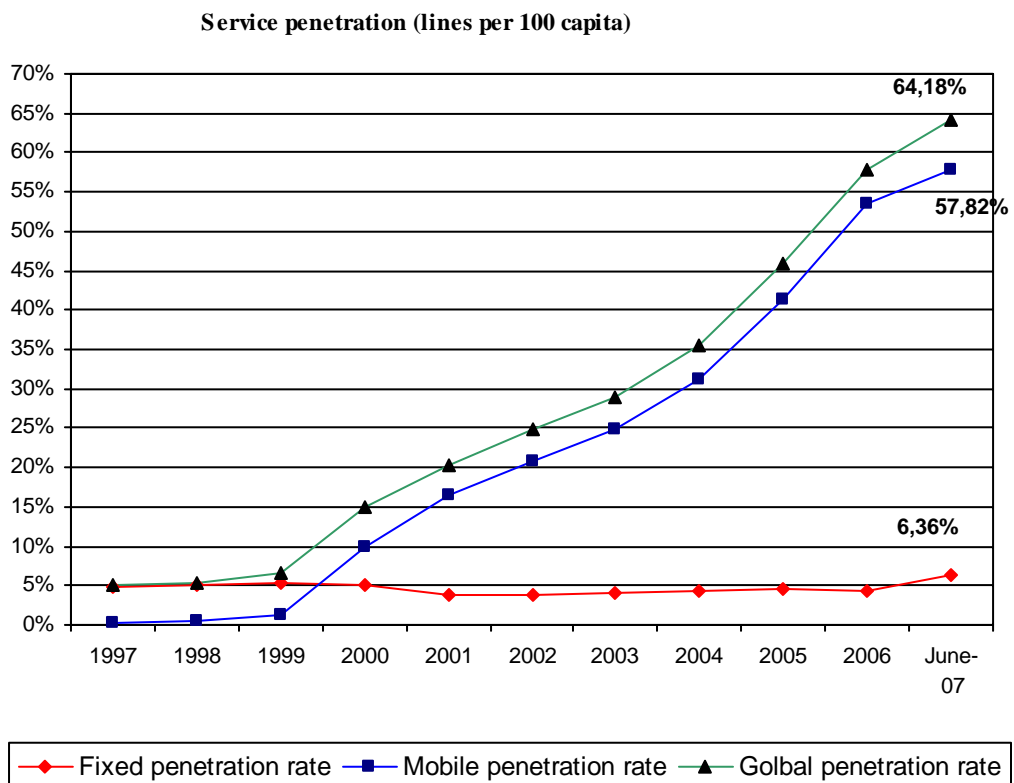
These observatories allow ANRT to establish a reliable and coherent data-base for the national and international public.

Survey and collection of data pertaining to ICT indicators:

The setting up of the information technologies observatory has been the outcome of surveys conducted by ANRT starting from 2005, which covered individuals as well as businesses segments.

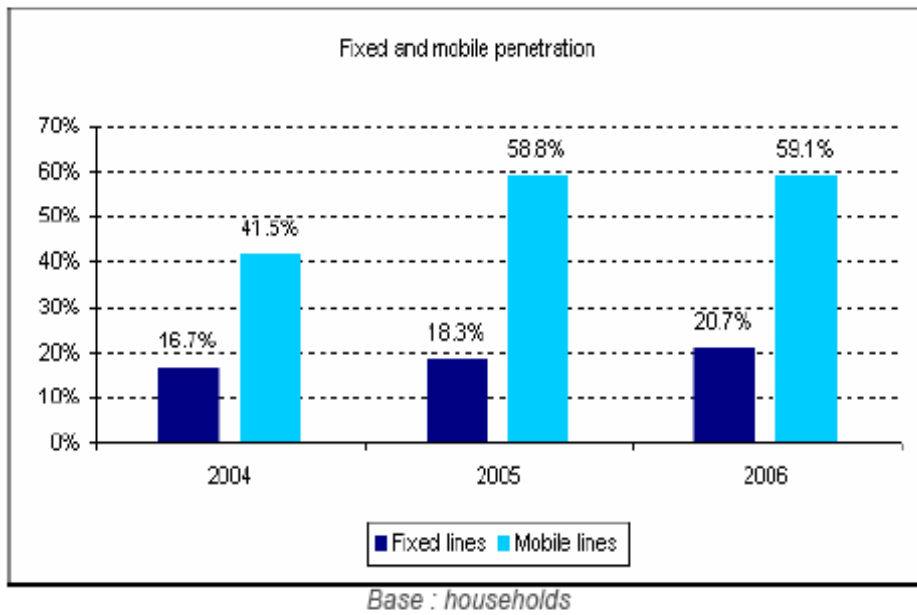
THE ICT SECTOR IN FIGURES

**THE PENETRATION RATE OF TELEPHONY
(THE NUMBER OF LINES PER 100 INHABITANTS)**



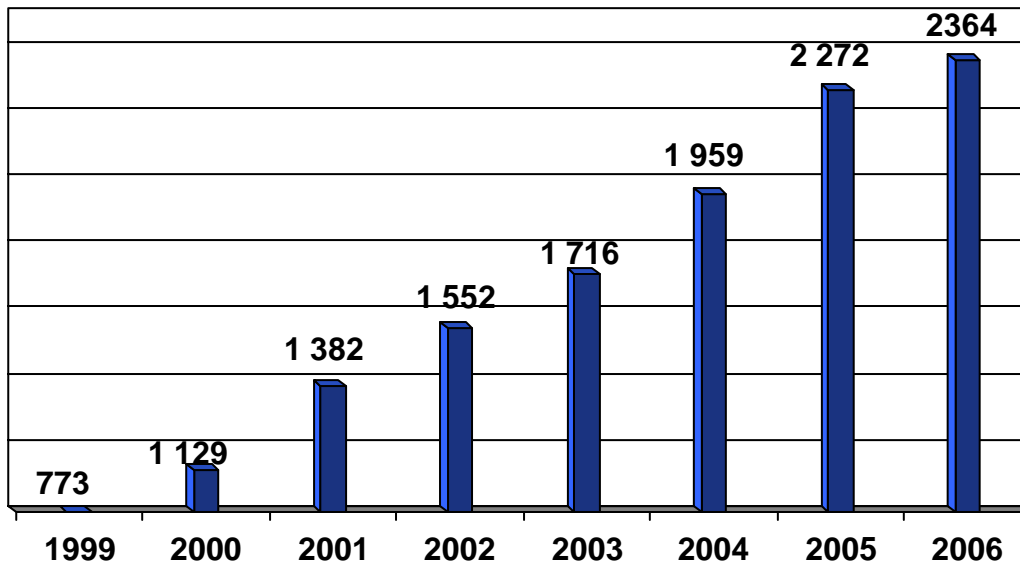
The mobile confirms its evolution. The penetration of fixed is still weak in spite of an improvement since the beginning of 2007.

THE PENETRATION RATE OF TELEPHONY WITHIN HOUSEHOLDS



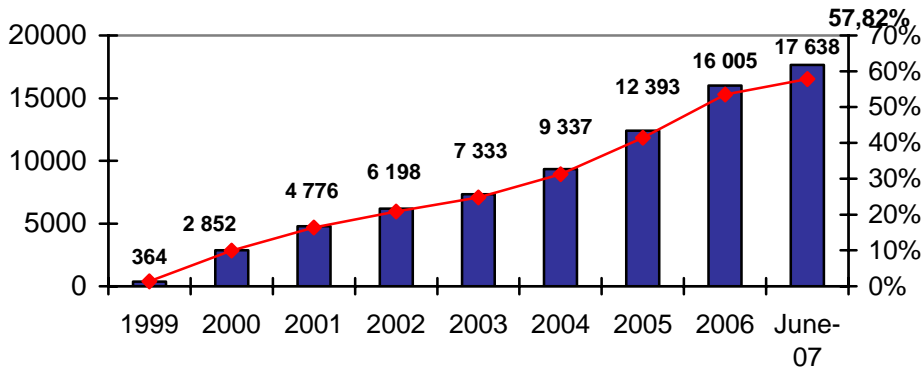
EVOLUTION OF THE TELECOM OPERATOR'S TURNOVER (IN MILLION US \$)

Turnover of the sector (in million Euro)



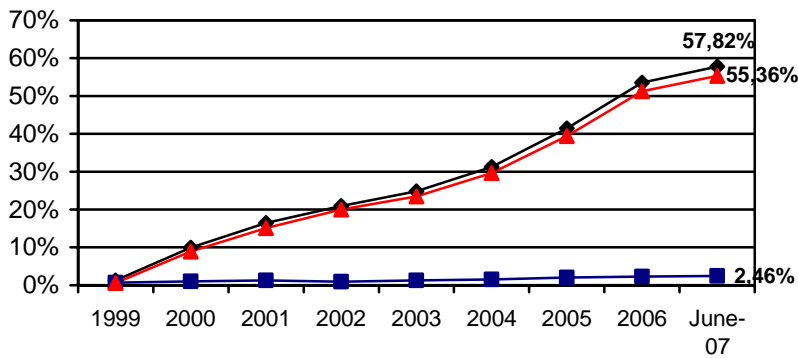
THE MOBILE SERVICE

EVOLUTION OF THE NUMBER OF SUBSCRIBERS TO THE MOBILE SERVICE



■ Mobile phone sets owned (in thousandss) ◆ Mobile penetration rate

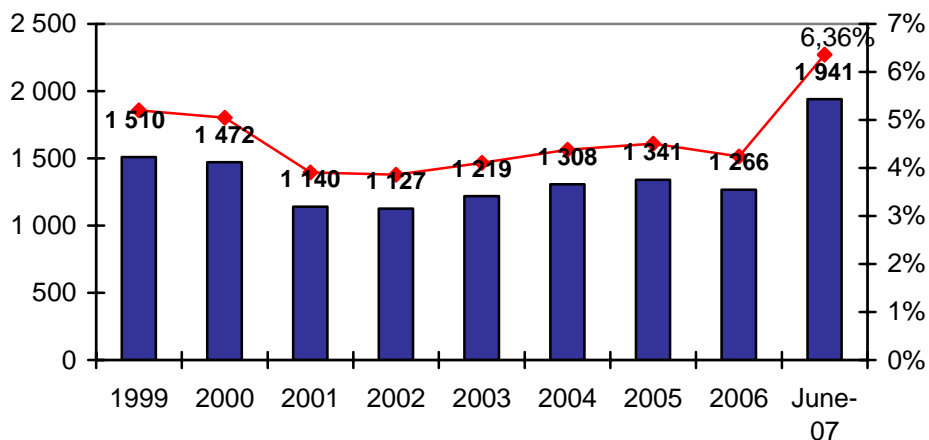
THE PENETRATION RATE OF THE MOBILE AS PER SUBSCRIPTION TYPE



◆ Total ■ Postpaid ▲ Prepaid

FIXED SERVICES

EVOLUTION OF THE NUMBER OF SUBSCRIBERS TO THE FIXED LINE SERVICE

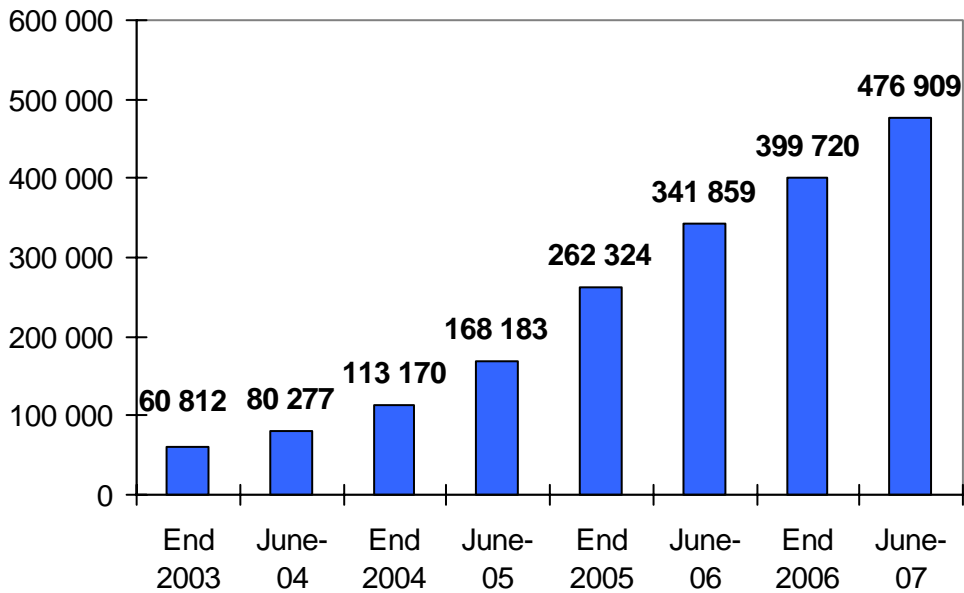


■ phone sets owned (in thousandss) ◆ Fixed line penetration rate

The fixed market has recovered since the beginning of 2007.

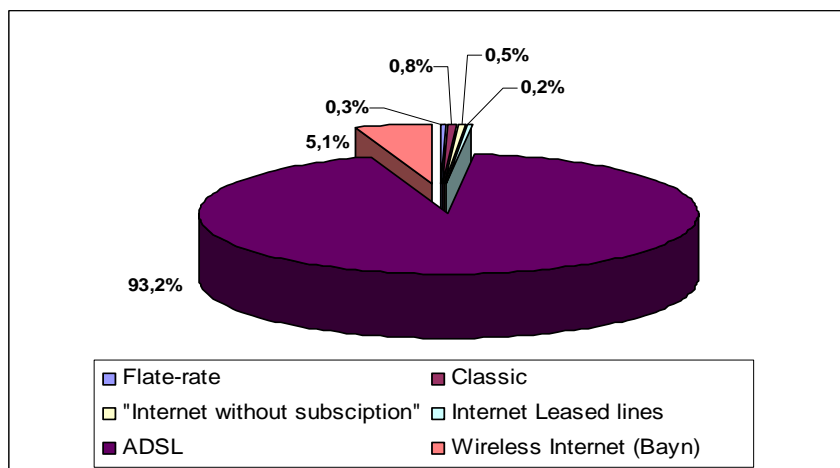
INTERNET

EVOLUTION OF INTERNET SUBSCRIBERS



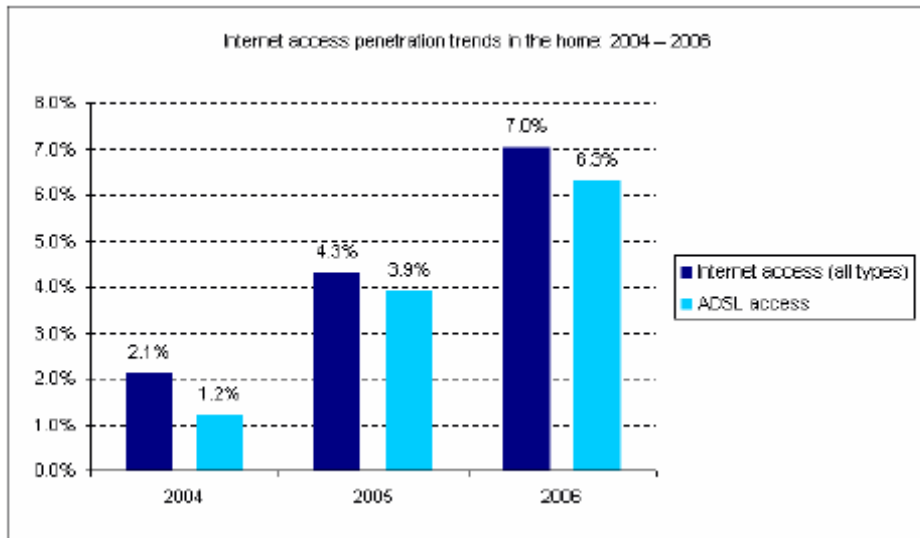
The Internet market experiences a considerable increase in spite of a low penetration rate.

THE DISTRIBUTION OF INTERNET SUBSCRIBERS PER TYPE OF SUBSCRIPTION (JUNE 2007)



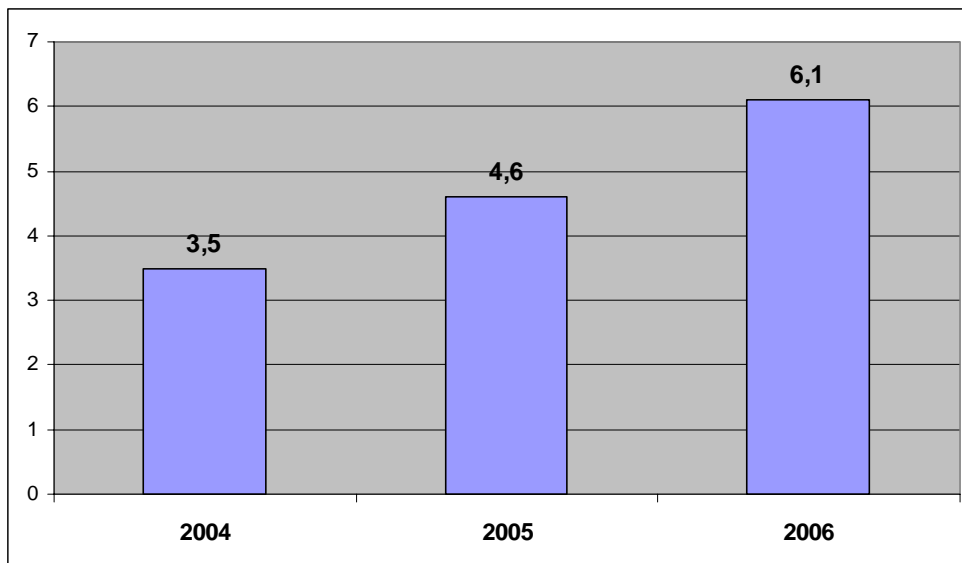
Prevalence of ADSL Access

THE PENETRATION RATE OF INTERNET WITHIN HOUSEHOLDS



Base: households

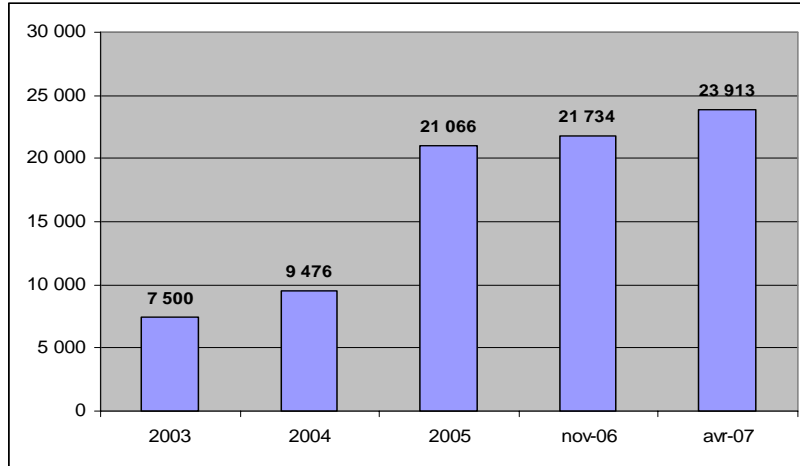
NUMBER OF INTERNET USERS



A rise of more than 30% per year for the number of Internet users passing from 3.5 million in 2004 to 6.1 million in 2006.

DOMAIN NAMES

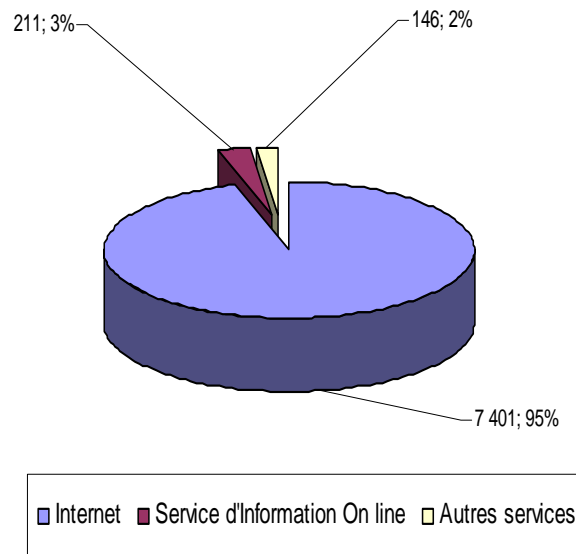
Evolution of « .ma » domain names since 2003



INTERNET CAFES

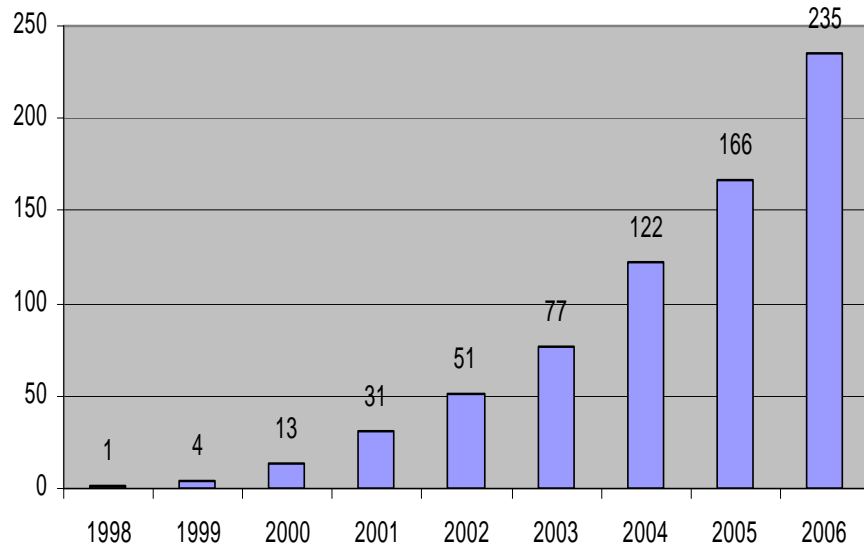
At end of June 2007, the number of value added services (internet cafes, call centers, other services) declarations were about 7664

Internet cafés represent over 95% of declarations.



CALL CENTRES

Call Centers Declarations



Key indicators of the call Centres activity at the end of the year 2006

	2004	2006	Evolution
Number of call centres (declaration)	50	180	x 3,6
Number of call centres in operation	50	143	x 2,7
Number of positions	4400	14.700	x 3,3
Average size (position/CC)	88	114	x 1,3
Employees	5500	17.500	x 3,2
Turnover (Million US\$)	97,6	346	x 3,5

MOROCCO POSITIONING AT INTERNATIONAL LEVEL

The last joint report of International Telecommunications Union (ITU) and United Nations Conference for Trade and Development (UNCTAD), published in May 2007, entitled "World Information Society Report 2007, Beyond WSIS" provides the last figures of ICT development in the World benchmarking the continuing growth of the Information Society around the World.

The report specially presents the growth recorded by North Africa countries. **Morocco** is reported like "a success story" in its region concerning the broadband Internet access.

Morocco initiated market liberalization relatively early for a developing country. In mobile communications, it became one of the first North African countries to introduce competition when it licensed a second mobile operator in 1999 and to process the privatization of the incumbent Maroc Telecom. Intense competition between the two operators led to mobile phones overtaking fixed lines in 2000.

The recent growth in Morocco has significantly surpassed all its North African neighbours.

The Internet market in Morocco particularly reflects this dynamism with the launch of a range of high-speed packages at comparatively low prices, including the highest-speed broadband package in Africa at 4 Mbit/s.

With nearly 400,000 ADSL connections at the end of 2006, Morocco is the top country in Africa in terms of the total number of broadband subscribers, well ahead of South Africa.

Morocco is quoted as a good example of Foreign Direct Investment (FDI) in the telecommunication sector, as it has experienced both incumbent privatization to a strategic foreign operator, as well as foreign investment in a new mobile operator. It also illustrates the emerging trend of South-South FDI.

Ces investissements ont eu des impacts positifs aussi bien sur l'opérateur historique à travers ses bonnes performances financières et sa cotation en bourse que sur les investisseurs étrangers. L'introduction de nouveaux opérateurs étrangers a eu un effet stimulant pour la concurrence sur le marché avec des résultats impressionnants au niveau de la pénétration de la téléphonie mobile qui a évolué de 1% seulement en 1999 à 53,5% en 2006.

These investments had positive impacts as well on the incumbent operator through its good financial performances and its quotation in the stock Market as on the foreign investors. The introduction of new foreign operators had a stimulating effect for competition on the market with impressive results on the penetration level for the mobile telephony which moved from only 1% in 1999 to 53.5% in 2006.

In total, the Moroccan government has earned around US\$ 5.6 billion from privatization receipts and license fees paid by foreign investors in the 7-year period between 1999 and February 2007, while outgoing FDI amounted to US\$ 417m.

Morocco's privatization policy has also boosted its ICT sector. The changes in the sector entitled Morocco to occupy the 1st position of the "faster gainer" in the World in terms of Digital Opportunity Index (DOI) between 2004 and 2006 and to record growth in other composite index like the ICT Opportunity Index (ICT-OI). This evolution in DOI score is due to the remarkable improvements in the ICT usage.

With a **DOI score of 0.47**, Morocco is classified on a rather high level (**68th position**) gaining 10 positions compared to the preceding edition (78th of 180 countries and a score of 0.41 in 2004/2005).

Morocco is classified 3rd in Africa (after Seychelles and Mauritius) preserving the same classification as the preceding edition.

Country/DOI		2005/2006
MOROCCO	DOI	0,47
	Position	68
JORDAN	DOI	0,45
	Position	79
ALGERIA	DOI	0,42
	Position	83
SOUTH AFRICA	DOI	0,42
	Position	86
TUNISIA	DOI	0,41
	Position	87
EGYPT	DOI	0,41
	Position	91

PART III

**STRUCTURING PROJECTS
FOR THE DEVELOPMENT
OF ICT IN MOROCCO**

Universal service as tool for bridging the Digital Divide

Introduction

The digital divide touches all regions and economies of the world and threatens to slow progress towards the goal of an all-inclusive information society. Policy makers are faced with the divide's daunting complexity but have a range of policy tools that have proven effective in expanding access throughout the world. Of these tools, regulatory reform has had perhaps the largest impact in both developed and developing economies alike.

To overcome the problem, a national policy ensuring equitable distribution and access to the new Information and Communications Technology is necessary to meet the citizen's needs.

In our effort to bridge the divide, we define a clear policy on Universal Service Obligations. In this fact, the Law n° 55-01, which modifies and completes Law no. 24-96, has undertaken to revise the regulatory framework governing the universal service. Accordingly, the scope of the universal service has been widened and re-defined as being a telecommunication service, 'and not simply a telephonic service,' which includes the provision of internet and value-added services. The new regulatory framework has likewise clearly defined the mechanisms necessary to the realization of the missions of the universal service, within the context of 'market mechanisms' and competitions. Thus, the following actions have been undertaken:

- The introduction of the mission of regional development within the scope of universal service;
- The setting up of a Committee for the Management of the Universal Service (CMUS). This is chaired by the Prime Minister and made up of several ministerial departments. This is tasked with the definition and the validation of universal service programs;
- The creation of a special allocation fund, called "the Universal Telecommunication Service Fund" (UTSF). The fund was actually created by the 2005 Financial Law.

The concept of the universal Service:

The scope of the universal service:

The law bearing on telecommunications defines the universal service as being:

- A basic service consisting of a telecommunication service, including a telephone service having a specific quality which is offered at an affordable price;
- The mission of regional development, which consists in serving the national territory by endowing it with telephone booths installed on public property, as well as serving peripheral urban zones, industrial zones, and rural areas by providing them with means of telecommunications;
- The introduction of value-added services, mainly those permitting access to the internet.

Services such as the routing of emergency calls; the provision of an information service; and the preparation of a telephone directory (either in a printed format or in an electronic one) are also part of the universal service, and as such, are obligatory for operators of public telecommunications networks.

Taking into account the general orientation of the country towards the principle of technological neutrality, any technology may be utilized for the realization of the universal service programs.

The financing of the universal service missions

The universal service is financed by the UTSF, which was created by the 2005 Financial Law. The said fund will be fed by contributions made by telecommunication operators adding up to 2% of their turnover, tax excluded, and free from interconnection fees. This fund may also receive any other contribution in the form of a donation or bequest handed over, within the framework of the development of the programs of the universal telecommunications service.

The management committee of the universal telecommunications service:

In order to ensure efficient management of the UTSF and to inscribe the programs pertaining to the universal service within a coherent overall governmental strategy, it has been decided to set up an inter-ministerial committee entrusted with the management of the universal telecommunications service.

Chaired by the Prime Minister, the committee is made up of certain government members and the General Manager of the National Telecommunications Regulatory Agency.

The main tasks of the committee are as follows:

- Defining the main objectives and the priorities in the area of development of universal services. These priorities are expressed mainly in terms of services and equipment to provide and/or zones to be served;
- Formulating multi-annual programs in order to implement the universal service all over the Moroccan territory, in conformity with set priorities;
- Proposing, for each competitive call for bid, the contents of the universal service, in full compliance with the provisions of the aforementioned Law no. 24-96, as it has been modified and completed;
- Approving draft-specifications concerning competitive call for bids.

The mechanisms for the achievement of the mission of the universal service

“The pay or play,” mechanism, which has been chosen by the Moroccan legislator, offers two possibilities to the existing public telecommunications network operators (PTNO) in order to participate in the realization of the missions of the universal service. According to this scheme, the PTNO may contribute to the universal service either by paying in their financial contributions in the universal service fund or by

realizing the missions of the universal service, as defined by the committee for the management of the universal telecommunications service (contributions in kind).

Thus, the PTNO may submit their proposed universal service programs to the committee for consideration. In case these programs are approved by the committee, the operators will then achieve their programs, in accordance with the conditions set by the committee.

As far as the programs which have been defined by the committee, but have not been accomplished by the operators, are concerned, a call for bid is launched so as to choose the operator who will be tasked with the achievement of the said programs, in conformity with Law 24-96. Both the existing operators and the new entrants may participate in this call for bid.

The universal Service projects approved by the CMUS:

Since its creation in July 2005, the CMUS approved 9 universal service projects, suggested by the existing operators. These projects consist on serving 1556 rural villages by the adequate means of telecommunications (voice and Internet). 600 million Dirham (Moroccan Currency) as subsidy from the UTSF was allocated to the existing operators to implement those projects. The realization of these projects starts at the beginning of 2006 and the operators in load of these projects are quite advanced in their work. On the 9 allocated universal service projects, 5 were completely achieved. The others will be completely implemented by the end of 2007.

The “GENIE” Program, consisting on the generalization of communication and information technologies in the education sector, was identified as a universal service project by the CMUS and consequently, the committee decided to allocate the subsidy of one Billion Dirham to its realization.

The Program “PACTE”:

In spite of the wide coverage of the GSM network (serving approximately 95% of the population); there remain several villages which are not (or badly) served by the GSM network (white zones). Indeed, among the 40.000 rural villages of the country, some localities are still considered as “white zones”.

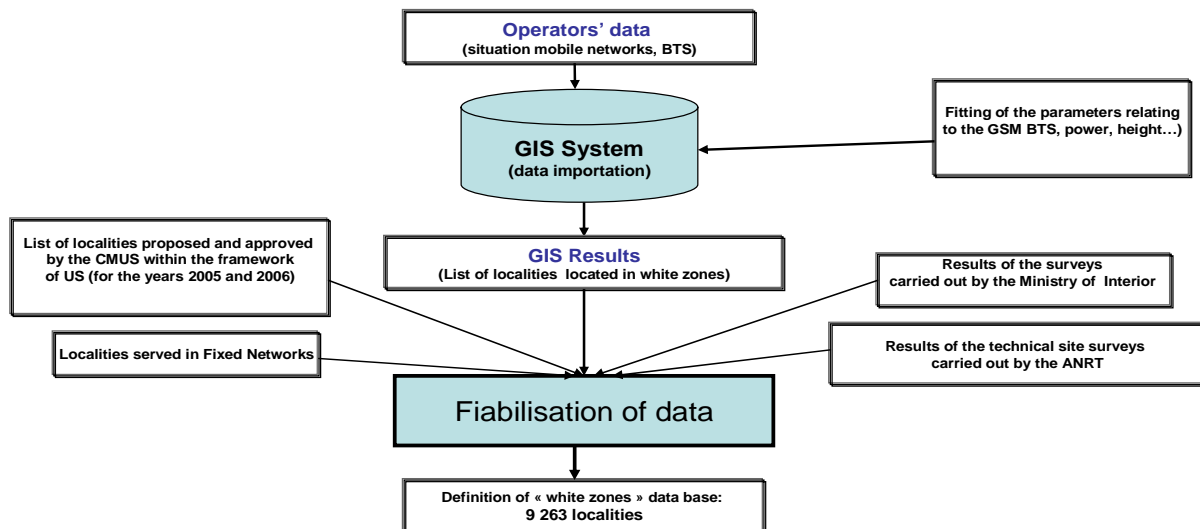
In order to bridge the digital gap on the national scale, The CMUS have to define a national program, consisting on serving the white zones by the adequate telecommunications services.

Within this framework, a working group (WG) was created by the CMUS. This WG, composed of the representatives of the ANRT, the Ministry for the Interior and the Ministry for the Environment, Water and Regional development, has as principal mission the determination of the localities considered as “white zones”.

For this principal aim, the WG set up a Telecom Geographic Information System (G.I.S). This system was implemented by using:

- a data base regrouping all the rural villages (geographical and socio-economic information);
- a national data base including all the GSM Base Stations (geographical and technical information);
- a technical information relating to the current coverage of the national territory by the fixed networks;
- a general data base related to public infrastructures networks (road axes, electrical network...)
- a data-processing solution related to the radio propagation;

Based on this system, a data base containing 9263 rural villages, characterized as “white zones”, was defined by the WG. This data base was made reliable by site surveys carried out by the WG. The flowing flow chart presents the methodology adopted by the WG to define the “white zones” data base:



During its last meeting, which was held on November 20, 2006, the CMUS approved the data base of 9263 rural villages and decided to establish a national program to connect all those villages by telecommunication services. This programme baptized "PACTE" (Programme of Access generalized to Telecommunications); will be spread out over the period [2008-2011].

To this end, the CMUS charge the ANRT to launch a consulting process concerning the realisation of the program "PACTE". Indeed, all the national operators were invited to submit their proposal projects, according to the guidelines and priorities defined by the CMUS as the following:

- Development of rural public telephony ;
- Promotion of public Centres for Information and Communications Technologies ;
- Extension of broadband networks.

By the end of May 2007, the ANRT received several proposals from the existing operators concerning the realisation of program "PACTE". Those proposals concern all the 9263 villages and consist to implement voice and Internet services over the period [2008-2011].

Several meetings were held with the concerned operators. During these meetings, the operators were invited to present their projects.

Actually, the process of studying and evaluating the proposal projects is in progress. The results of the study will be presented to the decision of the CMUS at its next meeting.

By the end of 2011, the PACTE program will be achieved by the existing operators. This process will reduce considerably the digital divide in the Moroccan society.

**THE GENERALIZATION OF ICT IN THE MOROCCAN EDUCATIONAL SYSTEM :
"GENIE PROGRAM"**

The introduction of information and communication technologies in the national system of education, and then their steady integration within national curricula and programs, represent two major stages of the educational sector's reform implementation. This reform was actually consecrated by the 1999 National Education Charter, which drew the broad outlines of the modifications and adjustments which needed to be brought to the national education system over a decade, stretching from 2000 through 2009.

In March 2005, the Government adopted a strategy aimed at the generalization of ICT within the public school system. It thus formulated a program designed to equip all school institutions (primary schools, middle schools, and high schools) with multimedia digital work environments by 2008. All of these environments would be connected to the internet. The program also applies to higher education (faculties and universities will also be equipped).

The strategy, which has been elaborated on the basis of quantitative and qualitative aspects of ICT in education, is premised on three additional bases ('infrastructure', 'training', and 'course content enhancement') all of which are intended to facilitate a swift and efficient integration of ICT tools within the Moroccan educational system. Over the short term, the strategy aims at ameliorating the quality of education; renewing school programs, and creating more coherence with international practices and trends. The strategy is much more than a simple policy designed to equip schools with computers; it also incorporates other aspects relating to training and development of the pedagogical dimensions of courses.

The Infrastructure Axis

This axis is intended to set up multimedia environments which are connected to the internet in each school institution. The equipment of each institution should be able to guarantee a minimal weekly time slot per pupil. This volume, which has been set according to the educational level of the pupil, takes into account room capacity in each school institution. It is as follows:

Primary Schools	Middle Schools	High Schools
1 hour	2 hours	3 hours

The number of computers necessary for this program adds up to more than 100,000 computers, to be made available over a three-year period. The multimedia environments will also be endowed with networked installations and additional equipment (video projectors, printers, etc.).

Other aspects relating to maintenance and service continuity have likewise been taken into account by the strategy. They aim to guarantee a permanent operation/utilization of the installations.

Furthermore, school institutions will have internet connections with speeds (at least 1Mbps) in order to permit a user-friendly access. Thus, and in order to supervise the use of multi-media spaces and to preserve pupils against uses which go counter moral values, some solutions based on the filtering of information flows and on web-security will be put in place.

The implementation of the infrastructure axis is being executed over a three year period, according to the following schedule:

	Primary Schools		Middle Schools		High Schools	
	In %	Number of School	In%	Number of School	In %	Number of School
Year 1	25%	1694	75%	897	75%	474
Year 2	50%	3387	25%	299	25%	159
Year 3	25%	1694	---	---	---	----

At this stage of the program, more than 2000 schools have been equipped and a call for bids have been published to equip more than 4000 schools with more than 57000 PC during the next 8 months.

The training axis

The main objective of this axis is the preparation and the training of teachers - who are indeed a key factor in the success of the program - in the effective utilization of ICT tools which will be put at their disposal. Several types of training have been designed, some of which will be realized in collaboration with foreign partners with confirmed experience in the area of ICT.

- Training sessions which will allow teachers to become acquainted with computers (computer literacy training) and to improve their knowledge of the field. This training will benefit some 230,000 teachers and administrative staff;
- Training sessions designed to allow teachers to use ICT tools in their Course materials. Some 10,000 teachers are targeted by this program;
- Training sessions which focuses on maintenance (more than 700 people are targeted by this program);
- Specific training sessions intended for computer science teachers, within the framework of school curricula and programs which will be implemented.

In order to facilitate the implementation of the training program, regional training labs have been set up and an intensive on-going training process has been developed.

At this stage of the program, more than 3000 teachers have been trained and are ready to train there colleagues.

The Contents-enhancement axis

This aspect is concerned with the development of pedagogical contents that are adapted to education in Morocco, as well as with the use of appropriate and validated ICT contents. The main aim of this axis is to allow for an optimal use of multimedia environments, in order to improve the quality of education. Various actions will be taken, notably:

- The development of pedagogical contents on the basis of national school programs and curricula;
- The creation of a national education portal;
- The use of ICT tools in the management of schools institutions;
- The setting up of a laboratory for curricula development within the Ministry of National Education. This entity will be entrusted with steering the development of digital-based curricula that are deemed relevant. It will also be tasked with defining the technical specifications of national pedagogical output.

At this stage of the program, two studies have been engaged. The first is for the establishment of the priorities regarding the digitalization of the courses materials and the second is relating to the design of the Digital Pedagogical Content Laboratory which will be set within the Ministry of Education.

The implementation of the program

Taking into account the significance and the complexity of this program, along with its positive impacts not only on the sector of education, but also on the sector of information and communication technologies, the management of this program is under the authority of a steering committee which is chaired by the Prime Minister and made up of the following members:

- Minister in charge of Finances;
- Minister in charge of National Education;
- Minister in charge of Telecommunications;
- Director General of National Telecommunication Regulatory Agency.

To this purpose, a project team has been set up by the steering committee in order to execute the action plan of the program aiming at the generalization of ICT in the educational system in Morocco.

THE "GALILEO" PROJECT

What is GALILEO?

A Satellite positioning and navigation system; It includes 3 entities:

- ➔ A constellation of 30 satellites (27 operational and 3 on standby) placed on a 3 plans circular orbit of nearly 24 000 Km of altitude;
- ➔ Terrestrial stations;
- ➔ Users with mobile receptors.

This system, co-financed by the European Union and the European Space Agency (ESA), was specifically designed for civil purposes, and will offer state-of-the-art services with outstanding performance in accuracy, continuity and availability. It will be an alternative to the current American system GPS (Global Positioning System) monopoly.

Galileo Services

The GALILEO system will provide a range of services to users. It can be used in many sectors of activity as transportation, navigation, agriculture, tourism, social services, justice services, customs, lifesaving, leisure etc.

- ➔ The use of combined GALILEO and GPS, made possible by their compatibility and their interoperability, will reinforce the world offer of satellite positioning and navigation services.

Impacts

The demonstration satellite has been launched on December the 28th, 2005. The launching of the first four satellites of the constellation will take place in 2008. The cost of deploying the system is around EUR 3.4 billions. The navigation by satellites services will create, according to the experts, a world market of equipments and services with a value of EUR 200 billion (with at least 3 billion receptors in service) and more than 10.000 highly skilled jobs by 2013.

GALILEO and Morocco

Morocco announced, since 2004, its interest for initiating discussions with the European Union in order to conclude a partnership agreement on the GALILEO program.

As of December the 12th 2006, Morocco and the EU signed an agreement of structural multilateral, industrial and scientific cooperation relating to the applications of the GALILEO system. Morocco became so, the 5th country having signed such an agreement with the EU, and the only Arab and African country.

Importance for Morocco

GALILEO represents for Morocco and Moroccan companies a real opportunity of developing expertise, creating value added applications and services, as well as exporting services.

GALILEO will allow Morocco, which has an interesting know-how in ICT sector; to take the place that it deserves among the countries producers of new technologies and applications with very strong value added in the field of satellite positioning and navigation.

Morocco can also be a main regional platform for the development of Galileo based services in North and Occidental Africa.

Managing Galileo Project in Morocco

Morocco opted for the creation of an Economic Interest Group (GIE) comprising:

- The Telecommunication Regulatory National Agency (ANRT).
- The Airport National Authority (ONDA).
- The National Centre of Scientific and Technical Research (CNRST).
- The Al Akhawayn University in Ifrane (AUI).
- The Federation of Moroccan ITC and offshoring companies (APEBI).

This choice aims at:

- The encouragement and support of the public/private partnership;
- The flexibility and the efficiency in the administrative management of the project.

This Group, named "Galileo Morocco Group", is the official interlocutor of the GALILEO program in Morocco with foreign and Moroccan partners as well.

The main missions of this group are:

- to initiate, promote and encourage projects that create jobs with strong value added;
- to conclude agreements of partnership;
- to encourage experience exchanges notably in the field of training and research on the satellite positioning and navigation.

"Galileo Morocco Group" is an important link in the chain of cooperation between Moroccan and European competitiveness clusters. Contacts have already been established with different actors of Galileo project like GSA, industry, services development companies, etc.

THE "SOFT CENTER" PROJECT

What is "the Soft Centre?"

It is an International Center of Research and Software Development created by the National Telecommunications Regulatory Agency (ANRT). It is legally constituted as a Public Interest Group (GIP),

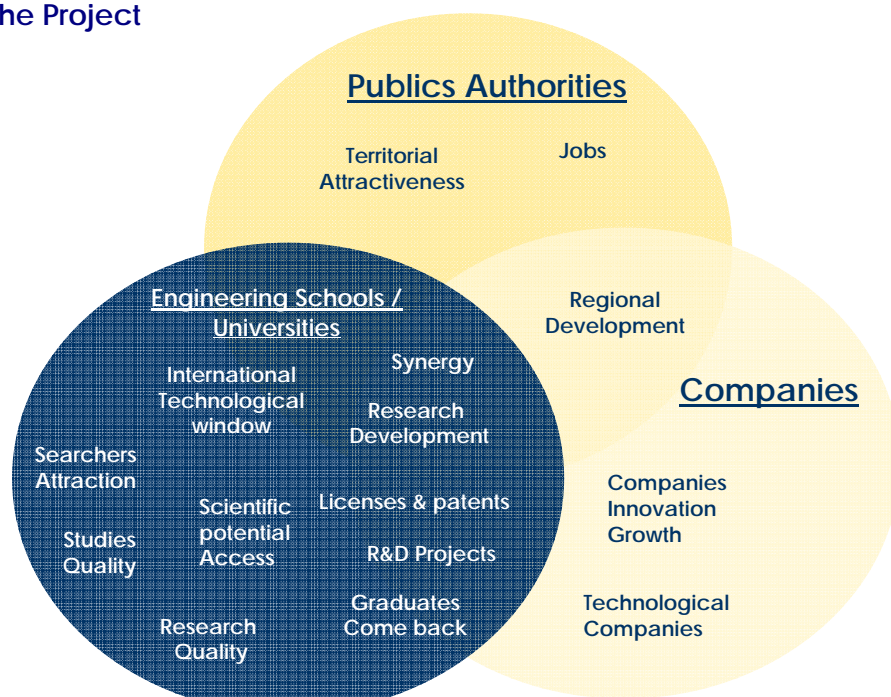
The "Soft Centre" will start its activities in September 2007 within the National Institute of Post and Telecommunication (INPT) and will be later located at Rabat Technopolis. It will be able to accommodate as far as 300 researchers.

What are its Missions?

The "Soft Centre" will have as main functions:

- to constitute a technological "window" concerning Research & Development in the ITC field;
- to attract foreign companies through its human and technological resources;
- to encourage the emergence and support of the innovating start-up companies;
- to reinforce economic growth of ITC in Morocco;
- to detect and bring out talents and innovation;
- to develop R&D activity in laboratories under the direction of confirmed researchers within the framework of partnership with companies;
- to participate to the national policy of trainers training in the field of software development;
- to participate to technological follow-up concerning information technologies;
- to assist in terms of the design and launching of R&D complex projects (European Program, Galiléo...).
- to create companies incubators within schools of engineering;
- to welcome confirmed enterprises having some requirements in R&D activities.

Impact of the Project



What Opportunities?

The setting up of the "Soft Center" benefits from an extremely favourable conjuncture, with the launching of big projects as:

- The "Emergence Plan", with 7 identified growth engines. Two of them present a direct interest for the "Soft Centre";
- The initiative "10.000 Engineers" who foresee to double the present number of graduate engineers by 2010;
- The positioning of Morocco in the offshoring market that can generate 100.000 jobs;
- The national strategy "E-Morocco 2010" offering the possibility to capture the development of e-administration projects.

This favourable context is supported by:

- The R&D local expertise in IT field in engineering schools and universities ;
- The setting up of a fund dedicated to the financing R&D in Telecommunications field;
- The partnership agreement between Morocco and European Union on the GALILEO project;
- The setting up of the GALILEO Morocco Group.

Moreover, besides the traditional academic partners, industry partners (Moroccan Telecom operators, some important companies like Thalès, ST. Microelectronics, Texas Instruments, Alcatel, CDG) expressed their willingness to develop a high-level R&D, within the framework of a partnership with the Soft center.

A necessary Tool

The Soft Center will allow:

- To mobilize and motivate the Moroccan researchers by bringing them support and encouragement;
- To make the offer of the Moroccan Research concerning software, telecom, IT, etc. known and available ;
- To contribute to the innovation rate growth in the Moroccan high-tech companies;
- To federate actors around a structured project in order to reach the appropriate level and capture market opportunities.