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IMPLEMENTATION COMPLETION AND RESULTS REPORT  
(IBRD-72440)

ON A

LOAN

IN THE AMOUNT OF EURO 10.8 MILLION  
(US\$ 13.13 MILLION EQUIVALENT)

TO THE

REPUBLIC OF TUNISIA

FOR A

INFORMATION AND COMMUNICATION TECHNOLOGIES

SECTOR DEVELOPMENT PROJECT

June 14, 2011

Transport, Water and Information and Communication Technologies  
Tunisia  
Middle East and North Africa

CURRENCY EQUIVALENTS  
(Exchange Rate Effective June 8<sup>th</sup>, 2011)

Currency Unit = Tunisian Dinar  
1.00 TND= US\$ 0.74  
US\$ 1.00= TND 1.36

FISCAL YEAR 2011

ABBREVIATIONS AND ACRONYMS

ATCE	Agence Tunisienne de Communication Extérieure (Tunisian Agency for External Communication)
ANSI	Agence Nationale de Sécurité Informatique (National Agency for Computer Security)
ATI	Agence Tunisienne de l'Internet (Tunisian Internet Agency)
CAS	Country Assistance Strategy
CERT	Computer Emergency Response Team
CNI	Centre National de l'Informatique (National Center of Computer Science)
DPL	Development Policy Loan
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
GOT	Government of Tunisia
ICT	Information Communication Technologies
INS	Institut National de la Statistique (National Institute of Statistics)
INT	Instance National des Télécommunications (National Telecommunications Agency)
ISET'Com	Institut Supérieur des Études Technologiques en Communication (Higher Institute for Technology Studies in Communications)
ISP	Internet Service Provider
IXP	Internet Exchange Point
MCT	Ministry of Communication Technologies and Transport
MENA	Middle East & North Africa
MNAVP	Middle East North Africa Vice Presidency
MTC	Ministère des Technologies de la Communication (Ministry of Communication Technologies)
M&E	Monitoring & Evaluation
PAD	Project Appraisal Document
PDO	Project Development Objective
PIU	Project Implementing Unit

PMU  
SERA  
SupCom

Project Management Unit  
Secrétariat d'État à la Réforme administrative  
École Supérieure des Communications  
(Higher School in Communications)  
Tunisian Dinar

Vice President:	Shamshad Akhtar
Country Director:	Neil Simon Grey
Sector Manager:	Philippe Dongier
Project Team Leader:	Carlo Maria Rossotto
ICR Team Leader:	Isabelle Huynh

**Tunisia**  
**ICT Sector Development Project**

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MAP

## **1. Project Context, Development Objectives and Design**

### **1.1 Context at Appraisal**

1. The Government of Tunisia (GOT) has made information communication technologies (ICT) a priority development sector since the late 1990s. In fact, a central objective of the 10th Development Plan (2002-2006) was to foster the emergence of a knowledge-based economy in Tunisia. In 2002, at the GOT's request, the Bank worked in partnership with the Tunisian authorities to complete a first ICT Policy Note with emphasis on the contribution of ICT to growth and employment. The strategy advocated telecom competition and Internet liberalization as drivers of sector development and broader economic growth. The Country Assistance Strategy (CAS) for Tunisia adopted in June 2004 identified private sector-led modernization of information infrastructure services as a priority to be supported by Bank operations.

2. The GOT had successfully undertaken several measures aimed at enhancing the diffusion of ICT among enterprises and consumers. It implemented certain measures to reform the telecommunications sector, including a new law that increased competition in mobile service and allowed the introduction of satellite services. Telecommunications sector reform, however, was slower than in comparable developing countries in MENA and in other regions. This has likely constrained growth of information intensive sectors across the whole economy.

3. Specific priority issues at the time of appraisal were: (a) developing the ICT potential of the Tunisian private sector; (b) accelerating Internet and ICT use by firms and consumers; (c) extending access to ICT in rural areas; (d) increasing competition and private participation in all segments of the telecommunications market; (e) improving availability and reducing price of broadband services; and (f) enhancing reliability and security of information and communications networks.

4. An additional factor at the time of appraisal was the intention of the GOT to seek Bank assistance to develop e-government projects in specific areas, to have a demonstrated effect on the rest of the government administrations, and to strengthen the security of the internet infrastructure.

### **1.2 Original Project Development Objectives (PDO) and Key Indicators**

5. The ICT Sector Development Project was designed to assist Tunisia in promoting the development of its ICT sector by:

- (a) supporting ICT institutional and sector reforms;
- (b) improving its e-security mechanisms;
- (c) developing e-government applications; and
- (d) promoting the participation of the private sector in the ICT sector.

6. The project was expected to:

- (a) develop a long-term strategic plan for ICT sector development, with increased private sector participation and competition;

- (b) strengthen the capacity of sector institutions;
- (c) develop the government's e-agenda as well as simplify procedures and achieve efficiency gains in the delivery of selected government services to private businesses and the population at large;
- (d) develop competencies and expertise for e-security, and improve preparedness and resilience of the Internet in case of cyber-attacks or disaster; and
- (e) assist the GOT in the monitoring and implementation of key sector improvements before the World Summit on the Information Society (WSIS) in Tunis in November 2005.

7. The PDO and key performance indicators are summarized below; Annex 8 provides detailed data for every year of project implementation.

**PDO:**

- Increase in share of ICT Sector in the GDP from 6% in 2003 to 8.5% in 2008 (CAS Indicator)

**KPI:**

- Awarding of new licenses in 2004-2005 in the VSAT and data transmission segments
- Number of fixed and mobile phone lines in % of the population reaches 60% in 2008 (up from 32% in 2003) (CAS indicator)
- Increase in share of private sector investment in ICT sector from 35.2% of total in 2003 to 60% of total investment by 2008
- Implementation of 2 new e-government portals in November 2005 and two additional new e-government portals by 2008.
- Increase in requests by private sector and citizens submitted over these new e-government service sites – Methodology to calculate indicators and base value to be provided by Government prior to mid-term review
- Creation of computer emergency response team and organization of 3 trainings or CERT workshops before the end of 2005
- Creation of a data backup center for critical applications of the government applications, and testing by the end of 2005.
- Publication of economic and statistical analyses of Tunisian “e-agenda” successes achieved by WSIS

**1.3 Revised PDO (as approved by original approving authority) and Key Indicators, and reasons/justification**

Not applicable.

**1.4 Main Beneficiaries,**

8. The Ministry of Communication Technologies and Transport (MCT) was responsible for the overall coordination, implementation and supervision of the project. The other main beneficiaries and implementing agencies were the Ministry of Culture, Youth and Leisure; the Ministry of Justice; the Ministry of Social Affairs and Solidarity; the Instance National des Télécommunications (INT - National Telecommunications Agency), the Agence Tunisienne de l'Internet (ATI - Tunisian Internet Agency), Centre National de l'Informatique (CNI - National Center of Informatics), the Agence Nationale de Sécurité Informatique (ANSI - National Agency

for Informatics Security), Secrétariat d'État à la Réforme administrative (SERA), the Institut Supérieur des Études Technologiques en Communication (ISET'Com - Higher Institute for Technology Studies in Communications), and the École Supérieure des Communications (SupCom - Higher School in Communications).

9. In addition to the public entities that benefitted directly from the project support, the primary target group was the Tunisian population as a whole, comprising of households and businesses. The population would benefit from the increased availability, affordability, and quality of traditional and advanced telecommunication services as well as enhanced Internet services and IT security. A secondary group of beneficiaries included the Tunisian population with disabilities, in particular students.

### **1.5 Original Components**

#### **1) Information and Communications Strategy, Policy, and Regulation.**

This component aimed at assisting the GOT on further opening the ICT sector to private participation and competition. In particular, the project was to support:

- (a) The elaboration of a strategic long-term plan for developing the ICT sector, including a strategy for promotion of universal access;
- (b) The award of additional licenses; and
- (c) Capacity building for the INT.

#### **2) E-government Strategy, Services, and Applications.**

The component aimed to support:

- (a) The creation of an e-government strategy, which was to be coordinated by the State Secretariat for Administrative Reform (SERA);
- (b) The development of e-government applications and online services in GOT ministries and agencies, such as the Ministry of Justice and Human Rights (portal and on-line services), the Ministry of Culture, Youth, and Leisure (portal and on-line promotion), and the Ministry of Communication Technologies and Transport (virtual ICT library).
- (c) The creation of solutions to equip selected schools and social service centers with specialized IT solutions for the disabled, under the direction of the Ministry of Social Affairs and Solidarity;
- (d) Assistance to the ATI in the development of an Arabic Domain Name System (DNS) registry; and
- (e) Improvements in the ICT training capacity of ISET'Com by providing a distance-learning platform and content for building ICT capacity in Tunisia.

#### **3) E-Security.**

The component aimed to:

- (a) Develop and implement a computer risk-prevention strategy based on the Computer Emergency Response Team (CERT) model;
- (b) Strengthen e-security research and training capacity; and

- (c) Establish a data backup centre to ensure continuity of government’s critical computer applications.

#### 4) Project Management and Support to the Preparation of WSIS 2005.

This component provided technical assistance to the GOT to implement a complex and fast-paced project, with emphasis on results by WSIS in 2005. It included:

- (a) Technical assistance to strengthen the Project Management Unit (PMU);
- (b) Support to an ICT statistical and economic analysis unit within the MCT to develop and implement monitoring and evaluation activities, measure progress in the sector, publish a regular monitoring and evaluation report, and provide input to policy-makers; and
- (c) Preparatory activities for WSIS 2005.

### 1.6 Revised Components

10. The project was restructured in December 2009. The Government’s request for project restructuring involved: (i) cancellation of three activities replaced by three smaller activities in line with Government’s priorities, and relying on agencies which had a solid track record with regard to activity implementation (see 1.6); (ii) cancellation of part of the proceeds of the Loan; and (iii) reallocation of the reduced amount of the Loan to disbursement categories.

11. The project components remained unchanged, however Component 2 and 3 had activities that were cancelled, and Component 1 and 2 had added activities (Table 1). The three canceled activities, for which procurement and project implementation processes suffered significant delay at the start, were the virtual library (procurement of equipment for an estimated cost of \$345,000<sup>1</sup>), the acquisition of a distance-learning platform (estimated cost of \$1,150,000), and the IT Security Lab for Research and Education (estimated cost of \$460,000). The first two canceled activities belonged to Component 2 of the project, and the third canceled activity belonged to Component 3. As requested by the Borrower, they were replaced by a study on Women and ICT in Tunisia (estimated cost of \$100,000), and a study on outsourcing the ICT needs of governmental and parastatals to the private sector (estimated cost of \$480,000), which were added to Component 1 of the project; and a pilot project on eDisabled (estimated cost of \$185,000), added to the Component 2.

**Table 1:** Activities cancelled and new activities

	<b>Cancelled activity</b>	<b>New activity</b>
<b>Component 1 – ICT policy</b>		Women in ICT in Tunisia ICT outsourcing
<b>Component 2 – eGov applications</b>	Virtual library Distance learning platform	eDisabled pilot
<b>Component 3 – e-Security</b>	IT security Lab	

<sup>1</sup> Otherwise mentioned, \$ refers to US dollars.

12. These changes did not impact the PDO as the canceled activities had an indirect contribution to it, and the new activities partially made up for this indirect contribution.

### 1.7 Other significant changes

13. There were two changes made to the project: an extension in 2008, and a cancellation and reallocation in end 2009.

14. The project was extended in December 2008 by 18 months, pushing the closing date from June 2009 to December 2010. This was the result of delays in project implementation, triggered mainly by delays in procurement processes (specifically due to local procurement clearance processes) and lengthy validation of the deliverables under the project.

15. The Borrower requested a cancellation of EUR2.646 million of the loan amount<sup>2</sup> and a reallocation of the loan proceeds. The total cost of the project was brought from EUR10.8 million down to EUR8.1 million. The cancellation request was mostly driven by: a) cost-saving efforts in project implementation,<sup>3</sup> and b) the substitution of the three original activities with new activities resulted in an approximate new savings exceeding \$1 million equivalent. The reallocation of the funds is shown in Table 2 below.

**Table 2:** 2009 reallocation (Euros)

CATEGORY	ORIGINAL ALLOCATION	PARTIAL CANCELLATION DONE ON JULY 2 <sup>ND</sup> , 2004	REQUESTED CANCELLATION AS OF JUNE 22 <sup>ND</sup> , 2009	2009 PROPOSED REALLOCATION
GOODS	3,900,000	3,900,000	1,500,000	2,700,000
CONSULTANTS' SERVICES	5,200,000	5,200,000	944,000	4,856,000
TRAINING, WORKSHOPS AND SEMINARS	700,000	700,000	202,000	490,000
FRONT-END FEE	108,000	54,000	-	54,000
UNALLOCATED	892,000	892,000	0	0
<b>TOTAL</b>	<b>10,800,000</b>	<b>10,746,000</b>	<b>2,646,000</b>	<b>8,100,000</b>

## 2. Key Factors Affecting Implementation and Outcomes

### 2.1 Project Preparation, Design and Quality at Entry

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<sup>2</sup> Including a 2005 cancellation of EUR 54,000.

<sup>3</sup> During the life of the project, the cost of software and IT services expressed in US dollars decreased – the loan being signed in euro, and the euro strengthened against the dollar during the project timeframe, i.e. e-Disabled equipment was purchased for about USD 0.5 million, instead of the original budget of USD1.3 million

16. The project approach was consistent with the World Bank Group's strategy for the ICT sector approved by the Board of Directors in September 2001 and was also well aligned with the ICT Policy Note recently prepared by the GOT (see 1.1): the project supported directly 2 of the 7 main priority measures identified in the Policy Note (sector liberalization, regulatory framework improvement) and 1 of the accompanying measure (eGov portals). The Bank had several comparative advantages to assist the GOT in this sector, which included the Bank's extensive policy dialogue on telecommunications with the GOT and several other countries in the region: the Bank had implemented several telecommunication projects and had proven expertise in helping countries make the transition to an information-based economy; the Bank could offer international global best practices; and, therefore, the Bank was well-placed to play a leadership role among donor agencies.

17. The background analysis described in Annex 1 to the PAD was comprehensive and sound. It partly built on an ICT Policy Note that had been recently prepared by the Bank in close cooperation with the Government. The ICT Policy Note was a major effort, and its preparation lasted about 18 months; it was completed before the start of the project. The background analysis pointed at three important aspects: (i) limited liberalization of the sector (including possible delays in WTO commitments); (ii) Government's commitment to continue reforming the sector albeit at a slow pace; and (iii) an important gap between the telecommunication penetration (fixed and mobile) which was relatively good, and the Internet penetration which was very low.

18. Working documents and internal memos show that the Bank team and management had a good understanding of the "freedom of Internet" issue in Tunisia. The team assessed this issue and listed it as an explicit risk for the operation. The team involved the management and MNAV P which had direct discussion on this issue with the counterparts.

19. One of the engines that led to project preparation was the WSIS 2005 event hosted by Tunisia. The Government needed to be ready to showcase the benefits of Internet to the world, at a time when it was strictly enforcing a policy of access and content control. The Bank team and the management assessed this risk adequately, as noted in the PAD (risks from outputs to objective and from components to objectives were rated high, in particular due to Government's concern with security). The Bank team engaged with various segments of the Tunisians society on a technical level, with a view to increasing Tunisia's exposure to best international practice, and building local capacity to encourage ICT entrepreneurship, while at the same time seeking greater access to the Internet, and emphasizing its benefits in terms of social and economic impact. The Bank team and the management (at VP level) used the project to deliver clear messages with regard to the need for more freedom of information in the context of an "information society" that can thrive only with freedom of content and wider access. The Bank had also gained credibility with the counterparts and with the broader private sector in Tunisia, by canceling a USD50 million telecommunications tranche in the Tunisia ECAL III operation, on the grounds that the process to award the license to Tunisia was not sufficiently transparent.

*Assessment of the project design:*

20. The objectives of the project were adequate to capture the effectiveness of the project. The PDO (increase in share of ICT sector in GDP from 6% in 2003 to 8.5% in 2008) was one of

the first attempts to quantify systematically the contribution of the ICT sector to the overall economy. An increase of 2.5 points was ambitious but realistic given that this was a priority sector for the Government and its commitment to further competition in the sector.

21. The four components were clearly defined and in line with the PDO and KPI. Component 2 (e-government strategy and applications) represented the largest portion of the loan (42 percent); Components 1 (sector strategy and regulation) and 3 (eSecurity) represented about 20 percent each, and Component 4 (project management and WSIS preparation) represented about 12 percent of the loan. Half of the project dealt with consultant services, 40 percent with the procurement of goods, and the rest with training.

22. The implementation arrangements were very complex with ten implementing agencies involved (1.4), which may be considered a weakness in the project design. This was decided at the time of project negotiations with the counterparts. The Bank team suggested a leaner, more focused project, with large turn-key packages for applications development. The Government insisted on the importance of being inclusive and of spreading the demonstration effect of ICT on the largest possible number of actors, with the view of disseminating ICT among the Tunisian public administration. Both points of view had strengths and weaknesses. In spite of the large number of agencies, the procurement plan did not appear overly complex at the beginning. The project could be considered realistic at the time of preparation given the commitment shown by the Government with regard to sector reform, and with the upcoming WSIS event creating positive incentives for the Government to showcase its ICT sector as state-of-the-art, not only from a technological standpoint but also in terms of investment and transparency. On balance, the team and management concluded that it was important to support the forces of change in Tunisia through sector reform and liberalization.

## **2.2 Implementation**

23. The loan was signed in July 2004 and the project, subsequently, became effective in January 2005. The original closing date was June 2009, but was later postponed to December 2010.

24. The project suffered early on from delays in all components. It took six months for the project to become effective. The selection of a procurement specialist for the PMU took several months, and that delayed project effectiveness. Once the PMU was fully-staffed, successive governmental changes and limited capacity within some implementing agencies, together with the national procurement processes that had to be followed, contributed to a slow implementation pace. Very early on (December 2005), the Bank task team warned the Government of these delays (in particular with Iset'Com and SupCom). These delays translated into low disbursement rates. The Government shared the Bank team's view, and ultimately canceled three activities, albeit later in project implementation.

25. Four main factors affected implementation. First, three different ministers managed the project in succession over the life of the project. While Government's commitment to reform was not shaken, it was necessary to brief the new ministers and delays arose at the time of their installation as they were getting familiar with their new ministerial portfolio.

26. The second factor related to the limited implementation capacity within some of the implementing agencies. The PMU consisted of a strong team that provided high quality interface with the Bank (and intense support to the implementing agencies) consistently throughout the project. However this was not enough to make up for limited capacity in some agencies. In addition, the procurement plan became more complex as the project progressed: in 2005, there were a total of 29 technical assistance activities identified in the procurement plan; whereas in 2010, there were a total of 90 contracts that were signed. Some procurement packages were divided in better identified tasks with a view to improve their implementation.

27. The third factor affecting project implementation had to do with the technicalities embedded in the ICT sector. High level of expertise was required from consultants, and contract negotiations were complex and validation of deliverables by the agencies was a lengthy process.

28. The fourth and last factor was related to the change management triggered by the rollout of new applications. The engineers in the implementing agencies had good technical skills; however, the administrative staff often did not understand or was not capable of managing information technology dimension embedded in the new e-government applications. This proved to be a challenge for project implementation.

29. The factors related to project implementation capacity in ICT projects were not unknown to the Bank team; however, they have been underestimated. The Tunisian counterparts had excellent engineering skills, but the change management associated with eGovernment, and with the implementation of complex IT systems in the public administration, was certainly underestimated. A posteriori the implementation schedule appears overly optimistic: for instance the ICT strategic plan, a pillar of the project, was planned in the first 18 months, but it did not start until May 2009 for a final delivery at the very end of the project. Similarly, the eGov strategy was originally planned for a delivery in July 2006, but was not completed until December 2009. The complex data backup center was successfully implemented, but only at the end of the project, with considerable delay.

30. All along project implementation, however, the Government has expressed its commitment to continue moving along the reform agenda. In early 2007 at the time of mid-term review, the new sector law was finally adopted (after two years of delay). Some of the activities were starting to have demonstrating effects, and the PDO was at hand's reach. The teams discussed in detail a project restructuring which took two years to be finally adopted.

31. For the Bank team, project implementation went through, alternately, from satisfactory improvements (the eDisabled program became quickly operational, but the eJustice portal and the eCulture portal took longer to become effective) to worrisome delays (with the ICT strategy and the eGov strategy) and drawbacks (with the outsourcing study, that was identified as a promising new activity, and which eventually was canceled altogether).

### **2.3 Monitoring and Evaluation (M&E) Design, Implementation and Utilization**

32. M&E design: The objective of the project was to assist the Borrower in promoting the development of its ICT sector by (i) supporting ICT institutional and sector reforms, (ii) improving its e-security mechanisms, (iii) developing e-government applications, and (iv)

promoting the participation of the private sector in the ICT sector. The results framework was adequately defined. It covered one PDO objective (contribution of the ICT sector to the GDP) and ten outcome indicators were defined to monitor the components implementation (Annex 8).

33. The PDO accurately captured the objective of the project. From a statistical standpoint, the PDO is a measure that is subject to continuous improvement given that the ICT are by nature constantly evolving and penetrating an increased number of sectors and sub-sectors. In fact, in the last year of the project, the methodology was updated by the Institut d'Économie Quantitative, to come closer to International Standards Industrial Classification (ISIC), considered as best practice.<sup>4</sup> As a result the baseline was modified downward: 4.3 percent in 2005 instead of 7 percent for 2005. The original target set for 2008 was 8.5 percent; the actual result in 2008 evaluated under the old methodology was 10 percent, while the revised methodology's result was 5.6 percent (Table 2).

34. More importantly, the ICT sector contribution to the GDP increased by more than 50 percent over the project life.

**Table 2:** PDO - Increase in share of ICT sector in GDP from 6% in 2003 to 8.5% in 2008

	2004	2005	2006	2007	2008	2009	2010
<b>Old methodology</b>	5.9%	7%	8%	9%	10%	11%*	12%*
<b>Revised methodology</b>	n/a	4.3%	4.7%	5%	5.6%	6.3%	6.8%*

\*forecast

35. The other indicators were collected on a regular basis (Annex 8). Performance indicators in ISRs were regularly updated, except for the indicators relating to the number of requests submitted in the portals of eJustice and eCulture. This is explained by the fact that the eJustice portal became operational only during the last year of project implementation, and the eCulture, while technically ready, was not officially cleared for launching until the closing of the project.

36. M&E utilization: The utilization of the performance indicators contributed to raising the profile of the sector and increasing its visibility throughout the Government. One activity of the project was fully dedicated to strengthening data definition, collection and analysis pertained to the ICT sector; the revised methodology mentioned above is the direct output of this activity. Also, the M&E framework has helped better illustrate the pervasiveness of ICT in the Tunisian economy – and by doing so, demonstrated the importance of the ICT sector to the entire national economy.

#### **2.4 Safeguard and Fiduciary Compliance**

37. There were no specific safeguard- and compliance-related issues.

#### **2.5 Post-completion Operation/Next Phase**

<sup>4</sup> Moving from an input/output parametric methodology based on a classification defined internally by the Institut National de la Statistique, to ISIC classification.

37. Between 2009 and the end of 2010, the Government and the Bank team had been in agreement to start preparing a follow-up project. A working team comprised of various ministries met a few times and put together a detailed table of proposals, including objective, scope of activities, timeline, M&E, and financial resources. These took into account the new ICT strategy prepared under the project; in particular, its final draft that was circulated in the final trimester of 2010.

38. Also in December 2010, the Bank team managed to secure the organization of a Korean-sponsored workshop on mobile applications that was attended by a large audience from the public and private sector, and was greatly appreciated by the participants as it gave opportunities to discuss the concrete success stories of the Korean ICT experience in the area of mobile applications in a competitive environment with full freedom to access the Internet and develop applications in the digital space. In addition to this event, the Bank team submitted an application to the telecom and ICT reform-related Korean Trust Fund with a view to having it contribute towards the preparation of the follow-up operation.

39. Following the “Jasmine Revolution”, the interim government is mandated to prepare the next presidential elections, and the sectoral dialogue was suspended for a few weeks. At the time of this ICR preparation, the prospects of a new ICT project are relatively high, although the timeline of its implementation remains mostly still undecided. In March, the Bank’s country team opted for a multisectoral DPL operation which is being actively prepared, with ICT as a cross-cutting subject. In particular, with the fund available under the Korean Trust Fund, a collaborative project with the health sector is being designed to strengthen accountability through the use of ICT applications. As a product of the dialogue with the counterparts, the Tunisia GO DPL has included two measures related to ICT: i) liberalization of the domain “.tn”, with less administrative procedures to register and host “.tn” websites, and the extension of the number of subjects that can be Domain Name registrars; and ii) introduction of technical guidelines to encourage government websites to include citizen feedback loops using ICT-enabled social media, such as Facebook.

### **3. Assessment of Outcomes**

#### **3.1 Relevance of Objectives, Design and Implementation**

Rating: Satisfactory

40.

41. The Tunisia ICT project was aligned with the 10th Development Plan (2002-2006) which aimed to support the emergence of a knowledge-based economy. At the same time, the CAS for Tunisia adopted in June 2004 identified modernization of information infrastructure services through private investment as a priority to be supported by Bank operations. In that context the project’s relevance was high.

42. The project was very innovative for its time: in 2002-2003 at the time of its preparation, there had been very limited engagements – in Tunisia and in the rest of the developing world – in the area of e-applications, setting up of a national back-up center, strengthening of e-security in

the civil society, or development of tools to improve access to ICTs by the disabled. The Bank team and the Borrower were overly optimistic about the implementation timeline, in spite of the overall high level of ICT competencies within the Borrower's project teams, and of the fact that numerous applications that were originally considered in the project scope, were finally dropped to keep the size of the project more manageable. Annex 7 showcases the success of four of the project outputs: eJustice portal, e-Disabled, the national back-up center, and eCulture (which, though not yet online, has an incredibly rich content).

43. Over the project life, the combination of various factors kicking in at different times, has translated into slow implementation. However, as explained in para. 3.2, the PDO and intermediary performance indicators were all met or exceeded, except for one relating to the number of certified auditors in cybersecurity: 178 certified auditors against the target of 220). Overall, the delays resulted from successive Government changes, time-consuming and bureaucratic national procurement processes, technicalities of the procurement packages that triggered a lengthy clearance process, and limited capacity in some implementing agencies. The non-disbursement of a telecom sector-related DPL tranche contributed to a cooling in the policy dialogue between the Bank team and the Government, but it also strengthened the credibility and reputation of the Bank. Finally, there was also a lull in project activities after the 2005 WSIS. Nevertheless, in the last two years of the project, owing to a dynamic PIU, the implementing agencies picked up the pace and several activities were completed just before the project ended.

### **3.2 Achievement of Project Development Objectives**

Rating: Satisfactory

44. The PDO, as discussed in para. 2.3, was achieved: in 2008 (original project closing date) the ICT sector contribution to GDP reached 10 percent, above the original objective. After project extension and subsequent restructuring, the new target for project end in 2010 was ambitiously set at 12 percent, and this target was reached (based on the old INS classification and methodology).

45. The intermediary indicators were also fully met:

- Contributing to greater sector liberalization, with 3 operators holding now eight licenses<sup>5</sup> (against an initial target of two), one of which was a global license awarded to Orange Tunisie, the first of its kind in the region.
- Increased competition translated into increased access: fixed and mobile penetration reached 118 percent from 32 percent in 2003; the initial target of 60 percent in 2008 that was already exceeded at 95 percent that year; target for 2010 was 109 percent).
- Increased competition was fueled by private sector investment in the ICT sector whose share reached 72 percent in 2010 (against a target of 65 percent), from 35.2 percent in 2003 and the original objective of 60 percent in 2008.

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<sup>5</sup> 2 fixed licenses, 2 VSAT, 2 GSM, 3 Wimax, and 1 global license

- Of the two eGov portals that were planned to be operational by project end, only the eJustice portal is fully operational (with 25,000 downloading in December 2010), while the eCulture portal is at a very advanced stage (only some last detailed content clarification were still under review at the time the project ended).
- The eDisabled solution targeting the schools was fully operational early on and constitutes a unique feature of the project. The number of disabled students benefiting from the project went from 600 in 2006 to 3,201 in 2009, and 8,370 in 2010
- The eAccessibility activity (web accessibility of all the administration applications in line with international standards in terms of access by disabled users) was completed in December 2010.
- The creation of a Computer Emergency Response Team (CERT) with 16 specially-trained team members was achieved in a fully satisfactory way, and the Tunisian CERT was the first African team to become a member of the FIRST (Forum for Incident Response Team) Initiative. FIRST is a global leader in incident response.
- The construction and operationalization of a national back-up center was achieved by project closing; it offered the first cybersecurity infrastructure and a large backup capacity (4 terabytes) to the Government. In addition, 178 auditors were certified in security at ANSI by end of 2010.

46. Details on project outputs by component are presented in Annex 2. In addition, specific annexes on eJustice, eCulture, eDisabled and on the back-up center provide in-depth description of project achievements in these fields.

### **3.3 Efficiency**

Rating: Satisfactory

47. The PAD's economic and financial analysis briefly discusses four areas of economic impact that were meant to emanate from the project, but which, however, cannot be fully dissociated from the overall ICT strategy:

- increased ICT expenditure derived from further sector liberalization
- declining production costs brought about by the more effective competition in all telecommunications market segments
- lower transaction costs in the private sector (through lower Internet cost and greater accessibility, allowing better e-commerce and supply chain management, and overall better quality control over production of services), as well as in the public sector (through eGov applications)
- employment creation generated by new entrants, contractors, suppliers and retailers.

### **3.4 Justification of Overall Outcome Rating**

Rating: Satisfactory

48. Based on the above-mentioned factors, the overall outcome rating is satisfactory.

### **3.5 Overarching Themes, Other Outcomes and Impacts**

#### **(a) Poverty Impacts, Gender Aspects, and Social Development**

49. The project's component on the e-Disabled was a very innovative feature of the project, and was highly successful in its implementation (Annex 8). They comprised of two activities: (i) improving access of students in schools to computer labs with adapted equipments and applications); and (ii) generalizing disabled-adapted applications in the specialized access centers so that all computers can be used by disabled people). A multi-site videoconference was organized to showcase the e-Handicapés experience, with South America and Africa countries. A good practice note was published in an international specialized journal.

50. The Government also requested a study on Women and ICT in Tunisia that provided a detailed overview of the access and usage of ICT by Tunisian women and the report suggested a number of recommendations to increase access. ICT use by women in Tunisia was found to be not significantly lower than that of men. Rather, usage was affected more by the socio-economic situation.

#### **(b) Institutional Change/Strengthening**

51. Most of the capacity building activities went to the INT and the CERT. In both areas, capacity building was greatly needed. In the case of INT, capacity building was organized through technical assistances with five important studies on interconnection, tariff policy based on cost models, numbering, local loop unbundling, and broadband access. Those studies were catalytic in allowing the organization to better negotiate and adopt interconnection catalogs (every year since 2006). Samewise, INT was able to determine the rules of local loop unbundling in 2009. INT's role in implementing the decision on liberalization the ".tn" domain name also reflects on its ability to be an effective body of regulation enforcement. However, further capacity building will still be needed to assert the regulator's autonomy and independence, in particular in the post-revolution era in which it is critical to bring all the operators, including the incumbent, on a true level-playing field competition.

52. The creation of the CERT, supported by the project, is seen from inside and from outside as a success. Internally, the Government intends to replicate similar organization in the key sectors of the economy (banking, tourism, education, etc.). Externally the Tunisian CERT is the first African organization to join FIRST (Forum for Incidence Response and Security Teams).

#### **(c) Other Unintended Outcomes and Impacts (positive or negative)**

N/A

### **3.6 Summary of Findings of Beneficiary Survey and/or Stakeholder Workshops**

N/A

## **4. Assessment of Risk to Development Outcome**

Rating: Negligible to low

53. With the Jasmine Revolution which started just a few days after the project closing, it is difficult to predict how fast the next generation of reforms needed in the sector (full competition in telecom, broadband and wider access to high speed internet) can be implemented. A year before the project was to be completed, the Government had expressed its interest to continue the reform with World Bank support. With the Revolution, short-term priorities are to prepare the elections, support employment creation and improve governance. The ICT agenda can help those short-term objectives and in particular this project has supported the first generation of reforms that provided a key foundation for achieving these objectives.

54. The new telecom legal framework and increased private sector participation in the sector – both supported by the project – have taken the telecommunication sector in Tunisia to a new level of competition and connectivity that is unlikely to be reversed. Thanks to the partial liberalization in the sector, investments have grown fifteen-fold between 2004 and 2008. Telecommunications reached 7.4 percent of total gross investment in 2008.<sup>6</sup> From a technical standpoint, the use of ICT in public and private sector is growingly pervasive and, ultimately, the best suited solutions to business development and quality delivery of services. From an economic standpoint, international benchmarking suggests that investments in the telecommunications and ICT sectors yield significant fiscal revenues, and that an adequate legal and regulatory framework can attract greater Foreign Direct Investments (FDI) – for instance the partial privatization of Tunisie Telecom in 2006 (35%) generated US\$ 2.2 billion of FDI (more than half of total FDI).

55. From a social standpoint, access to ICT can significantly improve the quality of life of the lowest-income group by encouraging job creation. Concrete risks of policy reversals always exist. In the case of Tunisia however, the most recent decisions taken by the “care-taker” Government and pertaining to the liberalization of the “.tn” domain name, and the introduction of technical guidelines to encourage government websites to include citizen feedback loops using ICT-enabled social media, are a sign that Tunisia is moving concretely towards an information society.

## **5. Assessment of Bank and Borrower Performance**

### **5.1 Bank Performance**

(a) Bank Performance in Ensuring Quality at Entry

Rating: Moderately Satisfactory

56. The Bank team prepared this project in 2003 within a short amount of time to meet the urgent request from the Government in view of the upcoming WSIS event. The team was composed of the same people that had contributed to the preparation of the 2002 ICT Policy

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<sup>6</sup> Diop, Ndiame; Vincelle, Gallina A.; Molouche, Mariem; Young Lee, Sun; Dee, Philippa; Walkenhorst, Peter; Cattaneo, Olivier; *Tunisia's global integration : a second generation of reforms to boost growth and employment*, The World Bank, 2008

Note, so it had a good knowledge of the sector. In spite of a fast track process, the PAD was well aligned with the Government's strategy and the CAS. It was also well informed, and in many areas, proposed innovative activities and bold objectives.

57. However the assessment of the readiness of the Tunisian counterpart was overly optimistic and the implementation complexity was under estimated. As mentioned earlier, institutional arrangements covered 10 implementing agencies, some of them were brought on board without much prior consultation. As a result, some implementing agencies underperformed very early on, and eventually had to be dropped (Iset' Com, Sup' Com).

58. The project was innovative in that it covered the launch of nationwide e-applications related to the eGov program. The paper-based process that had traditionally governed the administrative organization had to be translated into electronic data and stored accordingly. Such process requires a whole transformation of the way-of-doing-business in the administration. In 2003, the Bank had not yet mainstreamed such activities. In addition, the project was targeting an unusual population, the disabled youth, in a component that proved to be very successful. The e-applications were innovative, but the Bank underestimated the time needed between project/pilot design, and actual full-speed implementation; in particular the eJustice and eCulture components were implemented with delays.

59. The M&E framework was well designed to reflect the project implementation performance, and the Borrower was able to feed all the indicators (except for two that were supposed to be defined and collected by mid-term review, and were collected only in the last months of the project implementation). The targets were reasonably ambitious.

60. The risk assessment was worked into much detail, and demonstrated that the Bank team understood the political interference and vested interests that were at stake in the project scope. The Overall Risk Rating was High. Four out of eight aspects were rated High Risk.<sup>7</sup> The proposed risk mitigation measures were reasonable and realistic.

## **(b) Quality of Supervision**

Rating: Moderately Satisfactory

61. The strongest pillar of the project dealt with the policy, legal and regulatory framework, a field in which the Bank team had solid experience. The Bank team challenged the Government with a plan for rapid sector liberalization, a strategic orientation that the Government first resisted, and then implemented at a very gradual pace. There always is an opportunity cost in delaying such liberalization and private sector participation reforms. The way this project was

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<sup>7</sup> (i) GOT has an inherent bias toward public provision of services, (ii) the project will be decentralized to too many agencies with limited project implementation capacity, (iii) technical assistance will be provided to agencies but key political issues in sector reform may remain unaddressed, and (iv) eGov services will be under-used by citizens due to restrictive government policies on Internet which hamper development of Internet hosts and provision of Internet access services.

implemented helped reforms to happen in a faster pace compared to the likely pace of solely Government-engineered intervention.

62. The focus on development impact remained constant throughout the project. The Bank team delivered high quality policy advice to the Government, which contributed to a trusting relationship between the Bank and the Government whereby the Bank team was able to share knowledge and best practices, and contribute to high exposure for the Government. The Bank team regularly communicated to the Government its concerns pertaining to the causes of delay of the liberalization process, pointing out that this would seriously slow down the take off of Internet usage by businesses and households which, in turn, would limit the growth impact on the GDP. The advice provided by the Bank team was highly valued by the Borrower, and explains why early on, the Government sought to secure future Bank support for its ICT reform with a follow-up project.

63. While overall the supervision proceeded rather well, the delay in processing the restructuring (in 2009, whereas it was initially discussed in 2007) and the disconnect between the ISR (Implementation Performance ratings were satisfactory all along project implementation) call for a “moderately satisfactory” rating. An average of one to two annual supervision missions comprising of sector specialists and fiduciary experts took place during project implementation. In 2008 and part of 2009, the task team leader was based in Tunis and this allowed a quasi daily interaction between the Bank team, the PIU, and the implementing agencies. In the last two years of the project, the PIU organized monthly conference calls between Tunis and Washington, DC to take stock of implementation progress with the relevant agencies whose activities were still under supervision. As a result, project implementation accelerated. It remains difficult to explain the delay with which the Bank and the Government proceeded with the restructuring. Part of this is attributed to the uncertainty around whether or not to restructure the project when three activities were cancelled and three new were identified. When the need to cancel part of the loan was determined, the restructuring was allowed to proceed. An overall optimism reigned during and after supervision missions. Until at least January 2009, shortly after the 18-month extension was approved, the Bank team was confident that the loan amount would be fully committed and disbursed by end of 2010.

### **(c) Justification of Rating for Overall Bank Performance**

Rating: Moderately Satisfactory

64. The performance of the Bank team was satisfactory in several ways, but there were a number of shortcomings that impeded a flawless project implementation as envisaged at the preparation stage. In the Tunisian context, the way leading to liberalization, private sector participation and increased access to ICT was paved with pitfalls. With its proven technical and sectoral knowledge and experience, the Bank team was able to build trust and influence the policy orientations and regulatory changes.

## **5.2 Borrower Performance**

### **(a) Government Performance**

Rating: Moderately satisfactory

65. While Government ownership and commitment to achieving the PDO was repeatedly reaffirmed, and the involvement of the Secretary of State was evident, they were not enough to avoid a slow implementation pace.

66. Due to Government restructuring, the Tunisian team that prepared the project was not the same than the one appointed to implement it. In fact, the team that was in charge of implementation in the newly-created MCT did not know anything about the project that had been prepared. Moreover, there was no overlapping transition period, and neither did an organized takeover materialize. The learning curve was very stiff and that contributed to the slow start of the project.

67. The two studies that were planned for the 2005 WSIS were eventually prepared on time and presented to the public; however, the eCulture portal which had been announced was not made available on time. At WSIS, the Government announced a new sector law with five themes and 25 concrete measures; yet, the law was not passed until 2007. It is also worth noting that the insufficient support and lack of empowerment provided to INT in its mission to enforce the new telecommunication law, did not allow for wider liberalization, and instead, preserved the current situation. The INT greatly benefitted from the technical assistance provided through this operation, but the regulatory independence of INT needs to be strengthened. That said, the Government took the initiative to organize an internal consultation with stakeholders in order to shape the scope of a follow-up project with the Bank, replete with ambitious objectives.

#### **(b) Implementing Agency or Agencies Performance**

Rating: Moderately satisfactory

68. The PIU should be acknowledged for the solid and consistent support it has provided to project implementation overall. Interestingly though, and unlike other Bank projects, the PIU members were never appointed formally for this task. They took the responsibility of project implementation while dealing with their “official” position in the MCT. In spite of this potentially challenging situation, the PIU members remained focused and motivated. In the last two years of implementation when supervision involved monthly conference calls, the PIU kept the underperforming implementing agencies under pressure so that the last activities could be completed by project closure. The performance of the PIU in fiduciary matters was satisfactory.

69. Some of the implementing agencies were reliable and efficient, whereas others have shown weaknesses and unresponsiveness to accumulating delays. These delays can be partly attributed to the national procurement processes that are lengthy, and that are in addition to the Bank’s procurement process. But a lot of the delays also came from lack of capacity (in Sup’Com, Ist’Com and MCT). In the case of the eCulture component, while the technical work was performed rather rapidly, and MTC followed the technical implementation of this activity very diligently, the final sign-off from the Ministry of Culture to launch the portal was not given by project end. On the other hand, the Ministry of Justice, the Ministry of Social Affairs, ANSI and CERT have demonstrated good will and capacity to implement their components, although some of them experienced a slow start.

### **(c) Justification of Rating for Overall Borrower Performance**

Rating: Moderately satisfactory

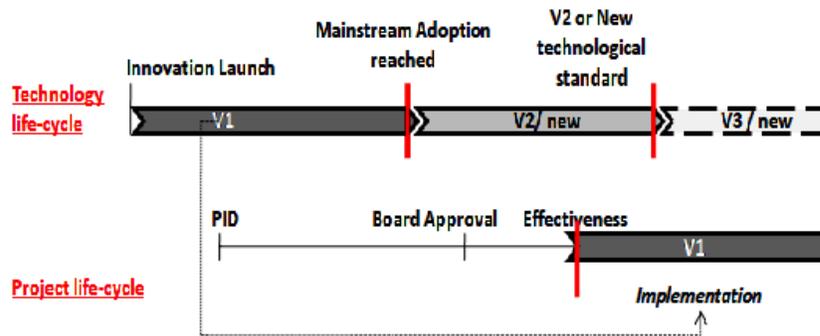
70. In view of the above, the rating is moderately satisfactory.

### **6. Lessons Learned**

71. Most of the lessons learned in this project are sector specific, while others pertain more generally to project implementation.

- a) A government that is embracing the concept of information society may not necessarily be ready to take the policy decisions that such a concept implies in terms of sector liberalization, private sector participation, level playing field competition, freedom of expression, and access to information and the Internet. While some publications (e.g. Network Readiness Index) rank Tunisia very high in terms of ICT readiness, the team assessed that the Internet censorship constitutes a major bottleneck for greater economic growth. A faster sector liberalization would have contributed to more competition, in particular in the area of high-speed Internet, and allow a faster trickling-down effect on the economy. Telecommunication liberalization and entry of private sector is difficult in an economy that is tightly controlled by a small group of powerful business people close to the Government. This may, however, be a general attribute of the telecommunication sector, as similar concentration of financial interests also characterize the sector elsewhere in the world. This does not obliterate the impact on the consumers who benefit from greater and more affordable access to ICT services, but this may slow down impact on price decline and quality of service improvement. This, on the other hand, has also helped identify the following critical bottlenecks that need to be addressed in order to allow the Government's information society policy to flourish:
  - Elimination of content control on government websites, liberalization of content control and of internet authorization process.
  - Liberalization of Tunisia's domain name (.tn) to encourage the creation of Tunisian websites.
  - Liberalization of the Internet exchange point, and allowing several Internet exchange points in Tunisia to speed up communication and improve the quality of service.
  - Liberalization at ISP level to increase competition, diversify value-added services and lower prices.
- b) ICT for disabled children and adults is an important issue that can be successfully addressed if a Government is committed to making a genuine difference for this group. The key elements of success of this initiative were the existence of a policy for the sector, the availability of excellent statistics on this target group that enabled customization of this program, and the leveraging on NGOs that –, while not fully independent – provided a better follow-up on this activity than would have been the case if the activity had been placed under a government department.

- c) There is a mismatch between World Bank project life-cycle and technology life-cycle.



- d) Successful implementation of eGov applications require availability of technical capacities in the implementing agencies, available competencies in the local ICT sector, and sustained and incentivized leadership, without which application development can take several years between project design and portal launch. It is important to be realistic when setting the timeline at the appraisal stage. This project was one of the first of its kind, and the timeline from design to roll-out of the e-applications proved to be unrealistic. New approaches are being used around the world, particularly around the concept of “agile computing”. For example, UK's alpha.gov.uk site was developed in about three months with a relatively small budget (GBP 261,000) and by using a small, multi-disciplinary team of developers, designers, and editors.
- e) A technology-based project requires flexibility and capacities in the field. The appraisal did not capture the flexibility needed in a technology project well enough. This project showed that planning costs of ICT acquisition of equipments and applications more than one year in advance is likely to bring inaccurate budget evaluation. Annual reevaluation of the main ICT components may help plan project restructuring (cancellation of proceeds) in advance. This lesson also highlights that the Bank’s traditional approach to project appraisal may have limited applicability to a technology-driven project.
- (e) The large number of implementing agencies also caused difficulties, although eGov projects by definition should involve several agencies. Such difficulties could have been reduced with better anchoring of project implementation at the prime ministerial level.

## 7. Comments on Issues Raised by Borrower/Implementing Agencies/Partners

### (a) Borrower/implementing agencies

Annex 5

### (b) Cofinanciers

N/A

### (c) Other partners and stakeholders

(e.g. NGOs/private sector/civil society)

## Annex 1. Project Costs and Financing

### (a) Project Cost by Component (USD millions)

Components	Appraisal Estimate	Updated allocation*	Actual/Latest Estimate	Percentage of Appraisal
1. ICT SECTOR STRATEGY, POLICY, AND REGULATION	2.96		1.45	49.00%
2. E-GOVERNMENT SERVICES AND APPLICATIONS	5.61		3.56	63.46%
3. E-SECURITY	2.92		2.06	70.05%
4. PMU and WSIS	1.64		1.1	60.98%
4A.SUPPORT TO WSIS PREPARATION	0.55			
4B. ICT SECTOR MONITORING AND SUPPORT	0.55			
4C. STRENGTHENING OF PMU	0.54			
<b>Total Baseline Cost</b>	13.13		8.1	61.7%
Physical Contingencies	0.00			0.00
Price Contingencies	0.00			0.00
<b>Total Project Costs</b>	0.00			
Front-end fee PPF	0.00			.00
Front-end fee IBRD	0.00			.00
<b>Total Financing Required</b>	13.13	9.8	8.1	

Exchange rate Jan. 2010: 1 Euro = 1.4 USDollar

\* In the December 2009 restructuring, there was no table showing the new allocation by component.

### (b) Financing

Source of Funds	Type of Cofinancing	Appraisal Estimate (USD millions)	Actual/Latest Estimate (USD millions)	Percentage of Appraisal
Borrower		2.24	0.00	.00
International Bank for Reconstruction and Development		13.13	0.00	.00

## **Annex 2. Outputs by Component**

### **1) Information and Communications Strategy, Policy, and Regulation.**

- (d) The elaboration of a strategic long-term plan for developing the ICT sector, including a strategy for promotion of universal access: This activity experienced significant delays in its implementation, mostly due to procurement reasons. The final product was presented to the Government in November 2010 shortly before the end the project. It was a comprehensive and detailed strategy based on 6 strategic orientations (broadband access, ICT in SMEs, ICT in schools and in vocational training, content, industrial platform, and ICT and R&D), declined in 16 strategic initiatives and 26 measures. A few weeks after this presentation, the Government has taken another look at the strategy and decided to give an emphasis to three cross-cutting thematics: sector liberalization, ICT and employment, and access to ICT throughout the country.
- (e) The award of additional licenses gave a unique edge to the Government of Tunisia: through this activity, the Government was the first in the region to award a technologically neutral license to Orange Tunisie (2G, 3G, fixed and data). In total during the project implementation, the Government issued 8 licenses which contributed to increase the competition in the sector.
- (f) Capacity building for the INT comprised of several activities: reports (market study, numbering and portability, and broadband access), capacity building (training on a various number of topics ranging from tariff regulation to new 3G technologies and cost accounting), workshops (competition in the telecommunication sector, local loop unbundling) and technical assistance to the team (local loop unbundling and interconnection tariffs). Most importantly, capacity building provided to the staff is expected to have a long lasting impact in the strengthening of the institution.
- (g) Women and ICT in Tunisia: this activity was added at the time of project restructuring. It provided insights about the interaction between Tunisians women and ICT use in the private and professional spheres, and allowed the Ministry to share statistics with international organizations.

### **2) E-government Strategy, Services, and Applications.**

- (a) Definition of an e-government strategy, based on international benchmarking: this study was coordinated by a Secretariat linked to the Prime Minister's office and as such, it allowed determining an eGov strategy for each Ministry. Without such central and empowered coordinator, the outcomes of the study may not have been used as such.
- (b) Development of e-government applications and online services in ministries and agencies, such as the Ministry of Justice and Human Rights (portal and on-line services), the Ministry of Culture, Youth, and Leisure (portal and on-line promotion), and the Ministry of Communication Technologies and Transport (virtual ICT library):

In this subcomponent, a number of e-government portals were created:

eJustice: <http://www.e-justice.tn>

This subcomponent that covers a number of items such as legal cases database, library software, security and email system, and a portal. The portal provides citizens and lawyers with various services such as: follow-up affairs (17 types), downloadable Official Forms (8 forms) and 30 models of court applications. This new space gives litigators and lawyers the opportunity to monitor reported cases and obtain information on matters affecting them in the last five years. The eJustice portal also offers a judicial map, which provides online information about the courts in different regions of the country with their creation date and address, and allows electronic transactions and payments (Annex 9a).

eCulture: <http://www.culture.tn>

This subcomponent consisted of the creation of a portal for the promotion of the Tunisian cultural capital. It suffered several delays in the beginning, and then quickly reached a point where a pilot was demonstrated to the World Bank (fall 2008). The pilot was at a well advanced stage, with 4,000 pages of information and multimedia content. The Tunisian Agency for External Communication (ATCE) started its clearance process in 2009, but in spite of several reminders it was not until September 2010 that it officially cleared it. In the last few months of the project, difficulties arose to reach the point of portal launch: issues related to some translation, and the hosting of the portal by the Agence Tunisienne de l'Internet (ATI) created some last minutes complications. The WB Team then approached the WB Team working on a tourism project to see whether this project could take the eCulture portal to its launch and at least support the definition and implementation of an appropriate communication strategy.

eDisabled:

This subcomponent was aiming at the creation of solutions to equip selected schools and social service centers with specialized IT solutions for the disabled, under the direction of the Ministry of Social Affairs and Solidarity.

A local software company developed specialized software with a series of courses targeting the needs of disabled children, affected by mental and learning disabilities. In 2009, 5,000 disabled children followed digital courses. Starting school year 2009, these programs have been generalized to all special education centers with a computer room and to all normal schools that integrate disabled children.

The ICT Sector Development Project also succeeded in establishing telecenters for the disabled. Since March 2010, there are a total of 24 centers, which are diffused all over the country, one per each region. These centers include equipment with Braille keyboards or touch screen and with sign language and various multiple functions.

Domain Name System (DNS):

This assistance to the ATI aimed at establishing a solution to create domain names in Arabic characters, and was successfully delivered end of 2009. In January 2011, there were 28 newly registered Arabic domain names.

eAccessibility:

This activity was added to the original procurement plan, and aimed at applying the web accessibility guidelines (defined by W3C/WAI and endorsed by the UN) to the Tunisian administrative websites. This activity was covering 5 ministries as pilot.

In this component, the activities related to the distance learning platform and to the virtual library were cancelled.

### **3) E-Security:**

- (d) Develop and implement a computer risk-prevention strategy based on the Computer Emergency Response Team (CERT) model at ANSI: This activity aimed at developing and implementing a computer risk prevention strategy (against virus, cyber-crime, etc.) with the creation and training of a CERT, through technical assistance, training and IT equipments purchase. The CERT was established with 16 professionals trained on cybersecurity and providing technical assistances to other African organizations (such as the Government of South Africa for the preparation of the 2010 World Cup). Annex 9b provides a detailed account of the achievements under this activity. The Tunisian CERT is the only African member of FIRST (Forum for Incident Response Team, a global leader in incident response).
- (e) IT security lab for research and education: This activity was cancelled.
- (f) Data backup center: This was a pillar activity of the project and the largest from a financial standpoint. In spite of several delays, the national backup center was eventually delivered and operational in the last month of the project implementation (Annex 9c). This activity was complex as it dealt with the construction and the equipment of a backup center with several security and inter-ministerial dimensions. The architecture is based on three centers. The production centre gathers all of the information concerning inter-administration government applications (i.e. management of the staff, management of public procurement etc). The production center sends the information to the intermediary data backup center in real time (synchronous transfer and updating) via fiber optic. The intermediary data center concurrently transfers information in asynchronous mode to the remote data backup centre, situated in a location about 30km from Tunis. The remote data center is situated in a zone protected by physical barriers and in proximity of military assets. All functional tests have been successfully completed. The transfer between production and intermediary centers is synchronous. The transfer between intermediary and final centers has an overall latency time of 15 minutes. The volume of data currently handles 1.5 Terabytes of data, with a capacity of 4 Terabytes. Over 10 major national applications are included (budget management, human resources management, missions management, State property management, municipalities budget monitoring, civil identification management, stock and purchase management, etc.). The next step that the Authorities are contemplating is to virtualize all applications and have a backup mechanism of the backup on the cloud.

#### **4) Project Management and Support to the Preparation of WSIS 2005.**

This component provided technical assistance to the Government to implement a complex and innovative project, with emphasis on results by WSIS in 2005.

It included a subcomponent on the preparation of the World Summit for Information Society, with a benchmark of the Tunisian ICT industry in terms of dynamism, competitiveness and ICT companies' development. It also covered a study on private sector participation to the ICT sector. Each study was presented during the Summit. The project also funded a high level roundtable on ICT and outsourcing.

The WSIS was an important milestone for the Tunisian government. It was object to debate given the limited Internet access available before, during and after the Summit, and the perceived control over the Internet. It was however an important experience for the government, and has allowed an exposure to international best practice and quality standard that some of the Tunisian officials did not have before. It contributed to changing the mind of some government officials, and bringing the private sector concern for more level-playing field competition on the table.

The second component dealt with the definition of a monitoring and evaluation framework for the ICT sector. Although a part of this activity was cancelled (related to the development of a database and training for the staff on the database, which will be funded through State budget), this activity allowed to improve the calculation of the contribution of the ICT sector to the GDP (see 2.3).

### Annex 3. Economic and Financial Analysis

The project was expected to result in considerable economic benefits but it was considered that these benefits could not be separated from those of ICT development generally. No specific economic analysis was applied to assess the economic impact; however most of the anticipated impact described below was tangible at the project's end:

- Increased ICT expenditures, initially in telecommunications services not directly related to project activities and in the longer run from both investments in the ICT sector to expand production and backward linkages to other sectors – *comments*: the project's PDO illustrates that the contribution of the ICT sector to the GDP has almost doubled during the project's life, reinforcing this economic impact.
- Declining production costs as effective competition develops in telecommunications, in the short term benefiting mainly the service sectors and, in the long run, also spurring productivity gains in other sectors – *comments*: no specific analysis was run to illustrate this anticipated positive impact, but globally the declining cost of telecommunication and Internet contributes to economic growth through gain in productivity.
- Lower transaction costs throughout the economy and better access to services by the population at large, resulting from increased use of Internet, including e-commerce and e-government applications – *comments*: intermediary indicators show a substantial increase in telecommunication penetration, 118% in 2010 compared to 49.5% in 2004.
- Lower risk of systemic failure of critical Government administrative information systems, resulting from the adoption and implementation of an e-security program – *comments*: The national back-up center and the CERT initiative have together contributed to considerably mitigate this risk.
- Employment creation related to (a) new work opportunities in the ICT sector that more than offset labor productivity gains from competition, and (b) higher economic growth and diversification, following economy-wide spillovers of ICT development – *comments*: this link has not been analyzed precisely, although other studies have proven the job creation impact of the knowledge economy.

## Annex 4. Bank Lending and Implementation Support/Supervision Processes

### (a) Task Team members

Names	Title	Unit	Responsibility/ Specialty
<b>Lending</b>			
Dominique Bichara	Special Rep. to The United Nat	EXTUN	
Rafika Chaouali	Lead Financial Management Spec	OPCOS	
Antonio J. Cittati	Consultant	AFTPC	
Lucy J. Cueille	Consultant	PRMTR	
Kashmira Daruwalla	Senior Procurement Specialist	ECISO2	
Bruno Dominique Lanvin	Adviser	TWICT	
Anat Lewin	Operations Officer	TWICT	
Michel H. Maechler	Sr Auditor	IADVP	
Samia Melhem	Senior Operations Officer	TWICT	
Mather B. Pfeiffenberger	Operations Analyst	FPDID	
Rajesh B. Pradhan	Consultant	FPDID	
Carlo Maria Rossotto	Senior ICT Policy Specialist	TWICT	
Bjorn Wellenius	Consultant	TWICT	
<b>Supervision/ICR</b>			
Lacinda Jene Barrow	Program Assistant	TWICT	
Philippe Dongier	Sector Manager	TWICT	
Isabelle Huynh	Operations Officer	TWICT	
Bruno Dominique Lanvin	Adviser	TWICT	
Anat Lewin	Operations Officer	TWICT	
Michel H. Maechler	Sr Auditor	IADVP	
Moez Makhoulouf	Consultant	MNAFM	
Mather B. Pfeiffenberger	Operations Analyst	FPDID	
Francesco Sarno	Consultant	AFTEN	
Arleen Cannata Seed	Senior Team Leader	ISGLA	

### (b) Staff Time and Cost

Stage of Project Cycle	Staff Time and Cost (Bank Budget Only)	
	No. of staff weeks	USD Thousands (including travel and consultant costs)
<b>Lending</b>		
<b>FY04</b>		157.28
<b>FY05</b>		0.17
<b>FY06</b>		0.00
<b>FY07</b>		0.00
<b>FY08</b>		0.00
<b>Total:</b>		157.45
<b>Supervision/ICR</b>		

<b>FY04</b>		0.00
<b>FY05</b>		188.45
<b>FY06</b>		111.78
<b>FY07</b>		103.10
<b>FY08</b>		53.05
<b>Total:</b>		456.38

**Annex 5. Summary of Borrower's ICR and/or Comments on Draft ICR**

REPUBLIC OF TUNISIA

Ministry of Industry and Technology

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State Secretariat of Communication Technologies

Project Management Unit

**ICT Sector Development Project in Tunisia  
IBRD Loan 7244-TUN**

**Completion Report**

**February 2011**

# Summary

## A-Introduction

- A.1. Key Dates
- A.2. Project Introduction
- A.3. Project Management Unit (PMU)

## B-Description of Activities and Evaluation

- B.1. Objectives/Results/Evaluation
- B.2. Performance Indicators

## D-Conclusion: Results Figures, Recommendations et Lessons Learned

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### A-Project Introduction

#### A.1. Key dates

Loan signature	July 2 <sup>nd</sup> , 2004
Approval	Law 2004-64 (Aug. 2 <sup>nd</sup> , 2004)
Effectiveness	Jan. 18 <sup>th</sup> , 2005
Original closing date	June 30 <sup>th</sup> , 2009
Revised closing date	Dec. 31 <sup>st</sup> , 2010
Original amount	Euro 10.8 million
Revised amount	Euro 8.1 million

#### A.2. Project Overview

The ICT sector project in Tunisia was funded by the World Bank (Loan No. 7244-TUN). It aimed to help Tunisia in promoting the development of the ICT sector by:

- Supporting policy and institutional reforms in ICT
- Improving its electronic security
- Developing applications and e-government
- Promoting private sector participation in ICT development

The development project of the ICT sector in Tunisia had four components they are:

- Component 1: Strategy, policy and regulation in information and communication
- Component 2: Strategy, services and applications of e-Gov
- Component 3: Computer security

- Component 4: Project management and support to the preparation of World Summit on the Information Society (WSIS)

### A.3. Project Management Unit (PMU)

To ensure project management from the point of view of performance and financial monitoring, coordination between the various bodies concerned and with the World Bank, the Minister of Communication Technologies appointed a Project Management Unit attached to Office of the Ministry.

The PMU was composed of:

- Unit Coordinator: Dr. Mohamed Abida (2005-November 2007) and Mr Fethi Methnani, director of technical post in the Ministry of Communication Technologies (December 2007-2011)
- Procurement Expert: Mr. Fethi Methnani, (2005-2011)
- Expert in project management: Ms. Thouraya EZZINE, Director of Studies, Planning and Approvals at the Ministry of Communication Technologies (2005-2011)
- Financial Expert: Mr. Abderrazek Zouari, Assistant Director of Budgets at the Ministry Communication Technologies (May 2006-July 2009) and then Mr. Abdessalem Ouerfelli, Communication Inspector (July 2009 – 2011)
- Legal Expert: Ms. Mbarka Missaoui, Assistant Director of Legal Studies at the Ministry of Communication Technologies (2005-2006)
- ICT Expert: Ms Ahlem Ghorbel, Tunisie Telecom (2005-2006)

## B-Description of Activities and Evaluation

### B.1. Goals / Accomplishments / Rating

	Objectives/Targets		Achievements	
	Original	Revised	2008	2010
<b>Growth of ICT Sector in the GDP (CAS Indicator)</b>	From 6% in 2003 to 8% in 2008	12% in 2010	10% (old method) 5.5% (new method)	12% (old method) 6.8% (new method)
<b>Granting of 2 new licenses in 2004-2005 in the VSAT segments and data transmissions.</b>	2 new licenses in VSAT and data in 2004-2005	2 fixed, 2 VSAT, 3 GSM, 1 unified (3g, Wimax, data)		2 fixed, 2 VSAT, 3 GSM, 1 unified (3g, Wimax, data)
<b>Number of fixed and mobile phone lines in % of the population.</b>	From 32% in 2003 to 60% in 2008	109%	94.8%	118%
<b>Increase in ICT investment by the private sector.</b>	From 35.2% in 2003 to 60% in 2008	65% in 2008	64%	72%
<b>Implement- ation of 2 government</b>	2 new government portals in Nov.	eJustice portal eCulture portal	2 prototypes (eJustice and	2 operational portals (eCulute

<b>online portals in November 2005 and two additional portals at the end of the project in 2008.</b>	2005, and 2 additional by end 2008		eCulture)	still is restricted access mode)
<b>Number of portal access put in place.**</b>				EJustice, Nov09: 3018 accesses
<b>Number of downloads per year.**</b>				EJustice, Nov.09: 24960 downloads
<b>Number of handicapped students having benefited from access to specific education services through the project. **</b>			3201	8370
<b>Creation of an emergency technology response team in November 2005, and mounting of three CERT training seminars or workshops before the end of 2005.</b>	Creation of a CERT team in Nov. 2005, and 3 trainings bby end of 2005	Creation of a CERT team, and 3 trainings	CERT team of 8 persons, in 2005 CERT team of 16 persons in 2008 3 training	CERT team and 3 trainings
<b>Creation of a data backup center for critical applications of the government, and tests at the end of 2005.</b>	Test by end 2005	Back-up center operational	0	Back-up center operational
<b>Number of auditors with ANSI security certification (cumulative).</b>		220	136	178
<b>Publication of economic and statistical analyses on the success of the “e-agenda” at the WSIS in Tunisia.</b>	Publication of economic and statistical analysis on the eAgenda in Tunisia	2 publications	2 publications ready for WSIS 2005	

## **Component 1: strategy, policy and regulation in matters of ICT**

This component aimed primarily at helping the Tunisian Government open up the ICT sector to competition and private participation through three beginning activities defined in the loan negotiations, which are the following:

- Master Plan for the Communication Technologies (ICT) sector
- Assistance in licensing grants
- Assistance to the regulation of the Telecommunications sector

As stated in the Loan Agreement, and during the mid-term review mission, a fourth activity was proposed by the Ministry of Communication Technologies, entitled "Study on the Interaction of Women & ICT", and validated by the Steering Committee and the World Bank. This activity furnished indicators and an analysis that helped to highlight the interaction between Tunisian women and the ICT sector, and also helped to answer international queries on this matter.

The four activities of this component have been completed and have achieved their specific objectives with reasonable success:

Regarding the second activity (Assistance in granting licenses), it played an important role in preparing for the granting of licenses, 2G, 3G, fixed and data to Orange Tunisie. Indeed, it allowed the government to grant a unified license, a first in the North Africa region.

The project assistance to the regulation of the sector composed of studies, INT executives' training, organization of workshops with stakeholders in the sector and mission assistance provided satisfactory technical assistance, notably in unbundling the local loop and broadband strategy, and strengthening the management capacity of INT, with the exception of a VAS study which was partially completed due to cancellation on its third phase.

As for the strategic plan, its implementation experienced considerable delay especially in procurement following the change of plans and the time involved in consultant selection procedures. That has provided a strategic plan in seven strategic directions, which themselves broke down into actions, initiatives and projects to achieve. However, given the new national environment, fruit of the Tunisian revolution of January 14, 2011, it was decided to establish a working group within the Ministry, to take stock of the results of the strategic plan, taking into consideration the three following priorities:

- Liberalization of the ICT sector
- Job creation
- Equity and equilibrium among the regions of Tunisia

## **Component 2: strategy, services and applications of e-Government**

This component's main objectives was to provide a comparative analysis and to develop a strategy for e-Gov which is coordinated by the Secretariat of State for Administrative Reform, and to develop applications and services in e-government ministries and government agencies in

the following activities:

- Development of an e-government strategy
- E-justice
- E-Culture
- E-Handicapped
- Virtual library
- Establishment of a distance learning platform
- Arabized DNS
- E-Accessibility

Six operations were completed successfully and reached the expected goals, with the exception of two activities: the distance learning platform and the virtual library.

Indeed, concerning the completed activities, and beginning with the e-Gov study which, despite significant delays during the launch of the project and the selection of the consultant, succeeded in defining the sectoral strategic plans with the project implementation of e-government with clear quantified targets and timetables and deadlines that provided the roadmap to enable the monitoring and assessment of objectives of the reforms in this field.

e-Justice and e-Culture were completed with delays in the execution, basically due to their technical complexity and scope which were underestimated at the beginning -- during project negotiations and even before the launch. However, this delay did not deny them success: The e-Justice is a portal that can be considered a “model” and can even be compared on an international scale. Currently, it provides monitoring services to court cases for citizens and lawyers (17 types), separating the provision of forms and sample documents. Of the e-Culture portal, the World Bank called it a "gateway to the most advanced cultural heritage in the Middle East and North Africa" (Aide-Memoire: December 13-17, 2010 mission).

The e-Handicapped had remarkable results and it has allowed the dissemination a copy of a model experience in new technologies for the access of the handicapped to innovative IT tools. This component has enabled thousands of disabled children to improve their educational performance, thanks to software developed in the framework of the project and brought in special education centers. The Tunisian experience in this area is now studied the world over, thanks to this component. This component is the subject of an article in a specialized publication of great renown in Russian, and is regarded by many observers as a proven success.

For the Arabized DNS project, the implementation of this component can be described as satisfactory. Currently, and following completion of this project, ATI plans to issue domain names in three phases: first to governmental entities, then to large enterprises whose brands are known, then to the rest of Tunisian businesses and the general public.

As for e-Accessibility, it was an activity that was added during the mission’s mid-term review as required by the Loan Agreement, following a proposal by the Ministry of Communication Technologies, which was validated by the steering committee and the World Bank. Its success has produced results considered excellent for people with special needs. Within the framework of this component, a national repository was developed for the definition of Web accessibility tools

according to international standards in this field and five of the Tunisian administration pilot sites were shaped by this national repository.

Finally, with regard to canceled and partially canceled activities, beginning with project distance learning platform "which was canceled by mutual agreement with the World Bank and following the approval of a project steering committee. This cancellation was decided upon given the delay noted at the launch of the project, and owing to deficiency in terms of vision and human resources allocated to this activity.

The project "Virtual Library", was partially canceled by mutual agreement with the World Bank and following the approval of a project steering committee, having experienced delay in its execution. The scanning work was approved by the records office and acquisitions were canceled and taken care of by the state budget within the framework of a decision that was made at the Ministry on the sustainability of the project and its management by CIFODE'COM.

### **Component 3: E-security**

This component aims to develop and implement a computer risk prevention strategy based on the CERT (Computer Emergency Response Team) model, subject of the first activity, and to strengthen research in electronic security through the third activity which consisted of establishing a backup data center to ensure continuity of critical government applications. Indeed, this component provides for the implementation of three activities (establishment of CERT, a computer security laboratory, and a back-up data center), two of which were successfully executed and the second (Computer Security Laboratory) was canceled by mutual agreement with the World Bank and following the approval of a project steering committee, given the lack of minimum conditions that would have ensured its quality execution and sustainability.

Concerning the first activity, it established the Tunisian CERT, the first African to be admitted to the prestigious international network, FIRST, which is a regional and continental reference point in this area. This activity gave Tunisia the opportunity to be a benchmark in the field of computer security on a regional scale in the African Continent.

The third activity established a Centre National Back-Up which was completed with satisfaction despite the delay in its execution stemming from the difficulties encountered in finding available land and the delay in the selection a contractor to build the premises (activities supported by the state budget).

Created pursuant to the criteria and standards of safety, the Center will back-up central national establishments that use important systems of information to ensure the continuity of their work under optimum conditions. This Center will, as a first step, backup applications currently hosted and operated at the Centre National de l'Information (CNI) and will later house other applications based on their national and s'ectoral priorities. The center will ensure the availability of large applications of the administration and continuity of services offered to users, and this, using the back-up copies.

#### **Component 4: Project management and support it as preparation for the WSIS**

This component aimed to provide technical assistance from the Government of Tunisia by:

- Supporting the preparation for the World Summit on the Information society (WSIS 2005) through the first activity
- Strengthening the support of the statistical and economic analysis unit within the Ministry of Communication Technologies in the development and implementation and monitoring of its activities through the second activity
- Strengthening the Project Management Unit (PMU)

The efforts of support to the preparation of WSIS (2005) were performed within the timeframe and met with remarkable success. The objectives assigned by the project were fully achieved.

The second activity (project "sector management") was partially met and saw the termination of the relevant contract of the second phase of the project. To capitalize on the phases carried out through the project, the Ministry intends to finance the third and fourth stages (development and implementation of a database and training of the BD management team).

Finally, the last activity (strengthening of the PMU) allowed the strengthening of the PMU with regard to awarding of work as directed by the World Bank, and management, audit and evaluation of projects funded by international donors.

#### **D-Conclusion:**

Achievements in figures:

The figure in this project is as follows (Annexes to this document furnished with all required details):

- Total number of contracts: 90 (29 studies services contracts, 46 contracts for the acquisition of equipment and 15 training contracts):
  - Contracts executed completely: 98%
  - Contracts partially executed: 2%
  - Disbursed Loan (on March 15, 2011): 6,665.26 Total mEuro
- Total disbursement on the loan (before April 30, 2011): 6,873.032 mEuro
- Disbursement rate commitments (on the Loan) on March 15, 2011: 97% (For the rest: 3% in progress)
- Amount of payments on March 15, 2011 % of total loans: 82.3%

The four project components have achieved their objectives and the performance indicators of the project have been fully satisfied despite the relatively low disbursement rate which are explained by the following elements:

1. The major change in the exchange rate during the period of implementation of the project 2005-2010: Average of interbank market of the year 2004: 1 Euro = 1.5486 DT average of interbank market of year 2010: 1 Euro = 1.8972 DT

2. The cost of contract impairment of ICT equipment
3. The estimated project cost was made based on the international market prices, while at implementation the number of local contractors was quite large; consequently, the fees and equipment costs are lower when compared to the forecasts.

**Recommendations and lessons learned:**

Following a meeting of the steering committee at project completion (see Minutes of the steering committee in Appendix E.4.), those present highlighted the lessons learned from their projects' experience and underlined the support of the World Bank to these projects.

Indeed, for the project of creating a Tunisian CERT, its indirect impact is the creation of SSII (société de services en ingénierie informatique) specializing in computer security, possessing of skills that are well-qualified in the field, the result of the activity, "Training Trainers in Information Security. It is also worth noting that support of the World Bank in this activity is considerable and especially the procurement of equipment and specialized software which, perhaps, would not have been achieved without the involvement of the World Bank as donor to this project, which gives some confidence, especially after the event of September 11. A recommendation of the installed CERT project head is to give priority to projects that ensure a transfer of competence and the obtaining of international certifications, or new funding for an ICT project by the World Bank .

The same scenario applies to the proposed assistance to the granting of licenses and the INT projects which, having the World Bank as a financial backer, gives some assurance that the consultants of international renown and qualified expertise in specialized areas of ICT (Canadian consultants and German) who have not previously had the opportunity to work with the Tunisian administration were able to acquire contracts under the project. Consequently, this allowed us to benefit from high-quality expertise in these projects.

It is also to be noted that for the granting fixed licenses, the World Bank gave the project added value by putting at the Tunisian government's disposal its expertise in this field and the experience of countries like Tunisia. For Arabized DNS which was completed successfully and is based primarily on the implementation of a technical solution not yet standardized, one of the lessons learned from this experience is that financing by a World Bank loan of a research project or of technical standards are rare or nonexistent; it is inappropriate given that such projects demand flexibility in implementation, something not easy with the application of procurement procedures of World Bank.

## **Annex 7. List of Supporting Documents**

ICT strategy – 2001 - World Bank Group

ICT Policy Note – March 2002 - Government of Tunisia, World Bank

10<sup>th</sup> Development Plan (2002-2006) – Government of Tunisia

Project implementation documents

### Annex 8. Performance Indicators

Project Indicators		End-2004	End-2005	End-2006	End-2007	End-2008	End-2009	End-2010
<b>Growth of ICT Sector in the GDP (CAS Indicator)</b>	PAD Forecast	6%						
	Forecast Old methodology					8.5%		12%
	Actual Old methodology					10%		12%
	Actual New methodology		4.3%	4.7%	5%	5.6%	6.3%	6.8%
<b>Granting of 2 new licenses in 2004-2005 in the VSAT segments and data transmissions.</b>	PAD Forecast	0-2				2 new licenses		
	Actual	1 fixed 2 VSAT 2 GSM (cumulative)	2 fixed 2 VSAT 3 GSM 1 license 3G (cumulative)	2 fixed 2 VSAT 3 GSM 1 license 3G (cumulative)				
<b>Number of fixed and mobile phone lines in % of the population.</b>	PAD Forecast	36%				60%		109%
	Actual	49.5%	68.8%	84.5%	88.8%	94.8%	105.6%	118%
<b>Increase in ICT investment by the private sector.</b>	PAD Forecast	40%				60%		
	Actual	54.4%	46%	52 %	72%	64%	65%	72%
<b>Implementation of 2 government</b>	PAD Forecast	0+				2 operational portals		

online portals in November 2005 and two additional portals at the end of the project in 2008.	Actual	0	0	0	1+	2 prototypes	1 prototype (E-culture) 1 operational (E-Justice)	2 operational
Number of portal access put in place.**	PAD Forecast							
	Actual						E-Justice: 3,018 in November 2009	-
Number of downloads per year.**	PAD Forecast							
	Actual						E-Justice: 24,960 (during the period June-November 2009)	-
Number of handicapped students having benefited from access to specific education services through the project. **	PAD Forecast	-						
	Actual	-	-	600	1,245	3,201 (21% of handicapped children in the centers)	7,000 (53% of handicapped children in the centers)	8,370
Creation of an emergency technology response	PAD Forecast	Core team exists				A team of 16, with 3 trainings		

<b>team in November 2005, and mounting of three CERT training seminars or workshops before the end of 2005.</b>	Actual	Core team exists (3p)	Core team exists (8p) plus one training	Core team exists (14p) plus one training	Team of 16p	A team of 16, with 3 trainings	Team of 16p	Team of 16p
<b>Creation of a data backup center for critical applications of the government, and tests at the end of 2005.</b>	PAD Forecast	0+						
	Actual	0	0	0	0	0	0	1
<b>Number of auditors with ANSI security certification (cumulative).</b>	PAD Forecast	-				220		
	Actual	0	31	103	128	136	136	178
<b>Publication of economic and statistical analyses on the success of the "e-agenda" at the WSIS in Tunisia.</b>	PAD Forecast	0						
	Actual	0	2	2	2	2	2	2

\*\* indicators defined at midterm review

## **Annex 8. eApplications supported by the project, and CERT eJustice**

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Through Tunisia ICT Sector Development Project, the Tunisian Ministry of Justice and the Ministry of Communication Technologies made a significant step towards a more open government platform, laying the crucial foundation for new, more democratic e-government initiative.

The eJustice portal was officially launched in October 2009, before the European Union launched its own eJustice portal. By November 2009, the Tunisian eJustice portal had 9952 page visits and 5158 downloads. Only two months after its launch, 397 lawyers registered already on the portal, which is 6.6% of all lawyers in the country.

The eJustice portal in Tunisia is exemplary and could be considered a reference for other countries in the region. The portal provides citizens, lawyers with various services such as: follow-up affairs (17 types), downloadable official forms and 30 models of court applications. This new space gives litigators and lawyers the opportunity to monitor reported cases and obtain information on matters affecting them in the last five years. The eJustice portal also offers a judicial map, which provides online information about the courts in different regions of the country with their creation date and address.

The Tunisia ICT Sector Development Project through the eJustice portal and other e-government components contributed to improving the exchange within public administration at the central, regional and local levels, and strengthened the capacity of civil servants.

Through the Project, the Tunisian government successfully upgraded the technological platform to enable the e-administration development. The Project implementation ensured the interoperability between national and sectoral computer applications and enhanced the use of common standards and references.

### e-Disabled

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Tunisia's Ministry of Social Affairs, Solidarity and Tunisians Abroad (Ministere des Affaires Sociales, de la Solidarite et des Tunisiens a l'Etranger, MASSTE) estimates that the population of disabled persons in Tunisia reaches about 152,000 inhabitants out of a population of 10,458,000; about 1.5%. This group subdivides into 43% of citizens with a motor disability, 28% with a mental disability, 13% with a visual disability, 12% with a hearing disability, and 4% with multiple disabilities.<sup>8</sup> According to MASSTE, the better socio-economic results are in any given region, the lower the prevalence of disability tends to be.

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<sup>8</sup> INS and MASSTE

Tunisia – through the ICT Sector Development Project – delivered a major success among the disabled, in particular for children with mental or hearing disability. Investing in ICT can boost the learning of children with disabilities and facilitate their integration in the economic and social life. For these benefits to materialize, the necessary infrastructure and services need to be established and adapted to the users’ abilities. A local software company developed specialized software with a series of courses targeting the needs of disabled children, affected by mental and learning disabilities. In 2009, 5,000 disabled children followed digital courses. Starting school year 2009, these programs have been generalized to all special education centers with a computer room and to all normal schools that integrate disabled children.

The ICT Sector Development Project also succeeded in establishing telecenters for people with disabilities. Since March 2010, there are a total of 24 centers, which are diffused all over the country, one per each region. These centers include equipment with Braille keyboards or touch screen and with sign language and various multiple functions.

Last, the ICT Sector Development Project also promoted nation-wide eAccessibility by ensuring the compatibility of all major websites of the government with the W3C/WAI standards to enable disabled citizens to access eGovernment services.

The project demonstrated that civil society, NGOs and the social sector can be a good partner for the diffusion of ICT for people with disability. The experience of Tunisia also shows the benefits of a centralized, planned approach – especially if the ambition is to develop mass applications and reach the various regions of the country. The “know how” developed in this project presents a successful example for other countries in the area of technical solutions but most importantly in the area of the fine0tuning, coordination and management of technology.

### Back-up Center

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The Back-up Center is a critical component to a successful eGovernment platform in Tunisia. It was created based on international standards to enable national institutions that use major information systems to continuously perform their work under the best conditions. The Center serves as a backup and hosts applications that are currently being developed at the National Center for Information Technology (CNI) ensuring the availability of large applications, supports administration and the continuity of services for users. In the future, the Center will also house other applications - according to national and sector priority.

The delivery of the Center took longer than the originally set deadline due to the complexity of the structure to ensure successful performance and commercial viability.

### e-Culture

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The eCulture component of the Tunisia ICT Sector Development Project is designed to be the most advanced cultural heritage site in the Middle East and North Africa. It will

highlight the country's rich cultural history in English, French and Arabic, and help boost much-needed tourism when the internal political and security situation is stabilized.

Although the eCulture portal was created within the Project timeframe, due to the country's uprising and shifts in the government, it has not been made public by the time of writing this report. The full delivery of the component to the public will likely take place after the new Ministries of Culture, Industry and Telecommunications resume their normal work organization. and will get the opportunity to review it in light of the political reforms in the country. With the new regime, the contents of the portal can be even richer and more open than before.

The eCulture portal shows the common historic roots and achievements of the Tunisian people, which is especially critical at a time when there is great need for national unity. In addition, it is also a representative tool for the Tunisian government to attract tourism which has dramatically dropped due to the revolution and regional upheaval.



CERT

With the increase of the use of the Internet in Tunisia and its intended use for critical functions from one side, and from the other side, the progressive evolution of intruder techniques and the increased complexity of attacks and their damage, it has become important to establish a Tunisian Computer Emergency Response Team “tunCERT” - Formerly known under CERT/TCC- that provides global (National and Regional) support for addressing computer security issues.

Considering the effective cooperation of the World Bank and favor in its established efforts in the field since June 2004, at present the TUNISIAN CERT is the Only African CERT member of the FIRST (Forum for Incident Response Team) since Mai 2007.

The Tunisian CERT works with the international and national community in detecting and resolving computer security incidents, as well as taking steps to prevent incidents. In particular:

- Provides a reliable, trusted, 24-hour, single point of contact for emergencies, in order to respond to security incidents, to limit damage and ensure continuity of critical services in spite of successful attacks, accidents, or failures (“survivability”),
- Provides high level training and Tunisian Certification for professional, to improve the security of national systems,
- Initiates proactive measures to increase awareness and understanding of information security and computer security issues throughout the community of network users,
- Help ensure that appropriate technology and systems management practices are used to protect national information systems,
- Facilitates communication among professional and experts working in the security field.

The Tunisian CERT is placed under the management of the “Agence Nationale de la Sécurité Informatique” (A.N.S.I oo NACS : the National Agency for Computer Security).

For the preparations for World cup 2010, NACS supported South Africa in the establishment and set up its CERT and to implement its CSIRT (Computer Security Incident Response Team) by developing the different services such as reactive services, proactive services and security quality management services.

## **Areas of activity**

### **Incident Handling and assistance**

Contributing to our broad view of the state of security is the information that reported to A.N.S.I, accordingly to the law (law n° 2004-5 of the 3 February 2004), private and public organizations should trust us and provides us with sensitive information about security compromises and network vulnerabilities because we are

obliged, by law, to keep their identities and other sensitive information confidential. We are also able to be neutral, enabling us to work with commercial competitors and government agencies without bias.

The hotline installed permits reporting of computer security incidents or requesting information and support. Therefore, our TUNISIAN CERT staff regularly works with sites to help them for computer security incident and try to establish an efficient and quite-automated incident-reporting system.

The Tunisian Cert tries to motivate the establishment of corporate Computer Security Incident Response Teams (**CSIRT**) inside the sensitive and big corporations and provides guidance and training to those teams (partially in Tunisia and mostly in foreign centers).

In our vulnerability and incident handling activities, Cert Staff assign a higher priority to attacks and vulnerabilities that directly affect the Internet and corporate telecommunication infrastructures.

### **Information, Alert, Education and Awareness**

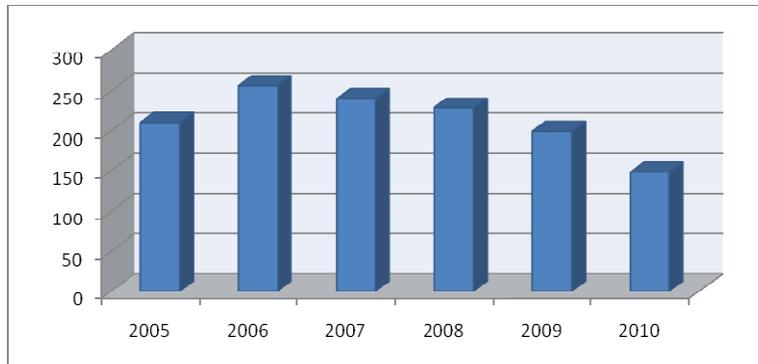
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**Vulnerability alert:** One of our tasks is to analyze the state of Internet security and convey that information to the system administrators, network managers, and wide public in the Internet community .This TUNISIAN CERT monitors sources of vulnerability information and regularly sends reports and alerts on those vulnerabilities (mailing-lists, publication on the web site). We analyze the potential vulnerability and try to work with other CERTs and technology producers to track the solutions to these problems.

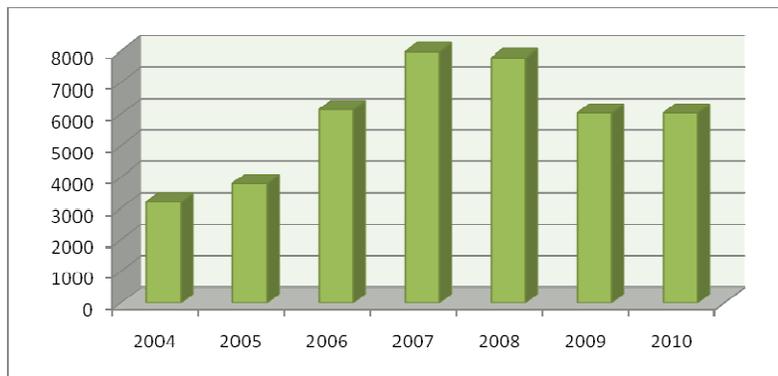
We note that the registration in the mailing-list is customized by profile's type (Microsoft, Linux, Cisco, SQL, etc.) to help meet the needs and attends of all subscribers.

**Information:** To increase awareness of security issues and help organizations improve the security of their systems, we collect and disseminate information through multiple channels (telephone and mailing-lists, World Wide Web site, brochures and Knowledgebase publicly accessible).

**Publications:** we develop and publish free electronic publications to shows administrators how to protect systems and networks against malicious and inadvertent compromise.



Number of Messages & Publications



Evolution of number of the subscribers in Mailing-List

**Media information:** We work with the news media, and give them the necessary information material and support to raise the awareness of a broad population to the risks they face on the Internet and steps they can take to protect themselves. We assist journalists and more of 15 articles per year who concerns the IT security on the local newspapers, and we participate on periodic animation in national and regional Radios and in the TV programs.

**Presentations:** We give presentations at National and International conferences, workshops, and meetings, as an excellent way to help attendees and Speak about the Tunisian experience in the field. We participate in more 95 National and 25 International conferences, workshops, and meetings.

## **Training**

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Among the objective of Tunisian Cert is the training of the skills and the *trainers* specialized in the advanced domains of the IT security, and in this frame we have realized several training courses (with MisTrainig, HSC, Auditewere) that succeeded more than 100 trainers, to improve the security and survivability of information system.

The topics (trainees' courses) are the following:

- Network perimeter security technics (Secure architectures, Firewalls, IDS, secure dial-up servers, content gateways and proxies, ..),
- Network inside security organization and technics (security policy development, security plan development, tools: Distributed firewalls, Anti-virus gateways, PKI, ..),
- Secure application development and hosting technics,
- Survivable network technologies, for preserving essential services if a system is penetrated and compromised,
- Technical basis for intrusion prevention (identifying and preventing intrusions and security flaws),
- Technical basis for Incident handling,
- ISO 2700X and ISO 1 9011,
- CBK course,
- ...

We also develop a Tunisian Certification course for security professionals (Auditors) and build and setup with national academic institutions training programs (masters' professionals).

### **Enterprise support (security self-assessment)**

For the purpose of helping organizations protect and defend themselves, we gives support for some risk self assessments methodologies that help enterprises identify and characterize critical information assets and then identify risks to those assets. This gives enterprises an efficient tool for identifying risk in their networked systems and keeping up with changes over time and uses the results of those assessments to develop or refine their overall strategy for securing their networked systems.

By our Hotline and E-mail, we treat monthly, more than 350 calls receipt and more of 50 demand of assistance.

### **Participation in International organizations**

With financing of the World Bank, at present, we are recognized on the International field and we are member of the FIRST and we occupy General Secretary's post of the OIC-Cert, and we try to take up an African and Arabic Cert.

38°N 8°E 10°E 12°E

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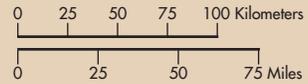


ALGERIA

Mediterranean Sea

Sicily (ITALY)

LIBYA



# TUNISIA

- SELECTED CITIES AND TOWNS
- ⊙ GOVERNORATE CAPITALS
- ⊕ NATIONAL CAPITAL
- RIVERS
- MAIN ROADS
- RAILROADS
- GOVERNORATE BOUNDARIES
- - - INTERNATIONAL BOUNDARIES

