

# Fez e-Government Project: An Initiative Transforming Scientific Research to Value in Morocco

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**Abstract:** Information and Communication Technologies (ICT) are growing worldwide and changing many facets of modern life. Yet the digital divide persists with developing countries far behind. The low integration of ICT in emerging economies restricts opportunities in many fields of development. This paper presents a case study of ICT development in North Africa. It shows how the Fez e-Government Project (eFez), through government and academic collaboration, has assisted and transformed many of Morocco's development challenges such as organizational misbehaviours and ills of bad governance in local government offices.

**Keywords:** e-government; Fez e-government; back-office automation; records computerization; records management; public value; intellectual capital

## 1. Introduction

In Morocco, local government offices known as *Bureau d'Etat Civil (BEC)*, keeping records of citizens' lives' events, are the only institutions legally authorized to provide citizens with certificates authenticating their respective life events required for a variety of personal, formal and administrative procedures e.g. enrolling children in school, job seeking, applying for social services, requesting passports and other formal activities. As with other public administration activities in Morocco and on a greater scale other developing countries, the BEC operates in an *archaic mode* that was inherited from colonial authorities and completely predates the availability of digital techniques for information processing and management as evidenced by the complete absence of ICT use at any stage in its operational life cycle. The BEC offices in Morocco (estimated to be 2400 in total) provide their service (i.e. certificate issuance) both at the *front office* (i.e. the space that citizens experience and view) and *back office* (i.e. internal data processing and management closed to the general public). It remains completely manual and paper-based.

The archaic functioning of these community oriented government offices has led to a citizen-unfriendly service delivery characterized with numerous organizational misbehaviours such as the expectation to pass monetary tips in order to be served or to speed up service delivery (i.e. certificate issuance).

In response, the municipality of Fez collaborated with a research team of the ICT4D lab at Al Akhawayn University (Ifrane, Morocco) to address BEC related organizational misbehaviours. Accordingly, the project team launched *Fez e-Government Project*. eFez project in 2004 and successfully completed by November 2005 a pilot e-Government system/platform: *electronic Fundamental Etat-civil System (eFES)* funded by the International Development Research Centre (IDRC) through its Acacia Initiative and deployed in the local administration of the city of Fez. Project evaluation has revealed eFES transformative capabilities and influence on BEC organizational misconduct and local good governance conditions in general.

## 2. Background

Regardless of ICT worldwide increasing diffusion, regional disparities in e-Government implementations persist. For instance, Europe is one leading region in e-Government. The European Commission (EC) has been steering and promoting e-Government in Europe; even though it is a supranational entity not legally entitled to exercise direct authority on public administrations of Europe member states. Traunmuller and Leitner outline some of EC's contributions to e-Government (2008). For instance, EC has been funding many of Europe e-Government projects under the umbrella of Research Framework Program. It has been organizing ministerial conferences to bring about Europe influential actors to make decisions and take actions in favour of e-Government implementation. EC has also organized three e-Government awards competitions in 2003, 2005, and 2007. Such an environment promoting e-Government implementation and pursuing innovative practices associated

with it contributed to the mushrooming of public sector applications, particularly the public sectors as employment, social service, taxation, transportation, public protection, and public procurement.

Despite Europe ICT-based public sector deployments, most believe the transformation faces challenges (*Ibid*, 2008). These are mainly associated with issues such as interoperability and identity management, enabling administrations to pursue vertical and horizontal integration, service design improvements fostering e-Government service take up, and e-Participation implementations to improve public governance (*Ibid*, 2008). Not only does EC promote e-Government but also measures and assesses “the short and long-term results of IST-related RTD and deployment action performed at EU and national/regional level (Vontas, *et al*, 2008).” The rationale behind e-Government assessment is measuring the value generation in the context of European e-Government implementations.

North Africa experiences difficulty in implementing e-Government though in close geographical proximity to Europe. Both share the same goal in integrating their respective regions yet, unlike Europe’s achievements within the European Community, the North African regional organisation, known as Arab Maghreb Union, has had little success. Because of deep disagreements between top North African officials, the union remains promissory and only on paper (Mortimer, 1999). As expected, there has been no supranational entity directing and supporting e-Government deployments in the region. Thus, individual states in North Africa separately launched their respective e-Government projects.

### **3. Fez e-government project (e-Fez)**

Morocco is a rapidly developing country. By late 1990s the nation started recognising how ICTs are changing the world and thereby expressed the need to use ICT in response to two major challenges: the need to make a shift towards Information society and its underpinning ICT-mediated information intensive economy, and the need to improve governance quality towards fostering human development (Morocco, 2006). Using ICT as a development tool to Morocco’s sustainable socio-economic development became increasingly expressed as a ‘national aspiration.’ This was first officially and publicly articulated in the speech of His Majesty, King Mohamed VI, delivered during the symposium on Morocco at the Global Society of Information and Knowledge (‘Le Maroc dans la société globale de l’information et du savoir’ in French) held in 2001 (Morocco, 2007).

Respectively, Morocco set up public sector modernization agenda, which rests on two major components: 1) the liberalization of the telecommunications sector; and 2) the development of eGovernment services. The telecommunications liberalisation has been successful; for instance, the penetration rate of telephony services improved from merely 5% in 1998 to 64.18% in June 2007 (ANRT, 2009). eGovernment, however, remained arguable; discussions on the elaboration of Morocco’s national cyber strategy started as early as 1993 and did not produce the needed ICT national framework until 2005 (Morocco, 2007); in addition to the delay in adopting the needed national cyber strategy, many ICT application initiatives were either abandoned or not fully implemented. Morocco’s unsatisfactory eGovernment actions is reflected in ICT low penetration, diffusion and use in areas, such as education (schools, universities, and libraries), commerce (companies and enterprises), and public administration (Moubsit, 2007).

In response to this slow implementation status, the city of Fez collaborated with a research team at Al Akhawayn University in Ifrane (AUI) known as Information and Communication Technologies for Development (ICT4D) to contribute to Morocco’s ICT integration and concerns. The project team (i.e. Fez municipality and ICT4D lab) opted for building a pilot e-government project in real-life settings (i.e. Fez) so that to investigate ICT implementation issues, specifically those related to using ICT to transform municipal service delivery. Accordingly the project team launched eFez project in 2004 and successfully completed a pilot e-government system/platform: electronic Fundamental *Etat-civil* System (eFES) in November 2005, funded by the International Development Research Centre (IDRC) of Canada through its Acacia Initiative and deployed in the local administration of Fez.

Lucratively, eFez introduced and initiated the use of ICT within Morocco’s pilot local government in Fez. Building an e-Government system intended to use electronic means to automate the service delivery of one of the mostly used citizen-centric services: *Etat-civil* certificates, issued at the local government office known as *Bureau d’Etat Civil* (BEC) entrusted with filing official records of citizens’ declared life events such as birth, changes in one’s name, marriage, divorce, and death. Specifically,

the project automated the BEC back office and electronically enabled the front office via a web portal and a related touch screen kiosk, available for public use and adapted for the illiterate. The ICT4D research team, within a PPP (Public-Private-Partnership) environment, built eFES platform with two complimentary building blocks:

- BEC back-end component, which retools BEC office via the automation of internal operations and processes to streamline employees' work
- BEC front-end component, which provides front-line database technologies accessible via staff networked desktops and (self-service) touch screen kiosks to allow citizens to have convenient, speedy, transparent, and easy access (i.e. request/receipt) to necessary documents (Kettani et al, 2009)

The collaboration between Fez and ICT4D team at Al Akhawayn University was further motivated with the recognition of the e-Government worldwide track record. Sharon Dawes during the 2007 ICEGOV conference talked about the significance of e-Government in the last 10 years, with urgency in reinforcing collaboration between research and practice. Underdevelopment between the two has restricted the potential of e-Government transformative properties. In fact, "Even when actual research results are implemented, there are delays in the implementations." (Makolm *et al*, 2008: 428). Furthermore, there has been technology-centred approach with respect to e-Government; issues such as interoperability, identity management, security, and users take-up have been addressed in technical ways by focusing on the technical implementations; non-technical issues called also 'people' related issues (e.g. organizational, political and social obstacles) have been overlooked which has led to shortcomings in ideal e-Government transformations (Heeks, 2001). Therefore, there is increasing awareness that the "transformation potential is mainly in the cooperation of the triad of research, industry, and administration. Promising is the contemporary transformation of research results into user-friendly applications (Makolm *et al*, 2008: 429)."

In light of these circumstances, the collaboration between Fez and ICT4D team at Al Akhawayn University conducted research in Fez's real life settings to facilitate converting research results into practice in a productive way. This was done by implementing a real-life e-Government system for the city of Fez in an action research mode. Fez was used as a real-life laboratory or test-bed environment to conduct a tactic of e-Government called 'concept-of-proof.' Accordingly, the PPP between Fez and ICT4D team at Al Akhawayn University transformed scientific research into value via developing and implementing what is known as 'back-office to front-office' integration (United Nations, 2008). Such integration modernized and retooled the BEC office, enabling an automated service delivery. Respectively, eFez is a case where *technological innovation* (i.e. back-office to front-office integration) became a practice in Morocco thanks to the joint venture of academia, public administration, and private sector. This is a rare *administrative arrangement* of research projects in Morocco and to a larger extent, developing countries.

## 4. e-Fez results

### 4.1 Methods overview

Greater than the research actions focused on building an ICT based system responsive to the needs of stakeholders, the eFez team (including members at the municipality level and university level) pursued learning about e-Government possible outcomes and changes possibly triggered in a public administration still loyal to a bureaucracy model, operating in a developing country context such as Morocco. Accordingly, the research team not only built the system according to the stakeholders' perceived requirements but it also assessed the influence of this e-Government output on the public administration and the people running and operating it.

To conduct needed assessments, it was important to delimit and define the scope of eFez intervention with respect to the public administration. The work of Shahin and Finger (2008, 25-27) differentiates between two interlinked elements in public sector: *democratic governance* and *institutional governance*. Democratic governance is 'more about the perceptions of the institutions from the outside.' At the politics level, governance refers to the interactions of state and non-state actors to influence and set the agenda; and at the policy level, governance refers to dynamics to collectively issue legislation or 'co-legislation.' Institutional governance 'looks from the inside at an institution's ability to govern.' The work of BEC offices (consisting of keeping citizen's life-event records and issuing certificates upon citizens' request) is institutional governance, which is the focus

of eFez intervention. eFez built an e-Government platform to enable Fez BEC offices to transform their service delivery from manual certificate delivery to automated (ICT-based) certificate delivery.

Correspondingly, the research team observed and studied BEC institutional governance before eFez implementation and after the deployments of the eFez platform and its operation within Fez pilot BEC offices. The two-temporal studies enabled comparing the institutional governance (service delivery) to identify and map changes produced by ICT intervention. The studies used intensive fieldwork to observe and conduct interviews. The studies were also supplemented with use of survey tools.

As an example, one of the most recent surveys was conducted in early January 2009. The survey rationale was the recognition that two years have passed since the eFez scaling up/rolling out phase (eFez-2) started. Accordingly there has been a growing need to learn about the achievements during the two year period.

The survey focused on the following matters:

- Changes that have passed at the BEC offices involved with eFez-2 automation
- Categorizing the perceived changes
- Organizational value of the BEC changes observed in eFez-2
- Behavioural changes developing through the city-wide implementation of eFES platform
- Other issues/concerns emerging from Fez city-wide scaling up of automation
- Feedback actors have on improving eFES platform performance

To fulfil the above survey objectives, the Survey Target Population was defined. First, the survey captured perspectives of one key player in eFES automation; those operating eFES technology as the intermediary/facilitating agents: the BEC officers. The rolling out phase has included 12 BEC offices in Fez. The survey elaborated and used questionnaires combining open and closed-ended questions in an effort to capture quantitative and qualitative data. To minimize bias and maximize the response accuracy, the questionnaire was administered by field reporters unknown among the target respondents. They visited targeted BEC offices for two days [12-13 January 2009], spending an average of thirty minutes per office. During his visits, they requested each officer to complete their questionnaire [elaborated in the Arabic language]. The reason behind this was to give participants confidentiality and a secure climate to speak their minds freely and aid in accurate data collection.

## **4.2 eFES findings**

### *4.2.1 Efficiency gains*

The survey generated several findings. There was 100% response rate; the twelve target BEC offices participated in the survey by completing the questionnaire. The survey revealed a consensus on recognizing changes taking effect the way BEC functions and delivers services. The most noticeable change [75%] was **delivery high speed & quality**. The survey revealed positive changes with respect to the following organizational elements:

- Delivery elapsed time: dropped from an average of 48 hours to 6 hours waiting time
- Certificate delivery: improved from 'poor' [58%] to 'excellent' [83%]
- Error rate: dropped from 'many errors' [58%] to 'few errors' [83%]
- Employees effort input: reduced from 'too much effort' [91.7%] to 'less effort' [66.7%]; to 'no effort' [25%]
- Productivity: improved from an average of 689.09 daily certificate delivery [minimum 80 – maximum 1500 per day] to 828.18 daily [minimum 100 – maximum 2000 per day]
- Labour: dropped from an average of 10.09 employees per BEC [minimum 2 – maximum 20] to an average of 2.27 employees per BEC [minimum 1 – maximum 8]
- Citizen relations: tense/conflict relations dropped [58.3% to only 8%]
- Work conditions' problems: 'too much stress' [25%] and 'unqualified employees' [16%] were previously the main problems. In the survey, the main problem was 'need for IT equipment, IT training, and labour for records' digitization' [24%]

- Perceived organizational value of BEC changes attributed to eFES: 91.7% recognize/admit eFES saved him/her time and effort in delivering BEC certificate. The quantification of time and effort saved is as follows: 33% indicated eFES saved them 80%; 25% indicated a 90% savings and 33% indicated a 100% savings

These survey findings show clearly that eFes intervention generated efficiency gains in BEC institutional governance. In this sense, eFes contribution was bringing about unprecedented efficient institutional governance in Morocco, a developing country context.

4.2.2 Public value

Further fieldwork and investigative studies have revealed that eFes not only facilitated BEC efficient institutional governance but also facilitated *ethical efficient institutional governance*. This is shown in the table below where eFes results are categorized according to the UN list of Good Governance attributes:

**Table 1:** e-Fes ethical aspects (source: Kettani et al, 2008)

GOVERNANCE ATTRIBUTES	MEASURED INDICATOR	VALUE BEFORE AUTOMATED SYSTEM DEPLOYMENT	VALUE AFTER AUTOMATED SYSTEM DEPLOYMENT
<u>Transparency</u>	Visibility of workflows for citizens via automated service delivery	<u>No</u> Since the BEC back-office is completely manual, sub processes of making BC request, processing the request, and filling out the needed copies of BC are carried out in separated way (and sometimes with different employees). The citizen cannot monitor/ see the processing progress of his BC (e.g. the possibility of length/possible reasons for a delay in a processing are neither accessible nor visible)	<u>Yes</u> Since the BEC back-office is electronically enabled, sub processes of making BC request, processing the request, and printing the processed BC are merged in one process carried out on a real time basis. This secures the principle of: first-come-first-served
<u>Effectiveness and efficiency (as a citizen user)</u>	Efficiency: optimal use of resources for citizens to request & obtain BC	<u>No</u> requesting and obtaining BC is costly for citizens: extended waiting time several trips to BEC need to tip (or use social connections)	<u>Yes</u> Citizens making time/money/effort savings in requesting and obtaining BC: no waiting time one trip to BEC no tip
<u>Effectiveness and efficiency (as tax payer)</u>	Efficiency and effectiveness of using scarce public resources	<u>No</u> To deliver BC, BEC needed 3 full time employees (when demand on BC is low and moderate ) When demand on BC is high (during summer and early Fall period: from June to Sept.): All BEC employees (10) stop processing their respective tasks in order to process BC requests  Furthermore, they take BC requests home to be processed (which is illegal )	<u>None</u> (i.e. casual calls on employee time with the elimination of 3 full time dedicated employees) No BC full time employee: (any of the employee can instantly process BC requests while doing her other BEC related manual tasks) With the kiosk: no employee is needed to process the requests
<u>Equity</u>	Citizens served in equitable manner	<u>No</u> Usually queuing/waiting creates motives and conditions for bribery	<u>Yes</u> ICT eliminated the need for citizen to tip in order to be served

		incidents. Citizens find themselves obliged to tip the employee in charge in order to be served, especially when they are in a hurry to meet tight deadlines of submitting paper work	all citizens are served on a timely and in a similarly professional manner (regardless of social class)
GOVERNANCE ATTRIBUTES	MEASURED INDICATOR	VALUE BEFORE AUTOMATED SYSTEM DEPLOYMENT	VALUE AFTER AUTOMATED SYSTEM DEPLOYMENT
<u>Rule of law</u>	Laws are applied impartially	<u>No</u> Equity is violated; and violations are perceived as normal: Many violations of law as people paid for special privileges (queue jumping)	<u>Yes</u> Eliminating value and opportunity for tipping reinforces the rule of law:
<u>Participation/empowerment</u> (i.e. citizens are empowered to legally control the service delivery to their advantage) Process of disintermediation: elimination of middle person in service delivery	Citizens' active participation in BEC services	<u>No</u> Citizens were not participating actively in the service delivery (with possible negative consequences on the service delivery arising from issues occurring in the workflow )	<u>Yes</u> Citizens through the kiosk/online service delivery actively participate in the service delivery, which eliminates possibilities of negative consequences arising from difficulties in the workflow
	Dependency on bureaucracy: Dependence of citizens on the employees good will	<u>Yes</u> Citizens were at the mercy of employees to get served	<u>No</u> Citizens through the kiosk/online service delivery are not at the mercy of employees
<u>Accountability</u> (the process of 'routinization' of the BEC process is a process of creating standards against which the individuals can be held accountable; when the system is opaque, it is not possible to hold individuals accountable )	Existence of standards to hold individuals accountable	<u>No</u> No standards because of the opaque and inconsistent system	<u>Yes</u> Visible/ transparent/ consistent system with implicit standards available against which to hold BEC accountable
<u>Responsiveness</u>	Consistency in the relationship between input and output	<u>No</u> The service delivery is not predictable The citizen cannot legally influence the system to be predictable/responsive	<u>Yes</u> The system (i.e. automated service delivery) is by definition/design responsive/predictable
<u>Consensus orientation</u>	Not Applicable		
<u>Strategic vision</u>	Not Applicable		

Regarding the above ethical aspects, eFez stimulated what is increasingly known as 'Public Value Management.' This is another view advanced by Stocker in e-government thinking (Shahin and Finger, 2008: 26). The beginning of e-government debate in the 1970s and 1980s was solely driven by "New Public Management" principles where e-government was promoted to improve the efficiency of public service delivery. Yet Public Value Management emerged as alternative perspective where, "... the public sector is not driven solely towards a goal of greater efficiency, but towards the aim of delivering more public value. One of the means towards achieving this goal can indeed be the increased efficiency and effectiveness of government services, but this remains one of a plethora of

aims: others include the need to ensure transparency, accountability, legitimacy, representation, and empowerment (*Ibid*, 27)."

#### 4.2.3 Intellectual capital

A closer look at the eFez research practice experience shows that eFez not only stimulated an increase in public value, but also brought about e-Government as a lever of change in Morocco. E-Government is frequently viewed as a tool "to improve effectiveness, efficiency, and friendliness in the public sector and as a consequence to improve peoples' quality of life and to facilitate economic growth (Cellary, 2008: 150)." Nevertheless, one alternative approach views e-Government as "a direct lever to speed up positive transformations aiming at electronic knowledge-based economy and information society. This strategy is valid for all the countries, independent of how rich or poor they are (*Ibid*, 2008)." In this respect, one way to address e-Government is to "consciously create an internal market of digital products and services by transforming the whole society - all generations - to the information society. In other words, it is necessary to massively educate people how to use internet and to provide them with internet access, including PIAPs (Public Internet Access Points), in order to stimulate demand for digital products and services (*Ibid*, 2008)." Here digital products and services do not mean e-Government 'hard' component, software development; rather, they refer to e-Government 'soft' element, meaning content creation. The success of eFez research practice experience fuelled a growing recognition to roll out the eFez system to cover all of Fez's thirty-three local government offices. This included working on the back-end of these offices to convert the paper based records to digital records. As the conversion operation is legally demanding and requires full-time labour, the municipality contracted out a company, which employed fifty-seven public university graduates to perform the job. The conversion of citizens' lives events records is conducted on city-scale level (serving a population of one million). This is Morocco's first large scale records' digitization experience conducted in a metropolitan area. In addition, all employees of the twelve automated offices already abandoned delivering handwritten certificates and adopted the platform to generate and print requested certificates.

In fact when platforms need trouble-shooting the employees refuse to handwrite certificates, rather, they call the IT department for technical intervention. Last summer, one BEC office, called *Atlas*, ran out of printing ink. The employees phoned the county seat responsible for supplies and discovered the delivery of office supplies had been delayed. The county Secretary General was surprised when he found out that employees gathered together their pocket money and collectively purchased printing ink for immediate use. He was surprised because purchasing something for the public administration is unexpected of low ranking civil servants with modest salaries. They justified the purchase with their unwillingness to go back to the old practice of handwriting certificates and the reluctance of citizens to accept handwritten certificates.

At present, citizens (BEC certificates recipients) not only expect receiving printed certificates but also have greater expectations in regards to the protocol at BEC offices. An increasing number of citizens abandoned the conventional way of requesting certificates: approaching the employee in charge. Instead they have grown accustomed to using eFez self service technology: a touch screen kiosk deployed at the BEC office, available to the public, free of charge, and more importantly adapted to the illiterate user profile. At least five of the twelve offices with automated service delivery, more than 95% of citizens request and print their certificates themselves and have them signed by BEC officer (free of shuffling through different chains of the administration). Touch screen kiosks have been used by banks for the last ten years but their use in public administration is only a few years-old. In addition, with the rolling out phase of the eFez project still in progress, the research-practice team initiated the concept of building a data centre to facilitate the interconnection and joining up of automated offices. Morocco's first data centre in public administration is commencing in Fez. The eFez rolling out demonstrated its multidimensional effects and inspired the central government to allocate sixty million Euros to launch a project, digitizing citizens records in all of Morocco's 2400 BEC offices (Rniche, 2008). Now, BEC records digitization has become a priority for local and central governments in Morocco.

Furthermore, the eFez research-practice experience generated value with respect to intellectual capital. One long-term debate among economists discusses how organizations succeed and maintain a good track record. In the 1990s intellectual capital, as 'intangible assets' or enablers facilitating organizations' success, became popular with the Swedish insurance company Skandia (Vontas *et al*, 2008: 424). Skandia developed a model known as 'Skandia navigator' on what determines the market

value of an organization. The model indicates that the market value rests on organizations' financial capital and intellectual capital. This includes the following asset areas:

- Human capital: Includes employee brainpower, competence, skills, experience and knowledge
- Customer capital: Includes relations and networks with partners, suppliers, distributors, and customers. It also includes the image of the organization in the market, its social identity, and brand equity
- Structural capital: Covers every intellectual capital that can be owned by the organization including business processes, practices, databases, systems and intellectual property (Vontas *et al*, 2008: 424)

Based on this model, we tried to compile and categorize intellectual assets produced with eFez research and practice experience:

**Table 2:** e-Fez intellectual capital

Asset Areas	eFez Contributions
Financial Capital	eFez enabled the Creation in 2005 of a spinoff service provider entity, <i>Enhanced Technologies</i> , specialized in developing and integrating free and open software to serve Morocco's public administrations via: automating back office, electronically enabling the front office, creating and diversifying electronic delivery channels
Market Capital	eFez enabled creating and maintaining collaboration network with: <i>Suppliers:</i> via maintaining business relations with network cabling providers, WiMax - Wifi and infrastructure installation providers, touch screen kiosk hardware re/sellers <i>Research effective/potential users (i.e. public administrations):</i> eFez started with collaborating with Fez-Agdal county; with eFez pilot success, collaboration expanded in 2006 to include Fez five remaining counties; and with eFez successful rolling out in Fez, collaboration expanded to include ten additional Morocco's cities (i.e <i>local decision makers</i> ) and Ministry of Interior (i.e. <i>central decision makers</i> ) <i>Researchers:</i> via joining and actively participating in two pan-African research networks: LOG IN Africa network (since 2005) and Wireless-Africa initiative (since 2008).
	eFez innovative qualities have been acknowledged and recognized via: Morocco's national Award: "eMtiaz 2006"; <a href="http://www.eforum.ma/dossier-de-presse-2006.pdf">http://www.eforum.ma/dossier-de-presse-2006.pdf</a> The African prestigious Award: the 2007 <i>Technology in Government in Africa (TIGA 2007) Award</i> ; <a href="http://www.uneca.org/eca_resources/news/2007/tigaawards.pdf">http://www.uneca.org/eca_resources/news/2007/tigaawards.pdf</a> The 2007 International prestigious Award of the <i>United Nations Public Service Awards (UNPSA 2007)</i> in the category "Improving the delivery of Services" <a href="http://www.unpan.org/innovmed/documents/Vienna07/28June07/summary_of_innovations.pdf">http://www.unpan.org/innovmed/documents/Vienna07/28June07/summary_of_innovations.pdf</a> " <i>The Best Scientific Paper Award in the Conference of Information and Communication Technologies</i> " delivered at the 5th Congress of Scientific Research Outlook & Technology Development in the Arab World (SRO5) organized by Arab Science & Technology Foundation (ASTF) in cooperation with the Ministry of National and Higher Education, Professional Training and Scientific Research between 25-30 October, 2008 in Fez, Morocco, as <i>part of the 1200 Anniversary of Establishment of the city of Fez, Morocco</i>
	eFez has gained increasing visibility in the mass media via: 100 news articles (published in Morocco's, Arab, and International newspapers) Ten radio interviews Five TV news reports
Process Capital	eFez has been conducted and led within an ecology integrating research with practice by facilitating a constant transfer of research results to be converted into practice fully materialized. Within this research-practice collaboration environment, research team investigates and defines users' perceived needs; then, proceeds to building appropriate solutions in a participatory and iterative manners following gradual approach consisting of these steps: finalizing Proof-of-concept, integrating the systems' different modules, developing and implementing the Prototype in a real-life setting, conducting real life deployment; and then, proceeding to scaling up/rolling out phase (in order to contribute to accelerating ICT diffusion in Morocco).
Renewal/ Development Capital	eFez Research team grew from five members to thirty members With eFez ongoing rolling-out, the research team explores: <i>New ideas:</i> building Morocco's 1 <sup>st</sup> Data Centres to accelerate automation and enable the joining up of local government offices <i>New technologies:</i> installing WiMax metropolitan area network in Fez to enable the interconnection between and among Fez local government offices

Clearly, pursuing innovation in a research-practice environment has made eFez generating and producing assets and resources feeding intellectual capital.

## 5. Conclusion

It is clear, Fez e-Government project has generated multidimensional value: (1) enabling efficiency gains for BEC administration, (2) infusing public value in BEC institutional governance, and (3) facilitating the generation of intellectual capital. This shows the transformative capabilities of pursuing innovation within triad collaboration: academia, public administration, and private sector. Such transformative capabilities have great potential in scope, influence and performance if such a triad collaboration is promoted within Morocco and among other North African countries via the Maghreb Arab Union.

## Acknowledgments

The project team hereby expresses its appreciation and gratitude to the IDRC for funding eFez project; without which this research work would have not been possible. Equal appreciation goes to Fez local authorities, employees and officers, for their invaluable assistance, support, cooperation, and collaborative work motivated by their willingness to make a difference on the ground. Equal gratitude goes to our Canadian research partners: Dr. Michael Gurstein and Dr Bernard Moulin. In conclusion, the authors of this article would also like to thank Franklin Charles Graham IV for his suggestions and editorial assistance.

## References

- ANRT (2009) E-Morocco: The Moroccan Economy of Knowledge is moving " [online], available: <http://www.apebi.org.ma/IMG/pdf/E-Morocco.pdf> [5 Sep 2009]
- Cellary, W (2008) "Strategic Impact of e-Government on Economy and Society", in T. Janowski and T.A. Pardo (eds.) *Proceedings of the 2<sup>nd</sup> International Conference on Theory and Practice of Electronic Governance ICEGOV*, Cairo: pp 149-153.
- Heeks, R. (2001) "iGovernment: Understanding e-Governance for Development" *Working Paper Series: Paper N° 11*, Institute for Development Policy and Management, [Online], available: [www.guidestarinternational.org/file\\_download/84](http://www.guidestarinternational.org/file_download/84) [3 Dec 2008]
- Kettani, D., B. Moulin, M. Gurstein and A. El Mahdi (2008) "E-Government & local Good Governance: A PILOT PROJECT IN FEZ, MOROCCO," *The Electronic Journal on Information Systems in Developing Countries, EJISDC* (35)1: pp. 1-7.
- Kettani, D., M. Gurstein and A. El Mahdi (2009) " Good governance and e-government: applying a formal outcome analysis methodology in a developing world context", *International Journal of Electronic Governance*, 2009 - Vol. 2, No.1 pp. 22 – 54, ISSN (Online): 1742-7517 - ISSN (Print): 1742-7509, DOI10.1504/IJEG.2009.024963, available at: <http://www.inderscience.com/browse/index.php?journalID=128&year=2009&vol=2&issue=1>
- Makolm, J, S. Weib and D. Ipsmiller (2008) "The DYONIPOS Innovation Framework: Research and Practice Hand in Hand," in T. Janowski and T.A. Pardo (eds.) *Proceedings of the 2<sup>nd</sup> International Conference on Theory & Practice of Electronic Governance*, Cairo: pp 428-432.
- Morocco: Ministry of Economic and General Affairs (2006), "Note de Synthèse: Composants Majeurs de la Stratégie Nationale e-Maroc 2010 », available: [http://www.septi.gov.ma/Strategies/Docs/Note-de-Synthese\\_e-Maroc\\_2010\\_Fr.pdf](http://www.septi.gov.ma/Strategies/Docs/Note-de-Synthese_e-Maroc_2010_Fr.pdf) [5 Sep 2008]
- Morocco: Ministry of Economic and General Affairs, Department of Post, Telecommunication and Information Technologies (2007) "Stratégie e-Maroc 2010: Réalisations, orientations and plans d'action. Réussir notre société de l'Information," available: [http://www.septi.gov.ma/Livre\\_R%C3%A9f%C3%A9rence\\_Strat%C3%A9gie\\_eMaroc.pdf](http://www.septi.gov.ma/Livre_R%C3%A9f%C3%A9rence_Strat%C3%A9gie_eMaroc.pdf) [5 Sep 2008]
- Mortimer, R.A. (1999) "The Arab Maghreb Union: Myth & Reality," in Zoubir, Y.H., *North Africa in Transition: State, Society and Economic Transformation in 1990s* (Gainesville: University Press of Florida).
- Moubsit, I. (2007) "Collectivités locales: Bientôt les téléservices!", *L'Economiste*. [online], available: [http://www.promedia.ma/actu\\_detail.asp?id=1034](http://www.promedia.ma/actu_detail.asp?id=1034) [ 5 Sep 2009]
- Rmiche, A. (2008) "La modernisation coûtera 600 millions de DH : 2.172 bureaux concernés par la saisie et la numérisation des documents » *Le Matin.ma.*, available: <http://www.lematin.ma/Actualite/Journal/Article.asp?idr=110&id=91630> [5 Sep 2009]
- Shahin, J. and M. Finger (2008) "The Operationalisation of e-Governance," in: T. Janowski and T.A. Pardo,(eds.) *Proceedings of the 2<sup>nd</sup> International Conference on Theory and Practice of Electronic Governance ICEGOV*, Cairo: pp 24-30.
- Traunmuller, R. and C. Leitner (2008) "e-Government: State and Perspectives," in: T. Janowski and T.A. Pardo (eds.) *Proceedings of the 2<sup>nd</sup> International Conference on Theory and Practice of Electronic Governance ICEGOV*, Cairo: pp 4-7.
- United Nations: Department of Economic and Social Affairs, Division for Public Administration and Development Management (2008) "UN E-Government Survey 2008: From E-Government to Connected Governance"

(New York: ST/ESA/PAD/SER.E/112), available: <http://akgul.bilkent.edu.tr/unpan/unpan028607.pdf> [5 Sep 2008]

Vontas, A. and P. Crehan (n.d.) "Effectiveness of IST-RTD Impacts on the EU Innovation System Study overview," available: <http://www.smart-research.eu/Contact.aspx> [5 March 2009]

Vontas, A., A. Mavirdis, A. Koumpis, and V. Moumtzi (2008) "Measuring Government Innovation in EU," in: T. Janowski and T.A. Pardo (eds.) *Proceedings of the 2<sup>nd</sup> International Conference on Theory and Practice of Electronic Governance*, Cairo: pp 423-427.