Preface

We live in an increasingly highly sophisticated and interconnected society, where the Internet has led to tremendous improvements in efficiency, effectiveness, and better services. The Internet has in recent years become a natural part of everyday life for an increasing number of individuals’ worldwide. Through computers, wireless technology, and cell phones we can communicate with one another whenever and wherever at low costs, and all the information in the world, in theory, can be available to citizens in seconds. Those who use the net on a regular basis have gradually come to expect all manner of information and services there – including the ones from the public sector.

More than 65 percent of all Internet users interact with government websites. E-Government technology saves individuals significant amount of money and time, while adding value to citizens’ experience with government and better serving their needs.

The emergence of the Internet as a major technological and social force in the 1990s was accompanied by a recognition that this medium could have a transformative impact on the relationship between government agents and citizens.

Today’s citizens need to develop a wide range of specialist skills and knowledge to drive performance and help their organization achieve success in a tough global market. The E-government book, I believe, is a valuable asset providing its reader with the required knowledge that enhances competitive advantage and effective change management.

The materials in the book cover an important role in almost every aspect of an organization’s activities. They provide comprehensive coverage of the e-government issues faced by managers, consultants and other practitioners. The book is divided into thirty three chapters covering most daily life activities in an electronic government.

The primary objective of the book is to assist its readers in recommending the formulation of ICT strategies for their e-government and acquiring knowledge on the significance of e-Government for developing efficient and effective government systems. At the same time, acknowledge the importance of e-Governance for building institutions to achieve transparency and accountability, and eventually democratic governance.

The book also aims to assist its readers in implementing collaborative policy initiatives among the private, public, and non-profitable sectors for eliminating the global digital divide. This book will also explore the relationship among different variables and the implementation of digital initiatives for effective e-Government readiness.

The first chapter of this book shows that governments around the world have sought to improve their governing capabilities by developing and implementing strategic information and communication technologies (ICTs). The use of ICTs can provide citizens with greater access to government services, promote transparency and accountability, and also streamline government expenditures.
The research, in this chapter, provides a comparative analysis of the practices of digital governance in large municipalities worldwide in 2005. Digital government includes both e-government and e-democracy. The research is based on an evaluation of a sample (n=81) of city websites globally in terms of two dimensions: delivery of public services and digital democracy. The official websites of each city were evaluated in their native languages. Based on the analysis of 81 cities, Seoul, New York, Shanghai, Hong Kong, and Sydney represent the cities with the most effective e-governance systems.

The second chapter introduces an approach that deals with the verification of UML collaboration and sequence diagrams in respect to the objects of internal behaviors which are commonly represented by state machine diagrams. The approach is based on the translation of theses diagrams to Maude specifications. In fact, Maude is a declarative programming language, an executable formal specification language, and also a formal verification system, which permits the achievement of the approach goals.

The chapter also defines, in detail, the rules of translating UML diagrams elements into their corresponding Maude specifications. This chapter presents the algebraic structures that represent the OR-States and the AND-states in a state machine diagram, and the structure that represents the collaboration and the sequence diagrams. The chapter explains the mechanism of the execution and the verification of the translated specification, which is based on rewriting logics rules.

Chapter Three outlines that government establishments are most times, highly involved in different reorganization programs. The processes in e-Government are diversified and complex, hence the need for an appropriate training and learning strategy for governmental employees. Changing business processes and organizational structures always means that the personnel have to be familiar with the changed procedures. Consequently, the employees need to be trained to develop capacity for new responsibilities.

The chapter outlines that existing methods of learning and training do not make provision for certain category of employees such as the visually impaired. They do not provide an alternative learning platform for government of employees that are not physically challenged. Many studies have demonstrated the value of several learning platforms, including mobile learning (m-Learning), but with the problems of access barriers and streamlined participation of most learners.

The purpose of the chapter is to propose a voice-based e-Learning system, also known as voice-learning (v-Learning) as a variant of the m-Learning with particular relevance to the visually and mobility impaired learners. V-Learning makes possible ubiquitous learning in e-Government and provides additional capacity and speed of response to help facilitate change. Cost reduction is also achieved and there is no shortage of teachers.

Chapter Four handles software reuse in Component Based Software Engineering (CBSE) which covers a variety of fields, including component design, component specification, component composition, component-based framework. CBSE is quickly becoming a mainstream approach to software development and most researchers are hoping that there will be solutions to problems that led to software crisis.

The software engineering techniques specific to this discipline, in phases such as modeling, verification or validation of component based software systems still insufficient and need more research efforts. ECATNets (Extended Concurrent Algebraic Term Nets) are frameworks for specification, modeling and validation of concurrent and distributed systems.

The techniques are characterized by their semantics defined in terms of rewriting logic. The objective of this article is to propose a formal specification of software components by using ECATNets formalism. The expected benefits of this work are: It offers a formal notation for describing the different features of concurrent and distributed software components; Defining a formal unambiguous semantics to describe the behavior of the composed system.
In chapter Five, we propose a new methodology for ontology building, which is based on a set of mapping rules from a conceptual schema (Entity-Relationship) and its corresponding logical model (relational model) toward a conceptual ontology. The proposed methodology consists of three big steps, which are, the Transformation (mapping), the Formalization and the Codification.

The crucial step in the building process of this methodology is the transformation; this last concept is based on an automatic extraction of information for a conceptual model ER (such as entities, relationships, properties and cardinalities). The data stored in the database (the schema extension) are extracted and used to create instances of the ontology. At the end of this stage, we will have a complete conceptual ontology that can be used in different applications.

Chapter Six shows how people search websites for health information for self-care, and how the information provided by these e-health portals are delivered in text form. This does not cater for the needs of the visually impaired, the blind, the low-literate and those who are not computer literate. Also, the existing speech-based disease screening initiatives lack the reasoning capability to make them attain the level of an expert system.

The work, in this chapter, presents an intelligent framework for usable speech-enabled e-health system that provides speech-based health information to cater for the needs of those not catered for in graphical user interface. It also introduces rule-based reasoning techniques into speech-based disease screening systems.

Chapter Seven introduces the usage of the internet and shows how the internet capabilities, as an example, have grown over recent years in South Africa, but at a very slow rate. This is the result of several challenges facing the growth of the Internet in South Africa. These challenges are mostly related to the lack of infrastructures of the Internet, high cost of computer technology and service provider challenges.

The chapter also provides an overview of the Internet usage and its impact on E-Government in South Africa. It examines regulatory issues pertaining to the Internet. It also examines Internet growth in the business and government sectors. In the government sector, the Cape Online Strategy, is an initiative by the provincial government of the Western Cape in SA, is an example of a global trend towards greater levels of interactivity between government and citizens.

This initiative is an excellent example of how Web-based solutions can be used to deliver certain services to citizens. Another excellent example is an E-justice initiative undertaken by the Department of Justice. The initiative aims at promoting a more efficient system of Justice in SA. The chapter provides an overview of the challenges to Internet adoption in South Africa.

Chapter Eight introduces the Internet and Information and Communications Technologies (ICTs) which have long been seen as potentially contributing to a solution to the problem of voter disaffection and disengagement that has occurred in many western liberal democracies over the past couple of decades. The success of Barack Obama in the 2008 presidential campaign in the United States has highlighted the role that ICTs, in the form of Web 2.0 technologies and social media, can play in enhancing citizen’s democratic participation and involvement in political campaigning.

This Chapter examines the nature of Web 2.0 technologies and social media and analyses their role in political campaigning, particularly in the context of the recent federal elections in America and in Australia. While broadcast television is still a dominant political player, the empirical evidence suggests that a viable campaign needs to integrate diverse communication strategies tailored to citizen’s interests and the political environment. The interactive and participatory technologies of the online world are increasingly key components of such integrated campaign strategies.
Chapter Nine introduces Nigeria experience which has made frantic efforts towards achieving the millennium development goals (MDGs) as spelt out in the United Nations’ Agenda for the world. A critical assessment of the e-Government strategies in Nigeria is important being responsible for 20% of the population of the entire African continent. This chapter presents a review of the e-Government strategies in Nigeria; the human capital development initiatives; the information and communications technology (ICT) diffusion and e-Inclusion. The global and continental ranking of the country is presented, as well as recommendations to accelerate developments towards achieving the MDGs.

Findings revealed that there are ongoing efforts in Nigeria to address the issue of poverty. The various initiatives of government include: the National/State Economic Empowerment Strategies (NEEDS/SEEDS), the Vision 2020, the National e-Government Strategy (NeGST) and a well-formulated National IT policy, to mention a few. The little hindrance encountered in the research is that the available data was only up to the year 2005 and 2006 in some cases.

However, based on the human capital development indices such as: economic empowerment and poverty reduction, education, health, employment generation, etc, it was observed that the adult literacy level of 64.2% is satisfactory and better results are expected before 2015. The life expectancy level is constant (54 years) from 2002 to 2007, which is the one of the lowest in Africa.

On school enrolment, the major problem is access and poverty. It was observed that only 25% of primary school leavers made it to the secondary school level, while about 14% of the students at this level made it to the tertiary level. Similarly, the average percentage of female enrolment in schools is 45%. The health facilities are under-funded and are grossly inadequate both in quality and quantity. There is an average of 1,700 persons per hospital bed and the ratio of physicians to the populace is about 1:6000. This calls for a state of emergency in this sector.

One major sector of the economy that is experiencing a boost is the ICT and Telecoms. The sector had brought about a teledensity growth of 0.73 to 37.05 from 2001 to 2007. Consequently, Nigeria has been named the fastest growing Telecoms nation in Africa and the third in the world, with a number of direct and indirect jobs created. Similarly, the rate of Internet diffusion is encouraging bearing in mind that the level was almost non existent in 1999. It is obvious that Nigeria would be able to bridge the divide by 2015.

Generally speaking, there are some meaningful developments in the country arising from the various poverty eradication schemes, but the resultant effect has not imparted positively on unemployment. This is the opinion of the populace and hence the need for government to restrategize, otherwise, fulfilling MDGs by 2015 may not be realistic.

Chapter Ten covers points that characterize the century as of evolution for information technology, communication technology and electronic communications. Contemporary society does business using the internet; the forthcoming ‘dispute resolution space’ (Katsh & Rifkin 2001), where people buy and sell regularly and even a large number of corporations have existence via an internet address. This excitement for further improvement of dispute techniques, in relation to the exploitation of those technologies used for the management of online virtual communication led to the appearance of the Online Dispute Resolution (ODR) mechanism.

The choice for settlement of disputes through the modern mechanism provides an easement for interested parties to tackle their disputes from any place and at any time through e-mails, video conferencing or chat rooms, instead of being in courtrooms. The fact that the businesses are transactions are conducted on the internet causes uncertainty, regarding the security of personal data and business secrets in combination with the lack of a framework that could have supported such a scheme.
For that reason, the role of Government is taken into consideration in the accreditation of service providers, as well as in the settlement of e-administrative disputes and the securing of e-transactions in general. The necessity for self-regulation, equality of digital divide and government’s recommendation for ODR tools are discussed. The current chapter will identify and explore considerable notions, concepts and debates for moving towards the development of an international dispute resolution framework online and trustful mechanism internationally.

In Chapter Eleven, we discuss issues that play vital role in helping citizens overcome perceived risks. Trust makes citizens comfortable sharing personal information, making online government transactions, and acting on e-Government advices. Thus, trust is a significant notion that should be critically investigated to help both researchers and practitioners to understand citizens’ acceptance to e-Government. Prior research in trust has focused mainly on consumer’s trust in e-Commerce.

Most of the existing literatures on trust in e-government focus on technical perspective such as PKI. This chapter contributes by proposing a conceptual model of citizens’ trust in e-Government. The proposed conceptual model of citizens’ trust in e-government is integrated constructs from multiple disciplines: psychology, sociology, e-commerce, and HCI. The research is aimed also to develop items in order to measure the theoretical constructs in the proposed model.

The pool of items is generated based on literature review. Q-Methodology has been utilized to validate the generated measurement items. The outcome of two Q-sorting rounds resulted in developing a survey instrument for proposed model with an excellent validity and reliability of statistical results.

Chapter Twelve introduces the methods of delivering public services through SMS (SMS-based e-government) which is becoming popular in developed and developing countries as a strategy to engage more citizens in using e-government services. Current advances in SMS-based e-government applications by local authorities in developed and developing countries are investigated to determine to what extent SMS-based e-government could deliver existing Internet-based e-government services and whether these services can fulfill the actual needs of e-government services users.

The currently available SMS-based e-government services are presented as a model with six levels: Listen, Notification, Pull-based Information, communication, Transaction, and Integration levels. The model classifies the SMS-based e-government services into levels based on the direction of communication, the complexity of the services and the benefits received by citizens; the higher the level the more complex the services and the more benefits received by citizens.

The SMS-based e-government model is compared to Internet-based e-government models and typical e-government use to show SMS-based e-government can deliver almost all of the service offerings of Internet-based e-government and meet the requirements of e-government users except for downloading forms. The outcomes justify the development of SMS-based e-government services.

Chapter Thirteen shows that stakeholders are proactive in the development of e-government initiatives; public organizations should be proactive in identifying all relevant collaborators, working with them and undertaking measures to systematically engage their stakeholders. Building coalitions with both internal and external stakeholders (Pardo and Scholl, 2002) of an e-government project may help in recognizing the critical stakeholders that deserve project managers’ attention. Henceforth, e-government has to rely on a broad consensus, commitment and ownership at all levels among government officials as well as the citizens.

The diversity of stakeholder interests poses considerable challenges to project managers. Stakeholder analysis may be applied to e-government projects to assist managers in identifying potential conflicts between project stakeholders at early project stages. Insights on potential stakeholder conflicts can then
be used for devising and implementing communication strategies to prevent contradictory stakeholder interests and to avoid conflicts.

Empirical evidence is needed in order to validate the suggested approach. Government to government and inter agency cooperation projects may be especially well suited, as complexity rises as multiple public sector organizations seek to align their objectives to reach common goals.

Chapter Fourteen examines the rising of the knowledge of economy, enhanced by the fast diffusion of ICTs, drives a wider perspective on the divide among Countries, interpreting it more and more as the result of an asymmetry in the access to knowledge and in the readiness to apply it in order to renew the basics of their development dynamics. Looking at the Mediterranean Area, the positive correlation between the Networked Readiness Index and the Global Competitive Index developed at Global Economic Forum – INSEAD, shows that the opposite sides of the Mediterranean Sea are performing a development path at two different paces.

In the effort to face the challenge of supporting the creation of Intellectual Capital which can be able to apply, diffuse and benefit from e-business. In 2005 the e-Business Management Section (eBMS) of Scuola Superiore ISUFI – University of Salento launched the “Mediterranean School of e-Business Management”.

The present work aims to offer a presentation of its genesis, its most distinctive features, operational model and action plan. The preliminary results of its activities show the role and the main challenges of the School in addressing the needs of the Mediterranean Countries towards logic of partnership for the development of their Intellectual assets.

Chapter Fifteen shows that the posting of interactive mapping is essential for the dissemination of information to the general public and in all areas. All the elements constituting a spatial object are represented by agreements with symbols. Each element is represented at the level of reality. The posting of maps on the Internet can take many forms. It can be static maps, as a picture. Interactions with the user can be included on the maps produced. These are movements and functions of the zoom presentation (display information, change of scale, global view).

At this level, it is also possible to examine, by selection of the objects represented on the map (common facilities). This level is commonly known as Web mapping. The dynamic mapping is used when information is to be renewed or if the geographical extent of the area is large. In this case, a server handles in real-time updated database to provide users with answers to their complaints. The functions proposed in this case are close to those of GIS software (acquisition, manipulation, management and processing of geographical data). In this Chapter we will explore the possibility of integrating a dynamic mapping on the Web.

Chapter Sixteen shows that the relationships among people, governments and organizations are subject to fast changes. The increasing demand for new services conducts to the need to create services from scratch and by integrating disparate and heterogeneous legacy systems. The problem is that the monolithic form as most of the systems were implemented turns the change excessively slow and expensive. Considering that some business logic portions are quite volatile and susceptible to changes and other portions are quite stable and less susceptible to changes, this chapter proposes ontology based integrated development environment (IDE) that can capture business changes and quickly implement them into computational systems.

The volatile portions are externalized as business rules and the stable portions as SOA based services. Business rules’ facts and conditions are linked to services, which are discovered in the business rules development or maintenance time. The IDE aggregates a set of tools to automate the modeling of business
rules in the business people’s terminology and to automate the integration of services. It is based on a set of ontologies to deal with metadata related to services, vocabularies and business rules. Business rules are modeled according to OMG’s Semantics of Business Vocabularies and Business Rules Metamodel.

Chapter Seventeen presents a literature discussion and empirical research that examines the factors that affect Electronic Commerce (EC) adoption in the Arab countries. The five countries that are represented in this research include Saudi Arabia, Qatar, Kuwait, United Arab Emirates and Yemen. The purpose of this research is to analyze the crucial factors affecting EC adoption among the Arab consumers. The Chapter presents the effect of risk perception, trust and consumer knowledge on their EC adoption.

The chapter also highlights consumers’ knowledge mediation in affecting their perception of risk and trust towards EC adoption. Upon filtration, three hundred samples were selected for data analysis. Descriptive and inferential statistical analyses including statistical mediation technique were carried out to analyse the data. Results reveal knowledge as the most important factor that contributes to EC adoption and it mediates consumers’ perception of risk and trust in contributing to their EC adoption.

The preliminary findings of this research were presented in the International Arab Conference of E-Technology held in Amman, Jordan from 14th to 16th October 2008 and subsequently published in the first issue of the International Arab Journal of E-Technology. This chapter presents the complete research with further data analysis, extended reports and discussions on issues relating to EC adoption.

Chapter Eighteen outlines that in many countries, governments have been developing electronic information systems to support in labour market in form of on-line services, web-based application as well as one-stop service. One of the most challenges is to facilitate the seamless exchange of labour market information (LMI) across governmental departments.

This chapter introduces an efficient implementation of Thailand e-government interoperability project in LMI systems using service oriented architecture (SOA) based on XML web service technology. In Thailand, Ministry of Labour (MOL) has developed Ministry of Labor Operation Center (MLOC) as the center for gathering, analyzing and monitoring LMI to assist the policy makers.

The MOL consists of four departments: department of employment, department of labor protection and welfare, department of skills development, and social security office. Those departments utilize electronic systems to manage LMI such as employment, labor protection and welfare, skills development and social security.

Provincially, MOL has 75 branches called “labor provincial office” located at 75 provinces in Thailand. Each office has developed a “Provincial Labor Operation Center or PLOC” as the operating center in the province where the information system called. “PLOC” system has been developed to analyze, monitor the localized labor information for the provincial policy-makers. Since those systems differ, it had required the process of data harmonization, modeling and standardizations using UN/CEFACT CCTS and XML NDR for achieving the common XML schema standard, with the implementation of SOA to integrate efficiently all those systems.

We apply TH e-GIF guidelines for interoperable data exchanges and the XML schema standardization. In Thailand, the first Thailand e-Government Interoperability Framework – the TH e-GIF - came into being in November 2006. This chapter illustrates main concepts of TH e-GIF, the project background and methodology as well as key leverage factors for the project.

Chapter Nineteen considers aspects relating to the role of tertiary (i.e. higher) education in improving the engagement of the public with government provided E-services. Some of the issues considered include those of tackling the digital divide – which can exist because of technical issues in provision of
the actual infrastructures, financial issues limiting access to available provision and educational barriers – as well as how to develop trust in online technologies.

The challenges of the networked society include a number that can be best addressed through education. These include

i. Engagement with new technologies and new paradigms;
ii. trust in a virtual environment;
iii. Understanding of processes and engagement with online services;
iv. Mapping of existing personal paradigms to the virtual world.

Education itself faces challenges in the networked world. Tertiary education in particular is potentially vulnerable to the changes that the modern networked world brings; however, it can also gain through some of the new opportunities. Of particular note is the potential to unlock students’ research skills and enable true inquiry by students within their studies – skills which should prepare them as active participants in the knowledge.

Chapter Twenty informs that policy makers in Tunisian higher education have decided to explore ways in which e-learning and e-management could be introduced to enhance university administration and teaching. In this context, the e-learning team in the Higher Institute of Informatics and Communications in Hammam Sousse (University of Sousse) has developed and deployed a number of online courses as part of a blended learning program. Various e-learning projects covering both pedagogical and technical aspects as well as doctoral research works are under way to support this activity. The deployment of e-learning courses is supervised by the Virtual University of Tunis with technical help coming from our university.

In addition to e-learning, we focus in this chapter, on e-services for the sector of higher education and student information systems accessible from the web. We discuss e-learning strategies within a national context. We therefore describe our experiments, the results achieved thus far and some lessons that we have learned. Current e-management practices have led to increased transparency and equal opportunities. Nevertheless, some drawbacks and concerns exist and will be discussed.

In Chapter Twenty-one, assessment of the main risks of software development discloses that major threats of delays are caused by poor effort/cost estimation of the project. Low/poor cost estimation is the second highest priority risk. This risk can affect four out of total five phases of software development life cycle i.e. Analysis, Design, Coding and Testing. Hence, targeting this risk alone may reduce the over all risk impact of the project by fifty percent.

Architectural designing of the system is a great activity which consumes most of the time in SDLC. Obviously, effort is put to produce the design of the system. It is evident that none of the existing estimation models try to calculate the effort put on designing of the system. Although use case estimation model uses the use case points to estimate the cost. But what is the cost of creating use cases? One reason of poor estimates produced by existing models can be negligence of design effort/cost. Therefore, it shall be well estimated to prevent any cost overrun of the project.

The material in this chapter proposes a model to estimate the effort in each of these phases rather than just relying upon the cost estimation of the coding phase only. It will also ease the monitoring of project status and comparison against planned cost and actual cost incurred so far at any point of time.

The electronic electoral system is covered in Chapter Twenty-two. It shows the important of these techniques to the survival of democracy all over the world. Current happenings around the world, particu-
larly in the developing world where poor conduct of elections had left a number of countries devastated are of great concern to world leaders. Therefore, efforts are ongoing to introduce a voting system that is transparent, convenient and reliable.

This Chapter presents an overview of an integrated electronic voting (e-Voting) system comprising: the electronic voting machine (EVM), Internet voting (i-Voting) and mobile voting (m-Voting). Similarly, issues of interoperability of the integrated system are discussed as well as the needed security measures. It is, however, recommended that emphasis be directed at EVM for use within the country while others are restricted to special cases of remote voting for citizens living abroad or living with certain deformities.

Chapter Twenty-three discusses the e-health development in Australia. The Australian government has been very proactive in e-government and applications of e-government such as e-health in the last five years. E-health is an important application of e-government in Australia for innovation of the public sector, as well as due to its very sparsely populated large rural areas.

E-health development in this chapter is analyzed using Layne and Lee’s (2001) e-government development model due to the similarities in the stages of development of both applications. This chapter illustrates that in Australia e-health development is mostly at the informational stage. It also indicates that e-health developments can be established in three stages of information; transaction; vertical and horizontal integration of services.

Chapter Twenty-four deals with building security awareness culture to serve e-government initiative. It shows that many countries have adopted E-Government initiatives for providing public E-Services to their citizens. These initiatives together with the existing and emerging private initiatives which offer E-Services, lead to dramatically increase in the number of the Internet user. This will form what is now known as E-Society.

All E-Government initiatives consider citizen-centered approach, where user’s security and privacy is a major issue. The level of citizen’s engagement in these initiatives will depend on the extent of his/her confidence in the security system used by these initiatives. This imposes the need for developing computer security packages. These packages are intended to help users protect their assets such as information, databases, programs, and computer services from any harm or damage. The level of harm or damage that could happen to assets varies from one user to another.

This variation depends on: users’ awareness of possible threats, their knowledge of the source of threats, and if they are applying security controls or not. The Chapter aims to analyze current users’ level of awareness and to propose possible methods in order to increase the level of users’ awareness i.e. education, continuous education, and training.

The first section of chapter twenty four presents the importance of security awareness to E-Government initiatives and also presents a research idea. The second section introduces the experimental design for a more comprehensive research that we are looking to carry on in later stages and specifies the objective of this stage; third section presents results and discussions of the new proposal of methods to increase level of users’ awareness.

Chapter Twenty-five presents a database model which provides a systematic, logical and regular basis for the collection, collation, dissemination and mapping of strategic e-purchasing data. Selective access to this accurate and timely data will measurably improve public sector strategic e-procurement performance, accountability and administration. It will assist the public sector to be more effective and efficient in resource allocation and investment outcomes measurement, more transparent, and will encourage the development of trust, networks and social capital amongst public sector employees and their suppliers.
The model has been successfully demonstrated through the establishment and analysis of an e-procurement data base with the Australian Department of Defense (DoD). The Australian DoD is a Federal Government Department with a FY 2008/9 spend of AU$9.3bn on products (goods and services), their support and maintenance, from almost every industry sector, on a global basis.

While the implementation of information technology is usually viewed as a means of reducing transaction costs, in practice such implementation often increases transaction costs. Public sector bureaucratic hierarchies and their governance systems contribute to transaction costs. This research provides an e-business database model so that the public sector can achieve improved procurement field mapping and strategic e-purchasing using existing data and resources at lowest transaction cost.

Chapter Twenty-six introduces Mobile phone which is one of the technologies which are widely used these days. It is available in most of the countries and all people, even children and elderly people can use it. It seems that in near future, each person will have at least one mobile phone. So it is a good choice for communication in emergency situation such as a heart attack or after an earthquake.

In this chapter, we will survey a number of systems which are designed for communication in emergency situations and then explain three systems which are developed by authors. The first one is for locating and rescuing victims after earthquakes. The second system is for calling emergency team by patients in emergency situations. The third system is for finding lost people with amnesia. In addition, we review some of related works which use mobile phones for communication in emergency.

Chapter Twenty-seven discusses one of the most powerful weapons for attackers which are the Internet worm. A worm attacks vulnerable computer systems and employs self-propagating methods to flood the Internet rapidly. Since “Worm” is self-propagated through the connected network, it doesn’t need human interaction or file transmission to replicate itself. It spreads in minutes; Slammer worm infected about 75,000 nodes through the internet in about 10 minutes.

Since most of the antivirus programs detect viruses based on their signature, then this approach can’t detect new viruses or worms till being updated with their signature, which can’t be known unless some systems had already been infected. This highlights worms still are on the top of malware threats attacking computer system although of the evolution of worms detection techniques. Early detection of unknown worms is still a problem.

This Chapter produces a method for detecting unknown worms based on local victim information. The proposed system uses Artificial Neural Network (ANN) for classifying worm/ nonworm traffic and predicting the percentage of infection in the infected network. This prediction can be used to support decision making process for network administrator to respond quickly to worm propagation in an accurate procedure.

Chapters Twenty-eight explains how to justify texts as Arabic calligraphers use to stretch some letters with small flowing curves; the keshideh instead of inserting blanks among words. Of course, such stretchings are context dependent. An adequate tool to support such writing may be based on a continuous mathematical model. The model has to take into account the motion of the qalam. The characters may be represented as outlines. Among the curves composing the characters outlines, some intersections are to be determined dynamically.

In the Naskh style, the qalam’s head behaves as a rigid rectangle in motion with a constant inclination. To determine the curves delimiting the set of points to shade when writing, we have to find out a mathematical way to compare plane curves. Moreover, as the PostScript procedure to produce a dynamic character should be repeated whenever the letter is to draw, the development of a font supporting a con-
tinuous stretching model, allowing stretchable letters with no overlapping outlines, without optimization would be of a high cost in CPU time.

In this chapter, some stretching models are given and discussed. A method to compare curves is presented. It allows the determination of the character encoding with eventually overlapping outlines. Then a way to approximate the curves intersection coefficients is given. This is enough to remove overlapping outlines. Some evaluations in time processing to confirm the adopted optimization techniques are also exposed.

Chapter Twenty-nine explains that e-government webs are among the largest webs in existence, based on the size, number of users and number of information providers. Thus, creating a Semantic Web infrastructure to meaningfully organize e-government webs is highly desirable. At the same time, the complexity of the existing e-government implementations also challenges the feasibility of Semantic Web creation.

The chapter, therefore, proposes the design of a two-layer semantic Wiki web, which consists of content Wiki, largely identical to the traditional web and a semantic layer, also maintained within the Wiki, that describes semantic relationships. This architectural design promises several advantages that enable incremental growth, collaborative development by a large community of non-technical users and the ability to continually grow the content layer without the immediate overhead of parallel maintenance of the semantic layer.

This chapter explains current challenges to the development of a Semantic Web, identifies Wiki advantages, illustrates a potential solution and summarizes major directions for further research.

Chapter Thirty describes a holistic approach for the design of e-government platforms. It defines principles for architecting a system which must sustain the entire e-government activity of a mid-level public authority (Geneva). The four principles are: Legality, Responsibility, Transparency, and Symmetry. The principles speak to policy makers and to users.

They also lead to usable and coherent architectural representations at all levels of responsibility of a project, i.e. the client, the designer and the builder. The approach resulted in deploying multipartite, distributed public services, including legal delegation of roles and the outsourcing of non mandatory tasks through PPP on an e-Government platform that will support a threefold increase in services yearly until 2012. In this sense, as well as in its daily operation, the system is a success.

Chapter Thirty one describes one of the Large-scale electronic government projects that had mixed results over the past decade. A considerably large percentage of such projects effectively failed. The over-ambitious promise e-governance positively transforming public sectors in developing nations didn’t fully materialize. The actual causes of e-government failures are still to be explored in more detail to improve the understanding of the phenomenon by practitioners and scholars alike.

This chapter explores also the causes of e-government failures within the context of Arab states and discusses prevailing views of such failures in earlier literature. Based on a survey of senior e-government practitioners in nine Arab countries, our findings indicate that the underlying roots of failure in e-government projects in Arab countries (which we classify in nine main categories) are entwined with multifaceted social, cultural, organizational, political, economic and technological factors.

We argue that, despite their many similarities, e-government initiatives in the Arab states would be better equipped for avoiding failure when a local ‘fit’ is established between leadership commitment, sustainable cross-government vision, appropriate planning, rational business strategy, suitable regulatory framework, practical awareness campaigns and rigorous capacity building for the public administrators and society at large.
Based on our findings, we argue that replicable “best practices” in a complex and developing field of e-government rarely exist. We conclude with a proposal to nurture a culture more tolerant to risk-taking and failure in the relatively new area of e-government in the Arab states. Until a local maturity level is reached, such culture should be accompanied with home-grown e-government risk management approaches as well as effective mechanisms of knowledge management to enable extracting relevant local lessons from failed projects and partial successes.

Chapter Thirty two presents a security framework architecture for electronic voting that permits the avoidance of problems occasioned by interposing computer system and technical personnel between the voter and the electoral board. The architecture is based on replicating the conventional security mechanisms and in segregating all critical functions into very simple systems that are audited, monitored and physically secured.

This concept of security architecture minimizes the number of components that must be trusted to only two, namely, the software generating the encrypted ballot and the software opening the digital ballot boxes and the envelopes there in. This addresses one of the main causes of trouble in electronic voting systems, namely, the need to trust overly-complex systems like DREs, web browsers, operating systems or Internet servers.

Chapter Thirty three outlines the importance of e-business in today’s world and how it affects decision making. In today’s world e-business is extremely important for many reasons. Some of which is due to the fact that it can speed the whole process of ordering up. This means that the lead time can be decreased because the ordering of products can be done much more quickly, because the Internet is a fast running wide area network.

This chapter also shows how better procurement and supply chain make sales teams more effective, the ability to outsource functions such as accounting, remote access to systems, linking management teams, in different locations, being able to locate the lowest cost supplier, improve customer services, improve collection of customer information for databases and more effective management of remote manufacturing sites.

Abid Thyab Al Ajeeli
University of Bahrain, Bahrain

Yousif A. Latif Al-Bastaki
University of Bahrain, Bahrain