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Integration of service delivery in the Arab Region- role of standards and interoperability

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This study is based on a report prepared by Mr. Jeremy Millard, Director, Third Millennium Governance, Denmark and the UK; Ms. Louise Thomasen, Director, coThomasen, Denmark; and Mr. Farouk Missi, Lecturer, Brunel University, London, UK.

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ABSTRACT

a) Introduction and approach

E-government services in all countries of the world are increasingly taking a citizen-centric approach focusing on citizens' needs enabled largely by Information and Communication Technology (ICT). To achieve this, collaboration, communication, interoperability and the adoption of common standards are crucial for the provision of integrated services across all channels, including traditional face-to-face contact, which are needed to maximize the benefits of citizens and other users. In this context, the main objective of this study is to provide recommendations for a strategic framework and guidelines for e-government service integration in the Arab region, with a particular focus on the role of standards and interoperability, in order to deliver both improved services for users and greater efficiencies within the government administration.

To meet this objective, the methodology adopted to meet this objective consists, first, of desk research to identify global good practices in e-government, and e-service integration in particular, by analysing selected examples from around the world in order to derive the main lessons and trends. Second, the latest surveys and studies are examined to provide an overview of e-government development and services in the Arab region. This is supplemented by detailed cases studies from eight Arab countries and eleven questionnaire responses, representing the current status of e-government service integration across the region. Third, this status is placed in the context of the identified global trends and good practice to examine the important issues relevant to e-government service integration in the Arab region and the challenges it faces. Finally, these issues provide the basis for recommendations for a strategic framework and guidelines for e-government service integration in the Arab region in order to assist Arab countries in progressing towards the most advanced global levels of development.

b) Global trends and good practice in e-government service integration

The studies and support undertaken by the main international organizations, including the United Nations, the European Union, the OECD and the World Bank, show that there are a number of important global trends and good practices. These include the adoption of a whole-of-government and collaborative government approach where users increasingly experience the public sector as an integrated system, and strong moves towards e-participation and the use of mobile as well as web platforms, in addition to face-to-face, for integrated service delivery. Most countries are still concerned mainly with installing infrastructure and providing information about the government and its activities, whilst in the more developed countries the emphasis has shifted to good service design and delivery, as well as to so-called open government and greater transparency. Good practices from the advanced e-government countries show that the integration of service delivery needs to be tackled both in the back-office and the front-office. In the former, interoperability, standards and data exchange, as well as establishing base registries, are fundamental building blocks. These also enable the integration of different actors across the public sector and with other sectors, as well as integration between different levels of government. In the front-office, global good practices show that service integration can be of many types, such as around different service functions, user characteristics, channels, locations and types of user involvement.

c) Overview status of e-government services in the Arab countries

The latest sources demonstrate that service development and e-government progress in the Arab countries are strongly correlated with income, but with significant exceptions particularly exemplified by Egypt, Morocco and Tunisia. Possible explanations for the latter's good performance include the adoption of a whole of government and collaborative approach, a strong focus on e-participation and online information about the various functions of government, publishing open government data and specific emphasis on supporting disadvantaged and vulnerable groups. An examination of the Arab region case studies and country questionnaires makes it possible to identify six generalizable approaches to implementing interoperability and standardisation to support service integration:

1. Initiation and testing in one entity; rolling out stepwise to other entities

2. Supporting front-office one-stop-shops for multiple entities
3. Shared infrastructures across multiple entities
4. Overlay on retained legacy silo-systems in each entity
5. From scratch by abandoning legacy silo-systems in each entity
6. Public-private-partnerships across multiple entities.

d) Important issues for e-government service integration in the Arab Region

Bringing together lessons from global developments and leaders with the status and trends of service integration and e-government in Arab countries and their approaches to implementing interoperability and standardisation to support service integration, a number of headline lessons concerning successful e-government can be derived. These are summarized as the need to focus on:

- E-government strategy and implementation in terms of: appropriate policies, strategies and plans for implementing integrated services, as well as mandate and political backing; the need for a dedicated national authority and governance structure, as well as legal, regulatory and financial provisions; changes to organizational and process structures and cultures; developing and supporting skilled and motivated government personnel; and effective project management and governance.
- A conducive e-government context in relation to geographical, demographic, economic, social and cultural conditions as well as the political situation in the country, and to ensure that e-government strategies are embedded in other (national) economic and social policies.
- E-government impact which can and should be substantial for government, the user and for society as a whole. Impacts are conceptualized as providing efficiencies for government, effectiveness for users, and governance benefits for society as a whole. They are also identified as either short- or long-term.

e) Strategic framework and guidelines for e-government service integration in the Arab Region

The following three elements of a strategic framework and guidelines for the delivery of integrated e-government services that focus on citizen needs in the Arab region are proposed:

1. Guidelines for e-government as a platform for service integration outlining the principles of e-government strategy suitable for the Arab Region by developing and implementing the following:
   - Policy and strategic framework
   - Governance of the e-government strategy and its implementation
   - Legal and regulatory basis for e-government implementation
   - Action plans
   - Quick wins
   - Monitoring e-government progress and the costs and benefits of implementation.
2. A strategic framework for service integration which provides guidelines on the overarching strategic approach for e-government service integration in the Arab Region through three main overlapping and interdependent stages:
   i) The back-office integration of services: developing back-office building blocks as a tool for integrated services.
   ii) The front-office integration of services: based on i) high quality integrated services can be designed and delivered.
   iii) Maximizing the impact on national development and governance: once i) and ii) are becoming established, the focus can shift to monitoring and evaluating impacts to ensure government services generally, e-government services specifically, as well as overall public governance, are directly contributing to the economy and to social development.
3. Proposals for collaboration and sharing to support service integration to maximize collaboration and sharing in e-government across the Arab Region, focusing on:
   - a realistic approach to cooperation and development
   - shared enablers, both in the back-office and front-office, which are often necessary for e-government transformation, services and impacts to be achieved

- shared services appropriate to Arab populations generally, as well as the different groups and types of users
- Capacity building and collaboration initiatives.

1. Introduction

1.1. Background and rationale of the study

As e-government services are being developed and rolled out in all countries of the world at local, national and regional levels, they are increasingly taking a citizen-centric approach and using social media. This reflects the growing importance of focusing on citizens' needs and providing integrated seamless government services, shifting from an entity-centric approach within the public sector to one which puts citizens at the centre. To achieve this, collaboration, communication, interoperability and the adoption of common standards are crucial for the provision of integrated services. Modern approaches in the design of e-government require that citizens' needs should be fulfilled without burdening them with the intricacies and complexities of backend operations.

An important aspect of service delivery is ensuring that the diverse channels by which users receive services are properly integrated around the particular needs of specific user groups and individuals in order to maximize the service benefits they enjoy. These include all relevant types of Information and Communication Technology (ICT) and social media, but also more traditional channels like ordinary post, call centres and face-to-face interaction. It is very important to continue to deploy these traditional channels for two reasons. First, because they are often the only means for many users to access services and communicate with government, and it tends to be the poorer and more geographically isolated and rural areas which both use these channels and need these services the most. Second, because many service components require direct human interaction, such as in health, care, education and building personal and trusting relationships through dialogue and empathy. In comparison, ICT is better at handling and analyzing large amounts of data in more routine and rule-governed processes and transactions, as well as communicating instantly regardless of time or location. Clearly, many services have components of both, thus underlining the importance of the integration of service delivery.

Interoperability between systems, common technology architectures and processes that are shared by agencies across individual countries and regions are critical for the delivery of citizen-centric government services, and need to be the cornerstone of any modern e-government strategy. It is important to consider the various types of interoperability for providing common services, i.e. the collaboration of systems, services and organisations, and thereby distinguish between the various levels of interoperability: technological, semantic, organisational and legal, as well as the interdependence between them. It is also necessary to devise and enforce the use of specific standards at certain levels in order to achieve interoperability and the integration of services.

Interoperability is important for the integration of services within a single country, but is also critical for the integration of cross-border services. For example, in Europe the European Commission together with Member States collaborated in developing the European Interoperability Framework[1] and is implementing pilots to ensure full interoperability between selected services across European Union countries. UN-ESCWA intends to promote interoperability to support the integration of services within each Arab country and then at regional level to promote cross-borders services. If service integration is implemented well it can make services more accessible, easier to use, of higher quality and of greater benefit to the user as well as to the government and the country as a whole.

1.2. Objective and methodology

The objective of this study is to prepare recommendations for a strategic framework and guidelines for e-government service integration in the Arab region that focuses on the needs of users and promotes efficiencies within the government administration. To meet this objective, the study considers global good practices in e-government service integration, and in this context examines the status and challenges of e-government services in the Arab region. An important area of focus is the role and importance of

[1] European Commission, 2010b

interoperability and the use of standards for the integration of e-government services at local, national and regional levels that also takes into account other means of service delivery such as face-to-face interaction.

The methodology adopted to meet this objective consists, first, of desk research to identify global good practices in e-government, and e-service integration in particular, by analysing selected examples from around the world in order to derive the main lessons and trends. Second, the latest surveys and studies are examined to provide an overview of e-government development and services in the Arab region. This is supplemented by detailed cases studies from eight Arab countries and eleven questionnaire responses, representing the current status of e-government service integration across the region. Third, this status is placed in the context of the identified global trends and good practice to examine the important issues relevant to e-government service integration in the Arab region and the challenges it faces. Finally, these issues provide the basis for recommendations for a strategic framework and guidelines for e-government service integration in the Arab region in order to assist Arab countries in progressing towards the most advanced global levels of development.

In order to undertake the study, definitions were developed to provide a systematic and consistent approach to understanding and analysing e-government service integration, including:

Service delivery integration can take place through the integration of:

- Service functions: bundling related service functions, such as around getting a job or applying for university.
- User characteristics: bundling services likely to be used by specific types of user, such as old people, students, or resident non-nationals.
- User involvement: the extent to which users themselves are able or encouraged to integrate their own services, such as through personalisation or co-creation.
- Channel integration: such as web, mobile, social media, kiosk, call-centre, face-to-face.
- Locational integration: bundling services specific to or relevant for a particular place or type of place, such as in a specific city, suburb or village.
- Supply-side integration in one country: between government agencies at different levels (such as sub-national and national).
- Supply-side integration in one country: between government agencies and other actors (private sector, non-profits and civil organizations).
- Supply-side integration across national borders: between two or more countries.

Interoperability is the ability of diverse systems and organizations to work together to exchange, share and re-use information and data. Within a particular political context where cooperating entities have compatible visions, aligned priorities and focused objectives, there are generally four levels of interoperability[2]:

- technical interoperability for interaction and transport, including linking computer systems and services
- semantic interoperability for semantic alignment, such as aligning the meaning of exchanged information which is preserved and understood by all parties
- organizational interoperability for organizational and process alignment, for example coordinating processes in which different organizations achieve a previously agreed and mutually beneficial goal
- legal interoperability for legislative alignment, so that exchanged data is accorded proper legal weight.

Standards are used when integrating services to underpin interoperability and can include, for example, proprietary, open-source, local, national, international or industry-specific standards.

Full details of these and other definitions, the analytical framework adopted and the overall methodology are provided in Annex 1.

[2] European Commission, 2010b.

2. Global trends and good practice in e-government service integration

E-Government is the use by governments and public administrations of Information and Communication Technology (ICT) to become more efficient in their own operations and to provide more effective services for citizens, businesses and other users. Well implemented and exploited e-government can also improve the governance of a country through greater transparency, participation by citizens and businesses, as well as improved policies and policy implementation. Since the advent of the Internet about fifteen years ago - and in the last five years the widespread use of social media and mobile telephones - the impact and importance of e-government has increased dramatically across the world, as has the investments made in it. One of the main issues is how public administrations can attempt to reform themselves and leverage the technologies to achieve the above impacts. The reform and strengthening of public administration is the key to the better exploitation of e-government and to increase the positive impacts it can have on both short- and long-term economic and social development.

A fundamental pillar of successful e-government is efficient and effective e-government services, which are fully user-centric, i.e. well targeted at specific groups and/or personalized for or by specific individuals. In turn this means that e-services should be integrated in the back-office (i.e. across government agencies and with non-government providers so that interoperability and shared standards are critical) and integrated in the front-office (i.e. so the user is offered services which make sense in terms of who he/she is and/or the task he/she wishes to perform). Further, service integration means that the electronic channel must be fully integrated with non-electronic channels, specifically face-to-face service delivery; given that the latter remains necessary in a large number of contexts or that the particular user prefers to access the service in this way. However, in almost all cases, the use of ICT in the back office and/or along the service delivery chain can significantly improve the use and impact of the service whichever channel is used. (See Annex 1 for the conceptual and operational definition of different types of service integration for the purposes of this study.)

2.1. Summary of global trends and good practice

The main international organizations provide a clear focus on e-government service integration, including surveys, studies and good practices of regions and countries within their mandate. The main trends and issues are briefly summarized in the following.

2.1.1. The United Nations

The United Nations in its survey of e-government published in June 2014[3] highlights a number of important global issues and trends: online service delivery; whole-of-government and collaborative government; e-participation; mobile and other channels for inclusive multi-channel service delivery; bridging the digital divide; the usage perspective; and open government data. Based on the analyses provided by this survey compared to earlier surveys, the first e-government efforts were concerned mainly with installing infrastructure and providing information about the government and its activities. Although these remain important today, the emphasis has shifted in most countries to good service design and delivery, as well as to participation and transparency. There is also now the emergence for the first time of systemic thinking about 'e-governance' as an overall concept linking together different public entities through the so-called 'whole-of-government' and 'collaborative governance' approaches. This implies that users (citizens and businesses) experience a single authority in their dealings with government, rather than having to understand the variable structures and rules of different entities, as part of a comprehensive user/citizen-centric, rather than government-centric, process. To achieve whole-of-government, common standards including interoperability between its various parts (in technical, semantic, organizational and legal/political aspects) is essential.

Other important global trends include seeing e-government as an essential tool for establishing transparent legal and decision-making processes, for example in the areas of tax collection and public procurement, as well as budget-making and spending at different levels. This also reflects an overarching conscious shift on the part of many governments to understand that e-government is necessary to tackle shared critical global challenges, such as climate change, ageing populations, poverty, education, health, and jobs. Many of these

[3] United Nations, 2014.

are reflected in the UN's global Millennium Development Goals, and are currently under review for the post-2015 period during which e-government, as an essential component of good governance, is likely to be prominent.

The United Nations e-government 2014 survey notes that the income level of a country influences its e-government development through the ICT infrastructure and human capital resources, but that the absence of these factors does not in itself mean that significant and effective e-government progress is not possible. It is clear that e-government both stimulates infrastructural and human development and is stimulated by them, and that it can strengthen national capabilities and enhance governments' overall performance. E-government can also promote transparency, reduce corruption and assist the 'greening' of the public sector, as well as facilitate effective disaster management, promote economic growth and enhance social inclusion through equitable access to services.

The UN has also undertaken a number of other relevant studies, most noticeably on e-government interoperability[4] by addressing the challenge that all too often e-government progress is hindered by difficulties related to the patchwork of incompatible information and communications technology solutions rather than flexible and reusable assets that would provide essential building blocks of services for citizens. Important issues covered included interoperability standards and architecture, and the need to develop a government interoperability framework (GIF). The CARICAD e-government strategy for the Caribbean region[5] has benefitted from this work by setting out an approach to enhance interoperability between data and services, not just within each country but also across the region.

2.1.2. The European Union

Despite significant variations between countries, Europe is the leading e-government region globally.[6] All countries have their own strategies and roadmaps but the vast majority also work within the *European eGovernment Action Plan 2011-2015,* agreed between Member States and the European Commission.[7] The plan specifies four priorities designed to implement four collective goals:

1. User empowerment: e-government services to empower citizens and businesses e.g. increased access to public information, strengthened transparency and stakeholder involvement.
2. E-government to support the further construction of the digital single market: high quality e-government services, mobility, creating synergies in e-government solutions, to reduce administrative burden, increase transparency and potentially generate costs savings.
3. E-government to enable efficiency and effectiveness, to reduce the administrative burden, improve organizational and administrative processes, facilitate information sharing and simplify interaction with the Commission.
4. Implementation through key enablers and the necessary legal and technical preconditions, including interoperability of systems to exchange, process and correctly interpret information.

Service integration is one of the main outputs of goals 2, 3 and 4, and is a necessary condition for goal 1. Interoperability and standards are directly necessary to achieve goals 2 and 3, are a main output of goal 4, and are similarly necessary for goal 1.

European e-government is also embedded within the wider European Union 2020 Strategy[8] and the Digital Agenda for Europe (DAE)[9] that includes strong political focus on interoperability and standards; trust and security; enhancing digital literacy, skills and inclusion; and ICT-enabled benefits for EU society. One of the key EU initiatives is the European Interoperability Framework[10] which defines interoperability as the ability of diverse systems and organizations to work together (inter-operate). It is often used in a technical systems

[4] UNDP, 2008.
[5] CARICAD, 2009.
[6] United Nations, 2014.
[7] European Commission, 2010a.
[8] Europe 2020 Strategy http://ec.europa.eu/europe2020/index_en.htm.
[9] Digital Agenda Europe http://ec.europa.eu/information_society/digital-agenda/index_en.htm
[10] European Commission, 2010b.

engineering sense, or alternatively in a broad sense, taking into account social, political, and organizational factors that impact system-to-system performance. The EIF provides the basis for most European countries' efforts in this area and is essential in the design of the cross-border services currently being agreed and implemented at European level, such as the health card. The EIF covers four parts: legal and political interoperability, organisational interoperability, semantic interoperability, and technical interoperability.

A number of studies have also been published elucidating Europe's interoperability strategies and the EIF. Misuraca,[11] in addition to analyzing the three basic building blocks of technological, semantic and organizational interoperability, also focused on the overall public value created by interoperability systems in supporting ICT-enabled governance at the local level. Public value refers to the value created by government through services, policies, regulations and other actions. This results in the recognition of a number of value drivers in interoperable governance systems supported by ICT, such as performance, openness and inclusion. Criado,[12] on the other hand, focuses more on the coordination and harmonization benefits of interoperability, particularly in the context of multi-level governance. In this context, the study also takes account of broader interoperability issues such as the political context, the need for legal interoperability and the business requirements of interoperability. The latter are defined by architecture guidelines and the data collection, exchange, dissemination and sharing attributes necessary.

Other relevant European initiatives which rely on or promote interoperability include the "Large Scale Pilot" projects (LSPs) that develop practical solutions tested in real government service cases across Europe in five main areas; eID, eProcurement, eBusiness, eHealth and eJustice.[13] Also of relevance are the Re-Use of Public Sector Information (PSI) Directive from 2012[14], which provides a framework for opening up government data, so-called Open Government Data (OGD) – for use by other actors such as citizens, businesses and civil groups. Again, common interoperability and standards are absolutely necessary. There are two other recent significant initiatives foreseen under the 2015 eGovernment Action Plan.[15] First, the strong attention being paid to ICT-enabled public sector innovation, especially where this addresses pressing societal problems through so-called open and social innovation like the ageing society, greater demands for health care, increasing poverty, climate change and sustainability.[16] Second, a focus on administrative burden reduction and benefits realization achieved through the integration of e-government tools; the smart use of the information that citizens and businesses have to provide to public authorities for the completion of administrative procedures; making electronic procedures the dominant channel for delivering e-government services; and the principle of the "once only" registration of relevant data. The latter ensures that citizens and businesses supply certain standard information only once, because public administration offices take action to internally share this data, so that no additional burden falls on citizens and businesses.[17]

2.1.3. The Organization for Economic Cooperation and Development

The Organization for Economic Cooperation and Development (OECD) is an international organization for mainly developed countries which acts as a think-tank and knowledge-broker of evidence-based policies on behalf of its members as well as a wider international audience. It is engaged in many relevant initiatives including public sector reform and modernization in relation to encouraging good collaboration across entities and different levels, as well as focusing on the 'public good' arising from standards and interoperability. OECD is also developing principles for good governance supported by ICT, such as trust in government, fairness, serving citizens, fiscal sustainability, efficiency, effectiveness, accountability and transparency. According to the latest "Government at a Glance" report[18] governments are also focusing on how to regain trust in strategic governance and the ability to think longer term. This means regardless of political vagaries and changes, and taking account of different contextual issues, so that strategies should recognise both institutional and historical differences as well as the fact that countries face many similar

[11] Misuraca *et al*, 2011,
[12] Criado, 2012.
[13] https://ec.europa.eu/digital-agenda/en/egovernment
[14] http://ec.europa.eu/information_society/policy/psi/index_en.htm
[15] European Commission, 2010a.
[16] European Commission, 2013a.
[17] European Commission, 2014.
[18] OECD, 2013.

challenges and opportunities, many of which are also directly cross-border if not global, so they need to be addressed at regional or wider levels regardless of these differences.

A major feature of OECD's current activities is the digitization of the public sector which sees digital technology as an 'equalizer' between institutions, competencies, responsibilities and leadership; and human resources and capacities in relation to ICT-skilled staff. The focus is also on linking ICT investments to both monetary and non-monetary returns, as well as on integrated service delivery where the service interface with the user is just the tip of the iceberg given that this is enabled by a well-functioning back-office and collaboration between different government entities. Particular areas include ICT procurement and contracting, as well as interoperability and standards. In the front-office, maximizing the usage of e-government services is also seen as very important[19], and the OECD is also a strong promoter of governments releasing much of the data they posses into the public domain in easy to access machine-readable formats (so-called open government data, OGD). Provided personal privacy and security are protected, this is seen both as a user right as the data is provided by citizens, businesses and wider society in the first place, as well as being important in creating economic and wider societal value if it is used, for example, to create new businesses and make governments more open and transparent. OECD is also promoting emerging platforms such as mobile government (m-government) and social media, particularly as tools to re-create trust in government, innovate public services, make the public sector more efficient, and to tackle emergencies and disasters.

A major issue addressed by OECD is the use of e-government to fight corruption through, for example, e-procurement and other digital tools. Corruption in the public sector hampers the efficiency of public services, undermines confidence in public institutions, and increases the cost of public transactions. In order to promote this agenda as well as the wider efficiency and effectiveness of the public sector, the OECD will launch a number of principles for digital government strategies in September 2014.[20] These are based on recent developments that show that, although government was once seen purely as a provider, it is now also seen as a convener and enabler. E-government used to be seen as a silo separated from the rest of society but today it is necessary to see these and other elements as a part of a seamless whole. The new OECD principles are grouped into three main pillars concerned not with the technology per se but with how the technology can be used: engaging citizens and opening up government to maintain public trust; adopting joined-up approaches to deliver public value; and strengthening capacities to ensure a fair return on ICT investment. The development of these principles is part of the wider OECD focus on public sector innovation which is wider than traditional notions of e-government but can rarely take place without ICT. Some of the objectives of public sector innovation include cost savings, improved service quality, increased user and employee satisfaction, and improved democratic value.

2.1.4. The World Bank

The World Bank's focus on e-government is part of its wider so-called e-transform and e-development work, concerned with providing support mainly to the emerging economies and developing countries in the form of technical advice and investment support for the design and roll out of e-government solutions and applications. This support focuses on "strategy, policy, regulatory and legal aspects, institutional frameworks, enterprise architecture and interoperability standards, shared infrastructure and services, training and change management, e-government applications and innovative funding arrangements including public-private partnerships."[21]

"The World Bank also provides support for project design, implementation and procurement of innovative approaches leveraging ICT, e.g. mobile delivery of public services, cloud computing, and open data initiatives." An important part of the World Bank's work is to build the necessary institutional capability for developing e-government applications for improving government performance and accountability,

[19] OECD, 2009.
[20] OECD, 2014.
[21] http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTINFORMATIONANDCOMMUNICATIONANDTECHNOLOGIESEXTINFORMATIONANDCOMMUNICATIONANDTECHNOLOGIES/EXTEGOVERNMENT/0,,contentMDK:20870448~menuPK:6226295~pagePK:210058~piPK:210062~theSitePK:702586,00.html

particularly in the delivery of public services. The success of e-government is seen as relying on reforming back office processes just as much as updating front office service delivery channels. According to the World Bank "sharing data across legacy systems, developing shared infrastructures, implementing management information systems and dealing with rapid technological change are crucial elements of an e-government programme."[22]

2.1.5. Global overview

Although the above reflects clear global level trends the impacts of which are apparent in almost all countries, there remain stark differences amongst nations. In the developing and emerging economies there is still a strong need to provide basic ICT infrastructures (although also the opportunity for many to leapfrog, for example from expensive fixed lines to much cheaper and more flexible mobile systems), to focus strongly on basic education and e-skills, as well as to provide good information about government and public services. In these countries, the critical e-government challenges remain such as laying the foundations for good governance and good basic services, as well as combating the digital divide, the need for comprehensive multi-channel strategies and promoting the awareness and usage of e-government.

In contrast, the leading countries, having laid down good e-government infrastructures and frameworks over the last ten years, are focusing more strongly on 'collaborative' governance and the 'whole-of-government' approaches as a holistic and transformative philosophy to change how the public sector operates and its relationships with wider society. This approach strives to present one face and although progress is very slow and highly varied, many significant advances are being made using new tools like social media, open data and cloud infrastructures. Even in these countries, however, there are important challenges related to the low usage of e-government, and how to enable the public sector to do 'more with less' in the context of the financial crisis, at the same time as the demand for services are increasing.

2.2. Selected good practice case studies and lessons from global leaders

The brief case studies in this section have been selected from leading global examples to illustrate the range and types of e-government service integration, as described in section 1.2 and in more detail in Annex 1. The first five sets of cases exemplify back office integration based up building blocks like interoperability, standards and base registries, as well as different actors and levels. Here, the user does not directly see the integration although he/she does experience the impact of it. The second set of five cases exemplifies front-office service delivery integration based around services, user characteristics, user involvement, channels and locations. Here, the user both see the integration and directly experience its impact. Of course, in most situations both front- and back-office changes are made, but this distinction provides a useful conceptual framework for understanding how services are integrated and the impact this has.

2.2.1. Back-office building blocks and tools

a) Interoperability and standards

France is currently the global leader in online service provision according to the E-Government Survey 2014.[23]

France: *PublicService*, inoperability and standards

The new French e-government policy, introduced in 2012, aims to lower ICT expenditures and improve agility whilst encouraging innovation and the engagement of non-government actors, such as local authorities and developer communities, in e-government service co-production. All this is underpinned by two main projects on interoperability: the Interoperability Framework (RGI) and the definition of common data models, both complying with the main standards and specifications of the European Interoperability Framework 2.0.[24] This framework is a set of recommendations classifying norms and standards which support interoperability within the information systems of administrations (between administrations, administrations and companies, administrations and persons). Principles

[22] *op cit*
[23] United Nations, 2014
[24] European Commission, 2010b.

applied within the RGI framework are:

- Promote online services by reducing the time of implementation
- Control the costs of development and maintenance
- Adopt a language and common semantics for information exchange
- Disseminate good practices between European administrations and converge towards a common framework for interoperability
- Ensure the neutrality of administration, based on norms and standards.

The RGI recommends a number of norms, standards and best practices designed to meet the needs of current actors. No standard is prohibited or discouraged. In legal terms, the RGI specifies standards and formats electronic data exchange between users and administrative authorities, and between the administrative authorities themselves. In organizational terms, the RGI recommendations have the goal to promote interoperability between the various actors and to allow actors seeking to interact to have interoperable information systems, going beyond simple bilateral arrangements. Semantic interoperability uses the common data model (CDM) based on a library of common components, and includes an overview of the available semantic standards and formats divided into two areas: basic formats for audio, photography, moving image and character encoding; and composite formats as aggregates of many items including, for example, office documents or formats for compressing files. Various standards on the syntax level are also available, such as business process modelling/UML.

In technical terms, the RGI sets technical rules to ensure the interoperability of information systems, including directories of data standards and standards to be used by technical administrative authorities. Four areas can be distinguished: presentation (e.g. navigation technologies), multimedia (e.g. messaging, telephony), web services technology and infrastructure (e.g. network protocols). All standards are made available via a website.

Website: www.service-public.fr

b) Data exchange and base registries

The Netherlands was one of the first countries to establish and exploit comprehensive data exchange standards and base registries for use across the government.

Netherlands: *i-NUP*, interoperability, standards, data exchange and base registries[25]

The Netherlands' e-government strategy *i-NUP* focuses on 'compact central government' and has been driven by the financial crisis. It refocuses on the back-office and the savings which can be made there. A central tenet of this approach is reducing the 'administrative burden' both on government and on users which simultaneously aims to provide better service through a reduced workforce and a cost reduction of €800 million. The Netherlands is the global leader in administrative burden reduction having already reduced overall governance costs by 25 per cent much of which is due to e-government. The aim is to ensure that this 'compact central government' cooperates with other governance actors, which in turn requires system harmonisation, standardisation and the sharing and reuse of resources, such as data, infrastructure and service elements, through for example a strong emphasis on facility management together with cloud services and solutions. Some entities in the Netherlands have also adopted service-oriented architecture (SOA) solutions, for example in the Ministry of Justice, in order to cope with existing legacy systems.

The development of cross-government building blocks, as specified in *i-NUP*, has been a strategic back-office focus since at least 1998 and also underpins front-office services for both citizens and businesses at all levels of government. The main building blocks, all of which are developed in cooperation with relevant EU programmes, include common standards, services and architecture, information standards (XML), web standards, interoperability and common (open) standards, as well as the 'Digi coupling system' as a G2G network inter-government information exchange. Also important both for data security and privacy as well as personalizing services is the e-authentication single-sign-on "DigiD" system and the e-identity smartcard facility.

An essential feature of data exchange and re-use is a set of 13 base registries at the core of the cross-departmental information sharing, like vehicles; income, salary/pay, social benefits and pensions related to persons; land administration and ownership; maps and geo-information; value of property; high detail maps (such as individual parts of roads); below ground maps; persons; companies; organizations; addresses and buildings.

These, and other common registries, are all linked as far as possible to international standards. They have been derived from the experience that it is neither efficient nor effective that every government body collects, maintains and distributes basic information themselves. A number of common principles are used, including 'once only' data provision enabling multiple re-use. The base registries are built and maintained by the relevant central government

[25] https://mijn.overheid.nl

ministries, with overall coordination provided by the Ministry of the Interior, but the data are collected and uploaded by the municipalities (in some cases municipalities have outsourced this to private companies). By law, municipalities or other collecting agencies must upload updated or new data within three working days, and a centralised government cloud is being established for these data. Use of the data by all government bodies is obligatory by law, although there are some restrictions in relation to data privacy when stipulated by law. There are also obligatory feedback mechanisms in case of error, as well as strict quality control monitoring.

Website: https://mijn.overheid.nl

The above two global good practices show that interoperability based on agreed standards, models and specifications is a very important basis for joining-up the back-offices of government entities. A clear but comprehensive framework is required which all entities and cooperating organizations need to comply with and actively support, covering all layers of interoperability. The French example also illustrates the benefits of adhering to international standards, in this case the European EIF.[26] Another important factor in joining-up the back-offices of government entities and being able to offer targeted, personalized and simple integrated services to users, is to build base registries and exchange data across government rather than holding separate data bases. In the Netherlands case, this is mandated by enforcing the 'once-only' principle that users should be required to input base data about themselves and their situation only once to any part of government, and then expect that it can be easily accessed by any other part for any other legitimate purpose, as long as agreed data protection principles are adhered to.

These two examples also illustrate how ICT expenditure in the medium-term can be dramatically reduced and resources shared and reused and thus better exploited, and in the Dutch case reflecting the reducing administrative burden policy of the Netherlands. They also show how greater flexibility in extending and developing new service innovations based on the modular building block approach can be undertaken, as well as the ability to respond to new challenges, such as through the Netherlands' facility management systems using cloud solutions. Underpinning both examples is how data exchange standards and the cross-government base registries they use have become essential building blocks for the future. It is also clear that these examples demonstrate the value of being able to directly disseminate good practices to other administrations and how the approach promotes transparency and thus neutrality.

2.2.2. Back-office actors and levels

a) Integration between actors

The Republic of Korea (South Korea) remains the global e-government leader according to the latest survey undertaken by the United Nations.[27] In the following example, the country demonstrates good practice in integration across 292 different systems in 17 government ministries.

Republic of Korea: Social Security Information System (SSIS), back-office service management

The Social Security Information System (SSIS) was first proposed and pursued in 2008 as a solution to management of welfare services in the country. The Korean government built the Social Security Information System step-by-step from 2009 to 2013. It was designed to comprehensively manage information on qualification, as well as records of 14 million welfare recipients. These records provide the basis for making payments from 292 systems in 17 ministries. At the initial stage, the system was built to manage information on recipients' qualifications and records of welfare payments and services led by the Ministry of Health and Welfare. At the second stage, key features were applied in the 17 ministries related to welfare in the following order:

a) The business process around welfare payments and services directed by the Ministry of Health and Welfare was re-engineered (BPR). Once "an investigation into the application, income, and assets" was conducted as a key and common process for the provision of welfare, a comprehensive delivery process was newly prepared for the investigation's adoption for diverse welfare payments and services. This process was to minimize the citizens' inconvenience in having to apply separately for diverse welfare payments.
b) Measures were prepared to connect information and solve the inefficient administrative process.
c) The measures allowed for the searching of records of past receipts of diverse welfare payments and services, thus

[26] European Commission, 2010b.
[27] United Nations, 2014.

preventing duplicate receipt. For this, a database organized by past welfare payment and service was changed to one that included individuals and households.

d) An information system was built for pan-governmental use. Ministries that used different and separate information systems to provide and manage welfare services could now use the features and information of the Social Security Information System (SSIS) for application submission, materials on income and assets, as well as receipt of qualifications and records.

Source: 2014 UN Public Service Awards Winner.

Integration in the back-office can take place between different government agencies as part of a joined-up and whole-of-government initiative that attempts to present just one face to users. The South Korean example shows the benefits of a phased approach starting in the main ministry but then rapidly integrating its back office systems with other ministries in close cooperation on common processes and standards. Finally the system was extended as a complete pan-government operation.

b) Integration between levels

Denmark shows how back-office integration can also take place between different levels within one country.

Denmark: *Borger.dk*, citizen portal integration local, regional and national services

Denmark has had an e-government strategy since 2000 when a Committee for Digital Administration, placed under the authority of the Ministry of Finance, was established. Early strategies were focused on getting the infrastructure and building blocks in place through establishing a new government-wide interoperability framework, to replace existing legacy systems, for digital collaboration, internal digitisation, a shared G2G infrastructure and to provide users with one point of access. The current national strategy runs from 2011-2015 as the "Digital Way to Future Welfare" which specifies a legally binding national framework that sets up national mandatory programmes and initiatives. Within this framework, regions and municipalities can then operate, adapting and prioritising to suit their own specific tasks and geographical areas on the assumption that this is self-financed. This "balancing system of joint ownership and common consensus" both ensures national interoperability and coherence (in strategic, technical, organisational and content terms, for example using standardised building blocks), on the one hand, and significant agency and local autonomy to implement appropriate solutions within their own mandate, on the other. Within this system the private and civil sectors can also be involved.

For each programme, initiative or project, each government entity at each level is obliged to develop a business case, which then might be outsourced for implementation. *Borger.dk*, the citizen e-government services portal in Denmark, integrates these across the three levels of government by acting as a 'display window' for digital citizen services in each municipality and public authority using public standards and common guidelines, as well as common components, like OPIS DB (the public portal integration system), "EasyID", digital post, MyPage, payments, maps and addresses.

This display window is essentially a mash-up consisting of information, services and data from many different sources, and collectively this creates a complete picture of the public sector and its services. There are four main contributors to this mash-up process: the state, the regions, the local municipalities and the *Borger.dk* portal teams. The latter ensures the import and export of content to and from the other contributors. In the case of the municipalities, 35 out of 98 currently receive 'syndicated' content direct from *Borger.dk* and this number is increasing all the time. This represents an important business case given the resources the municipalities thereby save. The municipalities are able to add their own local content to this centrally distributed syndicated content, and can purchase their own ICT solutions if they wish. Citizens do not care where content comes from as long as it is accurate, up-to-date, comprehensible, and provides effective services.

Website: www.borger.dk.

Despite being a relatively small country, Denmark has three levels of government appropriate to the functions that need to be carried out which are each both highly specialized and individual, but at the same time draw on common systems and syndicated content to save resources and to ensure uniformity where relevant. The country has developed a system whereby each level, and each entity within each level determines their own specific tasks, within legislative limits. It also assumes that this is self-financed on the basis of a sound business case which needs to be approved, through a balanced system of joint ownership and common consensus. This individualization using standardized building blocks put together in unique combinations also draws in non-government actors where thought appropriate, and also allows the resulting services in any entity to be customisable by the authority at that level by as well as by users.

c) Integration between countries

Linking the back-offices of government agencies across national borders through common interoperability and standards agreements can provide significant benefits to users who need to access their specific services in more than one country.

Europe: *epSOS*, cross-border eHealth Services

epSOS is piloting seamless e-healthcare for European citizens. Key goals are to improve the quality and safety of healthcare for citizens when travelling to another European country. epSOS concentrates on developing a practical e-health framework and ICT infrastructure that enables secure access to patient health information among different European healthcare systems. The initiative is making a significant contribution to patient safety by reducing the frequency of medical errors and by providing quick access to documentation as well as by increasing accessibility of a patient's prescribed medicine when travelling abroad. In emergency situations, this documentation provides medical personnel with life-saving information and reduces the (sometimes needless) repetition of diagnostic procedures. The technical, legal and organizational concepts developed within the framework of the project are subject to an extensive practical testing phase lasting until the end of June 2014.

epSOS is testing cross-border e-health services in relation 'Patient Summary' facilitating access to important medical data for patient treatment, and the cross-border use of electronic prescriptions (ePrescription and eMedication systems). In the extended project phase between 2011 and 2014, epSOS has consolidated, scaled up and operationalized the epSOS Services for ID management, security, semantics and standards. Additional epSOS Services, like the access of patients to their data or the Medication Related Overview (MRO) are also being analyzed and tested. For the first time, patients in Europe have the opportunity to use cross-border e-health services when seeking healthcare in countries participating in the epSOS pilot, whether as tourists, business travellers, commuters or exchange students.

Website: http://www.epsos.eu

Linking the back-offices of government agencies across national borders through common interoperability and standards agreements can provide significant benefits to users who need to access their specific services in more than one country. Integrating across borders is even more challenging than between entities in one country, given the vastly different legal, governance and administrative systems, let alone diversity of cultures and ways of working. Europe is attempting the develop cross-border Europe-wide services that are in principle standardizable although in practice operated and delivered in different ways in different countries. A number of services are being developed using standardized building blocks, including health services for citizen and VAT and customs for businesses.

2.2.3. Front-office service delivery integration

a) Service functions

In the following two front-office examples from Australia and Spain, integration takes place by bundling services within specific service functions or around user life-events.

Australia: *MyGov* website

The Australian government's new *MyGov* website is an all-inclusive one-stop-shop portal for an easy and fast way to access government services online using a holistic approach. Entering a username and password, users can access a variety of e-services from different agencies, such as Centerlink, Medicare, Department of Veterans' Affairs, Child Support, National eHealth Record System, and DisabilityCare Australia.

By creating an account, users can easily link their existing online services through *MyGov*. The website also has a YouTube page explaining to users how to use the system and its benefits, as well as provides a forum for interaction and questions between citizens using *MyGov* and The Australian Government Department of Human Services. Through the comments sections on the YouTube page, users can post concerns, comments, and questions that are addressed by the Department; thus in a way, providing an e-participation platform through social media as well.

MyGov website: https://my.gov.au/LoginServices/main/login?execution=e2s1.

YouTube page: https://www.youtube.com/watch?v=32IhKteOkb4.

Spain: *060 Network*: life events

Spain's www.060.es is a comprehensive one-stop-shop; a call-centre and a network of face-to-face offices complement the portal. The portal is one of the three components in the '060 Network' ('Red 060' in Spanish) which is dedicated to providing citizens and businesses with a unique multi-channel system acting as a key entry point to the administrative services of the entire country. The other two components of the '060 Network' are local offices and the telephone hotline number '060'. Many of these services are so-called 'life events', i.e. organized around a specific event, task or activity a user has and that integrates different aspects of the event which may come from different government entities. These include studying at university, contacting the administration, managing a business, driving a car, seeking employment, claim low-value welfare payments, and moving residence.

Website: http://www.060.es/060_Home/ServiciosLinea.html?idioma=en.

Integrating the delivery of services in the front-office has a number of important dimensions. First, the bundling of services around specific service functions or around user life events. These approaches are illustrated by Australia's *MyGov* website as a one-stop portal for all government services in relation, for example, to healthcare, children's affairs and disability services. In this context, services are meshed together so the user only sees a single face of government, even though the delivery and administration of the services components may be the responsibility of different entities. This approach also enables user interaction either by asking questions and posting comments or adding content. The second dimension is exemplified by Spain's life-event approach which is basically the same but in this case the service components are seamlessly bundled around specific user life events, such as studying at university, managing a business or driving a car. The Spanish system, as in most leading e-government countries, also uses multiple channels to deliver its services.

b) User characteristics

Another approach to front-office service integration is to bundle services likely to be used by specific types of users.

United States: *USA.Gov*

USA.Gov is a highly integrated national portal aggregating large amounts of information and service into it. The main government portal is a gateway to services through multiple channels, by theme and subjects. With an advanced search feature and FAQ function, citizens can easily navigate a specific item or service. The function 'chat with us' further facilitates and personalizes the use of the contents by allowing citizens to communicate with a government representative promptly. The government portal is organized primarily around audience group, such as kids and youth, teens, volunteers, businesses, visitors to the United States, seniors, Federal employees, caregivers, college students, grandparents raising grandchildren, homeowners, workers, job seekers, native Americans and tribal governments, parents, persons with disabilities, veterans, and many more. An additional feature is that the US not only has a single comprehensive portal, but also has integrated 'portlets' each with multi-sector, multifunctional integrated services and information. For example, BusinessUSA, a one-stop-shop for businesses to access Federal services from multiple departments and agencies.

Website: http://www.usa.gov/Topics/Audiences.shtml

The United States case illustrates the bundling of service components around 'personas', i.e. specific user characteristics, such as seniors, caregivers, Federal employees, workers, job seekers and home-owners. The USA Federal portal also integrates many 'portlets' with 'doors' direct into other major service bundling sectors such as business services.

c) User involvement

In the examples below, users are able to integrate their own service requirements in the front-office through personalization, co-creation and active participation.

Taiwan: *e-Housekeeper*: personalized and proactive information and services

To explore the potential for greater personalization and proactive dissemination of government information, the

Taiwanese government launched the e-Housekeeper initiative in 2008 to implement an integrated messaging platform for push-notifying citizens of useful information from across agencies and layers of government. Today, e-Housekeeper provides a unified notification platform for over 200 different services—everything from license renewals and benefits notices to the due dates for fines, fees, and taxes. For instance, car owners are notified when they must pay their toll fees, renew their registration, or schedule an emission inspection; are issued a parking fine or had their car towed; and when an accident impedes traffic, the price of gas changes, or the government temporarily closes a road for maintenance. Similar sets of services are provided in such domains as healthcare, home ownership, and social welfare.

The "e-Housekeeper" also provides proactive support during major life events, from sitting for exams to getting married. For instance, students needing to take the college entrance exam are notified when they can register; when and where their exam has been scheduled; and when their exam scores are made available. In so doing, the service simplifies government for the user by proactively guiding them through what can otherwise feel like a bureaucratic maze—guidance which is particularly important for helping vulnerable populations in accessing needed services such as social welfare and healthcare, which often require interactions with a multitude of agencies at different levels of government.

Specifically, citizens can today receive notifications in four different ways based on personal preference: (1) via the website; (2) via a PC-based, unobtrusive notification app modelled on the popular MSN Messenger (Windows, Mac, Linux); (3) via mobile phone applications (iOS, Android, WP8, and WAP); and (4) via commercial messaging clients and widgets (Yahoo, MSN, iGoogle). The team plans to expand this further to 'smart TVs' and kiosks at convenience stores to better reach offline populations. This diversity of access points tailored to different personal habits enables the government to proactively "go to where the citizen is" to better meet their needs. Today, the service benefits over 700,000 members, with more joining every day. With the first iteration coming to a close, the government aims to transform e-Housekeeper into a digital "Life Dashboard".

Website: http://www.ares.com.tw/en/services/emsg/

Singapore: ***National Environment Agency (NEA)***

The NEA partners across the public sector, with private sector and with ordinary citizens to engage and promote greater environment ownership in Singapore. One initiative is the use of smart technologies to share environmental data (e.g. air quality, public health and weather) between government agencies and with the public. NEA contributed to the development of 86 environment datasets and 17 spatial datasets for the Singapore Government data hub, SG-Data/GeoSpace, for inter-agency sharing. These datasets include weather information such as air quality, weather forecast, heavy rain warning, climate change, and the location of recycling bins. The datasets are also available as open government data. 75 datasets and 8 map layers were added to the Singapore Government's one-stop portal service, www.data.gov.sg, for public use. Using smart phone technologies, NEA has co-created several mobile applications with private sector partners and through crowd sourced ideas from the public to promote greater environmental ownership and provide real time information on environmental conditions in which both citizens and companies participate.

Website: http://www.nea.gov.sg

Enabling users to bundle and personalize their own array of services and service components is also a major trend amongst global e-government leaders. Taiwan, using systems named 'e-Housekeeper' and 'Life Dashboard', has gone further than most using a basically very simple but powerful approach which invites users to select their own components, which can be changed at will, and then to receive 'push' services, content and notifications as alerts for information purposes or when the user needs to do anything. This can also take place by the user's channel of choice. Another example of user involvement is using open government data to develop new content, apps and service components, as illustrated by Singapore's environmental agency. Users can also contribute their own data and other content and ideas through crowdsourcing. In both the Taiwan and especially the Singapore examples, users start to become important, if not equal, partners with government in developing useful services and other value added components.

d) Channel integration

Service integration can also be effected by integrating two or more delivery channels.

Sri Lanka: ***One for All***

Sri Lanka's e-government policies have been geared towards including all segments of the population and offering services to everyone, disregarding their IT literacy levels or access to the internet. As well as information about the

government of Sri Lanka, the *One for All* portal offers e-services, m-services, information about over the counter and call centre services as well as digital intermediary services. With mobile penetration rates in the country exceeding 100 per cent, and even the poorest people today having cell phones, albeit basic, Sri Lanka offers many m-government services. The Government Information Center (GIC) provides more than 65 online services through basic phone calls, such as train schedules, job opportunities abroad, flight schedules, exam results, economic indicators, medical services, and contact details.

Even though ICT literacy rates jumped from 9.7 per cent in 2004 to 40 per cent in 2012, the numbers are still not high enough to allow maximum utilization of the e-services the government provides. With the GIC, all-inclusive e-services can be delivered to the rich and poor alike, and hence everyone can become a beneficiary of Sri Lanka's digital advancement in government.

Website: http://www.gov.lk/web/

As mentioned, many countries are now experimenting with and offering integrated multi-channel services, and Sri Lanka provides a good example of the need to reach the whole population many of whom do not have advanced or even basic access to ICT. It covers web, mobile, call centres, face-to-face and so-called digital intermediary services in which a civil service or trusted person uses digital services on behalf of the user.

e) Locational integration

This example illustrates service integration around a specific location, in this case a city where most e-government services are typically offered.

City of Chicago: *Data Portal*

The City of Chicago's Data Portal is dedicated to promoting access to government data and encouraging the development of creative tools to engage and serve Chicago's diverse community. The site hosts over 200 datasets presented in easy-to-use formats about City departments, services, facilities and performance. The data catalogue and user tools supports an ecosystem of applications enabling co-creation of content and services integrated around an individual user's own needs or those of a group or community. For example, GPS-assisted maps and real-time information on public transit fleets enable a new kind of dynamic urban navigation, while innovative applications based on citizen complaints and requests to City Hall allow people to see trends in what is happening in their neighbourhoods and track the processing of their requests. The datasets hosted on the *Data Portal* platform are also readily accessible to programmers using Application Programming Interfaces (APIs) based on open standards facilitating the development of original applications by any developer to create new applications and services.

The data itself is also being catalogued in a project called the Chicago Data Dictionary, which is a large public metadata repository—a searchable archive of 'data describing data' that gives users information about the variety of data in the City of Chicago's databases. As the next phase of Chicago's government transparency initiative, the Data Dictionary complements the City's open *Data Portal* by providing background information on the provenance of data comes. Public data dictionaries can benefit academic researchers and software developers who want to know what kinds of data the City holds, and how they can access it for research or application development. They can also assist City Staff who manage City databases and work to improve their efficiency.

Website: https://data.cityofchicago.org

A final type of service delivery is integration around a specific geographic space or locality, normally cities though often also neighbourhoods, towns and villages. Such service integration tailors itself to specific spatial circumstances and needs, and the example given of the Chicago in the USA also illustrates the power of local open government data for local citizens, businesses and other organizations to develop their own services, apps and content. Local places are often more important than national entities, for example in Europe about 70 per cent of e-government information and services are tailored for and used by local and regional users at sub-national levels.[28]

[28] See for example in Europe, in European Commission 2013b.

3. Overview status of e-government services in the Arab countries

This section briefly reviews the latest studies and other evidence concerning service development and e-government in the Arab countries and puts this into a global context.

3.1. Arab government services and technology use

A survey on the Arab World Online in 2014[29] shows that there are currently more than 135 million individuals using the Internet in the 22 Arab countries. This is coupled with a mobile penetration rate of around 110 per cent on a regional level; and more than 71 million active users of social networking technologies. However, according to this survey, the region is also facing mounting social, economic and public service related challenges in terms of access and quality, and the barriers ahead are immense. Within most countries in the region, the digital divide is still impacting millions of Arabs, who are thereby doubly deprived of opportunities to access information, jobs, education and services. Another key barrier is limited availability of relevant Arabic content online. The findings in the survey indicate that the top three challenges facing internet users in the region are (1) accessibility and connectivity, (2) cost and (3) lack of content in local – mainly Arabic – languages.

A complementary study of Arab government services in 2014 from the same source[30] surveyed both key government officials and service customers across the 22 countries. The latter stakeholder group's main responses showed that the potential is high for Arab governments and customers to engage around citizen needs on public services, but that there are several clear disappointments and recommendations. These include the need for governments to develop a customer-centric culture especially by front-line staff: "all services are rooted in bureaucracy and this prevents the delivery of quality service to all." Red-tape results in inefficiencies and waste and has significant impact on the relevance and convenience of citizen services. It is also clear that service delivery is generally a huge challenge, and that especially the centralization of services in the capital and urban centres has made it very challenging for rural inhabitants to have access to important services.

The survey notes that limits are set by technical capacity and the prevailing government culture and especially the lack of a monitoring mindset that hinders the evaluation of the benefits of service delivery. Arab governments themselves recognize the need for much greater innovation in public services, but this relies on leadership and is hampered by a culture in which managers tend to think only in terms of their ministry or department rather than the government as a whole (so-called 'silo' mentality), and are very averse to taking any risks which might challenge or change what they have often been doing for many years. However, the survey also found that "eGovernment has enabled better accessibility, quality and efficiency of services. Customers who used government websites to access public services were more satisfied with government services than customers who only had access to public services through traditional means" and this shows that, at least from their point of view, "the adoption of electronic services across the Arab world has had a positive impact on service accessibility, efficiency and quality. Most Arab governments, however, have not yet embarked on developing m-services and have as a result, not reaped the benefits." This is despite the clear potential m-government has – given the ubiquity and cheapness of mobile phones – to bring much greater benefits.

Although the Arab countries share many common features in terms of language, culture and history, factors like wealth, population size and geographical context produce significant diversity. Accordingly, the Arab government services survey[31] found some differences between the three country groups based on income[32] in the levels of achievement and in the service sectors seen to be most in need of prioritization: "public

[29] Mohammed bin Rashid School of Government, 2014b.
[30] Mohammed bin Rashid School of Government, 2014a.
[31] Mohammed bin Rashid School of Government, 2014a.
[32] Arab countries can be divided into income three groups according to World Bank classifications (http://data.worldbank.org/about/country-classifications): high income Arab countries are Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, United Arab Emirates); upper middle income Arab countries are Algeria, Iraq, Jordan, Lebanon, Libya, Tunisia; and lower middle income Arab countries are Egypt, Mauritania, Morocco, Palestine, Sudan, Syria, Yemen.

transportation emerged as a priority area for improvement across all three country groupings, with cultural services and education emerging as priorities for high income countries, and public healthcare for lower middle income countries." These differences perhaps reflect the tendency to see healthcare services as basic for survival, but are least likely to be well developed in countries with lower incomes so are prioritized highly. In contrast, the higher income countries tend already to have relatively well developed healthcare, so their attention turns instead more to cultural issues and education as the next step up in citizen needs.

3.2. The United Nations e-government 2014 survey

The latest United Nations biennial e-government survey, published in 2014 provides data and analysis across all 193 Member States based on an overall E-Government Development Index (EGDI), which is itself composed of three equally weighted sub-indices: the Online Service Index (OSI), the Human Capital Index (HCI) and the Telecommunication Infrastructure Index (TII).[33] The graphics in Annex 2 depict United Nations E-Government Development data for these indices for the years 2008, 2010, 2012 and 2014, and compare the three groups of Arab Region countries (high income, upper middle income and lower middle income[34]) with the top ten performing countries globally. The following patterns and trends can be discerned.

The EGDI shows a clear positive relationship between overall e-government progress and income. Of three income groups, the high income countries, represented by the six Gulf Cooperation Council (GCC) countries, perform best and are not too far behind the global leaders. These countries have also made considerable progress between 2008 and 2014. The upper and lower middle income countries perform less well although some of the former countries are above the global mean. Both these groups, however, have made little relative progress since 2008 with the exception of Tunisia in the upper income group and Morocco in the lower income group, a finding which is reviewed below.

The OSI provides data that most directly measures e-government progress given that the HCI and TII focus instead on important enablers for e-government. Table 1 shows how the OSI is made up of data on three stages of online services: 1) emerging information services where government websites basically provide information only: 2) enhanced information services where government websites deliver enhanced one-way or simple two-way e-communication between government and citizen; and 3) transactional services where government websites engage in two-way communication with their citizens, including requesting and receiving inputs. Again, there is a clear positive relationship between overall online service progress and income, although this time the variance between countries is considerably greater than it is for the EGDI. The entire high income group are above the global mean (and Bahrain is one of the global top ten), as are Tunisia, Jordan, Morocco and Egypt from the other two groups. In fact the mean scores of all three Arab groups are above the global mean. However, although, the high income group has again made very good progress since 2008, the other two groups have relatively only made marginal progress, although both Tunisia and Morocco once more have performed best.

Table 1: United Nations Online Service Index: global and regional comparisons, 2014

Country groups	Total (per cent)	Stage 1: Emerging inf. services (per cent)	Stage 2: Enhanced inf. services (per cent)	Stage 3: Transactional services (per cent)	Stage 4: Connected services (per cent)
Global mean	37.12	64.54	39.91	22.05	26.94
Global top ten	83.60	99.10	78.10	80.80	79.80
Arab high income mean	67.50	93.33	67.00	58.83	55.00
Arab upper middle income mean	40.25	72.25	42.00	18.25	35.50
Arab lower middle income mean	38.60	65.20	31.60	19.80	45.80

[33] United Nations, 2014.
[34] Please notice that the UN E-Government Survey does not include data for Palestine.

Source: data from United Nations, 2014.

High income Arab countries do really well across all stages, but what is interesting is that lower-middle income Arab countries do better both in Stages 3 and 4 than upper-middle income Arab countries. Morocco and Egypt have pushed the mean score of this group beyond the mean score for the upper-middle income countries, despite having lower scores in Stages 1 and 2. The significance of this is it shows that the United Nations' stages are not necessarily cumulative, and that countries with appropriate policies, focus and initiatives can buck the trend and can perform well despite overall having lower incomes.

The E-Participation Index (EPI) measures a subset of the OSI indicators and is also composed of three stages: 1) e-information by providing citizens with public information and access to information: 2) e-consultation by engaging citizens in contributions to and deliberation on public policies and services; and 3) e-decision-making by empowering citizens to co-design policy options and co-produce services. The EPI shows that most Arab countries have made good progress in e-participation since 2008, despite considerable variation between them (see Table 2). The only exceptions are Jordan and Lebanon which have made little progress, whilst Tunisia and Morocco have made spectacular improvements, as discussed below. Most countries are, however, above the global mean, the exceptions being Lebanon, Iraq, Sudan, Yemen and Syria, all countries currently with significant governance challenges both domestically and internationally.

Table 2: United Nations E-Participation Index: global and regional comparisons, 2014

Country groups	Total (per cent)	Stage 1: E-information (per cent)	Stage 2: E-consultation (per cent)	Stage 3: E-decision making (per cent)
Global mean	36.38	55.65	24.64	7.31
Global top ten	85.86	93.71	83.18	68.89
Arab high income mean	60.06	85.19	46.97	16.67
Arab upper middle income mean	35.78	55.55	25.00	2.78
Arab lower middle income mean	36.89	54.81	26.37	8.89

Source: data from United Nations, 2014.

The high scores in EPI achieved by the Arab high income country group, is mostly made up of high scores in Stages 1 and 2 – well above the global means. A look at government websites from this group reveals an extensive use of social media for information purposes (Stage 1). Further, e-consultation is also used for receiving complaints and making suggestions especially for e-service creation and development (Stage 2). This is especially the case for Bahrain and the United Arab Emirates. However, decomposing the EPI also reveals very little use of e-decision making (Stage 3). The Arab Spring might have given governments a push towards using e-participation tools, but not to the extent that it actually empowers citizens to participate in the policy design, co-production of service components and delivery modalities. The highest Stage 3 scoring Arab country is Qatar, but even here and with a score of 33.33 per cent, it is well below the global top 10 for this stage.

Again worthy of note is that, for Stages 2 and 3, the lower middle income group has mean EPI scores above the upper middle income group and, as with the OSI scores, it is the exceptional performance of Morocco and Egypt which makes the difference. This underlines again that the United Nations' stages are not necessarily cumulative and that countries with appropriate policies, focus and initiatives can buck the trend and perform well despite having overall lower incomes.

In terms of HCI, most countries, including many in the global top ten, show some small relative falls in human capital scores. Much of this is due to the comparative nature of the data and the fact that, because many mainly developed countries are approaching maximum scores, those performing less well receive lower scores even where actual performance has not deteriorated or even increased a little (see Annex 2).

Also, the HCI overall records the highest scores of any index, making any progress more difficult to measure because of clustering around high scores. Despite these caveats, however, it is again clear that the lower the income, the less well relatively most countries perform, and this is certainly the case with the Arab countries. On the other hand, most Arab countries are above the global mean with the exception of Iraq and the lower middle income countries.

Finally, the TII shows that all Arab countries have improved their telecommunication infrastructure since 2008, most very significantly, with about half above and half below the global mean. This is in contrast to the OSI and HCI where most upper and lower middle income countries have not made much progress since this date, except for e-participation.

Overall, the data from the United Nations 2014 survey[35] clearly shows the strong correlation between income and e-government progress, as would be expected. However, within the Arab region, and particularly in the upper and lower middle income groups, three countries consistently go against this trend, i.e. Egypt, Morocco and Tunisia. Possible explanations for this good performance are that, in comparison with all other Arab countries with similar income levels, they have been at least partially successful in implementing some or all of the following types of initiatives:

- A whole of government and collaborative approach consisting of various versions of a unified, consistent and identifiable authority managing e-government (Egypt, Morocco and Tunisia). For example, "Morocco was one of the first countries in the Middle East and North Africa to institutionalize a regulatory environment for promoting competition in the telecommunications sector; and as such, made great strides in levelling the playing field for private operators to enter and succeed in the market. As early as 1999, a national strategy was developed to lay out the country's ICT vision which later became the foundation for subsequent plans such as e-Morocco and now Digital Morocco."[36]
- A strong focus on e-participation, such as the availability of online information about the various functions of government and the main ministries, and online citizen consultation about services and policies. (Morocco and Tunisia)
- Publishing open government data, for example on a data portal, and the use of creative commons licences that permit commercial and non-commercial use and reuse of data without restrictions (Morocco and Tunisia)
- Specific focus on supporting disadvantaged and vulnerable groups, such as by providing online archived information and data to support them, or email or Really Simple Syndication (RSS) services to these groups (Egypt, Morocco and Tunisia).

3.3. Case studies from the Arab region

Table 3 below summarises some of the main features of the eight Arab region case studies undertaken for this study. This is followed by case summaries grouped according to how they have implemented interoperability and standardisation.

[35] United Nations, 2014.
[36] United Nations, 2014, p. 21

Table 3: Overview of the main features of the Arab region case studies

Country /income	Title	Back-office building blocks & tools including interoperability & standards	Back-office actors & levels	Front-office service delivery integration	Other comments
Egypt (lower middle income)	The GAFI one-stop-shops (OSS) for businesses	Co-location in the OSS buildings forces 34 entities to interoperate on technical, semantic and organisational levels, and this prepares for future digitisation across the whole of government in a stepwise process.	34 national level entities in the local OSS buildings.	Service bundling around business user through a combined physical and digital one-stop-shop, offering company start-up services plus other services like tax and work permits.	Co-located front-office staff from different entities builds a knowledge community. Physically separating the front- and back- office staff reduces corruption risks.
Jordan (upper middle income)	Mobile and SMS Gateway	Shared infrastructures like the Enterprise Service Bus, establishes standards for data exchange between government entities and interoperability between service channels. Transactions can be completed centrally for all services and channels	SMS services from 18 ministries /departments	35 mobile and SMS pull and push services both within and shared across government entities, also enables the user to self-integrate services around him-/herself or family. A call centre also serves the Mobile Gateway.	Shared services and service components save resources and are more user friendly. Mobile and SMS push and pull encourage user interaction and feedback.
Morocco(lower middle income)	Morocco Government Gateway	A stepwise approach to interoperability and standardisation started by main government entity (Interior Ministry) building base registries for civil registration to then bring in other entities one by one using both back- and front-office building blocks it developed.	Interoperability between national and municipal levels.	The stepwise approach enables a digital one-stop-shop (the Government Gateway) to be developed in local offices which can also support physical services.	Barriers include inter-agency politics, budget complications, low level of literacy, and even lower levels of e-literacy. Customised services at municipal level by putting together standard packages developed nationally to suit local circumstances.
Oman (high income)	National Registration System – base registries	A stepwise approach to interoperability and standardisation started by main government entity (Directorate General of Civil Status) to then bring in other entities one by one using the building blocks it developed enabling base registries for civil registration to be built and data exchange between entities and channels.	National (National Registration System (NRS)) / police, 7 govt. entities.	Building blocks enable smart card as eID, plus web, kiosk, face-to-face. Services include ePurse for payments, eGate for crossing GCC borders and eVoting. Mobile units are used to register the population in rural areas.	Other government entities need to be offered appropriate incentives backed eventually by legal obligation as full benefits will only be achieved once the system becomes mandatory. Helps prepare people for a digitally enabled society; government with societal planning.
Palestine(lower middle income)	Zinnar – The Palestinian Interoperability Portal	A start from scratch approach that updates and replaces the legacy systems of each entity stepwise based on a simple, easy to use and precise interoperability framework that grows as it develops based on agreed ontology and semantic standards, not initially consolidated in one particular entity.	National - first result is an address and postal code system for Palestine Post.	None as yet.	Standards are created that can eventually be used by all entities for data exchange. Different government entities need not change their internal workings and data organisation immediately, and are offered guidance on how to proceed when changes to systems and business processes are being implemented
Saudi Arabia (high income)	SADAD - Bill Payment and Revenue Collection	A mandatory national uniform system developed by the banks and the government, based on a single interoperability framework and agreed standards, for all types of financial transaction crossing both the public and private sectors.	National Monetary Agency, 12 banks, government entities, private sector	Bill payments and receipts of all types across all channels and through any bank.	A public-private partnership as a model for other services. Serves all society, not just major companies, so SADAD helps boost the Saudi Arabian digital and overall economy.
Tunisia (upper middle income)	E-Administration	Existing legacy systems and technologies can be retained and accommodated using the SOA approach that enables interoperability between entities and is independent of technology and vendor.	National: common data and systems standards.	Citizens and businesses benefit from a large range of integrated services, that also enhances engagement through common procedures and use set-ups, e.g. eTax.	Set up in 2008 by Finance Ministry in collaboration with other ministries. Common standards being diffused through e.g. pilot projects on e-civil status documents.
United Arab Emirates (high income)	Abu Dhabi Government Contact Centre	Contact Centre acts as a one-stop-shop and whole of government citizen interface based on technical and semantic interoperability. The management team, supported by a CRM database, coordinates contact persons from each entity ensuring organisational interoperability and knowledge sharing across entities.	Emirate level within United Arab Emirates, more than 50 entities.	Services include information on procedures, events, complaints, suggestions, plus support on government related transactions; via phone, mail, SMS, government portal, online chat, mobile apps, and counter services, plus transactional services like licensing, permitting and paying fines	Driven by strong political mandate to break up government silos and facilitate cooperation, coupled with very high ambition to excel and create 'world-class' services. Brand identity and marketing are important to increase use of e-services via the Contact Centre and maximise quality consciousness.

Source: Synthesized by the Author from 8 Arab case studies and 11 Arab country questionnaires.

Unlike the highly focused global good practices in section 2, selected to illustrate just one or two specific characteristics, the eight Arab case studies all exhibit multiple characteristics of service integration across both back- and front-offices given that they have been examined in greater depth to provide a more comprehensive view. All offer multiple services, multi-channel and involve more than one type of actor, although only three exhibit multi-level characteristics and there are no cross-border services available for investigation. This pattern seems to reflect the status of e-government initiatives in Arab countries. Thus, the eight case summaries presented and discussed are examined from the perspective of *how* they have implemented service integration, specifically from the perspective of interoperability and standards, rather than the type of service integration implemented. On this basis, the Arab case studies are grouped around six generalizable approaches to implementing interoperability and standardisation. These do not, of course, represent all possible approaches but do clearly represent viable strategies for Arab countries given their current needs and situation:

7. Initiation and testing in one entity; rolling out stepwise to other entities
8. Supporting front-office one-stop-shops for multiple entities
9. Shared infrastructures across multiple entities
10. Overlay on retained legacy silo-systems in each entity
11. From scratch by abandoning legacy silo-systems in each entity
12. Public-private-partnerships across multiple entities.

3.3.1. Initiation and testing in one entity; rolling out stepwise to other entities

Morocco and Oman are both in the process of incrementally extending the countries' interoperability and standardisation frameworks after initiation and testing in an important central government entity, and then rolling out to other entities in a stepwise process. In these particular countries, building a digital national registry system forms the initial core of the strategy, enabling the relevant base registries to be set-up that can subsequently be used by other entities for offering services where civil registration data is required. Also in both countries, interoperability across the back-offices enables much better services for users via the one-stop-shop approach combining all the entities involved and offering both digital and physical services through the local offices.

Morocco's Government Gateway and a stepwise approach to interoperability and standardisation

The Government Gateway project aims to enhance systems interoperability, pool administration procedures, optimise information flow and re-organise the back-office. The overriding purpose is to maximise integration and promote the wider use of ICT in public services. The implementation of horizontal cross-government projects (like interoperability) is a big challenge for Moroccan e-government. A major push is currently underway by the Ministry of the Interior and its civil registry offices to build civil registry base registries and standardise data handling and associated services in order to extend its staff intranet services to the majority of employees. By tackling implementation within one entity first and building standard packages piece-by-piece, it is now possible to offer major services to other entities, including to the Finance Ministry and the Treasury (budget control), the Customs Service (in record keeping), the Tax Inspectorate and the internal Human Resource Services. These entities are able to develop their e-services for both back- and front-offices without waiting for the broader national-level project to be fully rolled-out. However, the process of coordination and interoperability with the different entities has proven difficult, including the need to overcome inter-agency politics, budget complications, low levels of literacy, and correspondingly even lower levels of e-literacy.

The Government Gateway also provides services for citizens and business, via both digital and physical channels through a one-stop-shop, more simply, more easily, and in much less time compared to the previous need to contact different government entities to complete a transaction. All necessary information from the different entities needed for a user to receive a service or complete a transaction can now be done in one place. Morocco's approach is also being used to enable interoperability between levels and effectively deliver customised services at the municipal level by putting together the standard packages developed by the Ministry of the Interior to suit local circumstances. This enables local electronic administration based on both back- and front-office standards, through for example local civil registry offices.

Source: Synthesized by the Author;

Website: www.egov.ma

Oman: National Registration System – base registries

The Oman National Registration System (NRS) developed by the Directorate General of Civil Status (Royal Oman Police), illustrates how one of the fundamental building blocks for interoperability – base registries – can be developed and rolled out. A base registry is an authoritative registry for identifying a specific subject such as a person, a company, a building or a vehicle. It facilitates the exchange of data concerning the subject, as both sender and receiver know exactly what is being exchanged. Further, it avoids unnecessary updating and duplication of work, as updating information about the subject needs only take place once, and at one place, by the designated entity.

Oman launched its Civil Status project in 2004 designed to develop the Civil Register containing authoritative data on births, deaths, marriages, and divorces in the Sultanate. As Oman has a large foreign community, the Civil Register also includes data on non-Omani residents in the country. Oman has introduced electronic identification smart cards for citizens and residents featuring the holder's photograph, signature and microchip containing the biometric data. Every citizen and resident holding an ID card has a unique civil number that identifies his or her identity as listed in the NRS. The microchip has capacity not only to store personal data such as occupation, marital status, level of education and passport number, but also the holder's driving license and an e-Purse acting like a debit card which can be used for electronic payments. The card further acts as an e-government card with a digital signature for using public services, and also facilitates the use of eGate for crossing borders between GCC countries and eVoting. The card can be used in self-service kiosks as well as on the government portal oman.om, on the websites of individual government entities, or for over the counter services. Access to public services and rights to benefits are tied to a person's ID number, so mobile units around the thinly populated country are used to register the population. This also helps prepare people for a more digitally enabled society, and assists government with societal planning.

Using the base registry was not made mandatory from the start, which has allowed sufficient time to roll it out and ensure compliance. However, the full benefits will only be achieved once the system becomes fully mandatory. The willingness of government entities to integrate and link systems electronically is essential. If only some participate, the full benefits will not be achieved, so appropriate incentives backed eventually by legal obligation are necessary.

Source: Synthesized by the Author

3.3.2. Supporting front-office one-stop-shops for multiple entities

Egypt and the United Arab Emirates are both implementing interoperability and standardisation based around front-office one-stop-shops in different parts of the country, offering services to users based on multiple channels, both digital and physical. In Egypt's case the services are for businesses, whilst in the United Arab Emirates it is a citizen one-stop-shop. The implementation process is also somewhat different as in Egypt representatives of all relevant government entities are physically present in one building to support the businesses. In contrast, in the United Arab Emirates each relevant entity has designated a person to liaise with the Contact Centre's management team for coordination and management purposes and not to personally assist users. In both cases, the physical channel in the OSS is based around a generalist civil servant as the main user contact, but who can physically bring in an entity specialist in Egypt, whilst in the United Arab Emirates this is done electronically if needed. Both countries also use their approaches to develop staff knowledge communities across the different entities involved. In Egypt's case this takes place physically in the OSS building but also influences the involved entities through their representatives. In the United Arab Emirates, this involves 'knowledge champions' from each entity forming a cross-entity 'knowledge network' which builds online and through regular meetings. In both countries, this approach is a powerful mechanism for building trust between entities, breaking up silo mentalities, and contributing to constructing a joined-up, whole of government philosophy.

Egypt: The GAFI one-stop-shop for businesses

The one-stop-shop (OSS) concept for businesses is a physical building integrating contact and services between businesses and public authorities in Egypt. The first OSS was in Cairo, but others have since been established in different parts of the country. The key achievement of the OSS approach is a dramatic simplification of business start-up procedures, where the number of procedures, as seen from the business perspective, has been cut from 19 down to three steps. To start a business or obtain licences, a business now needs only to deal with one GAFI officer for guidance and to take them through the entire registration process to prepare all necessary contracts in the backend systems through a Customer Relationship Management System including reserving the company name, obtaining bank certificate, paying for services, registering for taxes, and taking out social insurance. The process is highly automated, so for example the same data for the different forms is only entered once thus avoiding duplication, before all contracts are separately printed and stamped. However, as e-signature laws are not yet in place, businesses must still physically

visit the OSS building to sign the contracts.

In addition to starting a company, the services of 34 other government entities are also available in the OSS, including the Passport Department, Tax Authority, and the Office of Issuance of Work Permits for Foreigners. When staff of other government entities lacks the authority to act or give approvals without resorting to their parent ministry, GAFI acts as a window for digitally keying in applications and forwarding them to the entity in question. Another innovation is to let entrepreneurs start operating immediately by granting so-called 'temporary licences' before receiving final approval and security clearance, which means that other entities cannot stop activities or refuse to grant licenses during this period. A committee for dispute settlement has been created to investigate and solve businesses' complaints and disagreements with other government bodies. Overall, establishing a business and obtaining licences in Egypt has vastly improved with the OSS, but the process remains to be fully automated.

The Egyptian case shows that when it is not possible to fully digitise user services (in this case because of lack of legal and other barriers), a physical one-stop-shop in which a single civil servant deals with all user needs online is still a huge advantage both for government and the user in saving time and money. Physical inter-working between the entities' representatives physically co-located in the OSS building supports organisational interoperability through the business process re-engineering (BPR) of processes, legal and organisational standards. Technical and semantic interoperability across the building's digital infrastructure is also promoted, through common alignment, thus preparing the way for further digitisation in the future. It acts as catalyst for a whole of government approach, as it forces the different entities to rethink and reorganise internal processes and procedures. By having representatives from other government entities physically present in the building, a knowledge community is established, so the separation between different government entities starts to blur whilst remaining distinguishable. Clearly not all entity staff can work on one site, but collecting the relevant user-facing representatives can catalyse the whole of government process leading to increasing interoperability and standardisation.

Source: Synthesized by the Author

United Arab Emirates: Abu Dhabi Government Contact Centre

The Abu Dhabi Government Contact Centre (ADGCC) for citizens, residents and tourists provides information on government services, procedures and events, registers complains and suggestions, and offers support on government related transactions. It is the Emirate's government focal point for customer service, and a single access point to all government services in Abu Dhabi. The phone is the primary channel, but other channels are also available such as email, SMS, self-service on the government portal, online chat, mobile apps, and counter services. Acting as a one stop shop with the slogan 'one government, one number', using multiple channels, and the 'no wrong door' policy as part of its whole of government concept, it is the aim of the Contact Centre to maximise its accessibility to customers, for example using bi-lingual (Arabic and English) agents ensuring the majority of calls can be handled. The initial core service consists of information, complaints, incidents, suggestions and selected service requests. This will be expanded in later phases to include more complex and transactional services, such as licensing, permitting and paying fines. The ADGCC initiative also aims to provide access through other innovative platforms and solutions such as interactive mobile apps, location-based services, e-participation and social collaboration platforms, most of which have already been released with high adoption and usage.

The Abu Dhabi Government Contact Centre currently partners with more than 50 government entities, achieved via a strong political mandate to break up government silos and facilitate cooperation, coupled with very high ambition to excel and create 'world-class' services. Each entity subscribes to the Contact Centre service and appoints a 'channel leader' to act as the focal point for all matters relating to customer care within that entity and who liaises with the Contact Centre. This role is pivotal in coordinating the efforts and resources within their entity and ensuring customer service stays at the top of its agenda. The channel leader also acts as a 'knowledge champion' who is a member of a knowledge network across all government entities. This network ensures that information on the services and events offered by each entity is fed into the knowledge management platform of the Contact Centre as a centralised repository of customer data and is available to all other entities, which can in turn use the knowledge in interacting with customers. The Contact Centre has set up a 'customer relationship management team' to coordinate and liaise with each channel leader. This team provides support and advice to each entity, helping them to meet their performance targets and, ultimately, to deliver excellent customer experience. The team also provides training and change management services that ensure the channel leaders understand what is expected of them, and how they can maximize the potential of the technology that underpins their entity's services.

In 2012, a comprehensive Customer Relationship Management (CRM) Program was also launched with a two-fold rationale: to enhance the performance of the Contact Centre and to develop a unified brand identity as the one-stop-shop. The central CRM system means that today almost 85 per cent of information requests are dealt with and handled during first contact with citizens. Currently under implementation is also the integration of an e-participation platform 'Fikra', and an inbound SMS gateway.

Source: Synthesized by the Author; Website: www.abudhabi.ae

3.3.3. Shared infrastructures across multiple entities

Jordan is developing a shared infrastructure using an Enterprise Service Bus (ESB) to support its overall e-services development strategy, part of which are the country's Mobile and SMS Gateways. The e-government portal, the National Contact Centre, the National Payment Gateway, and the Mobile and SMS Gateways, constitute shared services running over shared national infrastructure backbone networks such as the Secure Government Network and the ESB. This unified infrastructure and central connection system connects government institutions. The ESB was customised for the government to enhance user experience by facilitating the integration and collaboration of various cross-government e-services. The ESB also enables governmental institutions to share and exchange data, verify identification numbers, ensure data security and execute payments. The ESB establishes standards for data exchange between government entities and interoperability between various channels. This enables services and service components to be shared which are saving development resources, enhancing interoperability and standardisation, and providing users with similar or identical service set-ups and use procedures, thereby increasing ease of use and time savings. Transactions can thus be completed centrally, regardless of service or channel. Strong leadership and project management are necessary, in this case provided by the Ministry of Information and Communication Technology, which also acquired the necessary domain competences (both technical, managerial, and developmental) to implement the e-government strategy.

Jordan: Mobile and SMS Gateways as examples of shared services and shared backbone networks

The Jordanian Mobile and SMS Gateway is part of the wider service offering including the e-government portal and the National Contact Centre, and is one of a number of channels utilising the Jordanian Enterprise Service Bus (ESB) linking the ICT systems of different government entities with each other in order to exchange information necessary to complete transactions centrally. The mobile and other channels also allow citizens to query, make suggestions, file complaints about government services, and make payments through the National Payment Gateway's e-payment transactions service. Given Jordan has a relatively low internet usage (41 per cent of the population in 2012), but high mobile penetration, offering mobile and SMS services is a way to reach many more users.

There are two different types of SMS services: 'pull' messages (querying and receiving a message back with the available service), and 'push' messages (SMS messages sent by the government to citizens without them being specifically requested, such as reminders, awareness campaigns, or the status of a transaction). At present, 35 mobile SMS services are available. Jordan categorises e-services into four main types: 1) vertical services, i.e. within one government entity, 2) cross-governmental service, i.e. linking one than one entity, 3) composite services, i.e. composed of components from other services, and 4) shared services, i.e. which are developed centrally for use by more than one government entity. The mobile gateway not only improves user access to government information and services, but also improves the tax and fee collection base for government through SMS reminder services.

Source: Synthesized by the Author

3.3.4. Overlay on retained legacy silo-systems in each entity

In Tunisia, each government entity is responsible for the development of its own information system which has resulted in heterogeneity in the technologies and platforms used. This is being tackled by adopting the service oriented architecture (SOA) approach which makes it possible to overcome these obstacles. Indeed, SOA enables cooperation between heterogeneous technology systems since it is independent of the platform and the implementation language. This also enables a new generation of public services based on SOA principles to be developed, and for services to be integrated on the basis of interoperability between the information systems of different entities.

Tunisia E-Administration

The Tunisian national strategy for the E-Administration was launched in 2008 as a collaborative strategy linking different ministries and other government entities. Interoperability is achieved through SOA as a software design and software architecture design pattern, based on distinct pieces of software providing application functionality as services to other applications. SOA is independent of any particular technology, service or vendor. A service is a self-contained unit of functionality, such as retrieving an online bank statement. Services can be combined with other software applications to provide the complete functionality of a large software application. SOA makes it easy for computers

connected over a network to cooperate. Every computer can run an arbitrary number of services, and each service is built using standards that ensure that the service can exchange information with any other service in the network without human interaction and without the need to make changes to the underlying technology itself. Efforts are directed to diffusing these common standards (systems and data) across all government entities, for example through pilot projects on e-civil status documents, and to introduce a common e-government terminology.

The overall aim is to reduce costs and improve the overall efficiency of public administration. Tunisian citizens and businesses also benefit from an enhanced range of integrated services, that also enhances engagement through common procedures and use set-ups. Another aim is to reduce the digital divide across the population through a network of cyber-cafes throughout the country.

Source: Synthesized by the Author; Website: www.pm.gov.tn

3.3.5. From scratch by abandoning legacy silo-systems in each entity

In a situation without base registries, lack of any technical, semantic and organisational interoperability, and few if any standards for coordinating and exchanging data between heterogeneous information systems and organisations, the exchange of data and integration of services become impossible. There needs to be widespread agreement on, and understanding of, what is being exchanged. Making ad-hoc agreements between organizations on a case-by-case data basis is not scalable and does not provide government-wide interoperability, nor the huge benefits this can bring. The Palestinian Zinnar solution has been to start from scratch with a new interoperability framework that can grow as it develops. Zinnar applies standards concerning processes, infrastructure and data structures and formats. Base registries can then evolve from developing the common interoperability framework with ontology and semantic standards, not initially consolidated in one particular organisation. This work creates standards that can eventually be used by all government entities for data exchange. The different entities need not change their internal workings and data organisation immediately, but are offered guidance on how to proceed when changes to systems and business processes are being implemented.

Palestine: Zinnar – The Palestinian Interoperability Portal

'Zinnar' is the Palestinian ontology interoperability framework project and portal, intending to facilitate data exchange between heterogeneous information systems in Palestine. The Palestine Authority finds itself in a challenging situation where citizen access to physical offices is often difficult. This is compounded by a tradition within government of no established business or organisational rules, no semantic or vocabulary standards, and no common data structure for exchanging data. The Palestinian government entities follow complex and often chaotic hierarchal organisational structures that result in processes resembling these structures. Their information systems are often thus closed, vertical, un-scalable and frequently proprietary-based, rendering the sharing of information within their internal structures very difficult, and sharing with other organisations virtually impossible. In addition, there has been no history of agreement between the different governmental institutions that own and operate the state registries and information systems.

Given this situation, the Palestinian solution has been to start from scratch with its 'Zinnar' initiative to tackle the issues of technical, semantic and organisational interoperability. Zinnar is a government-wide ontology system as a meaningful, simple, easy to use description of the concepts of the Palestinian government. Base registries can then be developed and then rolled out and expanded on a stepwise basis as new government entities are incorporated. A service repository for mapping the current state of government services and processes (the 'as-is' mapping) has been set-up that lays the foundation of how government can become more efficient and effective in future (the 'to-be' mapping). A database of State Databases has also been built to facilitate a comprehensive overview of Palestinian government and e-government in a non-intrusive manner to facilitate changes to each entity's internal workings and data organisation only when it is agreed to adopt the Zinnar framework. Through the Zinnar government ontology, the entities are offered high quality guidance on how to proceed when changes to systems and business processes are being implemented. One immediate result of the Zinnar project includes the establishment of an addressing and postal code system now being implemented by the Palestine Post.

Source: Synthesized by the Author;
Website: http://zinnar.pna.ps

3.3.6. Public-private-partnerships across multiple entities

The Saudi Arabian SADAD initiative is an example of a mandatory, top-down, centralised and uniform public-private partnership between banks and the government, based on a single interoperability framework

and agreed standards, for all types of financial transactions crossing both the public and private sectors. By providing a shared national payment infrastructure, SADAD offers standard central banking clearing-house facilities and the involved banks are guaranteed their payment, thereby building trust in the system. SADAD serves all of Saudi Arabian society, not just major companies, and as such helps to boost the Saudi Arabian digital society. The end customer does not need to be concerned with suppliers' banking arrangements as SADAD automatically ensures clearing of the bill and payment, and does not need to waste time queuing to pay bills and they can choose any channel, both physical or electronic, for payment in real time, and this also helps migrate users to e-services.

Saudi Arabia: SADAD - Bill Payment and Revenue Collection

The SADAD Payment System (SADAD) is the national electronic bill presentment and payment (EBPP) system in the Kingdom of Saudi Arabia. EBPP is the process by which companies send their bills to customers and receive payments electronically. The core mandate of SADAD is to facilitate and streamline the bill payment transactions of end consumers through all channels by developing private and governmental payment methods. SADAD is now facilitating the payment of high volume periodic and repetitive bills (e.g. utility bills and phone bills), as well as customer initiated payments such as traffic fines. All banks must accept bill payments at their branches whether the person paying has an account at the bank or not.

The SADAD system allows suppliers of goods or services from both the public and private sectors to send their invoices through the banking channels so that customers can pay electronically in real time. All kinds of services can join SADAD, including government, telecommunications, educational, transportation and financial. Before SADAD was introduced, bill payments were very expensive both for the banks and customers, but by making SADAD mandatory for all banks to facilitate payment in real time, SADAD has cut out delays and saved money, both of which help customers and supports the Saudi Arabian economy and digital economy.

SADAD is an example of how a private and governmental payment standard is combined and made interoperable through accounts held at the Saudi Arabian Monetary Agency (SAMA) acting as a transaction clearinghouse. SADAD saves the Saudi population from wasting time queuing to pay bills, and by migrating customers from physical to electronic channels, there are time and efficiency gains to all of the economy. Customers, whether citizens or businesses when presenting an invoice can obtain a precise overview of what is to be paid to the government or other supplier and when. As SADAD offers standard central banking clearing house facilities, the involved banks are guaranteed their payment and this enables trust in the system.

Source: Synthesized by the Author;

3.3.7. Summary of how interoperability and standardisation are implemented

The Table 4 below provides an overview of examples of how interoperability and standardisation are implemented in the eight Arab case studies, complemented by information from the eleven Arab country questionnaires where relevant, and compared with good practices from global leaders. (See also section 4.3.1.)

Table 4: Examples of how interoperability and standardisation are implemented in the Arab region compared with global good practices

Implementation	Arab country examples[37]	Global good practices[38]
1) Initiation and testing in one entity; rolling out stepwise to other entities	• Morocco: initiated by Interior Ministry building civil base registries, and then rolled out to e.g. Finance Ministry • Oman: initiated by Directorate General of Civil Status (part of the Royal Oman Police) building civil base registries, and being rolled out to the police system and to 7 other entities. • Lebanon: initiated and piloted by Public Health, Education and Higher Education Ministries, and Health Ministry is building base registry for Public Health Funds, Social Security Fund and others	Republic of Korea: built the Social Security Information System step-by-step from 2009 to 2013 across 292 systems in 17 ministries.
2) Supporting multi-channel front-office one-stop-shops for multiple entities	• Egypt: Local GAFI OSS buildings around the country for services for businesses over digital and physical channels, mediated by one civil servant with access to on-site representatives of other relevant entities, and building up a knowledge community amongst civil servants both on site and across entities. • United Arab Emirates: Abu Dhabi (Emirate level) Government Contact Centre for all citizen services from more than 50 entities over digital and physical channels, and building up a cross-entity knowledge community amongst civil servants coordinated by a customer relationship management team.	Australia: *MyGov* website is an inclusive OSS for easy and fast access to a variety of e-services from different agencies.
3) Shared infrastructures across multiple entities	• Bahrain: shared National Gateway Infrastructure using Enterprise Service Bus (ESB) for all e-services, plus Service Oriented Architecture (SOA) for integrating service components and enabling their reuse (as in Tunisia). • Jordan: shared Enterprise Service Bus (ESB) to support all e-services, including Mobile and SMS Gateways, on the e-government portal and the National Contact Centre. • Sudan: National Contact Centre is identifying criteria for information exchange to upgrade the national network of information linking all federal ministries, regional governments, others entities, universities and hospitals.	France: based on two main projects on interoperability: the Interoperability Framework (RGI) and the definition of common data models, both complying with the main standards and specifications of the European EIF.
4) Overlay on retained legacy silo-systems in each entity	Tunisia: Service Oriented Architecture (SOA) for integrating heterogeneous technology systems (such as services, software design and architecture design components), without the need to change these legacy silo-systems.	The Netherlands: the Ministry of Justice has adopted SOA to cope with legacy systems.
5) From scratch by abandoning legacy silo-systems in each entity	Palestine: new interoperability framework introduced stepwise to each entity, which then abandons its existing technology legacy systems and ways of working when changes are implemented.	Denmark: in 2000 set-up government-wide interoperability framework, to replace all legacy systems.
6) Public-private-partnerships across multiple entities	Saudi Arabia: mandatory national uniform (SADAD) system for all electronic monetary transactions, developed by12 banks and the government via the Monetary Agency, for use by all citizens, businesses and other organization.	Singapore: partners with private sector and citizens for the National Environment Agency service.

Source: Synthesized by the Author from 8 Arab case studies, 11 Arab country questionnaires and global good practices.

[37] Note: Some of the implementation approaches characterised in this table can be similar or complementary to each other. They are derived from what the named countries are doing according to the information obtained by this study. This table does not claim to summarise a given country's overall approach, and there may be other approaches used by each country that are not mentioned here. Information from the Syrian and the Yemeni country questionnaires is insufficient to determine how interoperability and standardisation are being implemented, although both state they are developing a national government information system and network.

[38] See section 2.2.

4. Important issues for e-government service integration in the Arab Region

4.1. Headline global e-government lessons relevant for the Arab Region

A number of headline lessons concerning e-government can be derived from global experience, summarised in section 2 with selected good practices and lessons from global leaders. The following general strategic approach provides most success. Although the 3 stages are presented sequentially because the focus shifts from 1 to 2 and then to 3, they need to be envisioned and designed together to ensure they are fully integrated and part of a synergistic whole (this is presented in greater detail in section 5):

1. **Back-office integration of services**
   Establish the basic e-government building blocks and frameworks for the integration of services:
   - The fundament is to provide basic ICT infrastructures, and given that much of this is still being built in the Arab region, it is imperative to employ an integrated long-term strategy, incorporating common interoperability and standards, even if implementation is undertaken on a stepwise basis from one government entity to the next.
   - In building service integration from a low base, as is the case in many Arab countries, there is often an opportunity to leapfrog and learn directly from global experience, including from some GCC countries which have become global leaders in the last five years.
   - Alongside the back-office building blocks, there is a need to focus strongly on basic education and e-skills both within the public sector and in wider society, as well as to provide good information about government and public services.

2. **Front-office integration of services**
   Once the building blocks are starting to become well established, this enables the integration of services in the front-office:
   - ensuring a collaborative and whole-of-government approach, which both saves resources in the medium term through sharing and cutting out duplication and waste
   - it also makes it possible to develop high quality integrated and multi-channel services which users need.

3. **Impact on development and governance**
   Once the building blocks and integrated services are becoming established, the focus can to shift to:
   - monitoring and evaluating impacts to ensure government services, and e-government services specifically, as well as overall public governance, are directly contributing to the economy and social development
   - ensuring that the service integration strategy maintain strong linkages to, and embedding within, the country's overall policy goals and development strategies.

Stages 1 to 3 are, of course, part of a circular and iterative process, constantly adapting to the country's needs, aspirations, and context.

This chapter draws on the global experience and good practices in section 2, and the sources and case studies of e-government service integration in the Arab Region in section 3, from which country examples are drawn. It is also informed by the country questionnaires. The analytical framework presented in Annex 1 is used to structure the chapter.

4.2. Important e-government issues for the integration of services in the Arab Region

This sub-section summarizes the important e-government issues and main challenges involved in providing a framework for the integration of services to be successfully implemented in the Arab Region.

4.2.1. E-government strategy and implementation

a) Polices, strategies and plans for implementing integrated services

Most Arab countries surveyed have some sort of E-Government strategy or action plan, and some also a broader national technology/ICT strategy. A small number of countries, mainly in the GCC, have well developed e-government visions, policies and plans and are well advanced in rolling them out. These typically include relatively advanced common interoperability, standards and architecture frameworks, as well as the necessary legal and regulatory arrangements. They have adjusted their organizational, human resource, management and work/business processes accordingly, and a few also deploy good monitoring and evaluation systems. In addition, the most advanced countries recognize the importance of trying to change mindsets and improve staff competencies, improve leadership and introduce innovation as a basic way of working. Singapore's "eGov2015 Masterplan (2011-2015)", the Netherland's "Compact Government" and Taiwan's "E-Housekeeper" strategies, have all been very successful in advancing e-government and service integration (see section 2.2).

A few GCC and other Arab countries have made very significant progress in the last few years in developing and implementing successful e-government strategies. Most other Arab countries are, however, still relatively early in their e-government development, some with relevant policies and plans that are only starting to be implemented, but others are still at the initial stage of developing suitable strategies. In these countries, the legal, organizational, management and resource availability challenges have yet to be fully addressed. All countries do, however, have at least piecemeal projects and services, some of which are of high quality and already achieving good impact, for example as in Tunisia (see section 3.3.4).

b) Mandate and political backing

The need for strong mandate and political will from the top is critical. Denmark's successful e-government strategy, "Digital Way to Future Welfare", is implemented through the cross-entity Digital Agency located in the Finance Ministry and is legally mandated by political consensus in parliament (see section 2.2). The United Arab Emirates Government Contact Centre case study highlights the importance of a strong political mandate as an enabler for breaking down government silos and facilitating cooperation between government entities. Political will coupled with a very high ambition about excelling and creating 'world-class' services gave the United Arab Emirates case a very strong mandate, without which government entities would have been much more reluctant to get on-board. The high ambitions also ensured the willingness to add new channels and solutions such as the e-participation platform. Egypt's GAFI one-stop-shop for businesses case study is a good Arab country example where a strong political mandate from the top has been both necessary and successful (see section 3.3).

c) Dedicated national authority, governance structure plus legal, regulatory and financial provisions

A dedicated national authority and related governance structures and arrangements taking the lead in e-service development and integration are highly recommended, including appropriate legal, regulatory and financial provisions. This provides national leadership and national initiatives. In France, the responsible national authority for steering e-government policy, as part of the Digital France 2012 plan, is the Ministry for the Budget, Public Accounts and Civil Service, and shares this remit with the Secretary of State for the Development of the Digital Economy and the Council for the Modernisation of Public Policies (see section 2.2). In the Jordan mobile and SMS gateway case study, strong leadership and project management are provided by the Ministry of Information and Communication Technology, which also acquired the necessary domain competences technically and managerially, to implement the e-government strategy. Tunisia's "Developing an e-Administration" case study is mandated and steered by the E-Government Division in the Cabinet, which is responsible for the follow up of e-government programmes as well as for the operational structures for implementation which will then be submitted to decision makers as guidelines (see section 3.3).

d) Organizational and process change

Careful long-term organizational changes in the administrative structure and in processes that involve staff are also essential. Part of this strategy needs to be countering resistance to change and addressing cultural issues in order to breakdown the silo mentality and drive cooperation across entities. Ensuring buy-in from management across all entities, especially regarding sharing data and other resources regardless of 'ownership', is important. In Denmark, all e-government projects are subject to a 'business case' test in which organizational and process changes need to be specified and approved in advance, together with the financial and other costs and benefits, before the project can be implemented (see section 2.2). The Morocco Government Gateway case study exemplifies the difficulty in doing this due to the need for horizontal co-ordination among ministries and other government offices, compared to providing new e-services within a single organization which has been the norm. The comparative ease of designing technical solutions for entity-specific applications explains part of this preference, but the difficulty of circumventing inter-entity politics, budget complications, and precedents are also major factors. Egypt's GAFI one-stop-shop for businesses case (see section 3.3) shows one way changing the mindset of government officials by, for example, hiring new personnel for the front office, 2) letting experienced staff with knowhow about bureaucracy, legal requirements and procedures handle the back-office, and 3) providing an incentive for staff in the form of increased salary (but also an increase in working hours).

e) **Skilled and motivated government personnel**

Skilled and motivated government personnel, with ICT and other training continuously provided, are the key to successful change. One of the biggest challenges to improving and innovating public and e-government services is legacy ways of working and of administrative cultures, and the often embedded resistance to change. The entrenchment of a 'risk adverse culture' and 'business as usual procedures' in public sector organizations remains strong at all levels, creating an inherent obstacle to the introduction of new processes, products, services and methods that ICT can enable. The importance of empowering civil servants, managers and policy makers, as well as changing organizational structures and processes, cannot therefore be underestimated.

Apart from providing appropriate tools and training for civil servants, leadership from both the top and the middle of government organizations is critical to ensure that services evolve at the right speed. Rather than attempting to keep pace with technological change (which is impossible given the current pace of ICT innovation), government leaders should promote the principles of open innovation amongst civil servants, ensuring a cultural mindset that is flexible, adaptable and responsive to user feedback. Applications and processes are needed which enable civil servants, many of whom are frontline professionals and decision-makers, to themselves participate in ensuring government is open and engaging, and that services are being used appropriately and having the desired impacts. Many civil servants see the real time performance and impact of public services and policies on citizens, and would be able to generate appropriate data and other inputs which could improve live service experience if they were given the data, tools and incentives to do so.

In the United Kingdom, staff and management competencies are a high priority, so that high quality project management skills and good communications are seen as essential, and that problems are identified early when they can be more easily solved. This includes reducing resistance to change and providing for training (see section 2.2). The United Arab Emirates Government Contact Centre case study sees intensive training of personnel and change management within government as a prerequisite for a whole-of government approach (see section 3.3).

f) **Project management and governance**

Good project management and governance for designing and rolling out e-government initiatives is important. Most advanced e-government countries have developed professional project management tools to improve the chances of success and to avoid costly and damaging failures of IT projects in government. For example in Australia, the Tasmanian Government has developed a project management framework comprising guidelines and supporting resources, developed in collaboration with practising project managers (see section 2.2). Tunisia evaluates government projects by examining the achievement of objectives,

policies and programmes. Furthermore, progress, respecting deadlines and the achievement of set objectives are also being evaluated during the implementation of the project (see section 3.3).

Experimentation is also useful to find out what works and what does not, as long as this takes place on a small enough scale so that, if it fails, no severe damage is done. The Omani National Registration System case study, having early established the citizen card as a smart card, has enabled the Omani government to experiment with various e-enabled solutions such as the ePurse, eVoting, eGate, etc. Experiments and initiatives preparing and educating the population on the transformation to a more digitally enabled society have been very useful (see section 3.3).

4.2.2. E-government context

It is imperative to take account of the context of geographical, demographic, economic, social and cultural conditions as well as the political situation in the country, and to ensure that e-government strategies are embedded in other (national) economic and social policies. Part of this is the obligation to provide integrated services to the whole population. Political stability is of course also necessary for such long-term thinking, and cooperation with, and learning from, leading e-government countries can also be a strong advantage. For example, Sri Lanka has adopted its "One for All" strategy since the civil war as part of reconciliation policies reaching out to all demographic groups as well as poor people who are likely only to have access to mobile phones (see section 2.2). The Morocco Government Gateway case study shows that, while many different motives have driven e-government adoption, the common denominators are the perceived needs to improve public service quality, to strengthen administrative control, and to join the international mainstream. Availability of financial assistance from international partners has also been a factor, but, overall, longstanding governance goals, including a desire to strengthen political and economic stability and growth, have encouraged governments to adopt e-government programmes (see section 3.3).

4.2.3. E-government impact

If e-government is implemented well (for example as outlined in section 4.2.1 and taking account of the context as in section 4.2.2), the overall impacts of e-government and service integration can be substantial, for government, the user and for society as a whole. Impacts are conceptualized as providing efficiencies for government, effectiveness for users, and governance benefits for society as a whole. They are also identified as either short- or long-term. On this basis, the benefits of integrated service delivery derived both from global experience, and as reported by Arab countries participating in this study's country survey, are as follows.

a) **Efficiencies for government, short-term**

Savings for government can accrue relatively quickly when there is no need to keep paper copies of every transaction. Time can also be saved, and the duplication of information and data can be avoided, whilst processes and procedures can be simplified and shortened. Data can be re-used and shared for future solutions, and the benefits of 'walk-in light' can be achieved when only new data needs to be entered. The provision of real time data reduces errors, especially when data ownership is clear and is allocated to the entity where it was created, modified and/or distributed. Agreeing a system of data semantics, so that all entities and users deploy the same terms and definitions, is essential. Efficiencies can also be obtained by deploying the service oriented architecture (SOA) approach whereby existing legacy technology and processes can continue to be used, thereby short-circuiting the need to standardise technology in the short-term. This adds flexibility that speeds change and provides greater control over the use of important resources.

b) **Efficiencies for government, long-term**

Longer-term government savings result from reduced implementation costs and other efficiencies designed to do 'more with less'. Governments can, for example, compare the cost of providing services via service centres versus electronically, thereby selecting the best solutions and leading to an overall reduction in government expenditure. Also, over the longer-term, building up data resources can improve data integrity,

as well as reduce errors, mistakes, corruption and fraud inside government, given that ownership of and responsibility for the data is transparent. This also implies that governments are changing from being purely collectors of data/information to users, analysts and exploiters of data. In terms of organisational efficiencies, back-office structures, procedures and competences can be reorganised to reflect user needs rather than the governments' bureaucratic makeup. This also leads to better organization and integration between government organizations themselves as well as with non-governmental entities. Monitoring the performance of government can also be enhanced, leading to reductions in bureaucracy and corruption. Predictive and intelligent tools can be used to analyse user data as 'big data', for example by improving policy, upgrading services, and making better use of human and other resources. Data security and personal data protection, either through legal or other means, are also necessary to avoid data misuse and corruption.

c) **Effectiveness for users, short-term**

Many of the short-term benefits for users of e-government and service integration are achieved through ensuring increased user awareness of e-services, and providing better access to services because of the additional digital service channels available which also typically reduce the cost of access. User data protection and privacy are necessary to ensure that only the data actually needed by government is available to it. Well-designed and integrated services available 24-7 can reduce the costs and make savings for users in terms of time, transport and convenience. Duplicated, cumbersome and repetitive documentation and other procedures can be avoided. Overall, the administrative burden on users can be reduced, for example by reducing the frequency and complexity of reporting.

E-government and service integration can also lead to better quality services which are more accessible, simpler, faster, easier to use and provide greater service impact and support for the everyday lives of citizens and businesses. Service choice from different entities and levels is also enhanced, and the possibility of service self-design, for example using web 2.0 and open government data, enables fully personalized, and thereby higher impact, services. Greater clarity and clearer standardized instructions can be offered to users, leading to improved transparency and greater trust in data and procedures. Back-office re-organization and business process re-engineering mean citizens do not have to go to each and every office to collect documents and signatures, so there can be less (unnecessary) interaction with the citizen (i.e. reductions in unnecessary contact).

d) **Effectiveness for users, longer term**

Longer-term benefits for users include a consistent customer experience when interacting with the government as a whole. This leads to greater satisfaction through better quality services and reduced waiting times and burdens, so that users will increasingly make e-services their first choice, which in turn also results in the growing usage of e-services. This can start a virtuous circle of improvement as greater use of e-government leads to greater savings for government and thus better services overall. Improvements to government-user relations, and moves towards joined-up collaborative government as a whole, can also be achieved, again leading to improved user interaction. In turn, this increases trust of government by users, and trust of users by government. Two new generic types of services can be developed in this context. First, push services when governments provide personalised services to customers proactively drawing on their knowledge of the user and his/her needs, and, second, services personalised by users themselves from service components and data made available by government, together with appropriate supports and incentives. Both can lead to an improved quality of life for users and communities.

e) **Governance, short-term**

The overall governance of society can be improved by exploiting e-government and service integration. The governance of the government organisation itself can be enhanced through better leadership, management, skills and training enabled by back-office services and data, leading to new and innovative ways of working, as well as flatter and more innovative organisations. This leads to benefits both to individual entities and to the whole of government. Participating entities are able to forge better relations with each other and obtain an holistic view of the situation across government and the country. The transparency of government can be

increased, as well as improved decision-making because of the availability of better information for better tactical decisions, and more engagement with other actors.

f) **Governance, longer term**

Longer-term enhancements to governance can be seen in better strategic decision-making, and in improved policy-making and policy outcomes, leading to greater impacts and eventually an improved economy and society. ICT can increase participation and accountability based on simplicity, more information and data, openness and increased transparency, resulting in greater trust and reductions in corruption. More engagement of citizens and businesses in government itself and in society can also be supported, moving towards the transformation to a knowledge society, with increased prosperity and welfare.

4.3. Important service integration issues for the Arab Region

4.3.1. Back-office integration of services

a) **Interoperability, integration standards, national base registries**

Interoperability is a key principle to enable smooth interaction among governments at central, regional and/or local level, as well as with businesses and citizens, thereby effectively exploiting the potential of ICT in e-services. A strong commonly agreed interoperability framework also enables the business and civil sectors to interconnect thereby facilitating organizations to cooperate. An interoperability framework has to ensure that principles of interaction are put in place at all four levels of interoperability, i.e. legal, organizational, semantic and technical, within a particular political context (see for example the European Interoperability Framework, EIF[39]). The interoperability framework is a crucial guiding frame for other priority themes such as basic infrastructure, security, e-services provision, e-participation and related topics in the overall strategy. Such a framework has to accommodate both guidelines for how to agree and work together, and the development and use of standards as means to enable interoperability.

Interoperability, integration standards, and national base registries are the important core features. Global experience shows that interoperability based on agreed standards, models and specifications is a very important basis for joining-up the back-offices of government entities. A clear but comprehensive framework is required which all entities and cooperating organizations need to comply with and actively support, covering all layers of interoperability. The French example (see section 2.2.1) illustrates the benefits of adhering to international standards, in this case the European EIF[40], which is a good example of attempts to develop international technical standards for e-government. Borras (2004) has documented the main issues for such technical standards based on work undertaken by OASIS (the Organization for the Advancement of Structured Information Standards),[41] a non-profit consortium that drives the development, convergence and adoption of open standards for the global information society, and which collaborates with various international bodies such as the European Commission and the United Nations. OASIS promotes industry consensus and produces worldwide open standards for security, Internet of Things, cloud computing, energy, content technologies, emergency management, and many other areas. (For specific approaches to developing and implementing interoperability and standards in the Arab Region, and which are also inspired by global good practices, see section 3.3.)

Another important factor in joining-up the back-offices of government entities and being able to offer targeted, personalized and simple integrated services to users, is to build base registries and exchange data across government rather than holding separate data bases. In the Netherlands case, this is mandated by enforcing the 'once-only' principle that users should be required to input base data about themselves and their situation only once to any part of government, and then expect that it can be easily accessed by any other part for any other legitimate purpose, as long as agreed data protection principles are adhered to (see section 2.2). In Bahrain, the National Enterprise Architecture Framework ensures that all ministries integrate

[39] European Commission, 2010b
[40] Ibid.
[41] https://www.oasis-open.org

with other entities and that integration standards are used to develop new applications and solutions. The Approach taken is 1) build solutions that are in compliance with the standards and guidelines; 2) integrate with the required data sources; 3) operate, roll out the business and run the solution; and 4) refine and establish integrations for better business functioning. The Zinnar Interoperability Framework in Palestine is a good example of a simple, very straightforward and easy to use framework which is able to overcome the obstacles of semantic and organisational interoperability caused by lack of standards and coordination between heterogeneous information systems and organisations (see section 3.3). The Omani National Registration System case study shows the successful use of base registries, and is an example of how to implement a mandatory authoritative civil registry for the benefit of the whole country (see section 3.3).

b) **National government networks and systems**

The availability of national government networks and automated common national business and other systems illustrates how ICT expenditure in the medium-term can be dramatically reduced and resources shared and reused and thus better exploited, for example in the "Reducing Administrative Burden" policy of the Netherlands. This example also shows how greater flexibility in extending and developing new service innovations based on the modular building block approach can be undertaken, as well as the ability to respond to new challenges, such as through the Netherlands' facility management systems using cloud solutions (see section 2.2). Underpinning much good practice is how data exchange standards and the cross-government base registries are essential building blocks for the future. This approach itself is also useful to disseminate good practice and easily link to other entities, and shows how this promotes transparency and thus neutrality.

It is important to develop a good ICT infrastructure across the whole country, including in rural and remote areas. Some Arab examples emphasise these issues, such as the Jordan mobile and SMS gateway which demonstrates how shared services with a common underlying infrastructure, like the Secure Government Network and the Enterprise Service Bus (ESB), are essential for offering shared and integrated services. The Saudi Arabia SADAD nationwide bill payment and revenue collection system can regulate and simplify the process of payment and collection of public funds. By providing a shared national payment infrastructure, SADAD ensures that duplicate investments in non-standard multiple interfaces and infrastructures can be avoided. Also, as exemplified by the United Arab Emirates Government Contact Centre, the use of a central government contact point enables scaling of service volume and serving customers in multiple languages to become much easier. However, Morocco, Oman and the Lebanon have taken a different approach by first establishing and testing an interoperability and standardisation system in one entity and then rolling it out in stepwise manner to other entities (see section 3.).

c) Linking between agencies and levels

Global experience shows that integration in the back-office can take place between different government agencies as part of a joined-up and whole-of-government initiative that attempts to present just one face to users. The South Korean example shows the benefits of a phased approach starting in the main ministry but then rapidly integrating its back office systems with other ministries in close cooperation on common processes and standards. Finally the system was extended as a complete pan-government operation. The United Kingdom case complements this by demonstrating how a non-government actor (in this case a civil society organization) may be better placed as a 'neutral' party to negotiate and implement complex interlinking across government entities and their often dramatically different organizational, semantic and technical systems. This approach can also be used to open up to users and encourage them to add content and participate in debates about the issues important to them. The example of Denmark, despite being a relatively small country, shows that its three levels of government which are individually tailored to be appropriate to the functions that need to be carried out, is able at the same time to draw on common systems and syndicated content to save resources and to ensure uniformity where relevant. These European countries are also aligned with the EIF, which thereby enables the development of cross-border services like health. (See section 2.2.)

Arab examples of interoperability between agencies and levels include Egypt's GAFI one-stop-shop for businesses that involves establishing a single 'window' to government services linking across different

entities and providers, thereby forcing them to rethink and reorganize internal processes and procedures if it is to succeed. Morocco's experiences, including with its Government Gateway, show how government services can be effectively delivered at the municipal level and provide both a pilot and an opportunity to test systems and gauge public response in advance of broader roll-out. Oman's National Registration System case study using base registries demonstrates how essential is the willingness of government entities at different levels to integrate and link systems electronically. If only some entities participate, the full benefits will not be reaped (see section 3.3).

4.3.2. Front-office integration of services

a) Front-office service delivery integration

Most Arab countries surveyed demonstrate examples of some types of service integration, whilst those in the GGC typically show examples of all types and at relatively advanced levels. The main types of service bundling are around service functions, user characteristics, user involvement and multi-channel. Service types themselves can relate to G2G back-office services between government entities; G2C services within specific entities, for example related to students or foreigners needing visa and residence permits; and G2B services such as tax, starting a business, trade and customs.

A number of Arab countries (mainly but not only in the GCC) also:

- offer multi-channel services, both web, mobile, kiosks, call centres, and face-to-face, but rarely where these are fully integrated.
- enable users to personalize their service interface, and/or have localized services related to the capital city or other large cities.
- develop and deliver services provided by a number of different actors including some outside government.
- have implemented interoperability strategies, common standards, and government-internal communication backbones, or are planning these, plus the shared data bases and data exchange standards required; several already employ eID and ePayment services for users.

The only known cross-border service in the Arab Region is between GCC countries for the payment of traffic fines incurred outside the perpetrator's country of residence, but no details regarding this service have been found.

b) Integration around service functions

Integrating the delivery of services in the front-office has a number of important dimensions. First, bundling services around specific service functions or around user life events. These approaches are illustrated by Australia's MyGov website as a one-stop portal for all government services in relation, for example, to healthcare, children's affairs and disability services. Another dimension is exemplified by Spain's life-event approach which is basically the same but in this case the service components are seamlessly bundled around specific user life events, such as studying at university, managing a business or driving a car. The Spanish systems, as most leading e-government countries, also use multiple channels to deliver their services. (See section 2.2).

c) Integration around user characteristics

User characteristics depend on the demography of service users (for example, age and gender), as well as factors like education, income, occupation and location. Combinations of these characteristics can determine the need for specific types of service tailored to a particular group's needs. The United States illustrates the bundling of service components around 'personas', i.e. specific user characteristics, such as seniors, caregivers, Federal employees, workers, job seekers and home-owners. The USA Federal portal also integrates many 'portlets' with 'doors' direct into other major service bundling sectors such as business services. (See section 2.2.)

d) **Integration through user involvement**

Enabling users to bundle and personalize their own array of services and service components is also a major trend amongst global e-government leaders. Taiwan, using systems named 'e-Housekeeper' and 'Life Dashboard', has gone further than most using a basically very simple but powerful approach which invites users to select their own components and then to receive a variety of 'push' services. Another example of user involvement is using open government data to develop new content, apps and service components, as illustrated by Singapore's environmental agency. In both the Taiwan and especially the Singapore examples, users start to become important, if not equal, partners with government in developing useful services and other value added components. (See section 2.2.)

e) **Channel integration**

As mentioned, many countries are now experimenting with and offering integrated multi-channel services, and Sri Lanka provides a good example based on the need to reach the whole population many of who do not have advanced or even basic access to ICT. It covers the web, mobile, call centres, face-to-face and so-called digital intermediary services in which a civil servant or other trusted person uses digital services on behalf of the user. (See section 2.2.) Although the Arab Region has yet to significantly exploit the potential of multichannel integration, many good examples already exist. The Jordan mobile and SMS gateway services offer a good alternative where internet access is low, but mobile penetration is high. The Palestine Zinnar Interoperability Portal project shows that, as the population of Palestine often has difficulties accessing physical government offices, m-government is already providing a practical alternative. The diverse channels of the Saudi Arabia SADAD initiative enable customers to pay electronically in real time, even if they don't have a bank account themselves. The multi-channel branding of Abu Dhabi government as "One Government, One Number" eases life for citizens, residents and visitors through the United Arab Emirates Government Contact Centre. Egypt's GAFI one-stop-shop for businesses case study integrates digital with over-the-counter services and ensures that the logical layout of the physical building visualizes for everyone the steps and procedures involved (see section 3.3).

f) **Locational integration**

A final type of service delivery is integration around a specific geographic space or locality, normally cities though often also neighbourhoods, towns and villages. Such service integration tailors itself to specific spatial circumstances and needs, and most successful examples are in major cities, especially those with so-called 'smart city' strategies. For example, Chicago in the USA also illustrates the power of local open government data for local citizens, businesses and other organizations to develop their own services, apps and content. (See section 2.2.)

5. Recommendations for a strategic framework and guidelines for e-government service integration in the Arab Region

The main purpose of this study is to propose a strategic framework and guidelines for the delivery of integrated e-government services that focus on citizen needs in the Arab region. The importance of interoperability and use of standards to guarantee the integration of services at local, national and regional levels is also demonstrated. Other means of service delivery such as face-to-face are also included as well as mechanisms for interaction between the various means of service delivery. The structure of these recommendations in the following sub-sections is as follows:

4. Guidelines for e-government as a platform for service integration: outlines the principles of e-government strategy and implementation suitable for the Arab Region
5. Strategic framework for service integration: provides guidelines on the overarching strategic approach for e-government service integration in the Arab Region
6. Proposals for collaboration and sharing to support service integration: presents recommendations to maximize collaboration and sharing in e-government across the Arab Region.

5.1. Guidelines for e-government as a platform for service integration

This sub-section outlines guidelines for the e-government strategy and implementation issues needed to build the framework for service integration presented in section 5.2 below. For fuller details, with plus both global and Arab experience and examples, from which these guidelines are drawn, see section 4.2.

5.1.1. Policy and strategic framework

A long-term and politically stable policy framework for developing e-government is needed which provides sufficient resources, as well as political will and support. It is very important to get clear high level political buy-in, and this is achieved by making a strong case which also emphasizes forward-looking strategic benefits. Focus should be placed on a long-term integrated policy framework from the beginning that foresees all main stages (though not the detail), but is also flexible to take account of changing opportunities and threats. The policy framework should also link with other international, national and local policies as appropriate, and ensure that e-government is embedded in wider public service policies as part of the wider information society and socio-economic development agenda.

The policy framework enables a long-term strategic plan to be developed together with institutional and legal backing to actively support a realistic, ambitious but also flexible e-government strategy for collaboration across entities. This collaboration is necessary to enhance the overall efficiency and effectiveness of public administrations and to lay the groundwork for integrated services. At Arab Regional level, collaboration is also highly desirable to increase learning and shared development between countries, and some proposals to support this are provided in section 5.3 below.

This study has also shown that there is a strong positive relationship between income and e-government development in the Arab region, and this reflects the situation in the rest of the world. However, there are important exceptions, for example as shown by Morocco, Tunisia and to some extent Egypt, which show that, despite poor access to financial and other resources, exceptional progress can be made and real benefits realized. (See section 3.2.)

There are three other important requirements of the strategy. First, the need for change management initiatives to counteract resistance to positive change, including project planning and management and the development of both financial and social business case approaches. Second, and related to this, is the training and support needed to develop professional and highly competent staff able to collaborate and commit to the strategies and plans for e-government, service development and public sector change and innovation. Training a cadre of top and middle-level leaders, who understand the needed changes, the opportunities and challenges, and who possess good leadership skills, is of the utmost importance. Third, gearing e-government development to directly contribute to addressing the societal challenges resulting from the

economic and social crisis as well as particular regional and national challenges, specifically in relation to cutting government costs whilst also improving services, and addressing in particular unemployment (especially amongst the youth), lack of growth, social cohesion and the digital divide.

5.1.2. Governance of the e-government strategy and its implementation

Global good practice shows that e-government policy and strategy needs to be coordinated and/or enforced at the very top level politically (prime minister's or president's office), or through a powerful cross agency task force in this office, or for example located in a key ministry like the Finance Ministry. There is a need for clear role and authority demarcations between entities, including the balance between centralization and de-centralization, especially concerning responsibility and accountability. Where there are decentralized entities involved in the strategy, these should be coordinated and supported by the agency. Governance also implies clearly and transparently defined roles and responsibilities of all entities, as well as non-government actors where relevant. Financial sustainability is important, for example governing the sources and modalities of the long-term finance and support needed so this can survive changes of government through wide backing across the political and power-base spectrum. Without this, the value and benefits of early investment will not be maximised and possibly even wasted.

5.1.3. Legal and regulatory basis for e-government implementation

E-government requires an intelligent and ICT-aware, forward looking legal basis, for example which underpins the necessary technical building blocks to be shared across government, particularly standardisation, interoperability, data exchange, base registries, e-ID, e-authentication and data protection. Legislation and regulation should also ensure as much transparency as possible, for example with clear demarcation of responsibility as well as clear lines of accountability. It is also important to get the legal relationships right with vendors and other non-public actors, for example when outsourcing or co-creating services. Regulation should be 'permissive', i.e. clearly articulate the required outcomes, but make it possible for the initiatives designed for achieving those outcomes to be open to innovation which increases efficiency and effectiveness, whilst ensuring that they uphold ethical and other legal standards and do not work counter to other policies. In this context, the legal distinctions between legal enablement (i.e. entities and other actors are legally but not obliged able to do something) and legal obligation (i.e. they must do something) are important when implementing interoperability and standards initiatives and building base registries over the life of an action plan.

5.1.4. Action plans

Based on the strategic framework and the governance and legal parameters, detailed action plans for implementation are drawn up, normally in phases of 1-2 years. Each action needs to be subject to a balanced assessment based on its specific objectives, relationship to and synergies with other actions, feasibility, cost, time required, expertise and other resources needed, management and reporting. Some actions, or indeed major parts of the strategy, may also require partners from outside government, including sponsors, donors and other financial resources, as well as specific political support.

5.1.5. Quick wins

Quick wins need to be undertaken with care so as not to impede longer term goals, but can be extremely important for demonstrating the potential of the strategy at an early stage of what is typically a long and difficult process, and thereby to ensure buy-in and ownership from decision-makers, managers as well as civil service staff. The precise nature of quick wins depends on the specific strategy and action plan, but these can often be identified by analysing, for example, where and how current services are used, the number of steps, time taken, whether fulfilled or not, and the overall process, in order to identify which can be rapidly changed to produce quick results and which require longer term work. It is also worthwhile examining all relevant legal and regulatory issues to distinguish those which can be rapidly changed to produce quick results from those which require longer term work. In the absence of legally enforced full compliance across all relevant entities, it can be beneficial to start only with 'the willing' entities, build on those and then show the benefits to others. Analytical tools should be used by government to spot unusual

patterns in data, as well as to predict what the next monitoring report should show and to raise an alert if there is a wide deviation.

5.1.6. Monitoring e-government progress and cost of implementation

On-going monitoring of the implementation of the e-government strategy and action plans is necessary to assess and quantify that plans are on time, on target and making good use of the resources allocated. It is advisable to use standardized approaches to monitoring, evaluating and analyzing progress and outcomes, including for example recognized project management tools, Key Performance Indicators (KPIs) and/or balanced score-card approaches. Specific studies on costs, benefits and other impacts, and to compare these with relevant international studies to learn from good practice, can be useful. However, comparisons between entities are not always easy given that processes, outputs and outcomes vary and are often not transparent.

Every project should, in principle, have a solid business case before starting (based on business case analysis), which can demonstrate the outcomes once achieved and which takes account of both monetized and non-monetized benefits and costs for all actors, as well as for society as a whole. However, it should be remembered that some projects rely on outputs and outcomes from other projects and thus may not have a sound business case seen in isolation, which is especially typical when cross-entity initiatives are implemented to achieve service interoperability. So, the business case should be made taking such different projects together as programmes or packages (i.e. measured overall).

Measurements should be made against a common set of indicators on a regular basis to gauge progress. Typical costs and benefits can be measured both on the government (supply) side and the user (demand) side, as exemplified in the Table 5.

Table 5: Example costs and benefits of implementing e-government for service integration

	Direct costs	Direct benefits	Indirect costs and benefits
Government	**Investment costs:** • System planning and development: the planning and development of ICT infrastructures/network and other tools required for service implementation. • Transition costs: incurred to shift from an offline to an online service provision. • System acquisition and development: costs incurred for the purchase of necessary ICT and technical tools for the service operation. **Operating costs** for managing, updating and monitoring service delivery.	**Monetizable**: arising from time saving, greater revenues (or lower money loss) and efficiency gains due to the reduction of the number of transactions and improved data/information quality. **Non-monetizable**: related to better service delivery and the enhancement of the decision-making process. **Lower data storage costs** if data is centralized, but do need back-up facilities as well. **Immediate access to validated user data** without having to wait for users to re-enter data with the risk of inaccuracies.	**Accurate base registers** provide value added for society, e.g. ambulances using the address and map database can save lives, there is more tax revenue, better procurement and mapping both public and private buildings to see the potential for solar energy, etc. **Making the once only data into open government data** (after appropriate control, anonymization and protection) can lead to large socio-economic benefits. **Outsourcing work to users ('self-service')** Many government savings are based on 'outsourcing' work to the user, i.e. 'self-service', thus potentially increasing the burden on users, so making this easy and beneficial to the user is key. **Improvements to online services**, involving the participation of users and other non-government actors in initiatives like co-creation, can lead to

Users	**Acquisition costs** of ICT systems and ICT skills. **Use costs**: expenses related to the usage of the service. **Information costs**: time spent to get information about the service usage.	**Monetizable**: include money savings, avoided expenses and time savings due to the reduction of the number of transactions. **Non-monetizable**: related to the improved efficiency and quality of the service used; users save time by not having to re-enter data the government already has about them unless their data has changed; better service experiences and greater incidence of service fulfilment; easier for citizens to identify and use the service needed when based e.g. on life events.	improved public services generally as well as more activity amongst non-profits, NGOs, communities and SMEs, thus stimulating jobs and cohesion especially at local levels. **Strategies for moving people online** can have big spin-off effects on the ICT industry by creating more demand on every level, and increasing and spreading digital skills further, thus also leading to an upgrade of personal and societal level capacities. It can also lead to some loss of frontline staff jobs in the public sector, though it has been shown that ICT in public sector services typically should and does lead to better quality services overall as human staff are able to focus on adding value to care and other services where people perform better than machines.

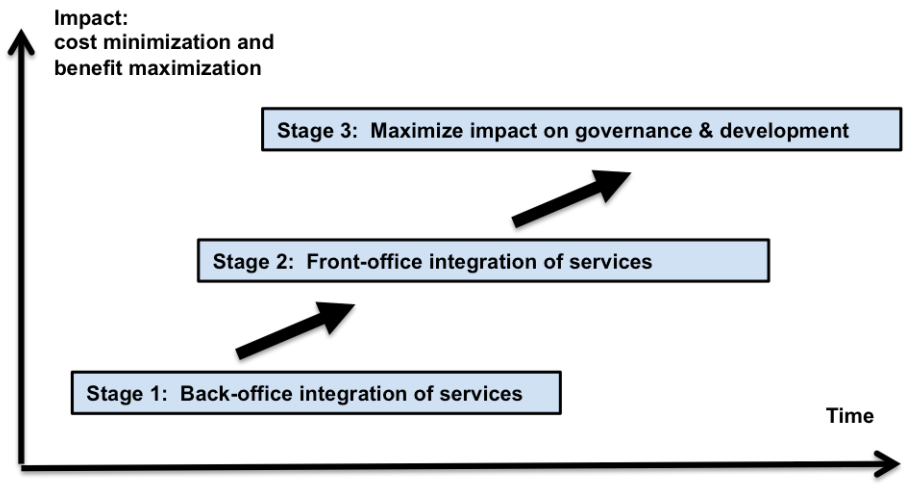
5.2. Strategic framework for service integration

This sub-section provides guidelines on the overarching strategic approach for e-government service integration in the Arab Region. Reflecting the approach outlined in section 4.1, and based on the methodological framework of the study (see Annex 1), there are three main stages which together provide the basis for the proposed strategic framework for service integration, as illustrated in Figure 1:

1. Back-office integration of services
2. Front-office integration of services
3. Impact on development and governance

Each strategy must be seen in the context of broader e-government strategies and developments, as outlined in section 5.1.

Figure 1: Three main stages in the strategic framework for service integration



Although the 3 stages are presented sequentially because the focus shifts from 1 to 2 and then to 3, they need to be envisioned and designed together to ensure they are fully integrated and part of an iterative process, constantly adapting to the country's needs, aspirations, and context. There is strong mutual dependence and synergy between the stages when implemented in the order presented, i.e. from back-office building blocks to front-office integrated services, and then to impact on development and governance which maximizes benefits for both government and users. Even though it is possible to achieve some benefits implementing each stage independently, global evidence shows that the size of the benefits increases when the three are implemented in the order suggested, even though there is strong iteration and feedback between them. A comprehensive strategic framework should consist of a continuous process and iteration between the three

stages, despite each being more or less discrete. Clearly each country will be at a different stage in this progression, so the strategic framework is a guide assuming a given country or administration starts from scratch.

Most Arab countries will need to focus mainly on stage 1 and then also on stage 2. Stage 3 needs to be factored into policy and strategic considerations from the beginning but will probably not directly show results until stages 1 and 2 are relatively well advanced. Some GCC and other Arab countries, however, are already directly benefiting from stage 3 impacts. In a context where infrastructures and services are currently being built and rolled out, often piecemeal and government entity by government entity, it makes sense to employ a guiding strategic framework to ensure synergy, coherence and best use of resources.

5.2.1. Stage 1: Back-office integration of services

For fuller details, plus both global and Arab experience and examples, from which these guidelines are drawn, see section 4.3.1.

Developing the back-office building blocks for integrated services is itself not the final goal, but is only a tool – albeit essential and very powerful – to make other goals possible, so consideration needs to be given to making many of them mandatory otherwise these other benefits will not appear. The building blocks are the cornerstone of making efficient e-government service integration so should be seen on the political as well as the strategic level.

In Stage 1, the basic back-office e-government building blocks and frameworks need to be established. The fundament is to design and build basic ICT infrastructures, and given much of this is still being built, it is imperative, rather than do this separately for each government entity, to employ an integrated and strategic approach, incorporating common interoperability approaches and standards as part of this process. In building e-government from a low base, as is the case in many Arab countries, there is often an opportunity to leapfrog and learn directly from the mistakes of the forerunners, many of which did not adopt a clear strategic approach. The main features of strategies for the back-office integration of services are summarised below.

a) Interoperability and standards

Interoperability is the term used to describe the ability of diverse systems and organizations to work together (inter-operate). National and international interoperability frameworks are needed as they can help make huge savings because different ministries or countries do not waste money duplicating the work of others. Interoperability is also needed to ensure that the systems of different ministries and countries can work together, for example that data and base registries can be easily exchanged. However, interoperability can also risk misusing user data and could make it more likely that it can be accessed in an unauthorized manner. Thus, provisions for protecting user data are also needed.

Interoperability and standards are the absolute bedrock of developing successful e-government that maximizes efficiencies and benefits for society. Government entities need to be joined-up through applying internationally recognized common interoperability and standards specifications in order to move as quickly as possible to a whole-of-government public sector. A clear and strong legal basis is needed for interoperability, standards, common architectures, data exchange and process automation, and it takes time to establish these. Government entities need to enter into a completely new collaboration stage in which silos are required to share information between their information systems as part of a deep back office connection and articulation effort, and this is not an easy task to accomplish.

b) The ‘once-only’ principle and base registries

It is important to set up and implement ‘once-only’ data principles as soon as possible, i.e. a user should only be required to input his/her information once to any part of the public sector, and then expect that any other part accesses this data for any legitimate purpose without requiring the user to input again (with the

exception of corrections or updates). Adequate data protection and privacy principles should be adhered to based, if necessary, on legal provision.

Base registries are the basic building blocks of modern e-government and service integration within a country and increasingly between countries. They consist of the main databases containing up-to-date categories of everything the government and the public sector need to become an efficient administration offering good services (both electronic and non-electronic) to citizens and businesses, as well as developing and implementing effective policies. The most typical registries are for all citizens (e.g. name, age, address, tax liable and paid if in work) and for all businesses (e.g. company size, year of establishment, number of employees, sector of activity, trade, tax liable and paid, often also linked to registries showing annual turnover and profit). Registries of land and of buildings (such as location, size, type, use, value and tax) are also common, as are vehicles, charities and other organisations.

If two different ministries keep separate registries of the same category and update these independently (for example, the tax and trade ministries of companies) there is clearly duplication of effort, greater likelihood of error and no possibility to get a full picture of each company. Each country typically has a different view of what a 'base' registry is, i.e. one that can be used by more than one ministry or agency, but typically citizens, companies, land and buildings are most likely to be designated as 'base' registries. Building, updating and sharing base registries can be quite costly in the short term, but, as explained above, this can make very large longer term savings as well as enabling other efficiencies, better services and better policies. Building base registries, and the interoperability system needed for them to be shared by relevant ministries and agencies, is thus a main foundation of e-government and service integration. Establishing base registers takes time, and must be managed by a legal entity which requires long-term funding. Centralized base registries may be difficult to build in countries with a decentralized government, but they can be partially replaced by a high level of interoperability. Whether centralized or decentralized base registries are set up, there should be back-up in case of data loss.

c) Data exchange

An important decision to take is whether to have a central data collection process, or just sharing across databases – both are feasible but have to be compatible with governance and legal frameworks. Also, consider sanctions if data is not shared adequately, but do not charge for inter-agency sharing as this becomes a huge barrier. The main barriers to data exchange are today largely no longer technical as most of these have been overcome, assuming the appropriate systems can be deployed, but there remain many standardization and definitional tasks. Semantic interoperability standards (i.e. the use of the same or comparable definitions of categories and terms – like a 'house', a 'vehicle', a 'company', even a 'citizen' – so data can be compared), is one of the biggest challenges. This is because many entities have historically used different definitions of basic categories even within the same country.

The lack of agreed definitions and standards can be critical barriers and lack of these can explain the slow progress in improving data exchange. Organizational barriers are also important, especially staff resistance, uncertainty and lack of coordination between ministries and agencies. Overall, legal barriers seem less challenging, but there are still legal legacies that take time to address, as well as some uncertainty about compliance with regulation, and rapid technological change which often makes it very difficult for both legal and organizational changes to keep up.

d) Data quality

The ownership of data, including which entity has responsibility for issues like data quality, data update and data loss, is a critical issue. Clear instructions to agencies are needed as to how to use and re-use data, based on common standards and approaches. Taxonomy (semantic) issues are again important, including defining terms in law so they are equivalent, such as what an 'address' or a 'citizen' is. The only real problem, however, is one of semantics when not every entity uses the same definition for similar items. Many global leaders (like the Netherlands, Denmark, Australia and the UK) are aligning their business reporting systems

with the global standard of Standard Business Reporting (SBR)[42] using equivalent fields, taxonomies and definitions. Data quality is, however, dependent on the context in which it is to be used, so open data and open data standards are an advantage as this issue thereby becomes transparent and easy to accommodate. An advantage of enabling users to see their data is they can apply to correct errors and improve quality, for example as in Denmark, Estonia and the Netherlands, whilst Estonia allows users to track which entities have used their data to increase trust in government, although these countries also impose some restrictions on this right in relation to some forms of crime and security-related data.

e) **Data protection**

The exchange of data between entities can place user data at risk of misuse and make it more likely that it can be accessed in an unauthorized manner. Thus, provisions for protecting user data are needed, as in most European countries which have developed legal, organizational and technical frameworks for personal data protection and privacy, usually based on national laws and customs. Data protection can be especially challenging when levels or countries agree to interoperate, especially if there are conflicting data protection rules in different jurisdictions would disrupt data exchanges. Individuals might also be unwilling to transfer personal data to another jurisdiction if they were uncertain about the level of protection available. Therefore, common Giving individuals the right to complain and obtain redress if their data is misused is an important feature of open government.

Clear, trustworthy and legally defined data protection/privacy rules and systems are necessary for the 'once only' principle to be successful and base registries to be built, together with robust information management systems. For this, a clear legal base is needed, for example specifying which entities and officials can use which data. A big issue is how much control the user has over their own data. Where there are concerns about data protection, or where there are no base registries or unique user identifier, as in the UK, one option is to consider how to allow people to control the use of their own data by government, for example by data being hosted by a trusted third party, rather than by government, to which the user gives or withholds permission for release to a public entity for a specified purpose. National ID and authentication are also important in allowing people to control the use of their own data. Data protection is a basic condition for building trust in government, and in that sense it is very important, although too narrow an interpretation of data protection can conflict with the once only principle for building base registries as thereby for government to offer high quality integrated services to users.

f) Implementation of interoperability and standards

Six complementary strategies for implementing interoperability and standards to support service integration are identified in this study. Although these do not constitute an exhaustive list of strategies, they are derived from successful examples in Arab countries as well as from global good practices. Depending on a country's starting position, requirements and specific context and challenges, one or more of the following can be considered (see section 3.3 for full details, as well as section 4.3.1):

1. Initiation and testing in one entity; rolling out stepwise to other entities
2. Supporting multi-channel front-office one-stop-shops for multiple entities
3. Shared infrastructures across multiple entities
4. Overlay on retained legacy silo-systems in each entity
5. From scratch by abandoning legacy silo-systems in each entity
6. Public-private-partnerships across multiple entities.

5.2.2. Stage 2: Front-office integration of services

For fuller details, plus both global and Arab experience and examples, from which these guidelines are drawn, see section 4.3.2.

[42] http://en.wikipedia.org/wiki/Standard_Business_Reporting

In Stage 2, high quality integrated services can be designed and delivered. Once the back-office building blocks are starting to become well established, this enables the focus to shift to ensuring a collaborative and whole-of-government approach. This both saves resources in the medium term through sharing and cutting out duplication and waste, and makes it possible to develop high quality integrated and multi-channel services which users need. This stage 2 strategy is seen as subsequent to stage 1 because it is generally not possible to develop such services without the existence of well-developed interoperability, base registries and the other building blocks upon which they rely. This is because it is much more realistic for government to offer such services when it itself is joined-up and integrated, which means that in turn it can exhibit a single face and an effective one-stop-shop to users. The main features of strategies for the front-office integration of services are summarised below.

a) **Access, affordability, usability and inclusiveness**

Services should be as easy to access as possible by increasing awareness and making them visible and easy to find. This might involve advertising or promotion campaigns. If services are not free-of-charge to the user, they should be affordable in relation to the user segment's disposable income as well as the costs of purchasing and/or using the required ICT tools.

The services themselves should be highly usable and user-friendly, through attractive simple layouts, fonts, graphics and colours, with easy navigation, not too many clicks, and clear simple texts. It is often beneficial also to provide simple special help functions such as "how to" instructions, maybe using short simple videos or graphics, as well as a help-desk, and facilities for sending feedback, getting answers, participating in chat sessions with staff, as well as using social media where appropriate. Services should ideally also use standardized semantics and design-for-all techniques enabling users with different handicaps or weaknesses (whether visual, dextral, hearing, or other) to personalize the interface and service delivery to precisely match their requirements.

b) **Multi-channel service delivery**

The different forms of multi-channel service delivery have been described in detail in section 4.3.2. It is important to note that non-digital service delivery channels, such as traditional post-, call centres and over the counter face-to-face services in citizen centres, can also be significantly improved by digitizing and joining-up the back-offices of government (as in stage 1) thereby, for example, enabling improved service simplification, personalization and targeting by intelligently using the data at government's disposal. Digitizing the service delivery chain in this way can also improve public services even if the final step of delivery to the end-user is non-digital. This takes place by increasing the relevant intelligence available to, for example, intermediaries (whether civil servant front-line staff, civil organizations, family or friends) so they possess greater knowledge and the ability to access additional information as needed. An important aspect of service delivery is ensuring that the diverse channels by which users receive services are properly integrated around the particular needs of specific user groups and individuals in order to maximize the service benefits they enjoy.

In many Arab countries, as elsewhere, over the counter face-to-face services remain an important component of service delivery and of the government's contact with citizens and businesses. For many, this promotes maximum trust and reassurance, especially if service needs are of a personal nature, as well as ensures that centre staff know their locality and the people who live there. Difficulties in using technology, including phones, are also overcome.

Call centres have become established in many countries in the Arab Region as well as globally and are an effective channel to reach a very large number of citizens and businesses especially now that the use of cheap mobile devices is becoming universal in most countries. Call centres mimic face-to-face over the counter services in that they provide real time interaction for information, requests and dialogue, and also avoid the disadvantage of long distances to a service centre, for example in rural or remote areas. Users can thus complete a service very quickly through a call centre without the need to use e-services if their online access is difficult or expensive, or if they have difficulty in reaching a physical service centre.

Section 3.3.2 provides examples of Arab Region case studies. The Abu Dhabi Contact Centre in the United Arab Emirates provides both a call centre and over the counter face-to-face services and demonstrates how these can be integrated with e-channels. The GAFI one-stop-shop case study in Egypt also provides an example of over-the-counter services for businesses which are integrated with e-services. A global leader example of channel integration including call centres and face-to-face is provided Sri Lanka (see section 2.2.3). Other examples include many of the large US cities that provide call centre facilities known as '311 services' in which call centre staff are linked through their computer to a large number of data bases for the immediate switching of callers to specialists in city government, or to access real time up-to-date information about the query in order to address callers' requests straightaway. The systems also allow call centre staff to immediately log the type, location and time of the call which enables the city authorities to build up intelligence about queries, complaints and incidents that, in turn, assists their resource planning and response capabilities and enables them to cut costs over the medium term whilst also improving service quality.[43]

It is very important to continue to deploy traditional channels like over the counter and call centre services for two reasons. First, because they are often the only means for many users to access services and communicate with government, and it tends to be the poorer and more geographically isolated and rural areas which both use these channels and need these services the most. Second, because many service components require direct human interaction, such as in health, care, education and building personal and trusting relationships through dialogue and empathy. In comparison, ICT is better at handling and analyzing large amounts of data in more routine and rule-governed processes and transactions, as well as communicating instantly regardless of time or location. Clearly, many services have components of both, thus underlining the importance of the integration of service delivery.

c) **Service simplification and personalization**

Two main features made possible by service integration are service simplification and personalization, as both make interactions between government and user as simple (and therefore as easy, quick, efficient and effective) as possible for users, which clearly reduces their costs and increases their benefits. There are a number of simplification and personalization strategies already being widely used by the leading e-government countries as outlined in the following.

d) **Process simplification and reduction**

Simplification of processes, forms, legal requirements, and other features, needs to be tackled, ultimately trying to get rid of processes and forms completely if possible. This is a strategy of 'reducing unnecessary contact', i.e. ensuring that only when absolutely necessary a user must contact the government or vice versa, which means that as much as possible should be automated or even not required, as long as service and quality standards are maintained. There are strong synergies with the once only principle, i.e. forms often represent knowledge already existing in one entity, so if forms are removed, the entities are forced to share data and use the base registries instead of contacting the user. (Note, success in doing this can of course result in reduced usage of e-resources, and this dilemma has been noted by some global leaders like the UK. However, it is a false issue because the goal is to increase e-service use as compared to service use via other channels, where this is both relevant and beneficial of course, whilst everybody benefits if users receive the services they need, even whilst their contact with government is reduced.)

The goal is to simplify forms and improve their usability by obtaining the data from the relevant base registries. This can be accomplished by undertaking initiatives to identify how procedures can be simplified, or eliminated altogether whilst not degrading the service, for example by analyzing processes and proposing simplifications, as well as looking at how legal requirements and reporting frequencies can be simplified or reduced. All of this reduces the costs and the administrative burden for users, but also requires that the legal base must enable and support it. Integrated services are simple services which require little effort from

[43] See for example New York's 311 service web-site: http://www1.nyc.gov/311

citizens, so that complexity is kept in the back office and only when absolutely necessary left in the front office.

e) **Personalization**

Service integration also improves usability, relevance and thus impact, by segmenting and/or personalizing information and services, thereby targeting these increasingly precisely to the relevant group and even individual. This also includes better exploitation of multiple channels, including web, social media, mobile, kiosks, call centres, face-to-face service centres, etc., as services are honed to individual needs using the most suitable means.

Ultimately simplification means personalization, as everything which is not relevant to a given user and their specific needs at a particular time and place, is removed. An important aim is to move towards government becoming increasingly like a personal assistant (and intelligent agent) in a manner corresponding to the strategies adopted by the best commercial companies through a process of 'mass customization'. This involves switching between the government 'pushing' pro-active services it 'knows' individual users want or need (using big data, data analytics together with the base registries), and empowering users to pro-actively 'pull' what they 'want', for example through providing their own data, co-creation or accessing from the cloud. Such developments are already happening in the more advanced e-government countries.

f) **User-centred design**

An important component of front-office service integration is moving towards fully user-centred design whereby a service and its delivery is fully dependent on what the user needs or wants, rather than reflecting the needs of the government as service supplier. There are many examples of this, including designing services that enhance both user experience and usability, and to ensure that procedures are supported by fluid and fully integrated services. The base registries provide a good foundation for developing 'service design models' which involve government doing all or most of the work, for example by deploying pre-filled tax forms and pro-active so-called 'disappearing' services which require no action on the part of the user (such as automatic payment of child benefit once a new baby is registered). Many of these approaches are now becoming systematized and implemented through so-called 'design thinking' programmes which exploit ethnographic and anthropological methods, as well as the analysis of personas and service pathways, to understand and design precisely what a user needs and how best to deliver it. For example, user observation studies are being used in Denmark to understand how companies engage with legal processes, and how they understand the information and procedures they are presented with. The UK's service design principles which became mandatory in April 2014 include the proviso that no service will be launched unless the responsible minister can successfully complete it unaided and in a timely manner. Working groups have been set up with stakeholders to develop style guides and similar.

5.2.3. Stage 3: Impact on development and governance[44]

In stage 3, maximizing positive impact on governance and development needs to be assured. Once the building blocks and high quality integrated services are becoming established, this enables the focus to shift to monitoring and evaluating impacts to ensure government services generally, e-government services specifically, as well as overall public governance, are directly contributing to the economy and to social development. (See section 5.1.6.) This includes ensuring that the service delivery strategy retains strong linkage to, and is embedded within, the country's overall policy goals and development strategies.

Ensuring impact on governance and development focuses on the goals and benefits of e-government (as described in detail in section 4.2.3) and thus on maximizing the usage of e-government. Without shifting as many users as possible to using online services, many of the benefits of e-government and service integration will not be realized on a wide enough scale. Of course, an important caveat here is that this should only be attempted for services which can be digitized without reducing quality and where users will not otherwise be

[44] For fuller details, plus both global and Arab experience and examples, from which these guidelines are drawn, see section 4.2.3.

penalized. Thus it is important to understand the basic strengths and weaknesses of digital services compared to non-digital services. In brief, it is clear that digitization works best for services which are governed by clear rules, regulations and/or algorithms, and where data is available (for example from the base registries) to apply these rules to in order to make decisions and/or offer possibilities. Often, digitization is the only realistic option when large amounts of data need to be processed. Non-digital face-to-face services are better when people are directly involved to provide 'warm', hands-on contact which needs understanding, empathy, consideration, respect and trust. Many social services fall into this category. However, as explained above, probably all such face-to-face services can be very significantly improved by intelligently deploying digitization in the back-office and/or along the service delivery chain before it reaches the user.

This phase 3 strategy, taking the above caveats as given, is seen as subsequent to phase 2 because it is generally not feasible to maximize the use of e-government and the benefits it brings without first providing integrated, efficient and effective services for users. Strategies for maximizing e-service use are most effective when they build cumulatively on the stages 1 and 2 strategies as it is only once much of this has been achieved that the focus can be moved to shifting as many users as possible to only or mainly use the online channel for all appropriate services. This is because it is much more realistic to implement such strategies when the government is already providing easy to use and high quality online services for citizens and businesses. The main features of strategies for maximizing the beneficial impact of e-government and service integration are summarised below.

a) Availability of ICT systems, e-services and ICT skills

Significantly increasing the take-up of e-government services needs: i) the widespread availability of high capacity and affordable ICT infrastructures and systems; ii) high quality and easy to use e-services; and iii) widespread ICT skills and Internet use in the general population and amongst civil service staff. A clear strategy and alignment is needed between policies upgrading ICT systems, e-service and IT skills, on the one hand, and strong policies promoting the take up of such services, on the other. Without such an alignment this could severely disadvantage users who are not online and do not have the necessary ICT access and skills, which would in turn impose much greater costs on public entities than might be saved purely to cater for such a mismatch.

b) Digital by default strategies

Digital by default strategies, which involve making specified interactions between government and users digital by default, i.e. the user is obliged to use the electronic channel unless there are good countervailing reasons. When appropriate services are only or mainly used digitally, this reduces the administrative burden for government by reducing their costs and the need to provide alternative channels, as well as for users by saving them time and money and increasing convenience, for example by being available 24-7 (see section 5.1.6). In turn, this potentially maximizes all the benefits of e-government as described in section 4.2.3. Careful selection is needed of digital by default services and the business case for these (see discussion at the beginning of section this sub-section). At the same time support to those who are not or cannot get online is absolutely necessary for any strategy aiming to move as many people as possible online.

5.3. Proposals for collaboration and sharing to support service integration

This sub-section presents recommendations to maximize collaboration and sharing in e-government and service integration across the Arab Region. For fuller details and both global and Arab region experience and examples, from which these proposals are drawn, see section 4. First, an overview is given of the need for collaboration, followed by suggestions for a number of possible shared enablers and shared services. This is followed by proposals for capacity building across the Arab Region.

5.3.1. A realistic approach to cooperation and development

Political will and the resources it provides must emphasize collaboration as the key approach, enforced if necessary at first, but constantly demonstrating the win-win benefits to all actors through, for example, strategically selected quick wins. Progress and power derive from involving people rather than from only

dictating to them, especially in a relatively new area like e-government. Ensuring that entities, managers and staff 'own' the process, and directly experience the benefits of progress, is absolutely essential (see section 5.1.5). Thus, managed risk, experimentation and trial and error are important, as long as this is on a small scale so any damage is minimal as well as forward looking, because dealing with risk naturally and logically leads to innovation. Furthermore, innovation is increasingly about collaboration, not just between government entities but also with other stakeholders in the private and civil sectors, with user groups, and with global partners. Collaboration is also about agreement and buy-in, through sensible support and incentives, at every level of government.

One of the principal reasons why e-government has not become a more important activity in many Arab countries to date is probably because different government entities have quite different ambitions and levels of progress. Many are busy working on their own silo agendas and activities, and their resources are limited. Thus, although it is important to insist on an overall strategic framework within which all entities move together, some element of a 'variable speed' action plan may be useful given that entities often start from different positions. If handled well, this can also encourage 'positive competition' and push the boundary of innovation within the framework of national e-government.

There are six inter-linked objectives for e-government collaboration which should form the framework for implementing e-government and service integration in the Arab Region: i) develop and coordinate e-government at national level; ii) within the national framework, support the development of e-government at sub-national level (down to cities and localities); iii) collaborate with other Arab Region countries to maximize synergies and mutual learning; iv) maximise linkages between i) to iii); v) engage with suitable non-government actors within and outside the country and the Arab Region to maximise learning and benefits for the country and the Region as a whole; and vi) ensure that e-government is used as a tool at national and Arab Regional level to promote socio-economic and cultural development. Two-way trust is needed to achieve this: trust in government by society and trust by government of society, and if e-government does not achieve this, then the tool must be refined or abandoned, as e-government is a means to an end, and not an end in itself.

5.3.2. Shared enablers

Global experience shows that there are a number of key shared enablers which are often necessary for e-government transformation, services and impacts to be achieved, both for national use as well as for cross-country cooperation. These can be both back-office enablers (i.e. for use by and across government entities) and front-office enablers (i.e. integrated services used by citizens, businesses and other target groups). This study has highlighted the importance of internal governance and performance management processes, focused around understanding and responding to the needs of users.

It is recommended that the following back-office and front-office enablers be the focus of cross-border collaboration and joint development to the extent possible, preferably across all Arab countries although partnership, pairing and sub-regional groups are probably more likely to lead the way.

a) Back-office shared enablers

- Effective approaches to an interoperability framework and standards can be exemplified by the European Interoperability Framework[45], including data integration through open standards and cross-border security and data protection (see also section 4.3.1). For specific approaches to developing and implementing interoperability and standards in the Arab Region and which are also inspired by global good practices are described in section 3.3.
- A common enabling Arab cyber law, as well as a review of general legal and regulatory issues and how these may need to be adapted to support Arab e-government.
- A common Arab e-government cloud.

[45] European Commission, 2010b

- Common measurement standards, approaches and indicators, including performance monitoring, whilst enabling specific country differences. The focus should also be to move from input/output based measurement and monitoring to outcome and impact based (for example on user satisfaction and socio-economic benefits), and to take account of and cooperate with international measurement standards. There is an opportunity for collective Arab efforts to collaborate with and influence the important work being done in this area particularly by the United Nations, OECD and the European Union.
- Develop common applications to empower and trust the civil servant, many of whom are frontline professionals, to themselves contribute to the development of new services and policies through direct access to data and tools and on the basis of appropriate policies and organisational arrangements. Many civil servants see the real time performance and impact of public services on citizens. They would be able to generate appropriate data and other inputs which could improve lived service experience if they were given the data, tools and incentives to do so, for example by being able to participate in a professional capacity in citizens' social networks to offer advice and knowledge.

b) Front-office shared enablers

- A common initiative on e-ID, taking account of the GCC and other work already done on PKI and smart cards and building on the GCC's successful eGate initiative to extend this to also access services (at present it is only used for crossing borders).
- A common e-procurement initiative which, on the basis of European and other experience, has high impact on competitiveness and support to the private sector, as well as realizing cost savings for the public administration and improving transparency.
- A cross-border e-payments service for Arab citizens and businesses to facilitate transactional services wherever they are in the Arab Region.
- Adoption of international standards for websites (e.g. W3C).
- A common commitment and approach to making all suitable public sector data available in machine-readable format as a part of an Arab-wide 'open data' initiative. This has the potential to kick-start innovative integrated e-government services developed outside the public sector, whether or not in cooperation with the public sector. Experience in the USA, UK and Australia is already showing that this can save money for the public sector and boost the development of SMEs and civil organizations across the Arab Region in the ICT services sector, as well as support e-skills, especially if a pro-active approach is adopted by governments to help build developer communities. This might be linked to more Arab countries participating in the global Open Government Partnership.[46]

5.3.3. Shared services

Arab country citizens and businesses could be recognized as distinctive user groups, particularly through the use of the Arabic language, and specific e-government cross-border and Arab Region services might be developed on this basis. This has been agreed in principle in a GCC context and some progress has been made in that sub-region. Such shared services would also help to link individual country's portals together, and should also take the needs and desires of the large upcoming younger generation strongly into account, given that they will form the basis of future demand, especially for Web 2.0 based services. This would also help to spur the growth of Arabic language content which is quite severely under-represented in the global picture relative to the size of the Arab population.

It is recommended that the following shared e-government services for cross-border and/or Arab-wide use be considered for development:

- eCustoms, eTrade, import/export, for example to support the existing GCC customs union and, as part of this, move towards adopting international standards for coding customs and goods transportation. This will also help to counter trade and goods transportation barriers, and help build an Arab digital common market.

[46] http://www.opengovpartnership.org

- Land purchase and registration in contexts where this is possible (e.g. between the GCC countries).
- Improved Arab citizen and business mobility and freedom of movement. This will also enable the tracking of residency permits to protect against crime and terrorism and ensure that non-Arab country nationals do not register in more than one country, as well as regulate the movement of guest workers and visitors.
- Sharing criminal records to track and prevent crime and terrorism.
- Common car registration and traffic fines (the latter cross-border service already exists in the GCC area).
- Common Arab-wide tourism services.
- Link Arab countries' web-sites and kiosks together to promote awareness, knowledge and mutual sharing.
- Jointly develop m-government services based on common APIs, apps, data, and widgets, by involving Arab citizens (especially the youth) and businesses. Mobile connections are fast becoming the de facto global infrastructure, and establishing a leadership position in this area will open immense export and collaborative opportunities for Arab countries.
- Continue to share the development and benefits of e-participation services, where many Arab countries are already performing well, according to the UN E-Government Survey 2014 (United Nations 2014) – see section 3.2.

5.3.4. Capacity building and collaboration

The following capacity building and collaboration recommendations are drawn from global experience and adapted for suitability in the Arab Region context.

a) Registers of expertise, capacities, skills and good practices

Arab countries should recognise each other's strengths and weaknesses, and provide mutual support on that basis, by setting up registers of expertise, capacities, skills and good practices. This can work in three ways. First, countries leading in a specific area can provide their expertise and support at the Regional level. Second, one-on-one mentoring assistance can be provided to individual countries weak in the given area or which wish to improve their performance. Third, two or more countries with a similar challenge or policy can collaborate in achieving their common aims. In fact, working groups or cross-country teams on particular issues could be established on this basis.

b) Organise staff exchanges, training, seminars and workshops

Organise staff exchanges for short or long periods, through secondment programmes, study visits, etc. It makes sense for many Arab countries to cooperate directly together, given their common language and cultural backgrounds, and the very similar e-government challenges and opportunities many of them face. Learning from neighbouring countries about e-government, especially those with distinction good practices (such as exemplified in section 3.3) is a high value approach. Common support and training programme could be set up for different types of e-government staff, specifically CIOs, senior management and decision-makers in the first instance, but this would also be very beneficial for website managers, e-service design staff, civil servants engaging in public online discussion and forums or providing citizen support in specific areas, and for middle managers, etc. This could be done both on a formal and informal basis. This will help extend the benefits that countries have already experienced through participating in international activities more widely across the countries to other groups. Capacity building of Arab Region public sector agencies is a critical task, and cooperation at this level can improve economies of scale and scope

c) E-Government and E-Society Conferences, Awards and Prizes across the Arab Region

Build on the successful eGulf Conferences and Awards in the GCC countries, by extending this more widely to promote friendly competition as well as cooperation. Investigate the potential for competitions with financial prizes to develop useful e-government or m-government services using, for example, open public

data. Although categories of services could be specified, the types of services might be determined by the competition participants themselves in order to open up innovation. Prizes could be awarded on the basis of value to citizens or businesses and value to the public sector, for example in terms of cost savings.

d) Set up a shared online collaboration space

Set up a shared online collaboration space for the Arab Region with good practice, communities, a journal, etc. (cf. European ePractice portal: www.epractice.eu), for example to house the expert databases, as well as events, blogs, common documents, knowledge bases of good practices, a learning portal, amongst others.

e) Present a common face to international organisations as a distinctive collaborating region

The main international organizations active in e-government, particularly the United Nations, the World Bank, the World Economic Forum, the European Commission and the OECD, recognize the common linguistic, cultural and shared socio-economic and political opportunities and challenges of the Arab Region. In many cases, acting together vis à vis these organization can increase the voice of, and the benefit accruing to, the Region as a whole which is considerably greater than the impact of any one country. For example, the OECD is increasingly active in partnering with regional groupings of non-OECD members states, such as with groups of Latin American and Western Balkan countries. One basis of this is cooperation between the OECD and regional development banks to finance peer reviews across the countries concerned, and another is adapting and aligning the OECD's principles on digital government strategies, currently in draft form (OECD 2014), but due to be formally published in late 2014.

6. Conclusions

This study has examined in some detail the situation and potential for e-government in the Arab Region, with particular reference on the integration of service delivery and the role of standards and interoperability in this, the different methods, how this is achieved, and the benefits and impacts it can have.

This has been undertaken by analyzing global good practice, including focusing on a number of specific examples from global e-government leaders. An examination was then undertaken of the main extant studies and data referring to the Arab Region, and this was supplemented by an Arab country questionnaire and a number of case studies. Lessons from global leaders were compared with lessons from Arab leaders as well as the particular challenges and opportunities in Arab countries. Finally recommendations for guidelines and a strategic framework for progressing the integration of service delivery in Arab countries, and proposals for enhanced collaboration and sharing between countries and at Regional level, were presented.

During the study, specific focus was placed on the important role of standards and interoperability, as well as to place e-government in the wider context of public services, including face-to-face services. The overall findings of the study show that e-government has made important improvements and had significant impacts in the Arab Region over the last five years or so, for example by enabling better accessibility, quality and efficiency of services, leading to greater user satisfaction. As could be expected, there is a strong positive relationship between income and e-government development, and this reflects the situation in the rest of the world. However, there are important exceptions, for example as shown by Morocco, Tunisia and to some extent Egypt, which show that, despite low access to financial and other resources, exceptional progress can be made and real benefits realized. In the case of these three countries, there is evidence that this good performance is at least partially the result of their whole of government, joined-up and collaborative approach, a strong focus on e-participation, publishing open government data for example on a data portal, and specific focus on supporting disadvantaged and vulnerable groups.

Important developments continue to be made in building the telecommunication infrastructure, although much still remains to be done, but in most countries this has yet to be translated in too few cases into better online services. The exceptions mentioned show that good progress can made where there is political will and sufficient resources. Indeed, it is clear that countries with appropriate policies, focus and initiatives can buck the trend and perform well despite overall having tight budgets.

In conclusion, the time is therefore now right to build on the many initiatives already underway and to put in place policies and programmes for significant improvements to online and other government services. The documentation of challenges and issues in section 4, and the recommendations in section 5, are designed to assist this endeavour.

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8. Annex 1: Methodology

8.1. Methodological approach

The objective of this study is to prepare recommendations for a strategic framework and guidelines for e-government service integration in the Arab region that focuses on the needs of users and promotes efficiencies within the government administration. To meet this objective, the study considers global good practice in e-government service integration, and in this context examines the status and challenges of e-government services in the Arab region. An important area of focus is the role and importance of interoperability and the use of standards for the integration of e-government services at local, national and regional levels, that also takes account of other means of service delivery such as face-to-face interaction..

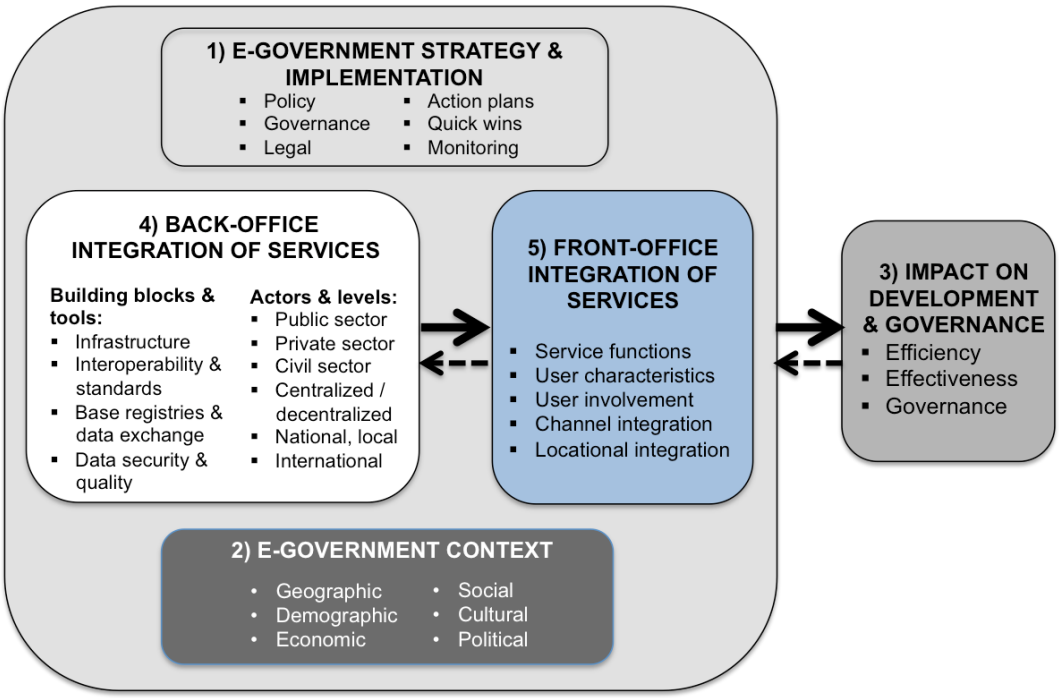
The methodology adopted to meet this objective consists, first, of desk research to identify global good practice in e-government generally, and e-service integration in particular, by analysing selected examples from around the world in order to derive the main lessons and trends. Second, the latest surveys and studies are examined to provide an overview of e-government development and services in the Arab region. This is supplemented by detailed cases studies from eight Arab countries and eleven questionnaire responses, representing the current status of e-government service integration across the region. Third, this status is placed in the context of the identified global trends and good practice to examine the important issues relevant to e-government service integration in the Arab region and the challenges it faces. Finally, these issues provide the basis for recommendations for a strategic framework and guidelines for e-government service integration in the Arab region in order to assist Arab countries in progressing towards the most advanced global levels of development.

In order to undertake the study, the following analytical framework and definitions were developed to provide a systematic and consistent approach to understanding and analysing e-government service integration.

8.2. Analytical framework

In order to achieve the study objective, a general survey and mapping of integrated service delivery in the Arab region was undertaken, as well as of relevant global good practices using a robust but relatively simple framework, as outlined below. This was designed to ensure that the most salient issues and factors relevant for the Arab region are in focus, and there is direct comparison across the empirical evidence gathered. This framework is presented in Figure 2 and explained in the subsequent text.

Figure 2: Analytical framework of the study



The survey and analysis took place based on five groups of factors as specified in more detail in the following, three of which are related to overall e-government development as a context for two specifically focused on the integration of services:

E-government strategy, context and impact

1) E-Government strategic issues: how to implement service delivery integration

There are six main types of strategic issues:

i) Policy issues: both specific in relation to service delivery integration, as well as conducive and linked policies
ii) Governance issues: the roles, relationships and powers of the actors involved
iii) Legal and regulatory issues: what is needed specifically as well as what is conducive and linked
iv) Implementation plans and actions: who should do what, when and how (such as a road map)
v) Monitoring and evaluation: how is the strategy and its implementation monitored and adjusted and how are its impacts evaluated
vi) Quick wins: what if anything can be done quickly to produce real and visible benefits without compromising the longer term strategy.

2) E-Government context: the right conditions for service delivery integration

Context factors are typically outside the direct control of the responsible actors but can have important affects on service delivery integration policies and implementation, and might include geographical, demographic, economic, social, cultural and political factors. They can often have impact in the form of drivers and barriers:

i) Drivers: basically conducive and positive factors which could make it possible and/or easier to implement service delivery integration and realize the benefits. These might include: well motivated and qualified staff, good leadership skills, good ICT literacy, good infrastructure and access, affordable prices of infrastructure and access, growing economy with increasing demand for services, and stable political situation.
ii) Barriers: basically blockers and negative factors which could make it impossible and/or more difficult to implement service delivery integration and realize the benefits. These might include: lack of suitability qualified staff in the labour pool, low ICT literacy, poor infrastructure and access, and high prices of infrastructure and access.

3) E-Government impact: why undertake service delivery integration

There are three main types of expected impacts, i.e. benefits both short and long-term:

i) Efficiencies for the government, for example reduced costs, better use of resources, better organizational, leadership and competence structures.
ii) Effectiveness for users, for example better quality services (more accessible, easier to use, greater service impact on life of citizen/business), time and money saved, improved satisfaction, simpler services, reduced burdens, and better support.
iii) Governance: better decisions, better policies, better linkage to and impact on broader government policies including economic (jobs and sustainable growth), social (education, inclusion, cohesion, cultural), openness (transparency, accountability, responsiveness, trust, anti-corruption, participation), etc.

Integration of services in the back- and front-offices

4) Back-office integration of services

Building blocks and tools

i) Infrastructures (for example fixed, mobile and cloud)
ii) Interoperability (four levels: technical, semantic, organisational, and legal, within a political context)
iii) Standards (such as proprietary, open-source, local, national, international or industry-specific standards)
iv) Base registries and data exchange
v) Data quality and data security

Actors

i) Public sector
ii) Private sector
iii) Civil sector

Levels

i) Centralised / decentralised
ii) National, sub-national, local
iii) International

5) Front-office integration of services

The integration of service delivery has three main definitional aspects:

i) Service functions: bundling related service functions, such as around getting a job or applying for university.
ii) User characteristics: bundling services likely to be used by specific types of user, such as old people, students, or resident non-nationals.
iii) User involvement: the extent to which users themselves are able or encouraged to integrate their own services, such as through personalisation or co-creation.
iv) Channel integration: such as web, mobile, social media, kiosk, call-center, face-to-face.
v) Locational integration: bundling services specific to or relevant for a particular place or type of place, such as in a specific city, suburb or village.
vi) Supply-side integration in one country: between government agencies at different levels (such as sub-national and national).
vii) Supply-side integration in one country: between government agencies and other actors (private sector, non-profits and civil organizations).
viii) Supply-side integration across national borders: between two or more countries.

9. Annex 2: E-government development comparison data

The graphics on the following pages depict United Nations E-Government Development data for the years 2008, 2010, 2012 and 2014, and compare the three groups of Arab Region countries (high income, upper middle income and lower middle income) with the top ten performing countries globally.

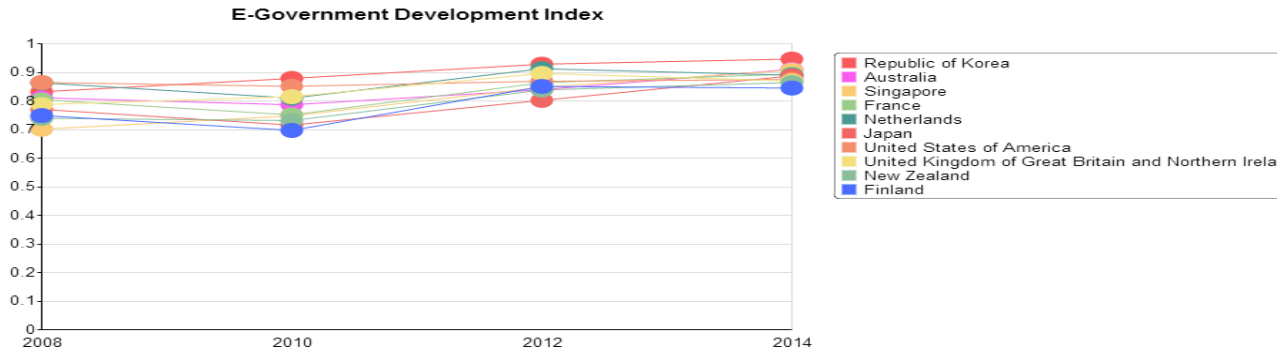
This is done for the following five data sets:

1. E-Government Development Income (which comprises equal weights of the Online Service Index, the Human Capital Index and the Telecommunication Infrastructure Index)
2. Online Service Index
3. E-Participation Index (a sub-set of the Online Service Index)
4. Human Capital Index
5. Telecommunication Infrastructure Index

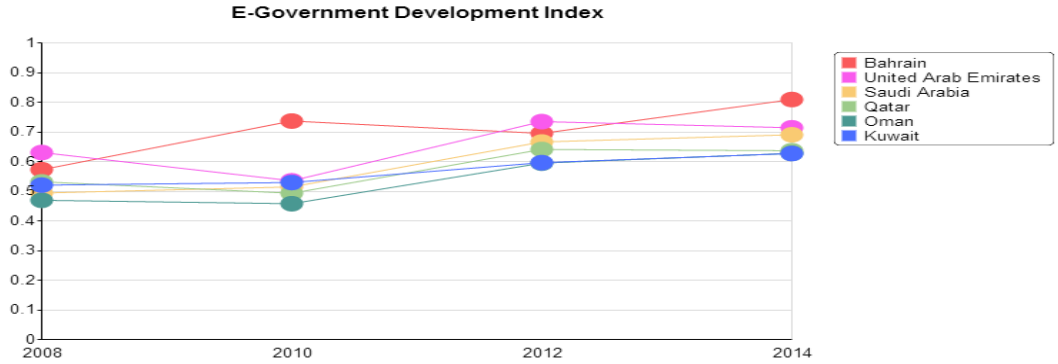
The data are derived from United Nations (2014) and the previous three E-Government surveys published by the United Nations in 2008, 2010 and 2012. It needs to be stressed that the scores for different years are not directly comparable as in each year they are calculated in relation to all country scores for that year only, and because between 15% to 30% of the indicators change each year to keep abreast of e-government developments. However, the scores are very good surrogates both for plotting changes over time as well as of the relative performance of a given country compared to all the others, as long as this caveat is borne in mind.

A commentary analysis of the data is included in section 3 of this report.

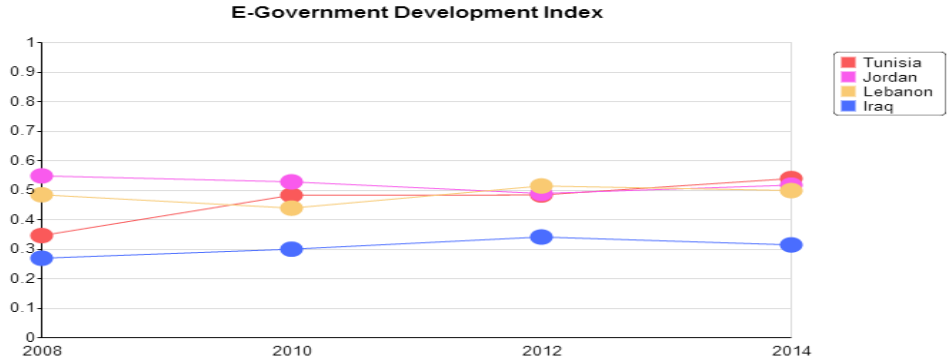
E-Government Development Index -- Global Top Ten (Global mean 2014: 0.471)



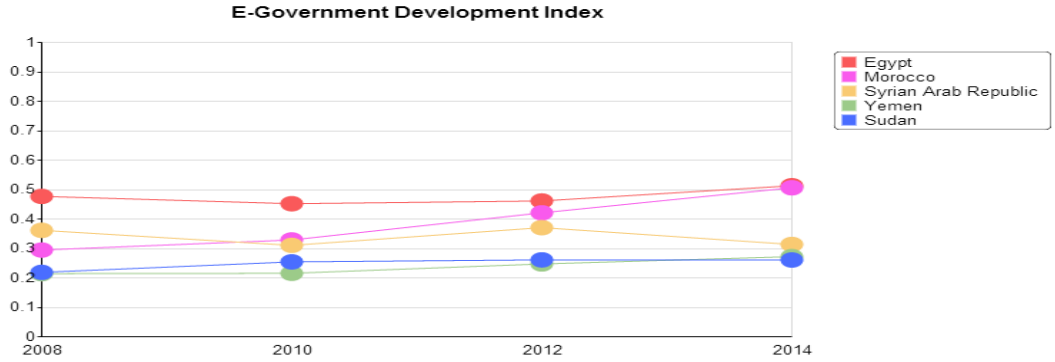
E-Government Development Index -- Arab Countries: High Income



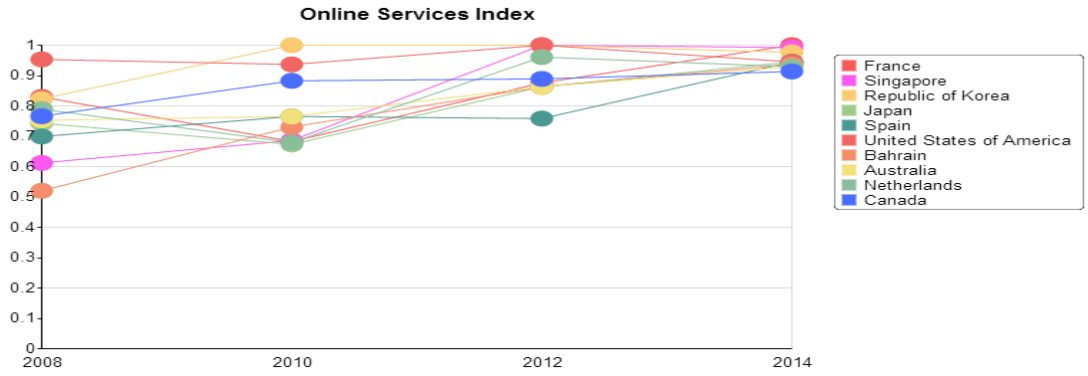
E-Government Development Index -- Arab Countries: Upper Middle Income



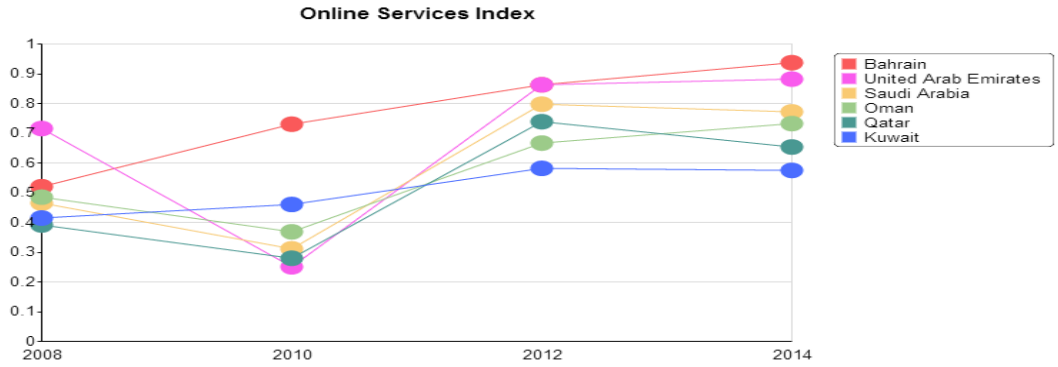
E-Government Development Index -- Arab Countries: Lower Middle Income



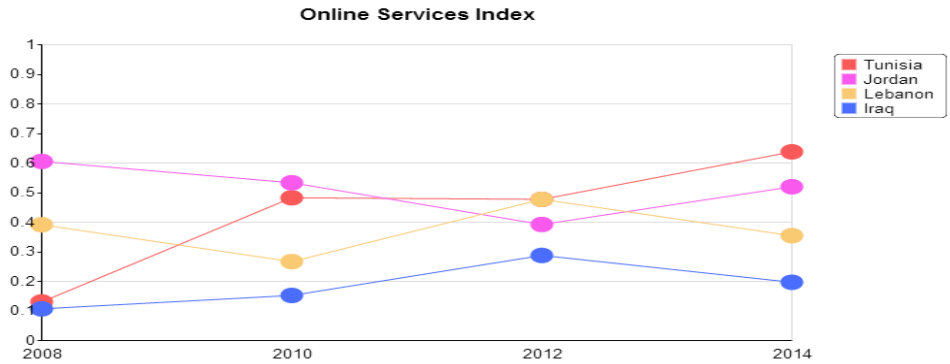
Online Service Index -- Global Top Ten (Global mean 2014: 0.394)



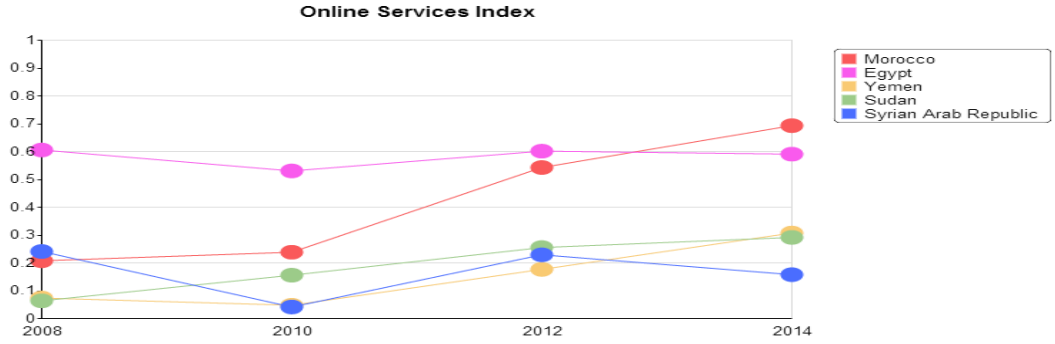
Online Service Index -- Arab Countries: High Income



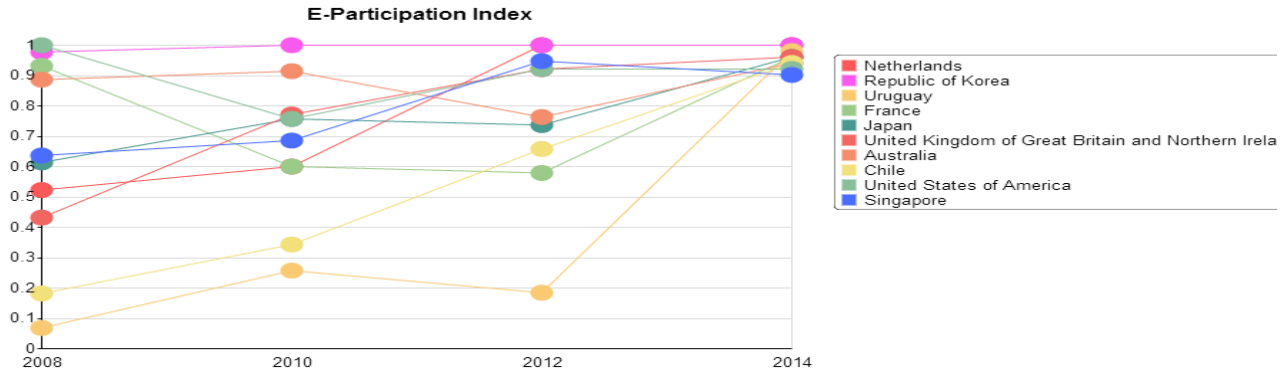
Online Service Index -- Arab Countries: Upper Middle Income



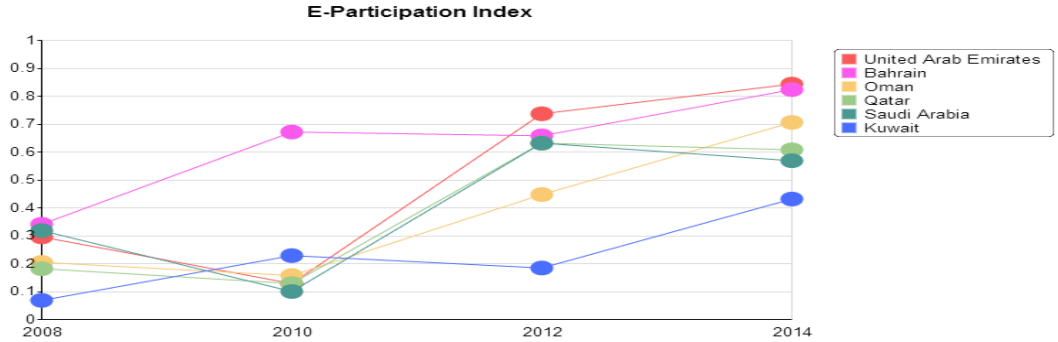
Online Service Index -- Arab Countries: Lower Middle Income



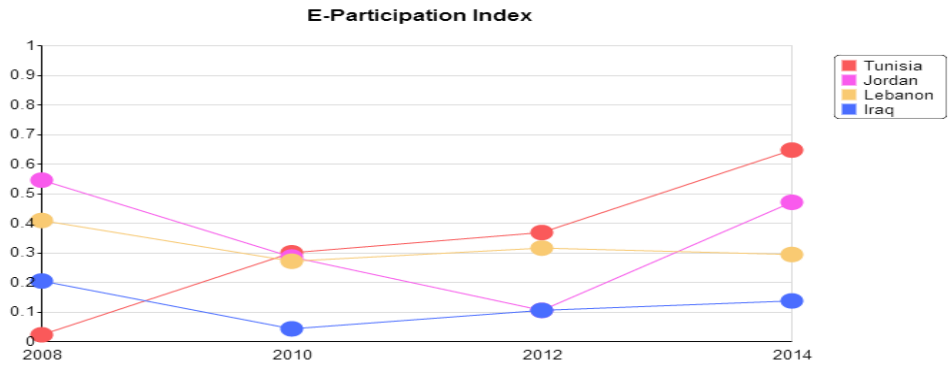
E-Participation Index -- Global Top Ten (Global mean 2014: 0.396)



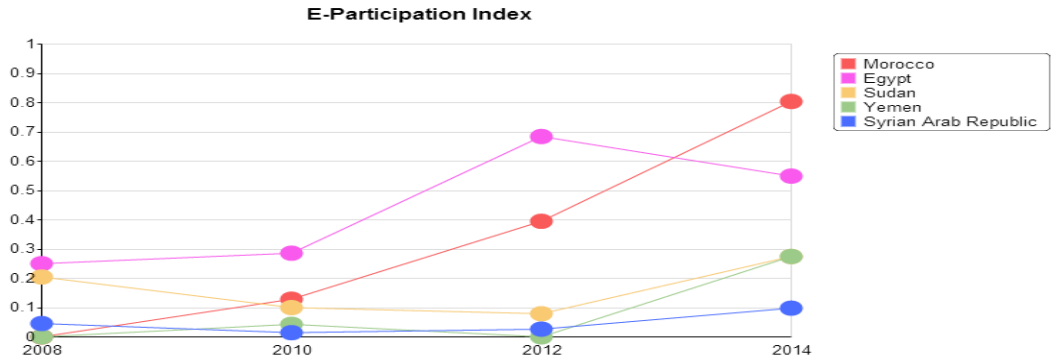
E-Participation Index -- Arab Countries: High Income



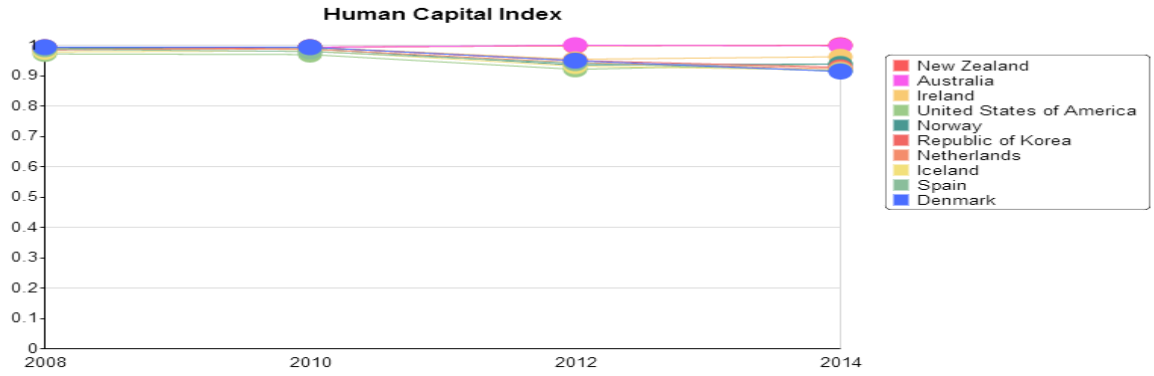
E-Participation Index -- Arab Countries: Upper Middle Income



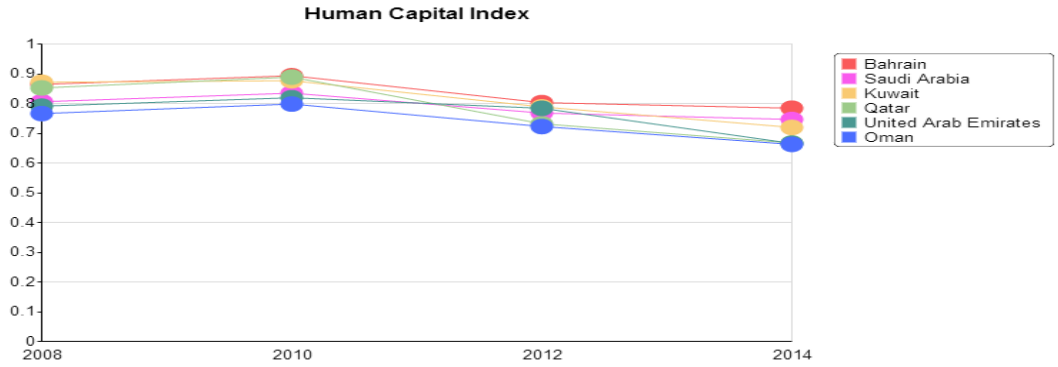
E-Participation Index -- Arab Countries: Lower Middle Income



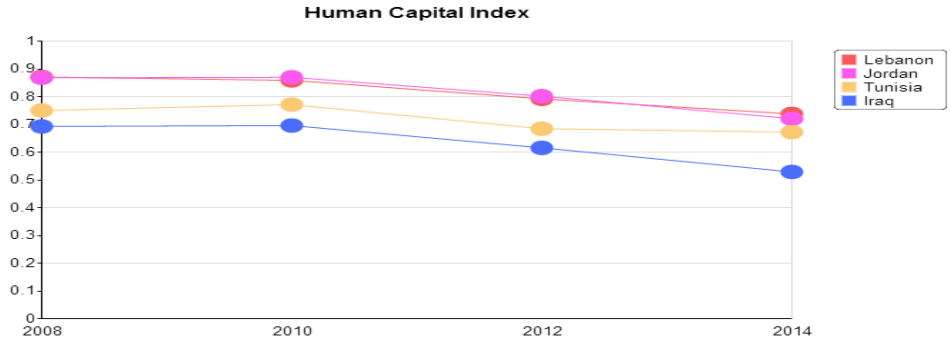
Human Capital Index -- Global Top Ten (Global mean 2014: 0.658)



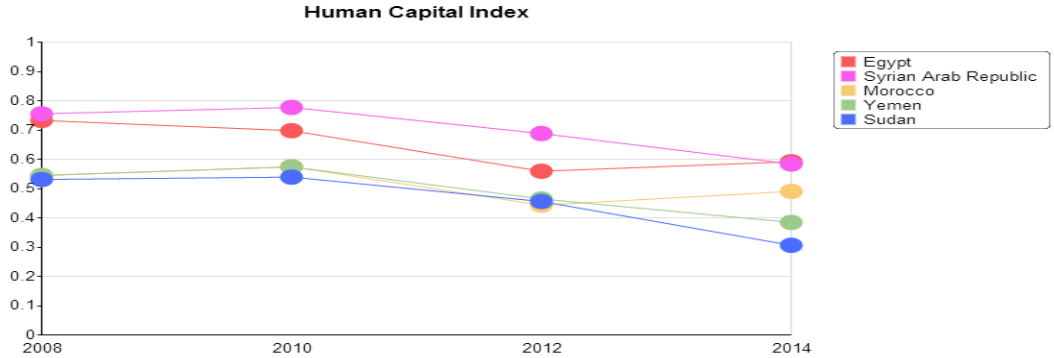
Human Capital Index -- Arab Countries: High Income



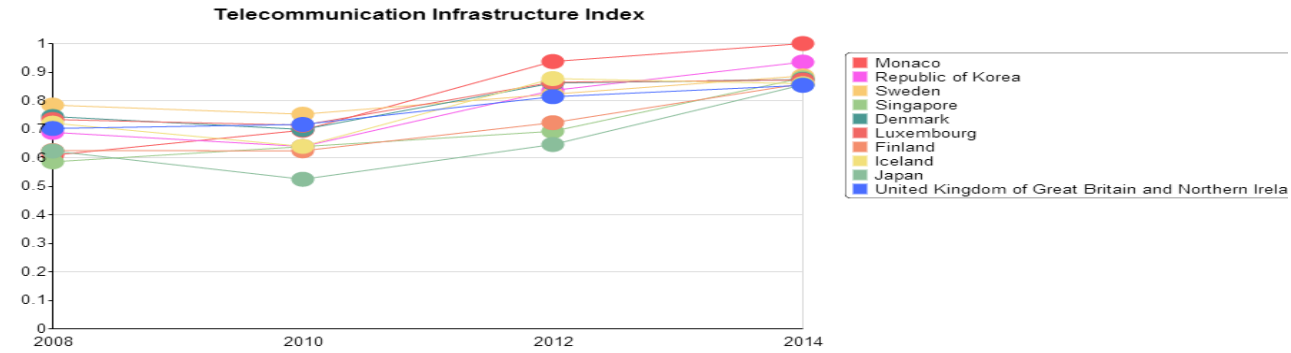
Human Capital Index -- Arab Countries: Upper Middle Income



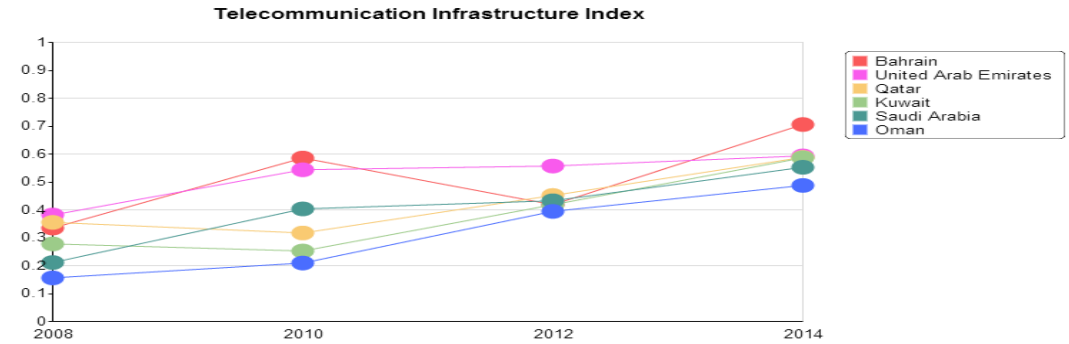
Human Capital Index -- Arab Countries: Lower Middle Income



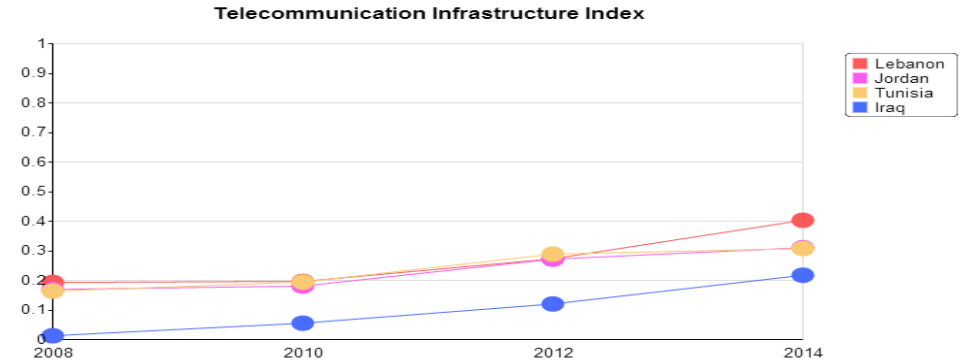
Telecommunication Infrastructure Index -- Global Top Ten (Global mean 2014: 0.366)



Telecommunication Infrastructure Index -- Arab Countries: High Income



Telecommunication Infrastructure Index -- Arab Countries: Upper Middle Income



Telecommunication Infrastructure Index -- Arab Countries: Lower Middle Income