



E-Government Unit  
Ministry of Communication and Information Technology

**E- Services Development and Implementation**  
in  
The Government of the Islamic Republic of Afghanistan

In the context of  
**E-Government Interoperability Framework (e-GIF)**

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## **1.0 Introduction**

An important part of the e-government is delivery of public services electronically so that the services could be delivered efficiently and effectively in the most citizen centric manner, at the convenience of the citizens in terms of time and location. At the heart of designing, developing and deploying public services electronically is the need for seamless integration of information resources and processes within the various organs, departments and agencies of the government. Without such information and process integration delivery of optimal e-services to the public would not be possible or in the least will be grossly suboptimal.

Government of the Islamic Republic of Afghanistan (IRA), in its efforts to develop and deploy e-government in its country has taken several strategic steps, including the drafting of the e-government interoperability framework (e-GIF) that provides the framework for technical standards, guidelines and policies that all component organs of the government must follow in order to make enterprise level process and data integration possible. And in turn facilitate design and delivery of e-services to the public.

## **2.0 Purpose of this Document**

The objective of this document is to assist in the conceptual understanding of the e-services development and implementation. In the e-GIF drafted by the government of the IRA and likely to be adopted by it, XML is the language recommended for data exchange between technical systems. This document will highlight the concepts of XML schemas development and management as a part of e-services implementation.



### 3.0 What are e-services

E-services on a broad basis could be defined as the customer services that are partially or fully delivered electronically. For a government, e-services are the public services that the government provides to its citizens and other constituents using electronic means. These could range from simple dissemination of information on a web site to the delivery of a range of integrated public services on line. In the developed economies such as in USA, Canada, Ireland and Australia wide range of public services are now delivered electronically. In some countries that have fully adopted e-governance as a model for public sector administration such as in Canada and Singapore most, if not all, public services are delivered electronically. In recent years some of the developing countries such as Malaysia and India have also started delivering a number of public services electronically. A sample listing of government e-services are given below:

1. Government Information available on line at the government web sites
2. Government Forms available on line for easy downloading
3. Registration of birth and death on line
4. Registration of businesses on line
5. Application for various government services made on line
6. Land records management and information
7. Drivers Licensing application on line
8. Application for trade licensing on line
9. Customs clearance on line.
10. Application for admission to government education institutions on line
11. Electronic procurement and tendering on line
12. Electronic recruitment and HRM on line
13. Information broadcasting electronically
14. Electronic government payments
15. Citizen grievance registration and follow up



16. Delivery of health services electronically
17. Delivery of critical information to specialized citizen groups such as farmers, students, women, youth and senior citizens using electronic means such as computers, mobile phones, radio and TV.
18. Delivery of extension and training services to specialized citizen groups such as farmers, students, women, youth and senior citizens using electronic means such as computers, mobile phones, radio and TV.

#### **4.0 Single Vs Multi Agency E-Services**

It is much easier to design and implement an e-service that is fully and completely to be handled by a single agency of the government than an e-service that involves many agencies of the government. Let us take the example of information dissemination services of a particular department of the government. This department posts the information at its web site for citizens to download or broadcasts that information over radio and TV. In contrast let us take the example of business or trade licensing on line. This would involve several departments and agencies of the government. Before the business is registered or trade license is given clearances may be required to be obtained from different departments such as home affairs, environment or lands. In other words the underlying business processes of this e-service would be located not in one agency or department but in several departments or agencies of the government. Thus the electronic systems in the various departments and agencies involved in the e-service delivery must be able to communicate with each other just like the people in these organs of the government should be able to communicate with each other as the service is delivered traditionally. The technical system in a particular agency of the government that is involved in this e-service delivery would have upstream and downstream linkages with the technical systems of other agencies that are involved in this e-service delivery corresponding to the business process involved in this e-service. Thus work flow management and



process integration would be inevitably involved in the design and development of these e-services.

## **5.0 Service Oriented Architecture**

As a part of the process towards development of e-government an essential requirement is to adopt a Service Oriented Architecture (SOA). This is not only a technological concept but also reflects the underlying management philosophy for strategic business planning process and a strategic approach to the planning, development and deployment of e-services. The governments of Canada, UK and Australia, for instance, have developed their e-government services within the framework of a SOA. As government of the Islamic Republic of Afghanistan designs and deploys its e-government services portfolio the concepts of SOA have to be grasped and applied at all levels in the government. The government has to recognize the need for a service-based whole-of-government approach to a business, information and technological infrastructure that supports the vision of a "service oriented" Government. At the fundamental strategic business management level it would dictate that the government see satisfying citizen needs as the basic goal through adoption of a whole of the government approach; and at the operational and technological level it would mean making resources available as independent services that can be accessed in a standardized way. In one of its policy documents the Government of Canada state:

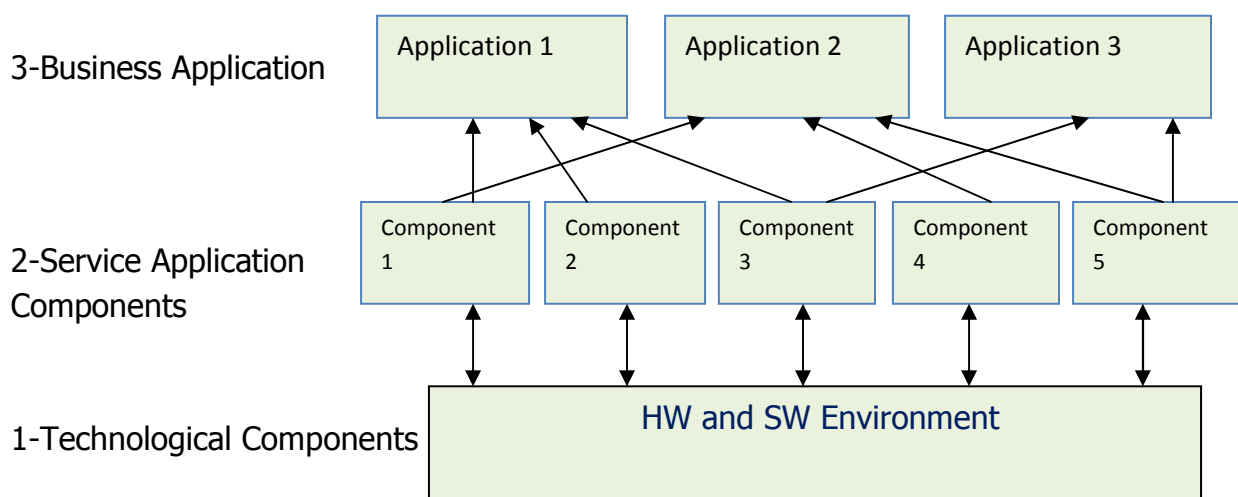
*To successfully achieve a service-oriented vision, there must be a consistent way of defining and implementing services across the federal government. A proven way to do this is to create them like a set of interoperable business components that can be flexibly mixed-and-matched to cost effectively achieve the desired outcomes and deliver on the many mandates of government.*

The same approach has been followed by the Government of Singapore in rolling out its Public Service Infrastructure (Psi), a large scale government programme to create the infrastructure that would facilitate the delivery of web e-services based on the mixing and matching of the pre-developed service components. This approach



allows the Government of Singapore agencies to cost effectively design and deliver citizen services within the least lead time.

At the operational and technical level the SOA for e-services delivery could be conceptualized as multilayered with the basic hardware and software layer at the bottom and the business application layer at the top with the middle layer containing the exchangeable application components.



## 6.0 E-Services Development and Delivery in SOA

E-services development and its delivery takes a new meaning in service oriented architecture. As mentioned earlier we have even taken the concept of service orientation to the management level also, which would indicate that we have to start with the customer end to identify the service portfolio that would best meet the mandate of the government. For instance if the authentication component is developed as a part of one service, the same component could and must be used for authentication for all other service applications unless there is strong reason not to do so. This of course evidently assumes that we have now accepted SOA as the base for both our technical system and our management philosophy and importantly we have



accepted to follow the whole of government approach. That is the government of IRA is a single enterprise.

In such an environment we will have the indispensable need for secure data and information exchange between the technical systems and applications.

## 7.0 XML and XML Schemas Concepts

XML (**Extensible Markup Language**) is just plain text. Software that can handle plain text can also handle XML. It does nothing special or great. It simply stores and transports data. Before it does so it gives data meaning by tagging. Thus applications that are XML-aware applications can handle the XML tags. The functional meaning of the tags depends on the nature of the application. If we have to realize the objectives of an integrated enterprise that we wish to establish and work efficiently within the enterprise service oriented architecture we need to go one step further to develop what is called the **XML Schemas**. These XML Schemas express shared vocabularies and allow machines to carry out rules made by people. They provide a means for defining the structure, content and semantics of XML documents. in more detail. They are, as one would appreciate specific to the applications or components thereof, and therefore to the E-services that these applications support.

As a part of the e-GIF we have already included international standards for application based XML schema development that would guide the development of the XML Schema's for various application areas. For instance for e-business oriented service applications would have XML schemas based on the ebXML, which has been included as a standard guide for adoption across the whole of the government. Various governments world wide have developed their own schemas for specific service applications. In the Annexure that follows some of these are reproduced here as examples. These are not recommended to be adopted as given here but only as a guide and for the purpose of illustration only.





## ANNEXURE

### Examples of E-Service Schemas developed by some Governments Internationally

#### Example 1:

Subject: Fire and Rescue Services ( Government of UK)  
Status: agreed  
Published Date: 10/12/2007  
Version: 1.0  
Description: *The Incident Recording System (IRS), developed by the Department of Communities and Local Government in partnership with the 59 Fire and Rescue Authorities in the UK, provides the means of collecting, validating and transmitting data to/from DCLG on all incidents attended by the Fire and Rescue Service (FRS). The IRS system will capture approximately 1.2 million incidents a year with extensive details to improve accuracy and analysis of Fire and Rescue Services. The incidents will include all Fires, Special Services and False Alarms attended. The central IRS database will also have the capability to hold and analyse the back series from the former primary fire only data collection. ( Taken from UK Government: GovTalk.gov.uk)*

Schema Document : DCLG Incident Recording System (IRS) can be downloaded from the following web site:

[http://www.govtalk.gov.uk/schemasstandards/schemalibrary\\_schema.asp?schemaid=273](http://www.govtalk.gov.uk/schemasstandards/schemalibrary_schema.asp?schemaid=273)

#### Example 2

The XML schema library of the UK government includes 11 schemas for the citizen **Address and Personal Details**. The details of one of the schemas is given below

Title: **Address and Personal Details 2.0**  
Subject: Address and Personal Details  
Status: agreed  
Published Date: 21/3/2005  
Version: 2.0



Description: *A set of address and personal details schemas including BS7666 2.0. Changes from the previous version are outlined in the PDF below. This schema and 10 other connected schemas can be downloaded from the following site*  
[http://www.govtalk.gov.uk/schemasstandards/schemalibrary\\_list.asp?subjects=17](http://www.govtalk.gov.uk/schemasstandards/schemalibrary_list.asp?subjects=17)

### Example 3

For e-Services and applications related to Education there are six XML schemas developed by UK government. These reside in their XML schema library. One of these schemas is described below:

Title: **eCAF XML Schema**  
Subject: *Education*  
Status: *agreed*  
Published Date: *5/7/2006*  
Version: *1.0*  
Description: *DfES Common Assessment Form*

*This schema defines the format for eCAF data exchange. It allows Common Assessment information about children to be interchanged between eCAF systems and between eCAF and other systems. Extensive further information can be found at*

<http://www.everychildmatters.gov.uk/deliveringservices/caf/e-caf/>.

*This information includes an overview of the surrounding business processes, a logical data model with detailed data descriptions, further guidance on interfacing, and example xml instances. ( Reproduced from the UK Government: GovTalk.gov.uk)*

The full set of six XML schemas for Educations related services can be down loaded from the following site:

[http://www.govtalk.gov.uk/schemasstandards/schemalibrary\\_list.asp?subjects=26](http://www.govtalk.gov.uk/schemasstandards/schemalibrary_list.asp?subjects=26)

### Example 4

There are currently 105 XML Schemas in the UK Government schemas Library available for use within their public sector. These are as follows:

#### Schema Library

XML Schemas which have undergone public consultation and been agreed by the e-Government Unit can be found here, along with schemas currently undergoing consultation and other schemas in draft form. Please check the status of each individual



schema in the 'Status' column before use.

Address and Personal Details	11 schemas
Archives and Records Management	6 schemas
DEFRA	1 schema
Education	6 schemas
EML	5 schemas
Fire and Rescue Services	2 schemas
Gateway Administration	4 schemas
Gateway Secure Messaging	4 schemas
Geographical	2 schemas
Health	2 schemas
Life Events	Currently contains no schemas
Local Government Services	27 schemas
Metadata	2 schemas
Planning Portal	7 schemas
Procurement	1 schema
Property	20 schemas
Transport	4 schemas

( Taken from the UK's government site: [govtalk.gov.uk](http://govtalk.gov.uk) )

These schemas can be downloaded from

<http://www.govtalk.gov.uk/schemasstandards/schemalibrary.asp>

<http://www.xml.gov/documents/completed/silosmashers/efforts2004.htm#table-EDU-FSA>

### Example 5

Governments of Singapore, HK and Canada have followed the same approach as has been detailed above. In all these cases we see that the laid out technical standards provide a broad framework for XML schema development. But in all cases repository or a library of XML schemas or sub schemas is developed that provides ready to use schemas which may be mixed and matched as e-services are developed. The Office of the Chief Information Officer of the Government of Hong Kong, lays down the XML schema development and management guidelines ([www.XML.gov.hk](http://www.XML.gov.hk))



For XML Schema Design and Management, please refer to the XML Schema Design and Management Guide promulgated on the HKSARG Interoperability Framework Web Site (<http://www.ogcio.gov.hk/eng/infra/eif.htm>). [www.xml.gov.hk](http://www.xml.gov.hk) also contains common schemas. I am reproducing below a summary of the Common Schemas that are available at this site

## Common Schemas

Catalogue of Approved Common Schemas					
Name	Definition	Version	Maturity Level	Links	Last Updated
Country. Alpha2. Code	A unique code (2 characters, e.g. "HK") for a country or an economy defined in the Alpha-2 coding scheme of the ISO 3166-1 code list. Different vertical industries may have chosen a different Country Code scheme (e.g. Alpha-3). Project teams are recommended to consult the associated industry standards bodies to check which ISO Country Code scheme should be adopted.	1.0	2, Matured for adoption by B/Ds	<ul style="list-style-type: none"> <li>• <a href="#">Details</a></li> <li>• <a href="#">Schema</a></li> </ul>	3/02/2006
Country. Alpha3. Code	A unique code (3 characters, e.g. "HKG") for a country or an economy defined in the Alpha-3 coding scheme of the ISO 3166-1 code list. Different vertical industries may have chosen a different Country Code scheme (e.g. Alpha-2). Project teams are recommended to consult the associated industry standards bodies to check which ISO Country Code scheme should be adopted.	1.0	1, Advised to be used by B/Ds	<ul style="list-style-type: none"> <li>• <a href="#">Details</a></li> <li>• <a href="#">Schema</a></li> </ul>	13/02/2006
Country. Name	Short country name in English of a country or an economy (e.g. "HONG KONG") listed in ISO 3166-1.	1.0	2, Matured for adoption by B/Ds	<ul style="list-style-type: none"> <li>• <a href="#">Details</a></li> <li>• <a href="#">Schema</a></li> </ul>	13/02/2006
Financial Report. Department. Code	A code representing a government bureau or department or an accounting subject in the HKSARG in financial reporting processes.	1.0	1, Advised to be used by B/Ds	<ul style="list-style-type: none"> <li>• <a href="#">Details</a></li> <li>• <a href="#">Schema</a></li> </ul>	13/02/2006
Free Format Address. Details	An address presented as one or more lines of free text.	1.0	2, Matured for adoption by B/Ds	<ul style="list-style-type: none"> <li>• <a href="#">Details</a></li> <li>• <a href="#">Schema</a></li> <li>• <a href="#">Discussion Paper 2003/01</a></li> <li>• <a href="#">Discussion Paper</a></li> </ul>	01/02/2005



				2004/01	
HK Business Registration Number. Details	A unique reference assigned by the Inland Revenue Department of the HKSARG to a business organization.	1.0	2, Matured for adoption by B/Ds	<ul style="list-style-type: none"> <li>• <a href="#">Details</a></li> <li>• <a href="#">Schema</a></li> </ul>	13/02/2006
HKID Number. Details	A unique reference associated with the holder of a Hong Kong Identity Card issued by the Immigration Department of the HKSARG.	1.0	2, Matured for adoption by B/Ds	<ul style="list-style-type: none"> <li>• <a href="#">Details</a></li> <li>• <a href="#">Schema</a></li> </ul>	01/02/2005
HKSARG Department. Code	A code representing a government bureau or department or a government related organization, with code values assigned in accordance with the standardized list of government department codes.	1.0	2, Matured for adoption by B/Ds	<ul style="list-style-type: none"> <li>• <a href="#">Details</a></li> <li>• <a href="#">Schema</a></li> <li>• <a href="#">Discussion Paper 2004/01</a></li> </ul>	13/02/2006
HKSARG Employee. Rank. Code	A code representing the rank of a civil servant of the HKSARG.	1.0	2, Matured for adoption by B/Ds	<ul style="list-style-type: none"> <li>• <a href="#">Details</a></li> <li>• <a href="#">Schema</a></li> </ul>	01/02/2005
Organization. Chinese. Name	The name of an organization (e.g. companies, businesses, societies, corporations, etc) in Chinese.	1.0	2, Matured for adoption by B/Ds	<ul style="list-style-type: none"> <li>• <a href="#">Details</a></li> <li>• <a href="#">Schema</a></li> </ul>	13/02/2006
Organization. English. Name	The name of an organization (e.g. companies, businesses, societies, corporations, etc) in English.	1.0	2, Matured for adoption by B/Ds	<ul style="list-style-type: none"> <li>• <a href="#">Details</a></li> <li>• <a href="#">Schema</a></li> </ul>	13/02/2006
Person Chinese Name. Details	The name of a person in Chinese, optionally with Chinese Commercial Code (CCC).	1.0	2, Matured for adoption by B/Ds	<ul style="list-style-type: none"> <li>• <a href="#">Details</a></li> <li>• <a href="#">Schema</a></li> <li>• <a href="#">Discussion Paper 2003/01</a></li> </ul>	13/02/2006
Person English Name. Details	The name of a person in English, comprising some or all of the person's name prefix, family name, given name, and person's name suffix.	1.0	2, Matured for adoption by B/Ds	<ul style="list-style-type: none"> <li>• <a href="#">Details</a></li> <li>• <a href="#">Schema</a></li> <li>• <a href="#">Discussion Paper 2003/01</a></li> </ul>	13/02/2006
Person. Gender. Code	A code to indicate the gender of a person (M=male, F=female, U=unknown).	1.0	2, Matured	<ul style="list-style-type: none"> <li>• <a href="#">Details</a></li> <li>• <a href="#">Schema</a></li> </ul>	01/02/2005



			for adoption by B/Ds		
Person. Marital Status. Code	A code to indicate the marital status of a person (U=unknown, S=single (Never married), M=married, P=separated, D=divorced, W=widowed).	1.0	2, Matured for adoption by B/Ds	<ul style="list-style-type: none"> <li>• <a href="#">Details</a></li> <li>• <a href="#">Schema</a></li> </ul>	01/02/2005
Structured Address. Details	Contain necessary information about a structured (possibly validated) address within Hong Kong, optionally together with validation result of the address.	1.0	0, Agreed in principle	<ul style="list-style-type: none"> <li>• <a href="#">Details</a></li> <li>• <a href="#">Schema</a></li> </ul>	06/12/2007
Telephone Number. Details	A number, including any exchange or location code, at which a person or an organization can be contacted by telephonic means.	1.0	2, Matured for adoption by B/Ds	<ul style="list-style-type: none"> <li>• <a href="#">Details</a></li> <li>• <a href="#">Schema</a></li> </ul>	13/02/2006
Vehicle. HK Vehicle Registration Number. Identifier	A registration mark assigned by the Transport Department of the HKSARG to a vehicle.	1.1	0, Agreed in principle	<ul style="list-style-type: none"> <li>• <a href="#">Details</a></li> <li>• <a href="#">Schema</a></li> </ul>	06/12