A Classification Taxonomy for Public Services in Iran

Fereidoon Shams Aliee[1], Reza Bagheriasl[2], Amir Mahjoorian[3], Maziar Mobasheri[2], Faezeh Hosieni[2] and Delaram Golpayegani[1]

[1]*Department of Computer Science and Engineering, Shahid Beheshti University, Tehran, Iran*

[2]*Information Technology Organiztion of Iran, Tehran, Iran*

[3]*Service-Oriented Enterprise Achitecture Laboratory, Shahid Beheshti University, Tehran, Iran*

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Abstract: These days public sector provides numerous services to citizens. Identifying and managing these services is needed for establishing a national Business Reference Model (BRM). Classifying services according to their functionality provides a great view of the current state of public services and facilitates the government policy-making. This classification taxonomy can be considered as a part of the BRM. In this paper, we propose a functional classification taxonomy of the Iranian public services including government-to-government (G2G), government-to-business (G2B), and government-to-citizens (G2C) services. All of the services provided by Iranian public agencies fit into this classification. Up to now, more than two thousand of these services are classified.

1 INTRODUCTION

In the past few years, countries adopted Enterprise Architecture at a national level have increased in number. In fact, National Enterprise Architecture (NEA) has become an essential part of e-government plans as the governments have found out the positive correlation between NEA programs and e-government success (Saha, 2009; Ojo et al., 2012).

Business Reference Model (BRM) is an important component of most of NEA frameworks and it provides a classification taxonomy of business functions and services (CIO Council, 2013; Australian Government Information Management Office, 2011). From the government perspective, BRM can have a great impact on public sector transformation which has had a crucial role in e-government success (Saha, 2009).

Every government provides a vast range of public services to its citizens either in a traditional or electronic way. These services are designed and developed by different public agencies with different structures and business areas. This results in duplicated or fragmented business services and the cross-agency interoperability cannot be guaranteed (Saha, 2010). A BRM helps the government have a holistic view of public services which results in making informed e-government decisions.

In Iran, the public sector is extremly complex and dynamic. Thus, one of the biggest challenges of the government is understanding the current state of business processes and services. To overcome this challenge, Iran's National Enterprise Architecture Framework (INEAF), shown in Figure 1, considers a business service reference model (Shams Aliee et al., 2017). The national BRM is derived from FEAF (CIO Council, 2013) and is customized in way that the government is able to effectively manage public services and deliver them to citizens. The most distinctive feature of the national BRM is that it does not only classify the services according to the sector they belong to but also it provides a classification which categorizes public services based on their functionality. Iran's first foray to implement EA at the government level is using this classification to comprehend the current state of public services in order to make new policies to achieve the future state.

In this paper, we focus on functional classification of public services in Iran. In section 2, we have a brief look at related work on BRM. In section 3, we discuss that why public services should be classified based on their functionality and what we expect to achieve from this classification. Next, we introduce 10 categories of public services that we have identified. Section 5 provides some information about how

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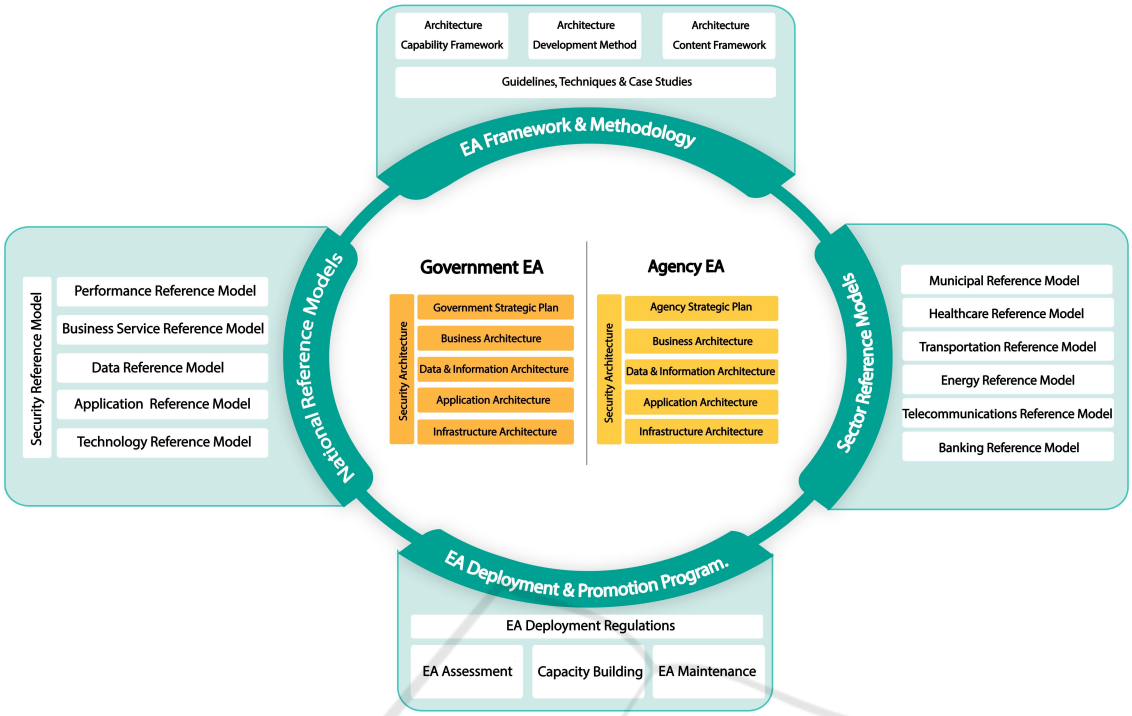

Figure 1: The Iran's national EA framework (Shams Aliee et al., 2017).

we have applied this classification to Iranian public services and we discuss the results. Finally, the conclusion is drawn in section 6.

2 RELATED WORK

Since business architecture is an inseparable part of EA, having a BRM promotes collaboration and consistency. BRM provides a common tool for business architecture, which can be shared between organizations (Adams et al., 2014). In this section, we have a brief look at the structure of BRMs in well-known NEA frameworks.

FEAF provides a three-layer BRM that represents classification taxonomy for describing the Federal governments business functions and services. At the highest level called mission sector,10 business areas of the government are identified. The next layer defines what government does by introducing 40 business functions each of which related to a specific business area. Ultimately, the service layer describes business functions at a component level (CIO Council, 2013).

The Australian Government Architecture (AGA) defines a BRM in addition to a service reference model. The former describes government business functions and is structured into three layers: business areas, lines of business, and sub-functions. The latter provides a classification taxonomy of services based on the business they support and their performance objectives. According to AGA, the service reference model is also a three-layer hierarchy: service domain, service type, and component (Australian Government Information Management Office, 2011).

Similarly, the Korean Government Enterprise Architecture (KGEA) considers both business and service reference models and underlines that their combination improves the government services integration and reuse (Lee et al., 2013).

The NewZealand (GEA-NZ) BRM classifies both government products and services and government business functions. Business domain, business area, and business category are levels of the BRM (Deleu and Clendon, 2015).

So far, we have reviewed the structure of BRM in some of NEA frameworks and none of them represents a functional classification taxonomy of public services. In the following, we will mention some papers that focused on e-government services classification.

(Fonseca and Corrêa, 2014) suggests using service patterns for modeling and developing e-government services. In the proposed method, the

patterns are extracted from existing e-government services, classified according to government areas, and cataloged in a repository. The authors also recommend a template for service pattern description. In another work, service patterns in public healthcare are presented and used for designing G2G enterprise service bus (Nazih and Alaa, 2011).

3 REASONS BEHIND FUNCTIONAL CLASSIFICATION

Service is a well-established concept in different domains of agencies and is a language being comprehended by both IT and business people. Service-orientation also has a positive effect on interoperability, reusability, cost, and agility (Lankhorst and Bayens, 2009). Therefore, business service is considered as the key element in the national BRM. To initiate NEA implementation, the Iranian ministry of ICT asked a number of Iranian public agencies to provide a catalog of their services. Each service was represented using a specific service description template. By analyzing the catalogs, we have noticed four common errors:

- The agency provided some services that should have been provided by another agency.
- The agency did not have a clear understanding of service concept and counted everything it does as a service.
- The agency has ignored a number of services that should have provided according to its duties and responsibilities.
- The agency has ignored some of its online services.

These services fit into 14 mission sectors identified in Figure 2. Although these mission sectors define business operations of the government, they are not sufficient for analyzing the current state of business functions and services for delivering efficient public services. Classifying public services based on their functionality may help the government to deliver an integrated and valuable set of public services. In addition, classifying public services based on their functionality will expose Achilles heels of the government in service delivery. The government can use this classification for policy-making, budget allocation, monitoring agencies performance, and measuring IT improvement.

Figure 2: The Iranian government mission sectors.

4 FUNCTIONAL CLASSIFICATION TAXONOMY OF PUBLIC SERVICES

By studying a majority of the public services, we figure out that although different vocabulary is used to describe them, they share commonalities and can be classified into 10 categories which fit nearly all of the government-to-government (G2G), government-to-business (G2B), and government-to-citizens (G2C) services. This classification is the result of combined efforts of experts in different business areas and is based on the constitution of the Islamic Republic of Iran. It is worth mentioning that reviewing other governments' services to citizens helped us form the classification. In the following, we are going to explore each category in-depth.

1. Establishing laws, regulations, tariffs, and standards

Description: includes a set of public services that lead to formation and establishment of new laws, regulations, tariffs, and standards. These services are usually provided by legislative agencies.

Type: Governance

Level: National

Examples:

- Codification of law and legislation
- Formulation of a new law
- Levy healthcare tariffs

2. Validation and qualification assessment
Description: includes services which lead to verification of a legal or natural person and qualification assessment of goods or services.
Type: Governance
Level: National, local
Examples:

- Issuing a trading license
- Degree approval and conferment
- Issuance of passport for refugees

3. Monitoring, auditing, and conducting trials
Description: matches the public services that monitor compliance with laws, policies, or standards through monitoring, auditing, and conducting trails.
Type: Governance
Level: National, local
Examples:

- Monitoring enterprise architecture laboratories
- Handling customer complaints

4. Enforcing the law
Description: includes services designed for carrying out criminals sentences and imposing fines.
Type: Governance
Level: National, local
Examples:

- Imposing driving fines and penalties
- Confiscating properties

5. Registering public records
Description: consists of a set of services that enables the applicant to submit information or records in person or by electronic means.
Type: Supportive
Level: National, local
Examples:

- Issuing birth certificate
- Filing price of goods and services
- Keeping birth, marriage, and death records

6. Publishing information, statistics, and records
Description: includes services that generate reports, produce statistics, and provide analysis based on collected information. Services in this category may also provide searchable online databases.
Type: Supportive
Level: National, local
Examples:

- Publishing census data
- Looking up birth records

7. Providing funds and benefits
Description: matches the services that provide grants, funds, or loans to a legal or natural person.
Type: Supportive
Level: National, local
Example:

- Providing funds for university students
- Granting mortgage loans
- Providing concessional loans

8. Training and cultivating culture
Description: includes a set of services that provide training and education for citizens. Public services in this category are considered as a complementary for services in other categories.
Type: Supportive
Level: National, local
Examples:

- Holding academic conferences and symposiums
- Offering online courses

9. Infrastructure investment, development, and maintenance
Description: consists of a set of services that lead to development and maintenance of urban, road, communication, etc. infrastructures.
Type: Supportive
Level: National, local
Examples:

- Road maintenance
- Developing railway infrastructure

10. Service operator
Description: includes services that directly provide services to citizens.
Type: Direct services
Level: National, local
Examples:

- Opening a new account (Banking services)
- Providing vehicle insurance (Insurance services)
- Medical and healthcare services

5 PUBLIC SERVICES CLASSIFICATION IN PRACTICE

the ultimate goal of the national BRM is to make a holistic view of public services. The public services should be accessed and used easily by citizens regardless of their location or time. To achieve this, we consider five steps depicted in Figure 3.

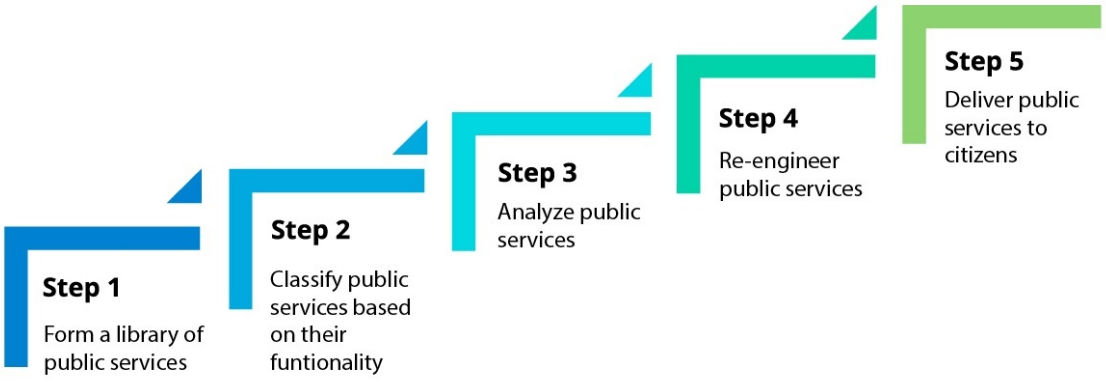

Figure 3: Steps to achieve a holistic view of public services.

Forming a library of public services including service catalogs of 95 public agencies is the first step in achieving a holistic view of public services. All of the services delivered by an agency are presented using a predefined service description template. In the next step, joint meetings of ICT and public agencies are held to discuss each service in order to identify the category it falls into. Next, the result of the previous step is used for discovering the gap between current and target state of business services not only in a single agency but also in the government as a unified entity. Therefore, each agency should re-engineering its processes and services to narrow the gap and the government has to make new policies and standards based on the results of the classification process. After applying the changes, services delivered to citizens. As it is shown in Figure 4, the citizens can access the services provided by different public agencies through a single portal (ira, 2018b) or via a mobile application called *mobile government* (ira, 2018a).

Up to now, more than two thousand public services provided by 95 public agencies are classified. Table 1 illustrates the result of classifying public services according to mission sectors.

Table 2 lists the number of services that match each category. The results show that the government is facing a tough challenge managing public services. A great number of services provided by different public agencies but they belong to a limited number of mission sectors and functional categories. For example, almost a half of public services fall into validation and qualification assessment category which means that the government provides a variety of services for people to get permission. But is it necessary to have more than a thousand services for only giving permission? Are all of the validation and quality assessment services being used frequently?

Table 1: Number of public services in each mission sector in percentage.

Mission sector	Percentage
Environment, agriculture, and natural resources	22%
Cultural and social affairs	11%
Health and well-being	10%
Education and research	10%
Transportation and urban development	8%
Industries and businesses	7%
Communication and information technology	6%
Economic affairs and finance	6%
Energy	6%
Internal affairs	5%
Social security and welfare	4%
International affairs	3%
Judiciary	2%
Security and disaster management	1%

The classification is beneficial for agencies as well. Typically, services provided by an agency belong to a limited number of categories as each agency has a scope of duties and responsibilities. for example, Communication Regulatory Authority services fit into three classes namely: establishing laws, regulations, tariffs, and standards, validation and qualification assessment, and monitoring, auditing, and conducting trials (rca, 2018). It shows that services are aligned with the organization's goals and responsibilities. On the other hand, Ports and Maritime Organization services belong to all categories except service operator. In this case, probably the organization is providing some irrelevant services.

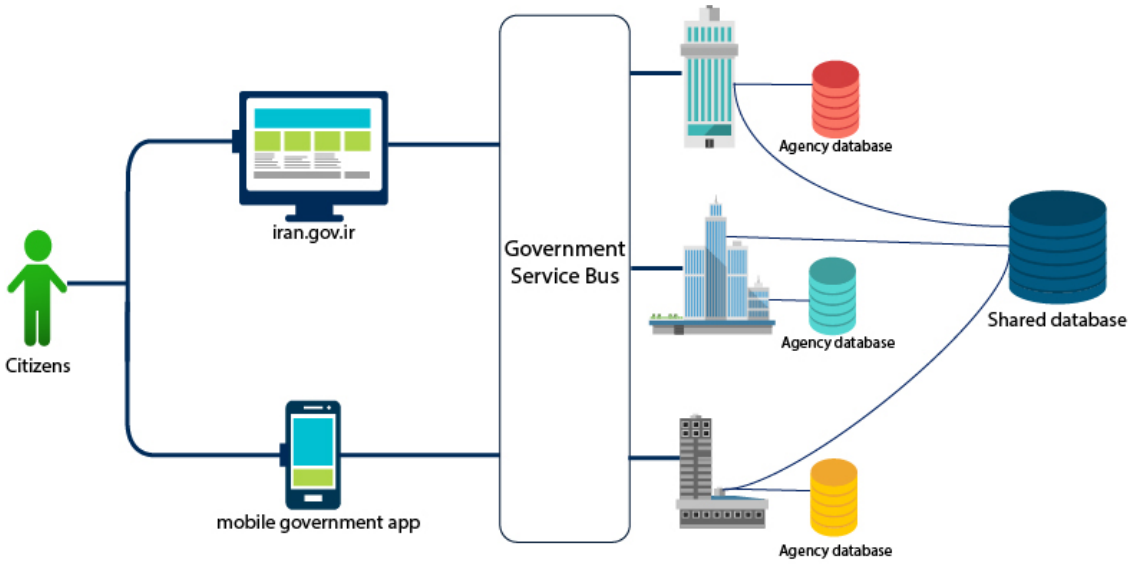

Figure 4: Delivering public services to citizens.

Table 2: Number of public services in each category.

Category	Number of services
Establishing laws, regulations, tariffs, and standards	95
Validation and qualification assessment	1243
Monitoring, auditing, and conducting trials	285
Enforcing the law	14
Registering public records	104
Publishing information, statistics, and records	130
Providing funds and benefits	224
Training and cultivating culture	192
Infrastructure investment, development, and maintenance	73
Service operator	234
All	2594

Classifying public services reflects the current state of the government services. It assists the government and IT managers in making informed judgments and decisions and facilitates management.

Future work concerns deeper analysis of public services to gain accurate information about the current state of the e-government. In addition, another direction for future work includes using public service classification in ITIL implementation as we think that the agencies can take a great advantage of using the classification especially in service design phase.

6 CONCLUSION

This paper introduces ten categories for classifying e-government services in Iran as a part of the national BRM. Using this classification is a catalyst for monitoring and verification of public services. This classification does not only help us to verify the services but also benefit public agencies. In addition, making a decision about the appropriate level of service granularity will be easier. It should be noted that our experience with classifying public service shows that at first identifying the service category was time-consuming but by gaining more experience this process speeds up.

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