E-government Maturity Model by Growth Level of E-services Delivery

David Zautashvili*

Abstract

E-government as a concept of governance implementation is a key element aimed at broader information transformation of society. The article proposes e-government definition and considers e-government types and characteristics. Very important is the question of assessing the progress of e-government. The most conventional system of e-government maturity evaluation is the assessment of e-services provision level. The article presents a four-stage e-government maturity model comprising: Web-presence, Enhanced web-presence, Transaction, E-democracy. The article confirms that the final stage of e-government evolution is an e-democracy and also presents some evidence for explaining the given evolution.

Keywords: E-government, E-government definition, E-government types, E-government maturity model, E-democracy.

Introduction

One of the major characteristics of our time, is the impact of the information and communication technologies on state administration that produced the concept of electronic government.

The concept of e-government appeared in the late decades of the XX century when the developed countries faced the low effectiveness of the state government institutions reflected in high costs, delayed decisions and bad governance. Introduction of information and communication technologies and internet was identified as a way to address these shortcomings.

Nowadays, most of the governments worldwide develop innovative systems and services of the electronic government as a mean for decreased costs, enhanced service quality for citizens, business and nonprofit organizations and transformed relations at all levels of the government sector. (Andersen, 2004; Venkatesh, Chan, & Thong, 2012; West, 2005). At the same time, various categories of customers jointly strive to receive more effective means for information availability in order to make relationships with the government institutions more simplified, time-effective and comfortable. They also strive to have immediate participation in state governance and decision-making (Heeks & Bailur, 2007; Jones, Hackney & Irani, 2007; Smith, 2010).

These two complementary trends broadly define the importance of e-government for the development of modern society and perfection of democracy institutions.

E-government definition

In terms of actual implementation, the concept of e-government has permanently evolved and expanded. It has made its way from simple use of information and communication technologies and internet applications in the government institutions to the concept of global transformation of total system of state governance.

In the beginning of the XXI century the definition of the electronic government emphasized the standpoint on improved information provision and services by means of information and communication technologies and Internet applications.

This is visibly demonstrated in frequently cited definitions of the e-government:

Fang (2002) defined e-government as " a way for governments to use the most innovative information and communication technologies, particularly web-based Internet applications, to provide citizens and businesses with more convenient access to government information and services, to improve the quality of the services and to provide greater opportunities to participate in democratic institutions and processes".

UN &ASPA (2002) defined e-government as "utilizing the Internet and the World-Wide-Web for delivering government information and services to citizens".

*Prof. Dr., Department of Information Technology, Akaki Tsereteli State University, Kutaisi, Georgia.
E-mail: david.zautashvili1@atsu.edu.ge

In the E-Government Act (2002) it is explained as "[…] using Internet-based information technology to enhance citizen access to government information and services, and for other purposes".

Carter and Bélanger (2005) referred to e-government as "[…] the use of information technology to enable and improve the efficiency with which government services are provided to citizens, employees, business and agencies".

This narrow definition of the e-government in the more recent works was enriched with transformation of the government under influence of information and communication technologies as well as utilization of ICTs aiming at improved democratic relations with government, civil society and other institutions.

According to Gil-Garcia & Luna-Reyes (2006) "electronic government is the selection, implementation, and use of information and communication technologies in government to provide public services, improve managerial effectiveness, and promote democratic values and mechanisms".

OECD (2004) defined e-government as "Use of new ICTs by governments as applied to the full range of government functions. In particular, the networking potential offered by the Internet and related technologies has the potential to transform the structures and operations of government".

Spirakis, Spiraki, and Nikolopoulos (2010) defined E-government as "the use of Information and Communication-Technology in the transformation of government; primarily aiming to theimprovement of accessibility, effectiveness and responsibility.... Electronic government guides to increasing citizens' participation and activecitizens' development affecting the mechanisms of democracy".

World Bank (2015) defined e-government as: "The use by government agencies of information technologies (such as Wide Area Networks, the Internet, and mobile computing) that have the ability to transform relations with citizens, businesses, and other arms of government. These technologies can serve a variety of different ends: better delivery of government services to citizens, improved interactions with business and industry, citizen empowerment through access to information, or more efficient government management."

So, at modern stage we can conclude that e-government is a broader concept than the use of ICT in public administration and enhanced effectiveness of the state government institutions.

Electronic government represents information and e-service by means of information and communication technologies and internet to citizens, business, for nongovernment organizations and other branches of the government and simultaneously, by means of mutual electronic interactions provide transformation of the structure and functions government that promotes the development of the electronic democracy.

E-Government'stypes and characteristics

Electronic services differ according to the users' needs and this diversity has given rise to the development of different types of e-government. E-government types are displayed in figure.
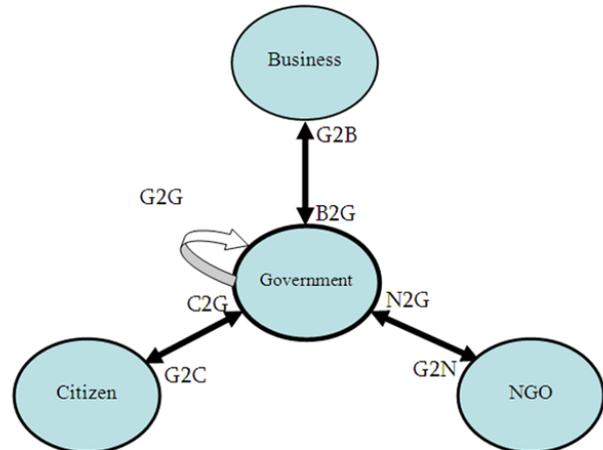
Fig. 1. *E-government types*

E-government functions can be classified into four main categories:

1. **Government-to-Citizen (G2C)** - Citizen-to-Government (C2G)

Electronic interactions between the government and citizens.

G2C allows customers to access government information and services instantly and conveniently from everywhere by use of multiple channels (PC, Web TV, mobile phone or wireless device) Ndou (2004).

C2G allows citizens to be involved in the government and have opportunity to influence the decision making of the government institutions.

2. **Government-to-Business (G2B)** - Business -to-Government (B2G)

Electronic interactions between the government and the business.

G2B includes various services exchanged between the government and business sectors, including information requests of a firm regarding taxes, business licences, registers, laws, business policy. Business services offered include obtaining current business information, new regulations, downloading application forms, renewing licenses, registering businesses, obtaining permits, and many others.

By means of B2G business is able to carry out discussion regarding the administrative processes for business

and products and influences the business policies of the government.

3. **Government-to-Government (G2G)**

Electronic interactions between various branches of the government.

In many respects, the G2G sector represents the backbone of e-government G2G e-government involves sharing data and conducting electronic exchanges between governmental sectors. his involves both intra- and inter-agency exchanges at the national level, as well as exchanges between the national, provincial and local levels. Seifert (2004)

4. **Government-to-Nongovernment (G2N)** - Nongovernment - to - Government (N2G)

Electronic interaction between the Government and nongovernment organizations.

The Government offers information and e-services to nongovernment organizations G2N Nongovernment organizations influence the government institution when making managerial decisions and support increased effectiveness of the governance and development of e-democracy (N2G)

G2N and N2G are the types that are less developed at the current stage of society evolution.

Currently there are very few services available that fall into this category. Success of these electronic interactions is feasible to achieve in the countries with the strong nongovernment sector.

E-government types, along with their characteristics, definition, and examples, are displayed in table1.

Table 1. *Characteristics and example of type's e-government.*

E-Government Types	Characteristics	Definition	Example
G2C-C2G	Electronic interactions between the government institutions and citizens contributing to simplified access to the government information and services. Also to, involvement of citizens in decision making process.	E-Participation	E-polling, e-consultation, e-petition, e-voting, Information systems of tax and fine payment. Information systems of social welfare (pensions, allowances)
G2B-B2G	Electronic interactions between government institutions and business organizations leading to development the mechanisms of electronic trading, competitive production of goods and services, to perfecting management of distribution for government needs	E-Business	E-tender, e-procurement, e-auditing, Information systems of tax, customs authorities, government institutions for certification and licensing
G2G	Electronic interactions between the government institutions at the different levels that ensures compatibility of standards for information storing and document flow, connection with unified computer nets of the government institutions at different levels, creation of interagency, regional and local information systems and database.	E-Governance	Inter-organizational workflow and exchange of data. Information systems for customs, tax, law enforcement and legislative authorities.
G2N-N2G	Electronic interactions between government institutions and NGOs ensuring participation in public policy decision-making.	E-Democracy	E- mediation, e-discourse, e-decision making Information systems in negotiation and decision making

E-government maturity model: from web-presence to e-democracy

International organizations, consulting firms and individual researchers elaborated e-government maturity models based on the resources, processes, technologies, infrastructures and web-presence of the e-government.

Fath-Allah et al. (2014) provide overview of 25 different models. The most outstanding and cited is the Layne and Lee model (2001). The Layne and Lee model is derived from observations of the evolving e-government in the United States. This model has been revised by Andersen & Henriksen (2006) and Lee (2010).

According to Gonha et al. (2012) existing e-government maturity models can be categorized into three groups:

1. **Governmental models**

These models have been developed by governments, consultants and academics to help the agencies identify and improve their levels of maturity in relation to e-government.

2. **Holistic approach models for e-government projects**

Holistic models are designed to be applied in electronic public services development projects

3. **Models of e-government evolution**

The evolution of e-government is often modeled by sequential steps, in the stages of growth models.

Proposed by e-government maturity model by growth level of e-services delivery which consists of 4 stages (see table 2)

Table 2. *E-government maturity model.*

E-Government Stage	E-services
1 Stage Web-presence	G2C
2 Stage Enhanced web-presence	G2C, G2G, G2B.
3 Stage Transaction	G2C, C2G, G2G, B2G, G2B.
4 Stage E-democracy	G2C, C2G, G2G, B2G, G2B, G2N, N2G.

Stage 1 - **Web-presence**

On this stage the government web-sites are created that are supposed to be regularly updated. The site will contain general government information (by-laws, orders, and statements), links to the ministries and state departments. The government information is intended for the citizens (G2C)

This stage is in a high degree implemented in the government agencies.

Stage 2 - **Enhanced web-presence**

On this stage the government suggests the provision of more information and electronic services to the citizens and business. (G2C, G2B) Interagency, regional and local information systems and databases are being created on this stage (G2G) Government agencies propose to the citizens the possibility to download information, services and applications published on the sites.

Stage 3 -**Transition**

On this stage online services acquire interactiveness and possibility to request information on various issues of interest. It is also possible to make online financial transactions and other types of services (B2G, C2G).

Business takes an active part in the government electronic tenders (procurement bids).

Stage 4 - **E-democracy**

This final stage proposes the full package of the electronic services and suggests more active participation of citizens, business and nongovernment sector.

The government deliver electronic services to citizens, business and NGOs, and simultaneously, involves them in the decision making and mutual dialogue based on the interactive services.

In the models of Westcott(2001), Shahkooh,Saghafi, & Abdollahi(2008), Siau& Long (2005),e-democracy is the final maturity stage.

According to Gronlund (2003) e-democracy is defined as "use of IT in democratic processes."

Siau and Long (2005) described e-democracy as follows: " This is a long-term goal for e-Government development. By offering tools such as online voting, polling and surveys, governments attempt to improve political participation, citizen involvement, and politics transparencies. At the same time, e-Government gradually changes the way in which people make political decisions."

Clift (2003) defined e-democracy as "the use of information and communication technologies and strategies by democratic sectors within the political processes of local communities, states/regions, nations and on the global stage".

E-democracy is utilization of ICT in working and making governance decisions with the obligatory electronic accouting opinions of all the stakeholders on all the levels of governance.

On the stage of e-democracy the government structures and functions are transformed. All the stakeholders (citizens, business and NGOs) are involved in the decision making for state governance by means of electronic tools of interaction. Meanwhile, part of the governance functions is gradually handed over from the government to the citizens, business and nongovernment organizations.

On the stage of e-democracy particular importance is given to nongovernment sector as to the main moving force in development of e-democracy through G2N and N2G electronic services.

With the development of e-democracy special meaning is given to legislative recognition of electronic consideration of viewpoints of citizens, business and nongovernment organizations while making governance decisions and cyber security of the electronic services.

5. Conclusions

Nowadays we observe the trend of increased understanding of the fact, that e-government is not just a usage of ICT for successful functioning of the government agencies but it is substantial transformation of government institutions functioning based on ICT and leading to the new quality of governance and development of e-democracy.

Today, there is no particular explicitly recognized e-government maturity model. International organizations, consulting firms and researchers give their preference to any of the models referred to the priority benchmarks of the model (resources, technologies, web-presence).

The model presented in the article is the evolutional model of e-government maturity. It clearly identifies the difference between the stages in accordance with the growth in electronic service delivery. Implementation of the final stage e-democracy is a long-term process. Successful development of this stage significantly defines transformation of government-society interactions through electronic services.

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