Ten Years of eGovernment: The 'End of History' and New Beginning

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Abstract. This paper argues that although there is no lack of eGovernment "frameworks", both governments and research are both in need of better guiding models in order to address contemporary and future challenges. This argument is pursued by reviewing a decade of eGovernment development and research in terms of the guiding values as expressed by influential maturity models and relating them to the eGovernment domain, as defined by formal definitions and practice in combination. We find that development so far has overall been too narrowly guided by a technical focus and economic and administrative values and too little informed by public sector values. While there is no lack of broad frameworks there is scarcity as concerns structured research and evaluation models that encompass such values.

Keywords: Maturity model, eGovernment, electronic services, organization, values, public values

1 Introduction

In the 2007 EU benchmarking report on eGovernment Austria achieved 100 % on online availability and 99 % for online sophistication (meaning full electronic case handling), the two measures considered by the EU to measure eGovernment success [1], closely followed by several countries. Even if Europe as a whole scored only 70 % and 84 % on the two measures respectively it seems we are rapidly approaching the end of eGovernment history, as defined by the EU. Austria has com there, other countries will follow, sooner or later; the trend is positive over the years since the measurements started in 2000. Soon eGovernment will be fully implemented and then what? Is today's Austrian model the final say on e-government practice? Of course not, most would say (as we shall demonstrate below), but this is as far as the EU eGovernment measurement model reaches, and it is not alone. To guide the efforts onwards we need new models able to cater for future developments. What goals, beyond online availability and full case handling can there be for governments' use of ICT? The eGovernment literature provides many suggestions, but the point to be made in this paper is that research and development are both guided by the models we use to describe and analyze the world. The fact that the EU model hit the ceiling early on is in this perspective a measure of limited vision which has meant limitations to

what has been done so far, both in research and practice. While it is easy to point at very creative exceptions (as we will below), eGovernment research is largely a collection of descriptive case studies [2]. There is little theory involved and very little of the theory that is actually there involves both "electronic" and "government", as this paper will demonstrate. Two reasons for this, the paper argues, are that IS researchers have focused too much on technology and even though there is quite some discussion about organizations we have largely ignored government, which is not just any organization. Note that the point of this paper is that structured models are missing, not identification of factors. There is quite some literature on "important factors", but there is so far too little ambition to model relations among factors in ways that sufficiently well cover the problem domain. According to Dawes [3], "Research into relationships among government, society and technology has grown substantially over the past 30 years. However, most research and most advances in practice address narrowly defined categories of concern such as government organization, citizen services, interoperability, or personal privacy."

This paper argues that although there is no lack of eGovernment frameworks, government organization and research are both in need of better guiding models in order to address the step change that is necessary to meet many of the contemporary and future challenges.

The research question of this paper is, what requirements are there for eGovernment maturity models able to guide us over the coming years of new eGovernment challenges and developments? How well do existing models meet the criteria, and what are their shortcomings?

2   The eGovernment Domain

There is no explicit eGovernment theory, but there are several definitions. There are numerous things that researchers and practitioners do under the label of eGovernment or some synonym. None of these things can be discarded so long as they fall within one or more of the many explicit definitions existing. Non-controversial examples of the latter would include privacy, accountability, trust and many more. Controversial ones would address government organization and public values.

The eGovernment domain can be defined by a combination of two approaches. One is to consider all the explicit definitions that organizations and researchers use to delimit and specify the field. The other, complementary, approach is to consider what is done under the label of eGovernment, in research and in practice and analyze the implications. In this section we will do both. We will then combine the two results and define the eGovernment domain in terms of both breadth and depth. Breadth will mean to what extent models cover all the issues and stakeholders involved, and depth will mean how well they deal with the issues involved; the relation with government.

Explicit definitions

OECD [3] reviewed eGovernment definitions and arrived at four types of definitions:
   Type 1. "Internet (online) service delivery".

Type 2. "E-government is equated to the use of ICTs in government. While the focus is generally on the delivery of services and processing, the broadest definition encompasses all aspects of government activity".

Type 3. "E-government is defined as a capacity to transform public administration through the use of ICTs or indeed is used to describe a new form of government built around ICTs. This aspect is usually linked to Internet use".

Type 4. "The use of ICTs, and particularly the Internet, as a tool to achieve better government". This is the only perspective taking a fundamentally external perspective; "better government" must be measured from outside, in terms of what good it does for society.

The categories differ in terms of both domain definition (breadth) and ambition (depth). Breadth, because "better government" (type 4) is clearly a wider problem, involving more issues and more stakeholders, than "electronic service delivery" (type 1). Ambition, because type 4 definitions explicitly relate to government values while type 1 ones does not necessarily. By all accounts, eGovernment involves stakeholders both in politics, administration and civil society [5]. However, the different OECD definition types focus distinctly on different parts of the e-government social domain [5]. For example, while certainly even electronic services may require legal change, this does not necessarily mean a transformation of public administration. Making internal administration more efficient (type 2) does not necessarily involve either policy change or affect customers/users/citizens directly. At the other end of the OECD definition spectrum, "Better government" does not necessarily involve e-services directly. For example, introducing "cyber laws" protecting privacy broadly across all activities people and organizations may undertake could well be seen as making government a bit better in a country where such legislation previously has been missing. Type 4 definitions include the policy making domain, politicians, and consequently also citizens although not necessarily directly. The OECD taxonomy is useful for our purposes because it relates technology to government. These relations are quite different for each category and the integration is the highest for type 4 definitions where technology is directly related to better government; there is no limitation neither in social scope, technology use, or organizational change. In contrast, the type 1 definitions have a limited social scope, do not measure neither organizational nor policy change, and do not include measures of better government. They might of course include measures of better services which may indirectly be a part of improving government. However, the point to be made – which will be illustrated below – is that government is not only the sum of its services, it also includes other aspects of citizen-government relations such as accountability, trust, fairness, etc.; aspects that not pertain to service delivery alone but also to service specification, audit, legal rights and responsibilities etc. Definitions of types 2 and 3 define intermediate levels of relations between technology and government. The OECD taxonomy hence defines the "depth" of eGovernment.

Implicit definitions: activities and issues

Implicit definitions concern what eGovernment in practice and research is about. Here we look in particular for the "breadth" of eGovernment, what issues are involved, but as we shall see, depth is also highly involved if not clearly specified.

eGovernment conferences are typically designed to reflect both developments in practice and researchers' own ideas about what might be interesting now or in the future. Hence the calls for papers typically include comprehensive overviews of what is considered to be the contemporary contents of the field. The following examples are taken from the calls to two main conferences, EGOV 09[1] and dg.o 09[2] which are respectively the main European and US eGovernment conferences. For reasons of space and focus we will not here exhaustively list topics but only submit examples to make three points important for our argument, namely, (1) A comprehensive social domain involving all stakeholders and all government activities is today generally understood as the correct focus of eGovernment study. Limitations, such as focusing on e-services, should be considered as sub-domains and be contextualized within the total domain; (2) The technical eGovernment domain is today seen to include any technology that can be applied to interactions within that social domain; and (3) The OECD definition taxonomy serves as a useful benchmark to analyze maturity models as it can contain any and all of the issues covered by the conferences.

The dg.o conference call supports these three points already by its very structure. It contains four categories, (1) Digital Government Application Domains, (2) IT-enabled Government Management and Operations, (3) Information Values and Policies, and Information Technology, and (4) Tools to Support Government. Category 1 defines the social domain widely in terms of all sorts of government operations, ranging from courts, education and health to natural resources management, transportation systems, and urban planning. In short: any social area where interaction between government and citizens is organized and/or regulated. Theme 2 defines the organization of government operations, pertaining to OECD definitions type 2 (for example "IT service architectures" and "cross-boundary information sharing and integration") and 3 (for example "decision making processes" and "IT adoption and diffusion"). Theme 3 directly matches the OECD type 4 definitions as it focuses on government values to society, such as participation, transparency, trust and openness. Finally, theme 4 addresses the technology domain in an open way, by means of categories not limited to specific technologies but application areas which can be related to government values, such as "collaboration tools".

The EGOV 09 conference themes also suggest OECD type 4 definitions (depth) as well as a wide technical and social domain definition (breadth). For example themes like "e-participation, e-citizenship and digital democracy", "mass collaboration of stakeholders in government modernization", and "e-policy, e-governance, ethics and law" imply type 4 definitions because they involve citizens, discuss roles of different stakeholders ("governance"), and concern issues at the heart of government, such as participation. They also imply a wide social domain definition. Themes like "crowd sourcing, grid computing, social software" and "mobile technologies" imply a wide technological domain definition not limited to web technologies

Conference calls give a picture of what researchers and practitioners in the field find worthwhile addressing at a given point in time. A more analytical picture is given by an EU-commissioned research project analyzing expected futures of eGovernment,

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[1] http://www.egov-conference.org/egov-2009/call-for-papers
[2] http://www.dgo2009.org/index.php/en/call-for-papers/52

RTD2020, which analyzed the current state of the art in eGovernment globally and developed future scenarios and research themes based on a series of workshops involving senior practitioners and researchers. One outcome of the research was thirteen research themes [6] that were represented both in the current state analysis and the scenarios for the future, which together represent researchers' and practitioners' view of the eGovernment field.

Consistent with the conference calls, the themes of RTD2010 outline a field where "better government"-type definitions are necessary (e.g. "government's role in the virtual world"; "performance management"), where a wide social domain is addressed (e.g. "cultural interoperability", "e-participation"), as well as an open mind towards new, not yet developed, technologies (e.g. "cyberinfrastructures", "ontologies", "intelligent information"). This paints a picture of a field with great breadth. As for the depth, many of the themes are far-reaching in terms of the role of government and address change yet unseen; "the role of government" and "the value of ICT investments" being two examples that reach far beyond "full electronic case handling", which is the end-of-history for the EU benchmarking model.

Integrating the RTD2020 results into a comprehensive general eGovernment framework, Dawes [3] suggests six central dimensions that need to be taken into account: the purpose and role of government, societal trends, changing technologies, information management, human elements, and interaction and complexity. These six ideas together suggest a government in a state of change due to its role as a central agent in what Dawes calls a "dynamic open socio-technical system". Within this view there is no real difference between government and e-government. ICT is one out of several areas where the development affects government and where government has some opportunity to influence the development. Governments can not think away ICTs, they are inherently intertwined with most operations. Even though ICTs will continue to develop and governments will continuously have to develop new and more effective ways of operating focus will no longer be on the "e" but on the underlying values, issues and processes which governments need to sustain.

This brief review of two major contemporary conferences and a comprehensive research effort investigating present and future eGovernment themes, corroborate the definition of the eGovernment domain made above. It includes (1) a wide social domain including stakeholders in politics, administration and society, (2) a wide technical domain not limited to any particular technology, and (3) a focus on several issues specifically to do with government values, such as accountability, legitimacy, and responsibility, which concern the very role of government. Even though neither the conference calls nor the RTD2020 or Dawes' framework explicitly define eGovernment, the implication of their framing of the field clearly is in line with the type 4 definitions in the OECD taxonomy; eGovernment needs to be discussed in terms of its role to achieve "better government".

3 Models of eGovernment Development

Having defined the eGovernment domain we will now turn to an analysis of some of the more commonly used and/or discussed maturity models. The first purpose of this

analysis is to see how well they can serve as guiding visions of future eGovernment development. A second purpose is to provide some empirical basis for discussing the need for better models for the next decade, at least, of eGovernment.

The presentation below is organized by the OECD taxonomy, for two reasons. First, as already discussed this taxonomy is organized by "depth", degree of involvement with issues pertaining to government values. Second, it also provides a rough but adequate time perspective on the development in eGovernment practice.

Type 1: Service delivery models

The EU model used for benchmarking across Europe since 2000 contained four steps until 2007 when a fifth step was added. The original four stages sequentially were: information, one-way interaction, two-way interaction, and full electronic case handling [7]. In the latest (2007) measurement, the list was complemented with a fifth step called "personalization" which means proactive and/or automatic service delivery of a service granted by law, for example tax return or unemployment subsidy, without request from the user [1].

The EU benchmarking model is not alone in this definition. Another much cited series of measurements covering the whole globe was done by Brown University in the US, in which eGovernment is defined as "the delivery of public sector information and online services through the Internet" [8]. Seen as limited models focusing on one particular eGovernment issue, this kind of models are not problematic even though they clearly limit vision. When used as the only guiding star they might be detrimental as they avoid the complex issues of eGovernment. They show us what is on the web but do not help us decide if or how this leads to "better government". If models like these are taken to define the eGovernment field we are near the end of its history.

Type 2 and 3: Organizational change models

Because many models mix elements of OECD definitions type 2 and 3 – organization and policy is closely related in the public sector – we keep these two together in this account. Models in this category deal with interoperability and integration of services across government department borders. As government departments are heavily regulated by law almost anything concerning extending cross-border integration requires some change of regulation.

The arguably most cited model early on in this category is by Layne & Lee [9]. The four stages of this model concern the "multi-perspective transformation within government structures and functions as they make transitions to e-government", that is both technological and organizational challenges are involved. The stages are cataloguing, transaction, vertical integration, and horizontal integration. The focus is clearly on integrating technology to allow for data transfer. For example the goal of vertical integration is "to seamlessly integrate the state's system with federal and local systems for cross referencing and checking". Associated risks, such as privacy intrusion are mentioned as challenges, however only to the extent they pertain to data. Viewed from a government value perspective, privacy is not an individual challenge, just some technical detail, but part of a trustworthy, and legally regulated, relation

between government and individuals where not just data is concerned but credibility, accountability and accountability.

Models of this kind considerabl widen the focus as compared to the type 1 ones as they bring in organizational issues. However, in doing so, they tend to be blind to the depth of issues involved; they tend to avoid policy. Integration and interoperability are positive for management, but they are contested values in government. For example, maximizing integration may jeopardize privacy as data flows freely and without citizen control (which is one part of the very definition of privacy). It increases some risks, e.g. for intrusion and fraud, other (negative) government values. It blurs the borders between government organizations which can reduce accountability. Accountability is strictly regulated in (democrativ) government and is one fundament for (any) government's legitimacy. Cross-department electronic, automated, services require reorganizing the accountability regulation accordingly so that no gaps occur [10, 11, 12]. This is an issue that involves not just management but also policy.

Layne and Lee are not alone. Gil-Garcia [13] reviews a number of stage models of this type (including the Layne & Lee one), summarizing them by the following 7-step resultant ladder. The basic thrust identified behind the models is that of integration of technology: "The evolutionary approach examines e-government stages: from developing a Web page to integrating government systems behind the Web interface " [13].

1. Initial presence: getting on the Internet, static information.
2. Extended presence: more dynamic, specialized information that is distributed and regularly updated in a great number of government sites
3. Interactive presence: Governments use a statewide or national portal to provide access to services in multiple agencies.
4. Transactional presence: Citizens and businesses can personalize or customize a national or statewide portal.
5. Vertical integration: integration, virtual, physical or both, of similar services provided by different levels of government.
6. Horizontal integration: comprehensive and integral vision of the government as a whole.
7. Totally integrated presence: Defined as full integration horizontally as well as vertically.

This 7-step model is more detailed than the Layne and Lee one but not fundamentally different.

There are models basically belonging to this organizational change category that border to next level in the OECD taxonomy, "better government", because they explicitly include the concept of values. For example Gottschalk [14] speaks of "value interoperability" which is recognized as a precondition for (full) interoperability, but value is not specified in detail, neither related specifically to government values.

A popular contemporary discussion is that of Enterprise Architectures (EA). Although EA emerged as a technical concept it has been extended to cover whole organizations, and whole governments [15]. For example the US Federal Enterprise Architecture (FEA) includes five levels starting at the top from goals, performance measures and outcomes and working downwards detailing and specifying distinct layers; in turn, business processes, service components, data, and technologies [16,

17]. By using this model thoroughly, values will be used at the top level to define goals and performance measures and thereafter logically determine definitions and specifications all the way down the pyramid to the bottom layers, data and technologies. However, EA and FEA models are "empty". They are comprehensive logical frameworks defining process maturity but they do not contain specific government content and they do not specify stages. They do define different levels of maturity, however, and are in this respect less vulnerable to advances in research and practice. While this makes them less well-defined in terms of eGovernment definitions it also makes them very useful. They can be used to guide development towards convergence, provided other models are there to fill them with eGovernment specific contents.

Type 4 – better government models

While there are many dimensions along which government can improve and there is no way to define a "best" government, type 4 models are such that relate ICT use in government to government specific factors. The only evaluation model so far that is explicitly built on a comprehensive eGovernment definition is the EU eGEP (eGovernment Economics Project) model. There are indeed models for assessing enterprise architectures, and specifically the FEA [18], and there are maturity models for assessing capabilities in general, such as Capability Maturity Model, CMM [19]. While well defined to measure maturity of processes, these models are, again, "empty" with respect to eGovernment; they do not address government-specific values specifically.

The eGEP model was constructed by the EU for the purpose of being able to monitor eGovernment more generally than the benchmarking model presented above. The eGEP model is designed after the EU definition of eGovernment, which is an OECD type 4 definition:

> "e-Government is the use of Information and Communication Technologies in public administrations combined with organizational change and new skills in order to improve public services and democratic processes" [20].

From this definition, three "value drivers" are elicited, efficiency, democracy and effectiveness. These are specified by several variables, leading to financial & organizational, political, and constituency values respectively [21]. The project reports both a theoretical model underpinning the choice of variables and specifies measurement of indicators. Although not every government value is specifically addressed the model as such can cover everything.

In terms of OECD match, eGEP specifies better government. However, there are reasons to question the depth of the model. Many measures are shallow and it is questionable how well they indicate positive change with regard to the often complicated issues covered. For example, "participation" is measured by "number of queries submitted online", and "transparency and accountability" is measured by "number of services requiring a two-way interaction with users" [21, p. 48]. The ambition with the model is to use quantitative measures so at least calculation is unambiguous and interpretation minimized. This is laudable but there remains the problem of explaining how well the indicators used reflect the underlying reality, the values pertaining to government. Government values are of different nature as

concerns measurability. Some values, such as privacy, can not be defined once for all as there is no absolute measure. What is considered "enough" privacy can at the end of the day only be measured by citizens' preferences. These change over time, and they are different in different countries depending on traditions. Other values, such as accountability, can in fact be measured objectively. For each step of each process accountability can be specified and communicated so that all actors can know what is expected from them. The distribution of responsibilities can be discussed, but as long as there are no "accountability gaps" in the processes – issues or events unaccounted for – the process can be trusted from this point of view. While this is not always the case, and electronic cross-organizational services risk inadvertently creating new such gaps (Smith et al, 2008) the point is that accountability can be specified. It does not seem, however, that it can in any reasonable way be measured by the number of services requiring two-way interaction. And it can not be reduced to "transparency". While transparency is one necessary ingredient in accountability it is not sufficient. Accountability is about someone actually taking responsibility for activities, and non-activities, it is not just about information.

In view of such in-depth analysis of the values involved it is open to discussion how well the EGEP model can measure progress.

4 Discussion

There is no doubt that ICT will continue to develop and that government will become more sophisticated in using it for improvement, and in this paper we took the approach that we should update the eGovernment research field so as to stay in business by being able to follow, and hopefully even lead, the further development.

To that end we started by asking, what can we do to modernize the field so as to be able to understand and guide further development? We first asked how the eGovernment domain should best be defined. This question was answered by reference to the OECD taxonomy of eGovernment definitions in combination with a review of today's state of the art and future expected developments. The review of eGovernment practice showed that the fourth type of definition ("better government") was necessary to cover the depth of the eGovernment domain, as were wide definitions of the social and technological domains involved.

At this point let us briefly introduce our eGD-MAM (eGovernment Domain Match Analysis Model), designed to analyze and compare the kind of models we have presented here. It uses five criteria to assess maturity models' match with the eGovernment domain as discussed above: (#1) Coverage of the social domain, (#2) Coverage of the technological domain, (#3) Domain integration, (#4) Consistency and measurability, and (#5) Government (value) relevance. Analyzing the maturity models by means of the eGD-MAM, we can see that models designed after "type 1" definitions, focusing on implementation of electronic services, are clearly approaching the end of their history as guiding stars for the future as they are too limited in terms of four of the eGD-MAM's criteria (except for #4 where they may score well). Most importantly, they are not able to specify the relation with government and hence they cannot help us see if or how online services improve

government. As of today, we have a number of models that are not capable of meeting the requirements ahead of us and hence not suitable as guiding stars for eGovernment. There are, however, a few models that may prove useful candidates for next decade of eGovernment. These include the specifically eGovernment-oriented eGEP model as well as open process maturity models such as EA assessment frameworks, ISO 9000, and similar. All of these score well on criteria #1 - #4. While the latter type of open models are frameworks measuring form rather than content (and hence do not necessarily score well on #5), the eGEP aspires to a comprehensive eGovernment content measurement by thoroughly defining a number of variables related to #5. There are pros and cons with the different types of models. Open models can more easily become standards because they can be used in any country independent of government traditions, and state of development. Models detailing contents, like the eGEP, will face controversy with respect to the indicators. As electronic services continue to develop and replace manual services, ever more values will be "hard-wired" into the processes, such as specifications of accountability, openness, audit trails, etc. This means evaluation of progress in pursuing these values will have to be more sophisticatedly designed to meet legal requirements and build public trust. On the other hand, pursuing models like the eGEP will provide a step further towards understanding eGovernment in terms of the measurable values it brings to governments and, to some extent, citizens. It will lead to more discussion about just what public values are (and hence it may face trouble with a general model quality criterion – simplicity). Pursuing EA or ISO 9000 models, to the contrary, is likely to lead to different countries developing different measures which will likely lead to less focus on contents and more on process. On the other hand, EA and ISO type models have the great advantage that they are consistent across the whole system. Using ISO 9000 leads to standardized products with clearly defined properties, produced by a well-defined process. This means they can be used in modules; each and every part of the production chain will have to adopt the same rules. This is a substantial benefit. Clearly eGovernment maturity models need not encompass the entire field. It is of course necessary to also have more specialized models focusing on steps in the development which are particularly important at a certain point in time. Unlike today's situation where we have seen that the "type 1" models are typically ignoring wider government values, applying EA, ISO and similar approaches will mean that even models with more narrow social or technical scope need to include the "depth" of eGovernment, the relation to government.

To stay in business it is a challenge for the eGovernment field to take up the challenge of constructing better models, starting from where the front line is today. This is, we propose, not among the commonly used technology-oriented models or even the organization-oriented ones limited to technical interoperability and service integration, it is among the policy and government values-oriented ones such as EGEP, EA, and similar. This paper has provided the eGD-MAM model to be used as a test of the quality of existing and new models in the eGovernment field.

Conclusion

This paper has shown that there is a need for new models to meet the contemporary and future challenges of eGovernment. We have shown that the most important challenge for these new models is to be able to handle government values. That is,

eGovernment research must become "deeper". It must better understand the relation between technology, organization and government values. We find that research and development so far has overall been too narrowly guided by technical focus and economic and administrative values and too little informed by public sector values. We suggest that next generation of eGovernment research must take up the challenge of understanding these values and contributing to defining ways of assessing them so that we can understand how eGovernment can contribute to better government. If we fail to do that, the eGovernment research field will face the end of its history. Implementing "full case handling" is today well understood while using ICT to make government better is still a great challenge; eGovernment researchers should take it up. The eGD-MAM model can be used as a test for upcoming proposals.

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