

EU eGovernment Benchmarking 2010+

General remarks on the future of benchmarking
Digital Government in the EU

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1 Executive Summary

The following paper makes a range of recommendations on changes to the methodology of the EU eGovernment benchmark (EUeGovBe) for the years beyond 2010.

First, it presents several frameworks to structure participating Member States' discussion based on a review of existing research and practice. Second, it provides an overview of relevant benchmarking activities including a few new insights on the EUeGovBe. Finally, suggestions for the future EUeGovBe are made.

The redesign of the EUeGovBe can be approached from several angles. A structure build on three pillars is proposed for deliberations among countries: guiding principles, benchmark methodology, and reporting and learning. Criteria to define measures, scope and research method are discussed as well.

There have been many benchmark studies on eGovernment. However, the benchmarks of the EU, the United Nations and Brown University have the longest history. Similar to the EU's benchmarking activities, the United Nations has started to work on its revision of its eGovernment benchmark end of 2008. The scope of eGovernment benchmarks is mostly on the supply/output side and a stage model of the government (online) services. The reviewed benchmarks are no exception.

To build future cause-and-effect frameworks for the EUeGovBe or better understand its complexity, three frameworks are presented. First, a typology of digital government is outlined as the terms eGovernment, eGovernance and Government 2.0 are sometimes used in similar way. Second, to understand participatory action, the democracy cube is introduced. It provides a three-dimensional view of various forms of participation. And, third, looking at the technology enactment framework, it becomes evident why capturing the transformative effect of eGovernment is a complex task.

Overall, the public sector is facing significant change in the coming years which will shape our thinking on digital government in general and the priorities for the EUeGovBe in particular. Among others, these are: a rising public sector spending, the trade-off between free market and regulation, new consumer groups, the information economy, Networked Government and Cyber Security.

Finally, the following suggestions for the future EUeGovBe are given for further consideration:

- Building data on a set of measures: core measures (e.g. sophistication, landscaping), elective/short term measures (e.g. Service Directive 2009) and test measures (e.g. not published but results given to government)
- Extend the unit of analysis to the European Commission (DGs) and all of its agencies (e.g. online services, Websites).
- Involve the public in the process of revising the EUeGovBe methodology or parts of it.
- To add some form of lead-measures to the EUeGovBe, the political landscaping could be extended by some trend and time questions.
- Data could be used to define a Member State's access to EU-level monetary or other types of resources to perform its task.

2 Introduction

The potential of benchmarking as a tool for learning, information sharing, and goal setting or supporting performance management has been recognized since the 1980s.¹ Unlike the private sector, the motivation for benchmarking in the public sector is not simply for competitive advantage. Benchmarking also serves the need for accountability. Since Lisbon, benchmarking activities are a cornerstone of the EU's "open method of coordination".

Together with the UN's "eGovernment survey"² and West's³ "Global eGovernment report", the European Commission's "eGovernment Benchmark" (EUeGovBe) belongs to the longest running efforts to track the development of eGovernment. It can be considered a success. It has positively influenced eGovernment progress and policies in EU Member States (MS) and beyond. It also facilitated knowledge sharing among MS. However, as noted by the European Commission⁴, MS and researchers⁵ alike, the time has come to change the EUeGovBe. The most common critique being that the benchmark's only focus is in on the supply side of eGovernment.

There are several reasons which provide the impetus for changing the EUeGovBe: developments in technology, a new thinking about the citizen government relationship, MS progress in providing the 20 benchmarked online services, and a new EU policy framework for the information society and media only 1.5 years away. Unfortunately, the development of a relevant and universally accepted benchmark for eGovernment will continue to be a challenge around the globe. Many aspects of eGovernment, especially transformation or its impact are difficult to capture.

The purpose of the following paper is to facilitate MS deliberations on the future design of the EUeGovBe. Accordingly, the paper is structured as follows. First, it presents several frameworks to structure MS discussion based on a review of existing research and practice. Second, it provides an overview of relevant benchmarking activities including a few new insights on the EUeGovBe. Finally, suggestions for the future EUeGovBe are made.

3 Notes on benchmark design

Benchmarking can be distinguished from other traditional forms of evaluation by its attempt to visualize best practice through normalizing comparison and by urging public entities to ask themselves what they can do to promote "good" or "best practices".⁶ Benchmarking enables and motivates to determine how well current practices compare to others practices, experience best practices in action, locate performance gaps, and prioritize opportunities and areas for improvement. Benchmarking is not the same as benchmarks. Benchmarks are performance measures and benchmarking is the action of conducting the evaluation.

The redesign of the EUeGovBe can be approached from several angles. Table 3-1 provides a potential structure to facilitate MS deliberations on the redesign. It is based on three pillars: guiding principles, benchmark methodology, and reporting and learning. As each of the pillars builds on the other, it is

¹ Bullivant 1994

² United Nations 2001

³ West 2001

⁴ European Commission 2008

⁵ Jansen 2005, Janssen/Rotthier/Snijkers 2004, Bannister 2007, Codagnone/Trond 2008, Osimo 2008

⁶ Yasin 2002

recommended to go through them chronologically. Greater details are provided in the following chapters.

Guiding principles

Existing (e.g. i2010) and future policies such as the recent Malmoe declaration⁷ influence decisions on measures or their weighting. Moreover, behind any policy, there is an underlying assumption of a cause-and-effect relationship between input, output and outcome. For example, the EUeGovBe focus on E-Procurement is based on the assumption that it increases Europe’s competitiveness and creates new opportunities for the internal market—a major goal of the Lisbon agenda. In addition to policies, it is important to have a shared understanding of terms and concepts/frameworks related to eGovernment as they also tend to guide design choices.

Dimensions	Details
<i>A - Guiding principles</i>	
Policy	Which policies should guide the design? e.g. i2010
Frameworks / Cause-and-effect relationships	Which underlying frameworks guide the design? e.g. EGovernment, citizen satisfaction, government transformation, online sophistication model, etc.
Priorities/Scope	Which priorities? On a macro-level, what should be measured? Compared with what?
Governance & Responsibility	e.g. How does the process of deciding on measures or guiding frameworks look like? Which parties are involved (EC, MS, citizens, academia)?
<i>B – Benchmark (EUeGovBe)</i>	
Framework	e.g. Online sophistication model
Unit of analysis	e.g. 20 public services and national portal in a country
Measures/variables/indicators	Natural, proxy, constructed e.g. Service compliance with accessibility standard
Scoring and metric	e.g. how are measures translated into values or ranks?
Frequency	How often? (e.g. EUeGovBe = annually)
Data collection	e.g. currently (Excel sheet with questions), timeline, questions to ask
Data sources	e.g. who provides the data?, sample size
Data analysis	e.g. type qualitative and quantitative methods
Costs	e.g. value for money of the benchmarking activities
Limitations	What are the weaknesses and gaps of the benchmark? Which data is missing and how can it be made available?
Execution	e.g. who conducts data collection and analysis?
<i>C – Reporting and Learning</i>	
Results	e.g. Which results? How are they presented?
Access	e.g. Which data is accessible? Who has access? How?

Table 3-1: Structure to discuss the EUeGovBe redesign

Once policies and underlying frameworks are clear, priorities for the EUeGovBe have to be set. What should be measured that will be compared? With what should the results be compared? For evaluation

⁷ European Commission (2009)

there are many possibilities. Will they be compared with other or similar organizations? A policy performance target? Or may be with last year's benchmarking results? The governance structure of the benchmark can also be an area of change. Citizens could be allowed to suggest certain measures or vote on others. Another issue to discuss might be the level of influence MS have on altering results.

Benchmark (EUeGovBe)

The benchmark's framework is derived from the final outcome of deliberations on the "guiding principles". The unit of analysis is essentially what the benchmark is supposed to study and where. In the EUeGovBe measures are referred to as "indicators" or "sub-indicators". A term with the same meaning is variable. Criteria for selecting measures are described in Chapter 3.1.1.

In general, there are three types of measures: natural, proxy and constructed. A natural measure is one that is already in use and can be easily connected to a benchmark objective (e.g. high investment into IT = Euro spent on ICT in the budget). When there is no natural measure available, there might be a measure available connected to a benchmark objective (e.g. information society = number of broadband connections). The EUeGovBe attempt to benchmark "citizen-centricity" is an example of a constructed measure when there is no clear understanding how something should be measured. A constructed measure describes different levels of achievement and assigns a numerical value.

Along these lines, the way measures are combined or balanced for results needs to be set. There is no common construct for scoring and metric in benchmarks.⁸ Conveying a complex issue in numeric scales belongs to the most challenging aspects of a benchmark. The scoring method will, therefore, vary with context.⁹ Much of the discussion on improving a benchmark is based on finding more representative set of measures and/or altering the weightings. Accordingly, this paper does not attempt to cover this issue as well as a detailed review of sampling and data analysis methods.

Revisiting the way data is collected may be of interest to reduce work load for MS personnel and facilitate information sharing. Currently, data is being collected through an Excel sheet that needs to be filled in by MS annually. For some topics of interest to policy makers, the frequency of a benchmark is of relevancy. A secure Internet benchmarking platform could provide new and alternative means of surveying, data access, measure identification, frequency and analysis.

Benchmarking data can also be influenced by its data sources; Therefore, which data is being sought, how it is collected (e.g. interviews, excel based survey (EUeGovBe), web search, software bot) and who it is collected by. Moreover, different types of data sources may need to be consulted for a single measure. Varying levels of easiness of access can further add to the complexity of data collection and, thus overall costs.

Once the design of the benchmark has been finished, its costs should be estimated bottom up from each measure to the final analysis. Moreover, the credibility of a benchmark can be improved, if its weaknesses are identified and addressed in the presentation of its result. A council of advisors could offer such a second perspective. While the EUeGovBe is executed by the respective benchmarking framework contract holder for European Commission's Directorate General for Information Society and Media (DG INFSO), alternative means of data collection and analysis could be explored in the future.

⁸ Anderson/McAdam 2004

⁹ Bannister 2007

Reporting and Learning

The way results are presented in a benchmark can influence its perception and which content will be communicated primarily. Such issues are rarely considered in discussion of benchmark design or during revisions. Given the volume of data submitted by MS, there is of course only so much detail possible in the benchmarking report. As indicated for 2009, the EUeGovBe results will be put into greater context achieved through the extended political landscaping. Following the learning and performance management aspect of benchmarking, the question of access remains open. Which data is accessible and to whom?¹⁰ For example, MS learning from each other could be facilitated by making the complete data set or of the top five available to MS. Yet who should be excluded and why? How long should data be disclosed, especially in light of the Malmoe declaration's focus on aspects of open government? Furthermore, what will be the impact of making data available to the public? Publicly available EUeGovBe data might lead to innovative forms of visualization or linking with other data sources.

3.1 Selecting Measures

The following criteria are useful for selecting a set of measures for EUeGovBe activities. Single and aggregated measures should be evaluated against the criteria below. The EUeGovBe uses a slightly different terminology. A set of measures are aggregated into an "indicator" and single measures are called "sub-indicators".

Understandability

Will the measure be understood by public managers and politicians? Generally, overly technical or complex measures have limited use for senior level public officials. Also think of those doing the benchmarking research. Will they understand it?

Impact

The data do not speak for themselves. Data is interpreted based on a framework, either chosen by default or careful consideration. Therefore, how could the measure or rather the returning results be interpreted and used internally and externally? Is there any risk of unintended consequences? Who will gain or lose? Existing political sensitivity related to a measure needs to be considered.¹¹ The online sophistication/availability ranking in the EUeGovBe is a case in point (Chapter 2.2).

Timeliness

This is three-fold. First, can the data be gathered in time for it to be useful for public officials? Especially when it comes to measuring outcomes, impacts might take years to become visible in measurement activities. "Outdated data" is less likely to influence policy and managerial decisions, thus running opposite to the intention of benchmarking. Though, prospective measures are difficult to find. Second, in light of the technology context of EUeGovBe, the question needs to be answered whether the technology context is time invariant.¹² Therefore, what happens to a metric/measure if developments in technology make a measure obsolete? Finally, what happens if data discontinues being available for the benchmark? Reasons could be a change in policy, definition of the measure or new technology.

¹⁰ e.g. <http://www.unpan.org/egovkb/>

¹¹ Pollitt 2005

¹² Bannister 2007

Validity/Accuracy

Does the measure what it should, therefore, is it valid? Is it accurately enough? This is of importance to the measure itself and data collection. Furthermore, is the measure in line with the policy goal or mission? Can it be applied to any government level and government context? Considering end-users. How important is the service and to whom?

Uniqueness

Too few measures may distort government officials' and organizational behaviour. Too many measures are like no measure at all because they lack focus. Unfortunately, there is no universal solution to this dilemma. A solution might be a shortlist of priority measure. Furthermore, overlapping, duplicate measures should be avoided.

Comprehensiveness

Is the set of measures able to capture all intended aspects it is supposed to measure? Deciding upon a framework that describes all aspects and assumed cause-and-effect relationships of factors before designing measures is usually helpful. Any gaps should either be marked in published results or filled through new measures.

Weight

How important is measure for the overall metric or benchmark? Based on the underlying framework, the importance of measures for the overall unit of analysis might differ. Thus results from citizen surveys might be given bigger weight than the number of form fields for a "citizen-centricity indicator". Of course, this decision has to be reviewed when making a decision on the final single scale for a core indicator.

Collection costs

What does it cost to collect the data for the measure and is it easily available? Data can be collected in a number of ways (Chapter 3.2). Considering the total value of the four year framework contract¹³ to provide EGovernment benchmarking services to the EU, there would be EUR 500.000 or approximately EUR 16.000 per country per year available.

Controllability

This question also relates back to the issue of validity. Especially when measuring outcomes, the key question is whether the measured entity has control over the measure. Effectiveness measures are often influenced by multiple factors. Consequently, the more abstract the outcome to measure the more difficult it gets to do so.

Measures can also be clustered into:

- cost measures (The amount of monetary resources spent)
- time measures (The amount of time for a particular activity)
- workload-accomplished (The amount of workload accomplished in a specific timeframe)
- effectiveness/quality measures (Most difficult to measure; derived from a set of measures)
- efficiency/productivity measures (relation of input to output)
- target measures (Simple Yes/No check or similar to effectiveness/efficiency measures)

¹³ European Commission 2008 (maximum value - not contracted value with service provider)

As a final exercise, guidelines need to be established that describe the scoring system for a specific measure. Any investigator repeating the benchmark should arrive at the same findings and conclusions. This ensures reliability and thus improves the quality of the benchmark design.

3.2 Research methods

The data of the benchmark can be based on qualitative, quantitative or mixed-method approach. The primary intent of qualitative methods is to collect open-ended, emerging data to develop themes from the data (e.g. a framework that describes government transformation).

In its essence, the EUeGovBe is a mixed-method approach with a strong quantitative focus. An underlying framework guides the observation and measurement of information in numeric values. It uses statistical procedures. Additional meaning and context is provided through non-numerical data (e.g. political landscaping, open-ended form fields in the Excel survey). Data is gathered through internal- and third-party assessment paired with a web metrics.

Data can generally be obtained from the following sources which can be differ in terms of costs, the provision of comparable data or value for specific measures:

- Official statistics
- Administrative records
- Internal self-assessment
- Third-party assessment
- Web metrics and automatic crawlers
- Survey (Website, pop-up)
- Survey (mass-user)
- Focus group

3.3 Scope

The approach of the current EUeGovBe is focused on outputs: 20 public services and national portal. However, benchmarks can take a variety of forms (Figure 3-1):

- Goal, Trends
- Input
- Process
- Output
- Outcome
- Efficiency (outputs relative to inputs)
- Effectiveness (outcome relative to output and goals)
- Demand
- Usage / Adoption

Benchmarks may collect data to give participants an overview of related issues or factors. This is the purpose of the political landscaping in the EUeGovBe. This could be extended further by shedding light on e.g. perceived trends or policy goals linked to digital government (e.g. What do we want to do?). If quantifiable, goals offer the opportunity to benchmark outputs and outcomes against them.

Once goals have been defined, different type of inputs (resources used such as labor, funds or infrastructure) are allocated to activities. Processes lead to outputs. Measuring processes can be achieved by looking at time intervals, consistency or input/output ratios. Yet measuring transformation cannot be achieved in the same way. Instead, an EUeGovBe that prioritizes “transformation” needs a pre-defined framework defining it and potentially varying scopes. Efficiency can be measured. It is reflected in the relationship between inputs and outputs if there is a direct link between them.

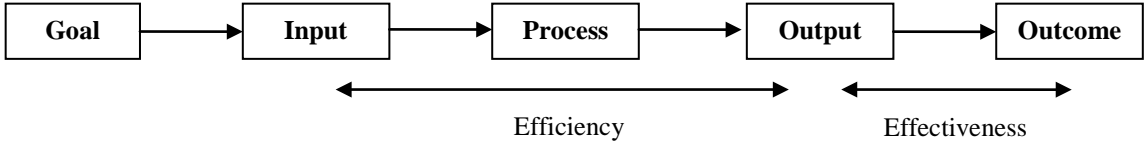


Figure 3-1: Scope of benchmarks

Governments produce outputs. These can be online services (number/design) or the number of processed tax returns per day. Information on output allows understanding what a government entity is producing. Hence, it is important for managerial purposes. A benchmark with a scope of outcome faces the problem of directly and unambiguously measuring the true outcome that the activities of a government entity are expected to result in. Therefore, outcomes are based on a predetermined causal link between government output and its outcomes. An outcome such as a reduction of waiting time for the citizen as a consequence of using ICT is easy to measure.¹⁴ Yet outcomes are the result of multiple factors. For example, sophisticated public E-Procurement solutions are only one factor explaining economic growth. Thus, a scope on effectiveness aims at building an understanding of outputs performed relative to the goals. Depending on the complexity of the goals it can give feedback to the question of “Are we on track and doing the right thing?” Measuring effectiveness in government has its limitations. Policy goals and user preferences can be conflicting.

Finally, a note on capturing usage. In comparison to adoption, which only provides information about the existence of a certain state (e.g. ownership of a mobile phone), usage numbers allow to better understand how technology or a supplied service is being used. However, numbers need to be analyzed in greater context. For example, what conclusion can be drawn from the result that 100.000 citizens have filed taxes online? Without any additional information, hardly any conclusion is possible. If additional information on the total number of taxes filed per year through different channels (e.g. online vs. online) is provided, results on usage become more comprehensive.

Moreover, the context can differ significantly for each service. Therefore, a standard approach might not lead to desired understanding. The public service “declaration to the police” captured in the EUeGovBe is a case in point. On the one hand low usage numbers could be interpreted as the result of poor usability or marketing. On the other hand low usage numbers could be interpreted as the result of low crime rates or even lack of trust the police.

¹⁴ Janssen/Rotthier/Snijkers 2004

4 Digital Government benchmarks and frameworks

This chapter presents an overview of digital government benchmarks and potential frameworks to guide design choices. It begins with a review of three eGovernment benchmarks: EUeGovBe, United Nations and West/Brown University. For every benchmark, information on its scope, method and some results are provided. Subsequently, three potential frameworks are presented.

4.1 A review of existing EGovernment benchmarks

4.1.1 EU EGovernment Benchmark

As the EU eGovernment Benchmark (EUeGovBe) is well known to Member States, Chapter 2.1 only summarizes key aspects and points out some existing shortcomings identified in recent years. Moreover, it classifies the EUeGovBe based on the frameworks presented in Chapter.

The EUeGovBe builds on the Lisbon¹⁵ and i2010¹⁶ agenda. 20 public services clustered into four areas remain at the core of the measurement: income-generating cluster, registration cluster, returns cluster and permits and license cluster. To understand the progress of the above policy and countries' efforts, the EUeGovBe measures these 20 public services and the national portal, using four indicators¹⁷: online sophistication (5-stages), online availability, user centricity and national portals. The i2010 policy would meet its target if all countries surveyed would be ranked 1st which is possible in the current EUeGovBe design. However, in particular, the ranking of the countries' online sophistication/availability usually dominates all other results in press coverage or presentations on the

Online Public Service	# ranks 2009	MS 1st 2009	# ranks 2007	MS 1st 2007
Job search services	2	29 out of 31	3	29 out of 31
VAT	2	30 out of 31	3	28 out of 31
Corporate tax	3	28 out of 31	4	26 out of 31
Customs declaration	3	29 out of 31	3	26 out of 31
Social contributions for employees	3	29 out of 31	4	25 out of 31
Income taxes	2	23 out of 31	3	20 out of 31
Declaration to the police	4	20 out of 31	4	18 out of 31
Public procurement	3	25 out of 31	3	16 out of 31
Submission of data to statistical offices	2	19 out of 31	4	15 out of 31
Registration of a new company	3	19 out of 31	4	15 out of 31
Car registration	5	21 out of 31	5	14 out of 31
Enrolment in higher education	15	15 out of 31	15	11 out of 31
Public libraries	8	14 out of 31	7	11 out of 31
Announcement of moving	9	13 out of 31	11	11 out of 31
Certificates	9	13 out of 31	13	9 out of 31
Environment-related permits	11	8 out of 31	10	5 out of 31
Health related services	11	7 out of 24	10	4 out of 23
Application for building permission	21	8 out of 31	21	4 out of 31
Personal documents	12	8 out of 31	11	2 out of 31
Social security benefits	18	9 out of 31	23	1 out of 31

Table 4-1: 20 Public online services rank distribution (2007)

¹⁵ <http://eur-lex.europa.eu/JOHtml.do?uri=OJ:C:2007:306:SOM:EN:HTML>

¹⁶ http://ec.europa.eu/information_society/eeurope/i2010/index_en.htm

¹⁷ CapGemini/European Commission 2007

political-level. This is an important aspect of the EUeGovBe that needs to be taken into consideration for its future design. As of 2007, the online sophistication/availability ranking resulted in 27 ranks for countries where 3 ranks (2, 9, 20) were awarded twice. Moreover, Table 3-2 underlines that more than half of measured online public services are difficult to differentiate as participating countries already managed to reach a full score.

The user centricity indicator remains an area of testing and further improvement in the near future. Its sub-indicators include “legally binding e-ID”, “number of data fields requested for transactional forms”, “multi-channel access to services”, “compliance with international accessibility standards”. However, the only insights given in 2007 were available in the country highlights. With regard to the learning perspective greater detail would be valuable. National portals, the fourth indicator, resulted in 24 ranks where three ranks were awarded a number of times (1: 4, 5: 4, 17: 2). A comparison (Table 4-1) of three EUeGovBe core indicators underlines that ranking high in online sophistication does not necessarily lead to a high rank in other areas. In fact, with the adjustments to the EUeGovBe 2009 design, countries with a score of a 100 percent may not reach the same percentage in 2009 (online

Online Sophistication (07/09)	User centricity (07)	National Portal (07)
Austria (1/4)	Bulgaria (1)	Cyprus (1)
Slovenia (2/5)	Norway (1)	Czech Republic (1)
Malta (2/1)	Austria (2)	Malta (1)
Portugal (3/2)	Netherlands (3)	Netherlands (1)
United Kingdom (4/8)	Slovenia (4)	Bulgaria (2)
France (5/11)	Malta (5)	Slovenia (3)
Sweden (6/3)	France (5)	United Kingdom (4)
Estonia (7/6)	Iceland (6)	Belgium (5)
Norway (8/15)	Estonia (7)	Estonia (5)
Germany (9/12)	Finland (8)	Greece (5)
Spain (9/13)	Portugal (8)	Portugal (5)
Netherlands (10/14)	Ireland (9)	Slovakia (6)
Finland (11/7)	Italy (10)	Italy (7)
Belgium (12/12)	United Kingdom (10)	Ireland (8)
Denmark (12/10)	Sweden (11)	Finland (9)
Italy (13/17)	Germany (11)	Hungary (10)
Ireland (14/9)	Belgium (12)	Norway (11)
Czech Republic (15/19)	Spain (13)	Switzerland (12)
Hungary (16/22)	Denmark (14)	Turkey (13)
Turkey (17/xx)	Czech Republic (15)	Lithuania (14)
Greece (18/26)	Latvia (15)	Spain (15)
Iceland (19/21)	Poland (15)	Austria (16)
Luxembourg (20/16)	Turkey (16)	France (17)
Cyprus (20/25)	Greece (17)	Germany (17)
Lithuania (21/20)	Cyprus (18)	Sweden (18)
Switzerland (22/27)	Lithuania (19)	Latvia (19)
Romania (23/29)	Slovakia (19)	Poland (20)
Slovakia (24/24)	Hungary (20)	Luxembourg (21)
Latvia (25/18)	Romania (21)	Iceland (22)
Poland (26/23)	Luxembourg (21)	Denmark (23)
Bulgaria (27/28)	Switzerland (22)	Romania (24)
Croatia (xx/30)	Croatia (xx/)	Croatia (xx/)

Table 4-1: EUeGovBe – Comparing online sophistication, user centricity and national portal

sophistication). Similar percentage drops have been observed in past EUeGovBe. Toward that end, a history of measurement changes could be continuously documented and published for each indicator.

4.1.2 United Nations eGovernment Readiness Benchmark

The eGovernment benchmark of the United Nations combines a focus E-Participation and eGovernment Readiness in roughly 192 countries. The latter is a combination of three measures (“composite indicators”) that are thought to capture the economic and social development of a country and its government’s eGovernment activities.

- **Telecommunication (connectivity) infrastructure index**
It is a composite weighted average of five primary indices of PCs, Internet users, telephone lines, mobile phones and broadband (all indices, per 100 persons/to be revised to households). The data is obtained from the International Telecommunications Union (ITU).
- **Human Capital Index**
It is derived from the United Nations Development Programme (UNDP) education index, which is a composite of the adult literacy rate and the combined primary, secondary and tertiary gross enrolment ratio with two thirds weights given to adult literacy and one third to the enrolment ratio.
- **Web Measure Index**
It is based on a quantitative analysis of a country’s web presence/features. The primary site assessed is the national portal or the official homepage of the government, along with the websites of five ministries (education, health, labor, social welfare and finance). This aims at making results comparable. Similar to the EUeGovBe, a five-stage model is used to capture the state of eGovernment in a country: 1. Emerging presence (representing limited, basic information) 2. Enhanced presence (more information available, with search options and help-features) 3. Interactive presence (downloadable forms, e-mail addresses) 4. Transactional presence (two-way interaction, paying options) 5. Networked presence (participatory, deliberative decision-making and integration of public). The scores of countries with a decentralized government structure (e.g. federal system) scores were adjusted accordingly.

The United Nations define E-Participation as “the sum total of both the government programs to encourage participation from the citizen and the willingness of the citizen to do so”.¹⁸ The E-Participation index, constructed by standardizing scores and based on the analysis of 21 citizen services (information/participation), focuses on three areas:

- **E-Information (websites used for dissemination of information)**
The government website offers information on the list of elected officials, government structure, policies and programmes, points of contact, budget, laws and regulations and other information of public interest. Information is disseminated through a number of online tools such as: community networks, blogs, web forums, text messages (micro democracy), newsgroups and e-mail lists.
- **E-Consultation (Citizen can engage in discussions on public policies)**

¹⁸ United Nations 2005, 19

The government website provides the tools necessary for e-consultation. It allows citizens to set the agenda for the debate through e-petitioning. The government ensures that its elected officials have a website to communicate directly with their constituents. It maintains an archive of their discussions and provides feedback to citizens.

- E-Decision making (Citizen participate in decision-making)

The government is willing to take into account the e-inputs of citizens into the decision-making process. The government informs its citizens on what decisions have been taken based on the consultation process.

Overall, the United Nation's benchmark scope is a mix of output and adoption. Data collection is conducted by a team of researchers. In addition, accessibility of Websites is tested with a web based automated software tool (WebXACT). Data is captured in a two-month timeframe.

The United Nations are also in the process of revising the benchmark design.¹⁹ New measures for back office management, mobile access to government services, inclusiveness and usage are supposed to be included in the future eGovernment benchmark. While E-Participation is already being measured, the United Nations intends to expand it to assess participatory eGovernment aspects and social software tools (e.g. social networks, collaboration spaces). Deliberations on the new EUeGovBe methodology could benefit from an exchange with the respective group at the United Nations as well as some new experts outside of the known pool of the European Commission.

4.1.3 Brown University

Brown University's benchmark has been looking at the progress of eGovernment since 2001.²⁰ The latest report covered a total of 1667 national government Websites from 198 countries. Subnational units of government are not included. Data sources for the evaluation are: executive offices (e.g. president), legislative offices (e.g. parliament), judicial offices (e.g. supreme court), and major agencies such as administration, health, human services, taxation, interior, education, economic development, natural resources, foreign affairs, foreign investment, transportation, military, tourism and business regulation. Data collection is executed in a two-month timeframe.

Websites are evaluated remotely by a team of researchers through a number measures which can be grouped into the areas of availability, service delivery and public access. For example, researchers are looking at online publications, online database, audio clips, video clips, non-native languages or foreign language translation, commercial advertising, premium fees, user payments, disability access, privacy policy, security features, presence of online services, number of different services, digital signatures, credit card payments, email address, comment form, automatic email updates, website personalization, personal digital assistant (PDA) access and an English version of the website.

Overall, Brown University's benchmark scope is on output and the supply side of eGovernment. Unfortunately, Brown University's reports lack a detailed description of the eGovernment benchmark's methodology. Unlike the EUeGovBE or the United Nation's E-Readiness benchmark, results are fairly inconsistent from year to year. For example, Portugal jumped from 182nd to 133rd to 31st to 86th to 43rd to 48th to 7th to 18th place in eight years of benchmarking activity. Moreover, national government websites that are not in English, are evaluated based on translations by foreign language readers.

¹⁹ <http://tiny.cc/UNben2009>

²⁰ West 2001, West 2008

4.1.4 Conclusion

The benchmarks presented are just three examples out of many²¹ attempts for benchmarking eGovernment. Therefore, the work of Janssen, Rotthier and Snijkers (2004) could be of value. They reviewed over 25 eGovernment benchmarks. One of the weaknesses of many eGovernment benchmarks is their major focus on national government.²² The three benchmarks are no exclusion. This has shortcoming has already been recognized by the EUeGovBe. Especially in countries with a federal government structure, most public services relevant to citizens are produced, offered and used at the local level.

With a scope on outputs (supply side; online services), the eGovernment benchmarks also fail to capture the expected transformative effects of ICT on government. Some critiques are concerned that

EUeGovBe (2007) <i>N: EU27+4</i>	Brown/Brookings (2008) <i>N: 198</i>	UN (2008) <i>N: 182</i>
Austria (1)	Austria (65)	Austria (16)
Slovenia (2)	Slovenia (112)	Slovenia (26)
Malta (2)	Malta (56)	Malta (29)
Portugal (3)	Portugal (18)	Portugal (31)
United Kingdom (4)	United Kingdom (35)	United Kingdom (10)
France (5)	France (15)	France (9)
Sweden (6)	Sweden (72)	Sweden (1)
Estonia (7)	Estonia (59)	Estonia (13)
Norway (8)	Norway (60)	Norway (3)
Germany (9)	Germany (7)	Germany (22)
Spain (9)	Spain (14)	Spain (20)
Netherlands (10)	Netherlands (33)	Netherlands (5)
Finland (11)	Finland (28)	Finland (15)
Belgium (12)	Belgium (105)	Belgium (24)
Denmark (12)	Denmark (62)	Denmark (2)
Italy (13)	Italy (25)	Italy (27)
Ireland (14)	Ireland (8)	Ireland (19)
Czech Republic (15)	Czech Republic (55)	Czech Republic (25)
Hungary (16)	Hungary (116)	Hungary (30)
Turkey (17)	Turkey (61)	Turkey (76)
Greece (18)	Greece (117)	Greece (44)
Iceland (19)	Iceland (68)	Iceland (21)
Luxembourg (20)	Luxembourg (26)	Luxembourg (14)
Cyprus (20)	Cyprus (50)	Cyprus (35)
Lithuania (21)	Lithuania (85)	Lithuania (28)
Switzerland (22)	Switzerland (29)	Switzerland (12)
Romania (23)	Romania (147)	Romania (51)
Slovakia (24)	Slovakia (153)	Slovakia (38)
Latvia (25)	Latvia (78)	Latvia (36)
Poland (26)	Poland (110)	Poland (33)
Bulgaria (27)	Bulgaria (94)	Bulgaria (43)

Table 4-2: Comparison of ranking differences in eGovernment benchmarks

²¹ For example: Accenture 2004, Accenture 2008, Bertelsmann Foundation 2002a, EIU 2003, Mosse/Whitley 2008, Reddick 2004, Waseda University 2008, Mia/Dutta/Geiger 2008

²² Williams 2008

the scope influences policy makers to make adverse resource allocation decisions towards improving their countries rank rather than investing in infrastructure, E-Participation or other areas important to citizens. Consequently, Osimo (2008) recently outlined a very basic model to capture “transparency” through 20 basic public data (e.g. draft legislation, public records) as a prerequisite for networked government which would need refinement.

Furthermore, while the benchmarks discussed present similar definitions of eGovernment and trends (e.g. citizen centric, participation), their approach to measurement and outcomes differ widely. Table 4-1 illustrates how the top-three countries of the EUeGove—Austria, Slovenia, Malta and Portugal—scored in the other benchmarks. Results are difficult to compare, especially when its objective/framework and methodology is not available. However, differences between benchmarks can be understood as an advantage for the future design of the EUeGovBe methodology. For example, measures that have proven robust (e.g. meaningful) elsewhere could be adopted.

Finally, this review has shown that all eGovernment benchmarks rest on one or more theoretical frameworks and policy objectives this might not always be clear. Hence, frameworks that may offer potential guidance to designing and deliberating on the future EUeGovBe methodology are presented in the next section (Chapter 4.2).

4.2 Guiding frameworks for deliberations of the future EUeGovBe design

4.2.1 Digital Government

While there is still no commonly accepted definition of eGovernment, variations depend on the context and its degree of broadness. Many limited eGovernment to public information and service provision over the Internet.²³ Broader definitions of eGovernment underline the change of internal and external government operations through technology, electronic public services and electronic participation. In this paper, eGovernment is defined as the use of ICT in government. The broadness of the definition allows capturing new technologies, varying channels or ways of utilization in any government domain. Meaning and objective to ICT is added mainly by policy.

In some cases, the terms eGovernance and eGovernment are used synonymously. However, eGovernance refers to the role of government in regulating (e.g. adjusting property rights laws to fight illegal downloading; protecting children using social networking sites; setting IT standards for government entity) and facilitating (e.g. funding schools’ IT equipment) growth of the information society and ICT. Due to the qualitative nature of eGovernance, measuring it may be more challenging than measuring eGovernment.

Along these lines, it is useful to include eGovernment, eGovernance and any future technology of ICT (e.g. Web 2.0 applications) under the umbrella of one term— digital government²⁴— in order to prevent neglecting the complexity of the issue. The following typology²⁵ helps to classify research on government initiatives (Figure 2-7). The term is now favoured by many researchers, because there has been an excessive use of adding letters like “e” (electronic), “m” (mobile), “u” (ubiquitous) or “2.0” to government-related terms.

²³ Dawes 2002

²⁴ McIver/Elmargamid 2002; West 2005

²⁵ Schellong 2008b

The term E-Administration refers to the internal use of ICT—which might, of course, support the external use of ICT—which is subsumed under E-Services. Activities and use of ICT within the field of public participation in government, whether in voting or in the policy-making process, is referred to as eDemocracy. eGovernance can focus on government, society or economy. Accordingly, the current EUeGovBe’s scope is on eGovernment and eServices.

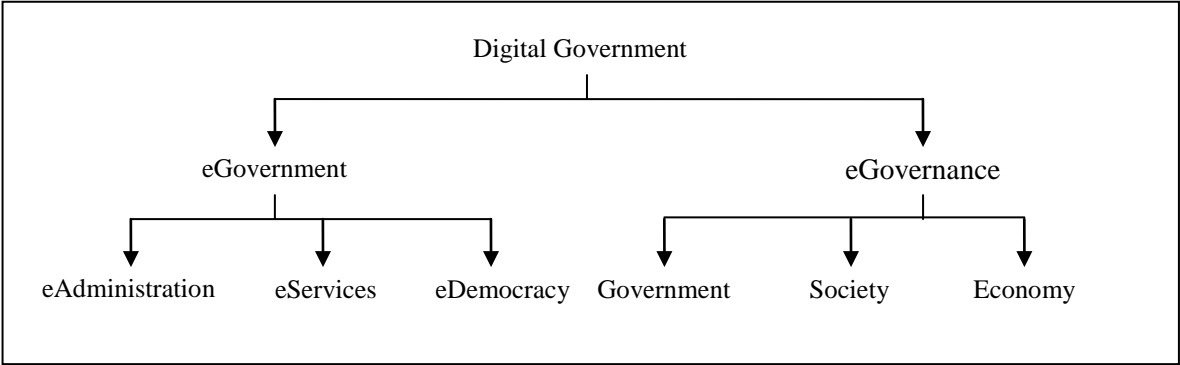


Figure 4-2: A typology of Digital Government

4.2.2 E-Democracy and participation

Forms of public participation other than electoral activities and contacting public administration can be grouped along three dimensions in the “democracy cube” (Figure 4-3): scope of participation (who participates), mode of communication and decision, and extent of authority (how far discussions affect policy and administrative actions). Common methods of participation are public, deliberative polls, neighborhood councils, advisory boards, citizens’ panels, co-production or referenda.

In the context of the EUeGovBe methodology revision, the existing or desired level of participation for a particular government activity (e.g. public services) can be mapped to define the appropriate measures. These could focus on the quality of information (e.g. accuracy, timeliness, relevance), the quality of communication (e.g. presentation of process/changes) and the process of participation (e.g. accessibility, usability).

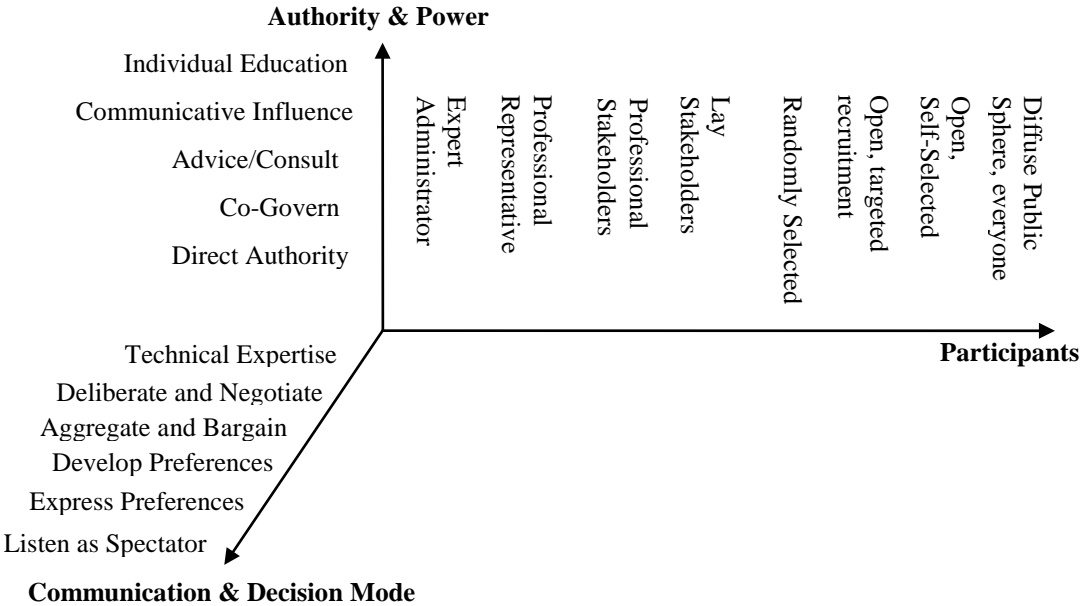


Figure 4-3: Dimensions of public participation (Fung 2006)

4.2.3 EGovernment and transformation

While it is no priority at this time to make “transformation” part of the EUeGovBe, results could be highly interesting. Measuring transformation, however, is not an easy task. It requires a commonly agreed on definition on what it is. Is transformation a change of organizational structure, hierarchies or jurisdiction of government agencies? Or is it the way citizens can influence policies through ICT? Moreover, transformation is best understood if there is data available on the ex-ante situation of an eGovernment activity. Thus, benchmarking transformation can quickly become complex and needs a lot of conceptual refinement and empirical testing.

The framework shown in Figure 4-4 might support future effort to create a model for eGovernment transformation. There is a distinction between “objective technology” and “enacted technology.”²⁶ The former describes the given characteristics of ICT, the latter how ICT has been designed, implemented, perceived, used and communicated.

It can take a long or very short period of time until an impact of enacted technology can be recognized. Outcomes can affect organizational forms, institutional arrangements, enacted technology as well as objective technology as seen in the striped causal arrows. Causal arrows which point in both directions stress the recursive effects of variables. As such, outcomes can be direct, indirect, indeterminate, multiple, and unanticipated.

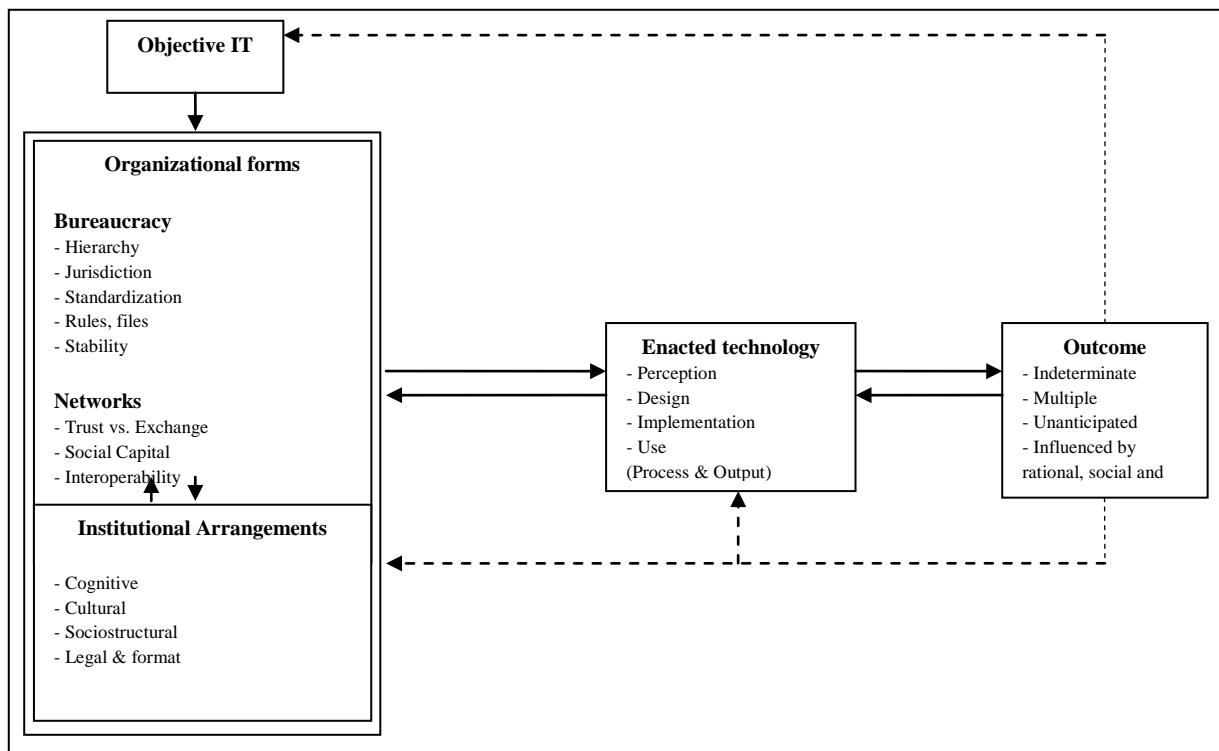


Figure 4-4: Technology Enactment Framework

²⁶ Schellong 2007

5 Global trends in the public sector

The public sector is facing significant change in the coming years. Consequently, these changes will shape our thinking on digital government in general and the priorities for the EUeGovBe in particular. Since it is not the major purpose of this paper to discuss these trends, they are only outlined in brief.

Rising public sector spending

Apart from the current economic stimulus packages issued by governments around the world, the aging of populations in all of the countries currently benchmarked in the EUeGovBe will lead to an increase of healthcare and pension budgets. A shortfall of tax revenue and additional budget constraints through debt payments, both resulting from the economic crisis will further put government budgets under stress.²⁷ ICT will be considered as facilitating element to reduce costs.

The trade-off between free market and regulation

The economic crisis and concerns about social welfare and equity will lead to further calls for greater government intervention. At the same time other non-governmental actors may be seen as having more appropriate solutions. Public managers will need to find the right balance the level of government involvement and oversight. The latter could mean more administrative burden. Likely ICT will be used for oversight, analysis or reporting. At the same time the assessment of the value of ICT investments and dependency in government will increase.

New consumer groups

The number of singles and woman in the workforce is on the rise. At the same time a generation (“digital natives”) is entering the workforce that is used to ICT and expects public and private organizations to take advantage of them to allow their idea of a flexible lifestyle.²⁸ Moreover, immigration, religious diversity and aging society in EU MS will require new ways of public service delivery (eInclusion²⁹) and identity management³⁰.

Information Economy

The information economy is powered by the digital infrastructure upon which we depend. ICT flattening communications, markets and hierarchies have contributed to a period of disruption to many business or organizational models. ICT facilitate the speed of communications and more selectively control access to, and participation in, information exchange. Because of the general trend of the consumerization of ICT, technologies once used only by experts, are now available to everyone. Successful organizations are those that harness the data being available to them internally and externally. Decisions are driven by digital data that can be combined (mash-up) or reconfigured so as to provide new information. Networks and resources of knowledge workers can be adapted more flexible.

Networked Government / Open Government / Government 2.0

Top-down bureaucracy is fading and government by network has emerged.³¹ Issues like immigration, trade, financial markets and global warming transcend national boundaries. Many times several levels of government and agencies working together will not be enough. Government simply cannot solve

²⁷ GAO 2005

²⁸ Centeno/van Bavel/Burgelman 2004

²⁹ http://ec.europa.eu/information_society/activities/einclusion/index_en.htm

³⁰ Codagnone/Wimmer 2004, 119

³¹ Goldsmith/Eggers 2004

many issues by itself. A network of government, business and citizens can or is at least believed to lead to better outcomes—increasing public value. The term Government 2.0 refers to the use of social software³² and underlying philosophy of Web 2.0: information sharing, transparency or peer production in government. Other terms being used are “open government” which has received wide media attention as it is part of the policy agenda of the Obama administration.³³ Information and services are provided to citizens seamlessly when they need it and where they need it as they go about their digital, daily lives. Where other entities (“intermediaries”) have a solution in places, government will collaborate or outsource. Government is also more open because the democratization of data drives accountability, engagement and performance. Citizens are understood as co-creators in policy making, public management or public service delivery. The active involvement of civil society and a strong administrative apparatus are neither mutually exclusive nor contradictory. Nevertheless, balancing privacy and strengthening citizen participation will remain a constant challenge. In fact, this trend could be complimented by the “Me-centric” model described by Cap Gemini (2008).

Cyber Security

Cyber Security is the protection of all things Internet—from networks to data on computers. Cyber threats to governments and are evolving and growing.³⁴ These threats can be unintentional and intentional, and can come from a variety of sources, such as foreign nations, criminals or hackers. As the world continues to move towards a networked world and ubiquitous technology, the threat will continue to grow. Governments, businesses and citizens have already experienced a wide range of incidents involving data loss, privacy breaches, computer intrusions or system malfunctions. Aspects of cyber security are identity-, risk- and incident management. Identity management, for example, validates individuals accessing networks to verify their identity and what they are allowed to do. Risk management identifies network vulnerabilities and threats and determines appropriate countermeasures based on the sensitivity of data. Incident management executes responses when security events threaten the network. Cyber security measures can be considered to have an influence on the level of trust in public services and information.

Elements of eGovernment strategies

In the next few years the following trends might continue or be part of many countries’ eGovernment activities:

- Interoperability (e.g. X-standards, SOA)
- Integrated data management
- Shared Services
- Enterprise Architecture (e.g. FEA)
- Location based services
- Wireless connectivity
- Grid / cloud computing
- Biometrics

³² Mergel/Schweik/Fountain 2009; Schellong 2008a – The term social software is used for software systems that are utilized for group communication and collaboration which foster building and managing social networks or publishing information and its dissemination. Blogs, Microblogs (e.g. Twitter), discussion groups, Wikis, rating features, social networking platforms or data sharing tools (e.g. Flickr) are examples of social software. They are mostly self-organized by users, taking advantage of collective or swarm intelligence, replacing taxonomy with folksonomy and bridging any kind of organizational boundaries.

³³ OMB 2009

³⁴ GAO 2009

6 Additional suggestions on the future design of the EUeGovBe

- **Unit of analysis**
Extend the unit of analysis to the European Commission (DGs) and all of its agencies. The way technology is being used and information is presented at the EU-level differs widely (e.g. E-Procurement) and could benefit from greater transparency through benchmarking.
- **Measures**
The idea of “elective measures” outlined by CapGemini offers the chance to make the EUeGovBe more flexible and supportive to emerging policies. The idea could be developed further. Thus, in the future, the EUeGovBe builds on three measures: core measures (e.g. sophistication), elective/short term measures and test measures. Results of test measures are not published but will be introduced annually depending on what deems necessary. Measures include something that is being measured (e.g. a service) or how it is being measured.
- **Measures**
Involve the public in the process of revising the EUeGovBe methodology or parts of it. The public could suggest new measures, frameworks, and rate and discuss measures discussed inside this group. After all, citizens might be the best source to make contributions on what should be a priority measure in indicators such as citizen-centricity
- **Measures**
To add some form of lead-measures to the EUeGovBe, the political landscaping could be extended by some trend and time question. Some of these could then be summarized in aggregated form to improve the accuracy of MS reporting.
- **Reporting and Learning**
EUeGovBe data could be used to define a Member State’s access to monetary or other types of resources to perform its task. Using benchmarking this way can be a mechanism to ensure policy adherence, contribute to a suitable distribution of resources among countries, punish poor performance, and possibly for other purposes as well.
- **Reporting and Learning**
Future data collection and should be done online. This will save government representatives and the EUeGovBe analysis team much effort and time. Once data is available online, additional opportunities for knowledge sharing and transparency arise.

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