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"Towards a multi-measurement platform of e-government projects and services"

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Towards a multi-measurement platform of e-government projects and services

e-Government, an explosion to keep under control

e-Government types of experiments, practices and services currently explode in number and variety in all European countries. They fit a long-term conceived plan to build a more consistent Information Society, hopefully also, a promising Knowledge Society.

In 2005, E-Europe is entering its second phase and just as best practice diffusion and policy incitation are still needed, evaluation tools and programs are urgently to be deployed and discussed. Economic benefits of e-government undertakings are of course a major concern and should be considered not only in the narrow sense (where cost reduction of administration activity can be effectively acknowledged) but also in a larger sense, taking into account counter-effects due to external cost increase as well as forgotten transaction or learning costs. However, measuring the value of e-government projects and practices should go beyond this mere cost-minded appraisal as more profound reasons support the implementation of E-Europe, i.e., overall competitiveness based on increased knowledge capabilities for a large variety of actors, increased well-being, citizen and inter-regional equity, administration user empowerment and more globally the building up of a more consistent and pervasive information society.

This multi-dimensional set of goals requires an assessment toolset capable of reporting upon a quite large and also heterogeneous number of features. Based upon our various implications in past or current European projects as well as in-depth national experiments linked one way or another with e-government processes, we have conceived a methodology to evaluate, compare, monitor and steer a variety of e-government projects. This research is still under construction and this paper presents the first stage of what we have reached, notwithstanding the fact that we are still making progress in the meantime in other dimension of our evaluation concept.

On our way to explain in more concrete terms what is meant by the different criteria, reasons for allocation of weight or the features targeted by any given measure, we could have taken examples throughout the list of our fieldwork references, as well as tapped in from other sources. In order to keep it simple, we will stick to a case we have covered in one of our studies (Buser, Cotti, Rossel and Finger 2003 and Finger and Rossel 2003), i.e., the pilot project eTampere in Finland, a complex and ambitious setting for which we are continuing to make observations and follow-up fieldwork (see for instance for Tampere: e-Tampere / Infocity Case Study, http://dowire.org/wiki/E-Tampere).

The evaluation of complex projects

Evaluation studies have since long emphasized the difficulty of evaluating complex projects, when embedding quantitative and qualitative aspects, in addition with variable scales, forms and statuses. Evaluation can be done with the goals the project initiators had in mind as reference, taken as a measuring yardstick (fulfilling the goal or not, to what extent, etc.), or according to some general, commonly-agreed upon indicators, which immediately bring about the possibility to compare different projects. Most of the time, regarding complex projects, the evaluation objective is obtained by self-limitation to one or a few, hopefully measurable aspects that account for the whole in the mind of this type of proposal, at least in the absence of more convincing solutions. In this sense, there are already evaluations published and discussed in the area of e-government services. Some deal with the quality of portal interface (number of click to get through, for instance), others with discreet features which can be benchmarked (e.g., time it takes to actually deliver a specific service). We have participated in several of these types of evaluations and we are now eager to develop a more comprehensive toolset to discuss in a sustainable manner the e-government processes we are confronted with.

This is not an isolated goal. On the contrary, it fits a more general framework of why e-government seems to be a strategic endeavor in Europe today, as we have developed a theory of how the State is transforming and how to evaluate the contribution of any specific project within that transformation process (cf. Finger 2002, 2003).The capability of evaluating more particularly the services which the various strata of the administration deliver electronically is at the same time a new area of evaluation issues where we need to develop a robust knowledge and a phenomenon deeply related to this transformation of the State missions and functions. We will first present the e-government evaluation scheme and in a second part, develop a reflexive approach of how this specific evaluation toolset may fit within the broader framework of our own compass on State transformation and furthermore, E-Europe build-up. In more general terms, we expect this discussion not so much to generate a decisive adhesion on the part of all specialists involved in e-government actions but rather enhance the debates on how to examine and follow up e-government performance in a variety of contexts. We also want to go beyond some common pitfalls or limitations of evaluation studies in the domain of e-government and suggest a potentially evolving ("leaning") perspective of how to keep things as open as possible for innovation and political creativity, along with the necessity for best practice diffusion and process standardization necessary to make European e-government more effective.

The need for a first flexible yet robust orientation tool

In e-Government, there are already throughout Europe, a considerable amount of ongoing experiments, reliable services and actual benefits, by the ten of thousands, involving professional agents by the hundreds of thousands, and citizens by the tens of millions.

In this situation there seems to be a multi-fold need:

- to evaluate and enhance what is already underway, as well as suggest to new coming projects how to learn from these experiments ;

- to steer the existing information, service delivery and transaction base of e-government operations, as well as e-participation and democratic functioning for optimised local operations but also constant collective improvement ;

- to compare and benchmark projects, hence promote, diffuse and transfer best practices, while remaining open to innovations.

The first orientation tool we are developing should therefore be capable of addressing these objectives. Its robustness should come from its versatility to perform in a large variety of configurations and perspective:

1) stand-alone projects or already implemented services evaluated as such, with a narrow focus on how well they do from a certain point of view (time, cost, reliability), more or less corresponding to the notion of efficiency (doing things right), or on the contrary with an open question, emphazising an innovative approach in the delivery of a new form of service, more or less corresponding to the notion of effectiveness (doing the right thing);

2) comparisons between near to similar projects or already implemented services, with the idea of focusing on key features and performance aspect (e.g., lesser time and cost), or on the contrary on the newness of offered solutions (e.g., 24-hour a day, 7 days per week) in the area of e-government;

3) coordination capabilities, generic features transferability, reflexive contributions to the advancement of knowledge in e-government, etc.; there are also other dimensions to be stressed as important which may be the result of not one project or site's activity but of several or even a vast series of local actors in several countries.

We thus conceived a multi-purpose analytical grid based on a series of criteria. The meaningful dimensions we have chosen have been selected out of our experience and on the basis of the observation of relevant literature as well as current European goals for e-government; we are in the process of describing and documenting each one of them in detail (sub-criteria and mode of appraisal definition).

Main evaluation grid for assessing e-government projects: 10 key dimensions

Key indicators	First level explanation of indicators' substance
• Cost reduction of the first order	Direct, service-intrinsic or overall administration-relevant cost reduction (positive booster and signal)
• Cost reduction of the second order	Including external and transaction costs, longer-term relevant cost reduction (robust change)
• Increase/improvement of regulatory interventions	For existing but also new domains of expertise in regulatory practises
• Enhanced democratic perspective	Visibility, transparency, participation, quality of debate, equity, etc.
• New type of service	Directly or indirectly forstered, socially or economically creative
• Enhanced service reliability and trust	Procedure-tracing and tracking and overall process consistency improvement, including trust issues
• Extended multi-level interactions	Including the European level as an horizon for integration, convergence or complementarity
• Knowledge creation and sharing	Evidenced progress in knowledge acquisition and handling for a diversity of actors
• User affordability/accessibility	Beyond equity and divide issues, dynamic and empowering user mobilization
• Longer-term construction	Fitting / initiating a long-term, socially robust process through increasing quality of user/citizen involvement

Another view of this tool is the polar design, allowing for immediate comparison of near similar types of projects or implemented services. According to which criteria is placed on top of the grid, it also sheds light on how well a specific attribute does in comparison with others. Let us imagine the case of delivery time reduction. Placed on top, it emphazises with great readability whether it is in line with other improvements or on the contrary, functions at the cost of other dimensions of the same project or existing service.
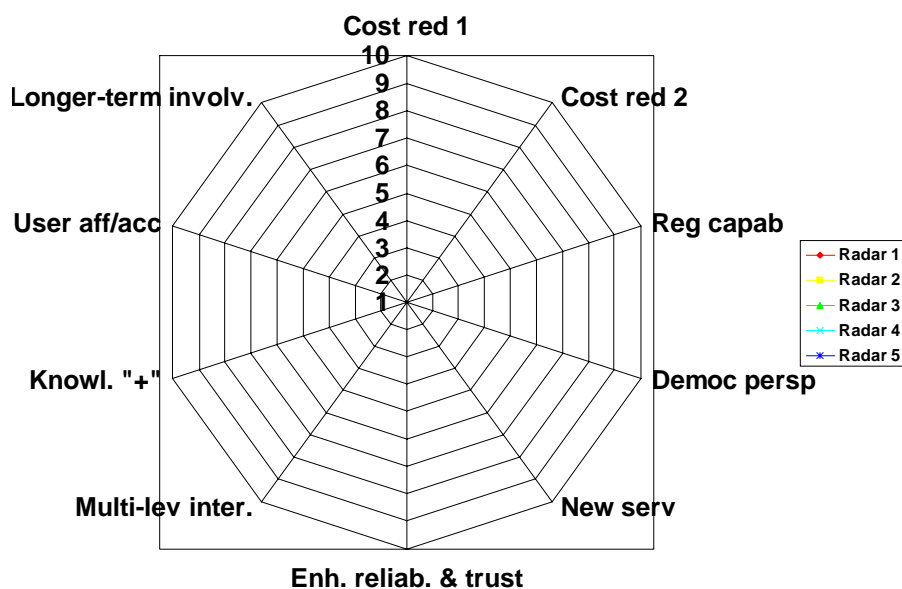
Each one of these ten indicators is defined as precisely as possible so as to function fully and unambiguously as e-government quality indicator within a certain scope of relevance. Let us take for instance the idea of "enhanced reliability and trust". It means that e-government services must correspond to a higher level of performance, in these matters, than non electronic procedures. This must of course be documented by a convincingly favorable evolution of statistics in terms of, on the one hand, litigation, arbitration, court appeals, etc. (quite easy to document), and on the other hand, reputation (a more difficult issue), attractiveness of the profession of civil servant (higher quality of applications, lower turn-over, lower complaints, etc.), regularity in the quality of service delivery (several means to evaluate this), explemplarity for others, favorable auditing and external assessments, etc. The definition of the criteria is then made of 1) a statement outlining the content of an indicator, with 2) associated comment on scope and limits of relevance, in addition to 3) the inventory of sub-criteria making synthetically the value of the indicator (see below). With time, a section 4 will be added, incorporating operational and validation comments from fieldwork experience.

These ten indicators are separate concerns, to which we can attach specific estimates, but of course they have strong interrelations with one another, hence the interesting possibility to suggest underline different views of the same performance (radar 1 to 5), emphazising, if needed, a few of these relationships as being crucial.

All ten indicators, as already evoked, encompass several sub-criteria. For instance, cost reduction is certainly an important motivation for changing from traditional administration service to e-government type of service delivery. It implies a process reengineering of how missions, roles, tasks and procedures are aligned by and with electronic workflow perspectives. However, the time and investment it takes to implement the change is a criteria as important as the time or cost reduction of an actual service delivery; much the same, additional training needed to reach that performance, new reporting habits and new civil servant-to-citizen interactions capable of assuming not only the missions but the trouble-shooting, could complete the picture. If we deal with second-order cost reduction, it also means that reliability must be at least as good or higher than before, that reorganization costs must not surpass the intrinsic gain in productivity, that claims of inequitable treatment of certain categories of citizens must not disqualify the claimed gain. From the point of view of "knowledge sharing" (another indicator), it also suggests that some value may be added when a specific gain and the underlying procedures that support it have more generic and cross-cutting, replicable features, so as not to represent an isolated achievement, always bearing a risk to be at some point more costly than what it looks like in immediate terms (often hidden or forgotten by the locally successful management).

If we take the multi-level interaction potential, for instance, it means that it can fit the objective of a given project (as a gradual construction), or even be the core of a specific service (enabling interactions between various levels of the administration, local, regional, national, European), but it can also constitute a goal for later, not immediately implemented, but possible (expandable, scalable). It can mean a multi-level perspective for one service, or the possibility to integrate any project within in a multi-level scheme comprising a variety of e-government services. It can represent a pilot case, imitable, transferable by nature, or on the contrary an ultra-specific arrangement to make things work in a particular multi-level configuration. All these attributes have to be taken into consideration and rated globally in the score making of a particular indicator.

If we take the domain of democratic perspective, as another example of how sub-criteria will shape the overall indicator's grading, the number of citizens involved in a given activity is undoubtedly a strong criteria, in particular if this number increases; but the increase in knowledge it takes for these citizens to participate, the decrease in litigation further on, the level of integration between citizen involvement all the way through and political decision-making at the end (rather than isolated expressions of participation), or in another perspective the increase in participation of less active segments of the population (young people, elderly, low education categories, etc.), should be a few of the sub-criteria taken into consideration to appraise this indicator.

All in all, between five to eight sub-criteria support the scoring of each indicator.

We conceived that they could work together and be graded in conjunction with one another, synthetically, in a format of a ten point grade per criteria (as it can be seen in the design of the polar graph, above). The question of the overall comparability of weight allocated to all these criteria is of course raised. Basically, it is the same problem as the decathlon one. How to compare running short distance, long distance, throwing weight, jumping, etc., as all these disciplines have their specificities? Experience is how the decathlon issue was settled. It is still not perfect, but athletes who are true specialists are uneasy with the accounting combination of performance developed so far and it is probably as good as it can get in general terms (it can always be improved, but beyond a certain point, not without some costs and risks). The only difference with decathlon is that some of criteria may be, in some cases, not additive to others, but because of possibly contradicting performance outputs, substractive; if we want to remain in the analogy with sports, figure skating or gymnastics would more fitting then. Nevertheless, the decathlon metaphor provides us with a useful reference to the idea of a global appraisal encompassing several distinct and diversely functioning sub-dimensions. Let us not forget that more than claiming to have reached a perfect way of evaluating e-government services, which is impossible, we aim mainly at constructing good debates and best evaluation practice proposals so as to contribute to a pan-European process of learning by doing and experimenting in the area of e-government.

Criteria and sub-criteria, just as the weight calculation system we are working on, will be tested in a series of contexts, projects, actual service implementations and reported upon for discussion. They will also serve to debate with other e-government measuring projects, as we will substantiate little by little all these features and their systemic resonance with one another. In order to reach a meaningful level of relevance and documentation, one more year is probably needed, convoking all the projects we are part of as a source for case testing.

Broader concerns

There is no reason why e-government should be envisaged in a substitution perspective of traditional face-to-face encounters with electronic forms of interaction with the administration or between administrations. Symmetrical appraisal should be made of non electronic solutions and above all of combinations between electronic and non-electronic options (for the time being, there is rather a trend towards redundancy, having most of the time in parallel both the electronic and non electronic versions of a service). There should be a non religious approach to this, in particular bearing in mind that a gain is generally supported by an upstream or/and a downstream investment in time, expertise and money (transactions costs, also conditioned by non electronic relationships). However, beyond this mere reminder that even in the long run, e-government servicing is rather to be considered as a component of a combination of options and not a substitution or translation problem (from physical to electronic), the broader concerns about the performance of e-government raise questions of governance. The idea is that e-government, beyond a certain point, will not improve the exercise of democracy and boost creative policy-making, unless we also reflect and improve on how we set the rules of functioning and regulating, at multi-actor level, so as to enhance the overall collective problem-solving perspective, of which the optimization of administration procedures is only a part.

Electronic services, as predicted by Malone, Yates and Benjamin (1987), should contribute, given enough time, to the decreasing of transaction costs, market and governance possibly gaining over hierarchies and government. This governance perspective, where the role of the State is more in the development of its regulatory capability than in the improvement of its sheer direct service delivery performance, is probably the effective translation of the passage between an Information Society to a Knowledge one.

Measuring is shaping

The problem is also to avoid, through standard benchmarking exercises developed throughout Europe, reaching an excessive convergence and even conformity, and on the contrary to leave room for creativity

and diversity. In the longer term, this dynamic tension is likely to be acute. When more than 95 % of European political entities will have their e-portal, when the nations having today a 65 % Internet access will have got the 95 % mark and the nations with between 30 to 40 % will be somewhere between 75-85 % Internet access, this open issue of conformity/creativity (or convergence/diversity) may as a matter of fact prove to be vital. Any tool bearing this medium-term provision is therefore claiming an important added value to start with. As new forms of computing pervasiveness and user-knowledge sensitive platforms emerge supporting the transformation of lifestyle standards and commonalities, a measuring toolset capable of appraising e-government performance in terms of immediate achievements as well as more open, qualitative, open-scenario compatible type of developments seems to be a safe bet, at least one to be worth discussing. Concrete references of past research and ongoing observations will gradually help documenting our point. Envisaged as a continuing evaluation activity, it can grow into a form of e-government observatory. For the time being, let us take as an illustration of our toolset functioning, the evaluation of e-Tampere. The radar view is as follows (in further and longer documents, it will be discussed in-depth):

# A quick glance on the appraisal of eTampere
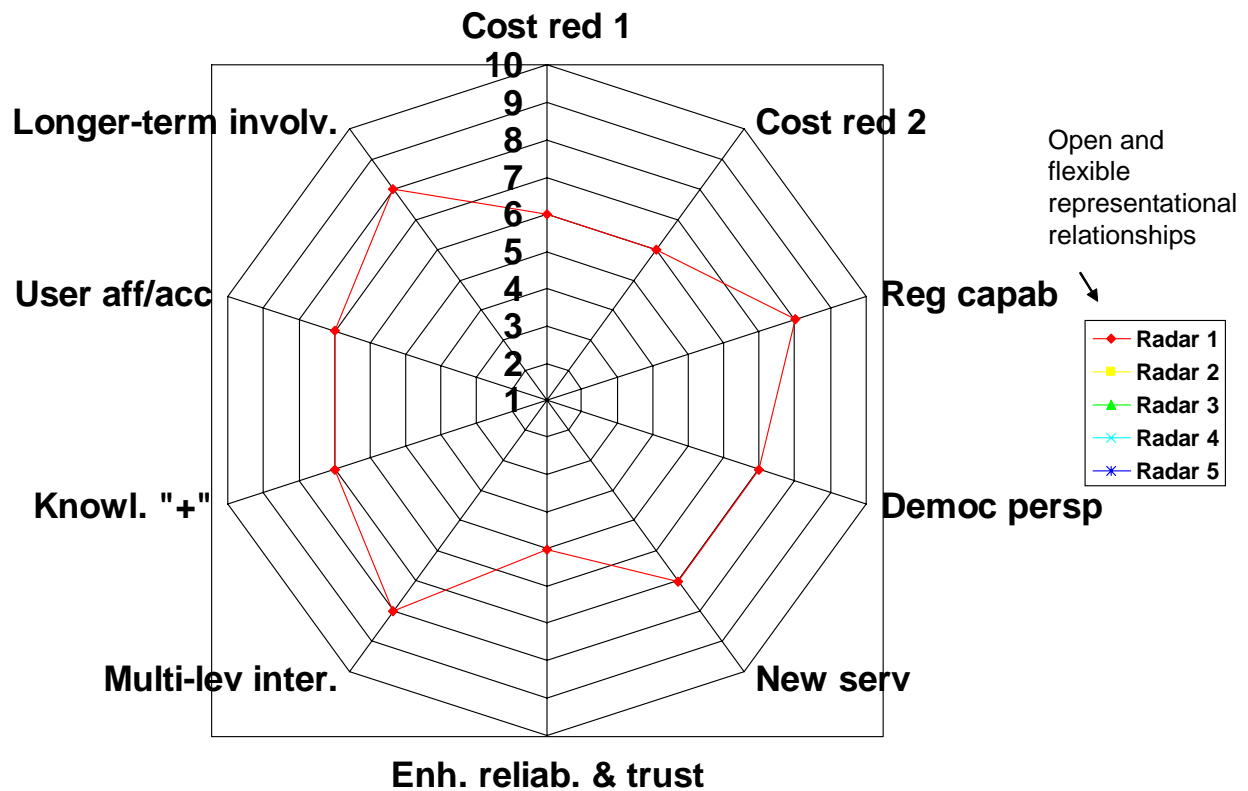
A first remark here is worth making: new services, democratic perspective, regional capabilities, multi-level interactions and longer-term involvement are the strong points of the eTampere programme. This relates tightly to our next evaluation step.

As a matter of fact, in order to avoid that our evaluation tool to become too narrow and static, it needs to be coupled with a another preoccupation (the second fold of the toolset), complementary in the sense of also paying attention to the future, to strategic needs and other dynamic featuring, integrative and evolution-sensitive within a larger scale, in space and time, in the pan-European context (or even wider). We call it a positioning and orientation table; it accounts for the paradoxical fact that if it is important not to always reinvent the wheel and therefore diffuse templates and best practices (and stick to them), it is also

necessary not to stop being innovative and creative, including at the cost of deviating from standards, once in a while. The main goal of our global positioning tool is to evaluate dynamics and knowledge building aspects (an overviewing assessment on particular processes, projects or programs). Let us see our strategic positioning tool displayed with the eTampere programme as an example. Per se it seems to bear limited value, but matched with the previous polar diagram, it can be used to steer in time the various projects or components of e-Tampere towards certain broader concerns of pan-European value; it can also allow for comparing e-Tampere with other more or less similar claims from other cities or regions dedicated to the promotion of e-government.

A dynamic positioning of eTampere seen as a collective learning process
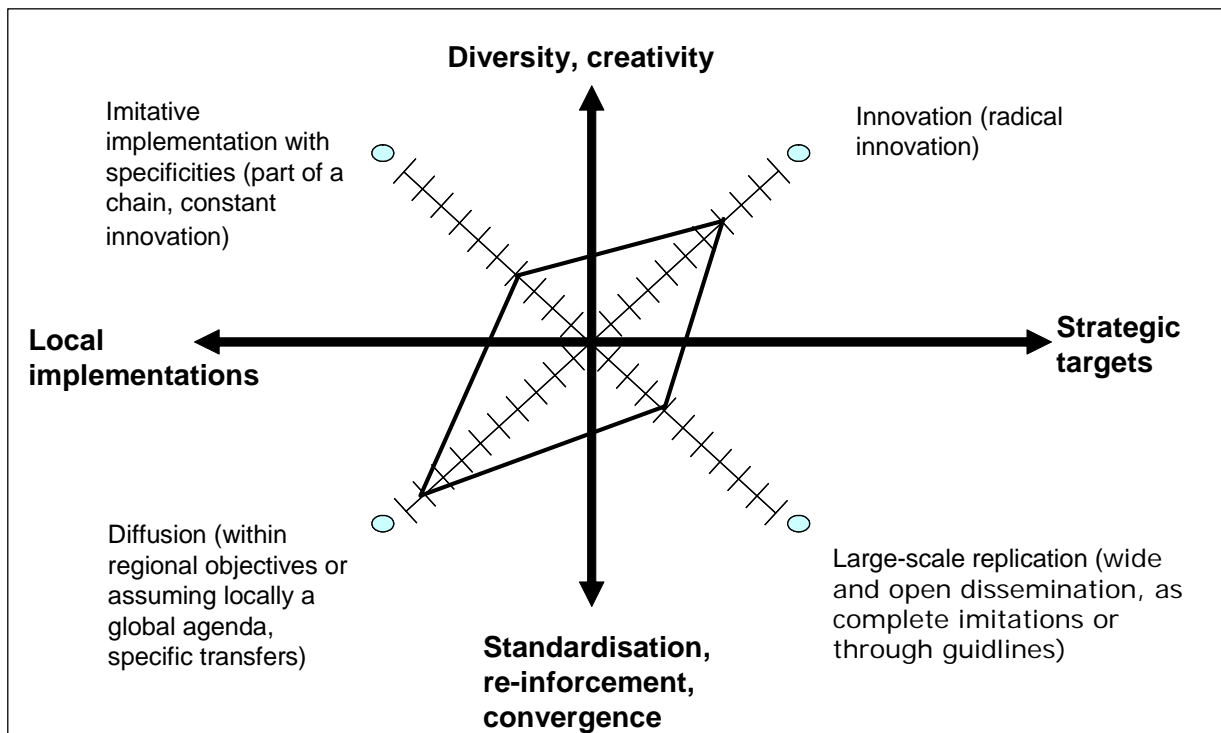
This view suggests that eTampere targets innovative-minded projects (as a vast ambition with international perspective), but that its potential replicability elsewhere, as such, is not so high (it is a complex setting, making the best out of a specific configuration). The good point is that regional integration is strong point of the programme, imitating others being as for itself hardly a construction pattern. The strategic value of eTampere comes form the innovation-minded perspective (diversity) more than large-scale replicability. It constitutes a overarching concept and sub-programmes are to a large extent, characterized by this general scheme (in addition to the fact that they are also comparable, on even terms, with similar programmes elsewhere, of course). The conjunction of both diagrams is the 2004-05 signature of eTampere, at least this is our claim. However, more in-depth discussion is needed to support it and it is showed here only as an illustration of how our methodology operates. Next steps are the use of such a toolset 1) to follow a same programme in time (for instance eTampere 2006 and 2007) and 2) to compare two or more similar programmes (either a concept like eTampere with another one elsewhere or more simple projects or services in any two or more locations).

The methodology we have outlined so far can grow in different directions (city service development roadmapping, regional or national policy design and evaluation toolset, systematic comparison of cross-regional or cross-national projects, etc. Whatever the efficiency we reach, our conservative idea is that

the underlying evaluating discussions are worth considering and even supporting, as a general learning process on the follow-up of e-government undertakings in Europe.

Back to E-Europe

This first attempt at developing evaluating the performance of e-government services within the wider framework of the transformation of the State is going to be reinforced by our various research projects and networking activities. As suggested, it should not only serve as benchmarking toolset, but as roadmapping platform for developing innovative e-government initiatives at various levels. Beyond the identification of best practices, quite a standard objective in European-supported e-government projects, is the ability to carry out effective discussions on these best practices, so as to reach both a satisfactory operational level (e-government services), in all countries, and to maintain a creative approach to collective problem–solving and in particular in the regulation and policy-making capacity of the State. This second part, in the medium-term, should become beneficial for the first part, enhancing it with highly reflexive knowledge on how to handle societal problems, with the expectation of improving, in addition, administrative processes, whether carried out electronically or not. This makes for the hypothesis that the transformation of society into a more efficient, equitable and inspired body, is not the automatic consequence of the optimization of administrative process, but most probably, to a certain extent at least, the contrary (the idea of reverse process engineering, setting broader goals and supporting these goals by revisiting administrative options). Until this perspective becomes standard, we can keep on improving our evaluation requirements, so as to include in the examination of e-government practices, provisions for higher societal expectations. This is the sense of the toolset we are currently working on.

References

Buser M., Cotti L., Rossel P. & Finger M. (2003), *Government and Democracy in the Information Age*, MIR-ILEMT-EPFL (rapport COST A14-CH), Lausanne.

Finger M. (2002), "E-governance in Europe". In: EGRI (ed.) (2002). *E-Government: Issues and Challenges.* E-Government Research Institute, Seoul, pp.347-377.

Finger M. (2003), "De la transformation de l'Etat à la gouvernance électronique"[From State Transformation to Electronic Governance]. *Les Cahiers du CREMOC* (Centre de Recherche sur L'Europe et le Monde Contemporain), special issue.

Finger M. & Rossel P. (2004), "Impact of ICTs on local government". In: Löffler, E. (ed.). EFPA/Forthcoming.

Malone, T., Yates, J. and Benjamin, R. (1987), Electronic markets and electronic hierarchies. *Communications of the ACM* 30, 484–497

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Short abstract

Confronted with the stimulation g proliferation of e-government services all over Europe, there is a growing need for tools, debates and reflexive and benchmarking evaluation on how to consider and steer the performance of these transformations. Based upon our own research h base and in colaboration with our partners with are developing an

evaluation toolset consisting of two complementary compass. The paper shows the current level of progress being made in this development.