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Towards interoperable E-Government – identifying and classifying G2B services in the European metropolitan area Rhine-Neckar

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ABSTRACT

E-Government can transform and improve the entire scope of administrative actions and political processes. Hence, E-Government is both, vision of a future government and the reality we can experience today. E-Government is not an objective per se; it has rather to be seen as measures of organizing public governance for better serving citizens and enterprises. Conversely, E-Government services are often developed and implemented by a top-down approach without reflecting the use of the services by involving the potential users. Hence, this paper advocates implementing services on regional level – assumed to be the social context of E-Government. The presented survey conducted in the European metropolitan area Rhine-Neckar (MRN) among self-employed citizens identified the most requested E-Government services in the region as a first step. The case of the MRN allowed classifying the services into several groups distinguishing by the level of regional influence. The case suggests that the more influence a region – or public administration at local level has – the more a bottom-up approach of identifying and implementing E-Government services should be followed. In decentralized structures such as the MRN the question is also raised whether E-Government programs should move outside the organizational boundaries of known hierarchical administrative structures.

Keywords

E-Government, metropolitan area, Rhine-Neckar, case study, interoperability

INTRODUCTION

Governments at the level of administration will have to face the changing social situation – examples of that changes and developments are globalization of people, capital and goods, (neo-) urbanization in aging societies, increasing flexibility with higher legal standards of formalization etc. (Hood 2007). The effect of these changes is an increasing competition between regions in terms of living standards. One aspect that contributes to the competitiveness of a region (the one this paper focuses on) is the provision of public online services. The fast development of ICT and the benefits realized in the private sector put pressure on public authorities. On the one hand, citizens and companies that are more and more used to virtual transactions in their daily life demand the same level of virtuality and efficient services when interacting with the public administration. On the other hand, E-Government seems to be part of the answer to global developments such as aging societies and neo-urbanization. But the ongoing debate in research and in public show that introducing E-Government systems to public administrations and make them work together in a decentralized environment is not that easy (Dubois and Fattore 2009). Many of the technologies and techniques that are successfully used in the private sector cannot be transferred one-to-one to the public institutions (Wolf and Krcmar, 2005). According to a survey among top executives in German public institutions the major barriers are the lack of internal know-how, legal restrictions, the missing documentation of public processes and organizational issues (Scheer et. al., 2003).

Public organizations try to overcome these barriers by applying the basic E-Business concept of simply offering existing services (partly) online i.e. deploying online services in order to provide public services independent from time and place. Nevertheless as business development in the late 1990ies and the beginning of the millennium showed, private companies

went through a turbulent time of process changes including great successes and dramatic failures of business models (Bradley and Meyers, 2000). However, since the government's tasks are derived from public law and its underlying processes are mostly defined by law as well, the potential for process innovation in the executing offices – i.e. local authorities in states, districts, cities etc. - is limited. It becomes more and more evident that – as the development in the private sector already suggested – an online service provision strategy cannot be implemented without corresponding process changes (Burn et. al., 2003; Scheer et. al., 2003; Lenk and Traummüller, 1999).

But rather than changing the public processes towards virtual transactions, most of the early E-Government programs often focused on simply implementing their current process electronically. For example, the first federal German initiative 'BundOnline 2005' reproduced all the federals' 400 services by aid of ICT in a top-down-approach and made them available online. The effort treated all services equally, regardless of any adjustments concerning process improvements (BMI, 2004). Examples of implementing E-Government top-down can be found in other counties, too see e.g. (Clinton, 2000; Liikanen, 2000; e-Evoy, 2003). Advocates of using the top-down approach could also be found among academics (e.g. Peristeras und Tarabanis, 2000). A critical discussion on the top-down approach using our results is given in section 5.

Consequently public online services are rather implemented by availability, by technical ability or a political agenda than by analysis of the users or regions needs (Krcmar, 2008; Matheis et. al., 2008). Since the classic bureaucratic hierarchy (nation, state, and city) seem not to match with the demands, i.e. lack in terms of interoperability, this paper suggests another distinction: In the course of urbanization the worlds Metropolitan Areas seem to represent the reality of social movement and social behavior best. We therefore assume they should be put into the focus of E-Government initiatives. As a demonstration example we will investigate the provision of (online) public services on a regional level given the European Metropolitan area Rhine-Neckar in Germany.

When the European Metropolitan area Rhine-Neckar (MRN) launched their E-Government program, it was decided that the implemented services should only be of major value for the users and beneficial to implement for the region. It is assumed that net-benefit for the citizens (or a selected group of citizens) is crucial for the success of the service (Scott et. al., 2009). Hence, the implemented services had to be identified and a semi-formal survey among the users in the MRN was chosen as investigation method. The presented survey discusses two underlying research questions:

1. Do citizens in the MRN demand for (more) E-Government solutions at all?
Sub-question: Which specific government services do the users want to be implemented in MRN?
2. Is classic bureaucratic hierarchy (nation, state, and city) suitable to support E-Government?
Sub-question: Does E-Government need a new/collaborative platform on a different level than the usual bureaucratic hierarchy in order to be accepted by its citizens?

We are calling the survey semi-formal for two main reasons: Given the fact that private citizens have far less contact with public administration than business people, the MRN decides to focus on business-to-government services on a regional level. Implementing these services should provide a quick benefit of the program (Joia, 2005). Consequently, the first research question mostly refers to government-to-business services only and the group of participants to our survey was selected likewise. In other words: We did not conduct a representative survey among the whole population, but focus on potential E-Government users with business focus. The second question is of general nature and tries to figure out whether a supra-regional institution can be the right provider of government services or not. The question also implicates that there is a potential by harmonization of services (e.g. harmonize different application forms in different municipalities within the region) and by combining and cross-linking related services (i.e. cooperation in service provision). Precondition is, of course, a change of the legal framework towards allowing such regional cooperation as occurred in the MRN (see section and MKRO, 1995) and described by (Cresswell and Prado, 2001; Strejcek and Theil, 2003). A detailed analysis of the legal perspective in E-Government programs can be found in (Olbrich, 2008), who even suggests a feedback process between legislation and public projects.

In order to answer the research questions, this paper is structured as follows: The subsequent section will outline our research setup and methodology. The results of the survey are presented in section 3. Section 4 discusses the results and interprets them. We close with a summary of our findings and provide an outlook over our future research.

SETUP AND RESEARCH METHODOLOGY

Due to its industrial, cultural and educational connections, the settlements around the junction of the rivers Rhine and Neckar in south-west Germany was acknowledged as European Metropolitan area in 2005. But even though its 2.3 million habitants largely enjoy the benefits of the Rhine-Neckar area as a whole, the region is still characterized by single local attributes. Especially outsiders or visitors remember single sights of the region like the worlds most visited castle ruin in Heidelberg, the

ancient cathedrals of Worms and Speyer, the BASF Ag headquarters in Ludwigshafen, the SAP Ag headquarter in Walldorf, the European headquarters of the American forces in Heidelberg, Germany's biggest vine area in Palatinate, the famous university faculties of Heidelberg and Mannheim etc. A recent survey pointed out that the Rhine-Neckar-Triangle is rarely recognized as a single area - neither externally nor by its own administrations (IFOK, 2005). Therefore few political or administrative connections exist. One explanation is that the region, historically a single principality known as the county of 'Kurpfalz', today has been split into three federal states and 15 districts with no less than 260 municipalities – the split is still as a result from the Napoleon wars and reforms. The citizens of the MRN however sense the split into three federal states as artificial (IFOK, 2005). Hence, the first mission of the newly institutionalized MRN is to change that fact and establish the MRN as a coherent area.



Figure 1: the European Metropolitan area Rhine-Neckar (MRN)

One among many measures is to establish a better connection between the administrations of the federal states, the districts and the municipalities in order to coordinate their programs e.g. concerning traffic, commerce, research, tourism. This seems to be a challenging task for two main reasons. First, a European metropolitan area does not have any executive power since they are usually not structured by country, state or municipal borders. Hence, people living in the same metropolitan region are dealing with different authorities (sometimes even in different countries), different legal environments and different services. The task of implementing a common E-Government platform, i.e. creating a single user interface, lies in coordinating the differences in a single process set. Second, unlike most other metropolitan areas the MRN is not centrally organized. The MRN does have a major capital around which smaller municipalities are located that can be integrated in a hub- and spoke like architecture. Hence, services needed in equal networks are harder to identify.

In order to deal with these challenges the MRN organizes annually conferences to commonly decide on the last year's discussions and projects. One of these projects is concerned with a common E-Government program in the region. Taking into account earlier findings and expertise (Eichhorn and Spannowsky, 2004; IFOK, 2005) the question was raised if a metropolitan area is the suitable provider for E-Government services at all and what kind of services that might be (Traummüller et. al., 2004). Common agreement was to sponsor the presented survey since its empirical approach seems to be a suitable method to answer the given questions (Enticott, 2003). Since the regional conference was held by the guiding

theme ‘business meets government’, the goal was to identify three pilot projects regarding government-to-business (G2B) transactions. In order to do so all of the potential services should be listed and marked by the participants of the survey.

As we do not intend to conduct a representative survey among the population, but identify G2B services with maximum of potential use/users, we focused on potential stakeholders of our services. In that course, the association of self-employed citizens in MRN could be convinced to take part in the survey. The association represents small- and mid-sized companies in the MRN. The majority of the members are self-employed craftsmen, salesmen, architects etc. with rarely more than ten employees. The questionnaire was sent to all its members (i.e. 5500 times) that are split geographically well across the region.. The rate of return was almost 17% very positive – especially since the questionnaire was sent out unannounced.

Number of questionnaires sent	5500
Number of returned questionnaires	920 (4 returned empty and were not counted)
Rate of return	16,73%
Period of Data Collection	June-September 2007
Survey partners	association of self-employed citizens in MRN

Table 1: Setup of the survey

The setup of the questionnaire comes with a seed list of potential services to be offered by the MRN portal. We define potential MRN service as one that already exist as one or more implementation in the region. However, services run in heterogeneous environments – i.e. they are not harmonized in the region or there is no way of interoperation. We distinguish 3 categorical groups: The first group contains the classic civil services such as requesting a new passport, register a car etc. Since these services mostly address civil services we do not expect significant differences in the results. In the second and third group we address the entrepreneurs exclusively and distinguish between services that can be addressed locally (group 2 ‘special permits’) and such services that refer to administrative duties (group 3). The second group contains the classic local services such as parking permits, use of public property (e.g. road blocks for celebration or construction) or legal consult by the major’s office – e.g. concerning environmental issues. Group 3 addresses official duties that the state and the regions municipalities have to execute e.g. by federal law or for a higher ranking agency. This can be, for instance, the companies’ duty to collect statistical data for the federal office of statistics (‘Bundesamt für Statistik’) or the Chamber of Industry and Commerce (‘Industrie- und Handelskammer’, IHK). To sum up, group two is not only concerned with a harmonization within the region but all stakeholders have to be involved in the process. Group 3 on the other hand is less of a service provision for the companies but rather of bureaucratic nature – e.g. the state uses its sovereign power to collect statistical data. In order to provide them in a homogenous environment one has to abandon individual regulation and offer them in a single form – e.g. in a common portal service.

The participants of the survey were allowed and explicitly asked to mark multiple services. The marks were counted equally – i.e. no prioritization took place. The participants did not know about any grouping and marked a list of services in alphabetic order. The questionnaire also contained a free text field for the participants to fill in services they missed. As a first result we can state that the text fields were almost not used. 4 participants filled in an additional service – 3 of them were found already listed and could be aggregated to the rest.

RESULTS

In addition to the list of services we asked for some statistical data (size of company etc.) that had little to no effect on the answers. At the beginning of the questionnaire we asked the participants directly if they think that the MRN should provide E-Government services and whether or not the participants expect any benefit from an E-Government initiative. The answer was extremely positive since almost 80% (713 total nominations) of the participants were in favor of an E-Government

program in the MRN and 85% (765) saw a potential benefit in harmonizing regional E-Government-Services. The biggest approval (104/114 nominations ~92%) could be found among the group of craftsmen with five or more employees. It can be generally stated that the bigger a company is the more they appreciate regional cooperation.

As figure 2 shows the common civil services received the most in total nominations. This seems rather strange since we already stated that the demand for government-to-business services is much higher than the demand for civil services. However, since our participants belong to the group of self-employed citizens we can assume, that they use all kind of government services (B2G and B2C) if provided. It is interesting to observe that almost all major standard services (drivers license ID, Passport, registration office etc.) received about the same number of total nominations (between 530 and 560) which equals 60% of nominations. There is only one statistical outlier: The service of car registrations was mentioned by more than 4/5th of the participants. This is easily explained since self-employed people mostly need a car to execute their business. Therefore we expect everybody in the group to be in frequent need of that service.

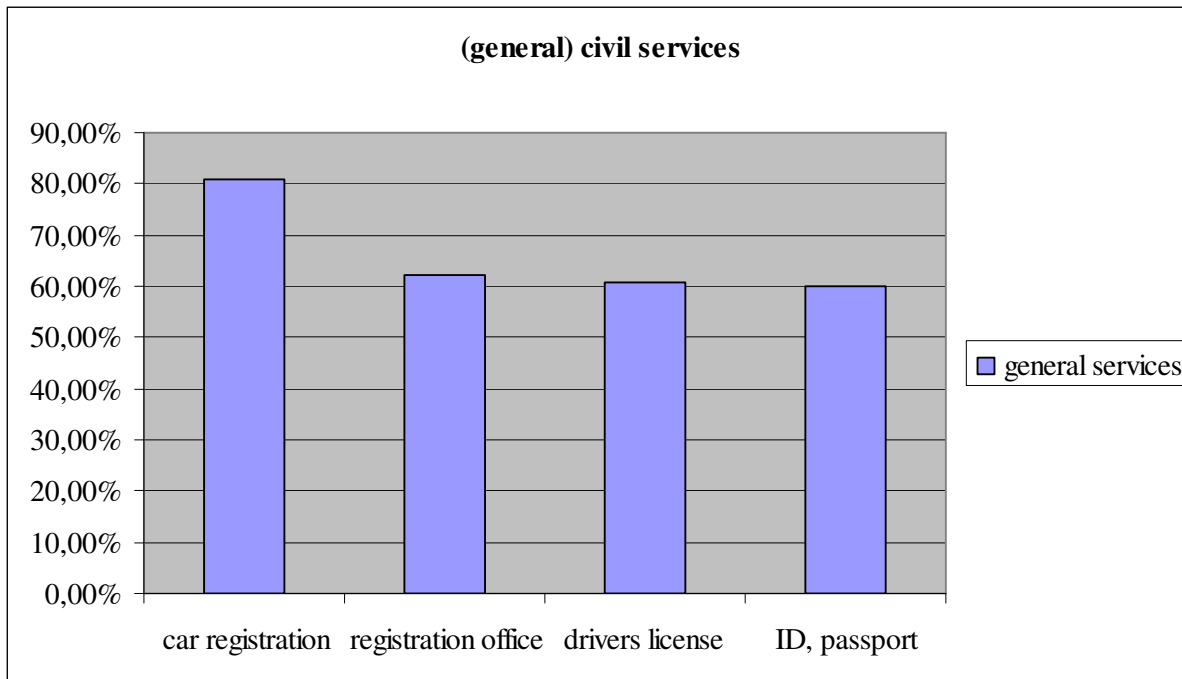


Figure 2: Results group 1 – civil services

As figure 3 illustrates the picture looks different within the second group. The total amount of nominations depends largely on the service when it comes to special permits. Special parking permits in residential areas or pedestrians (e.g. for handicapped people or craftsmen) were mentioned by over 2/3rd of participants. With almost 600 nominations in second place ranked the service of applying for a temporarily closing or use of a public road – e.g. for a celebration, a sales stand or putting up a construction site. Our participants see a big potential for increase in efficiency once these processes are harmonized in a region. A craftsman that operates in the whole MRN might have to learn to deal with over 200 municipalities in order to get special parking permits. Almost half of the participants would enjoy regional consulting services such as on labor, union or environmental issues. Again a topic the region could easily harmonize without anybody giving up any administrative power.

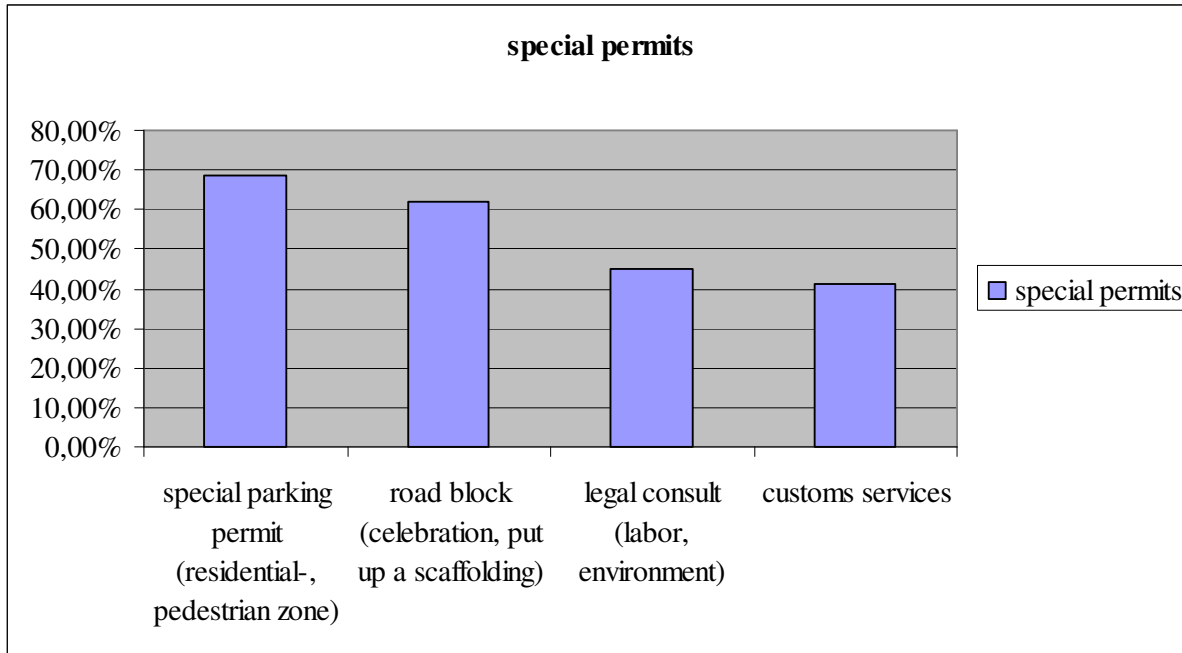


Figure 3: Results group 2 – special permits in the MRN

Figure 4 depicts the result of the last group. Here services are collected that are characterized by the states' unilateral use of its executive powers. The most nominated service (623 times) was the registration for the social security. This and all top-nominated services (communication with Chamber of Industry and Commerce services, unified registration of a business, collection of statistical data, performing rights society or virtual public construction authority) have in common that (business) information is exchanged with a local authority in order to fulfill German (state or federal) law. Given the example of the top nominated service of applying for the social security system: In Germany it is obligate that every employee (even auxiliary workers or short term employees) are reported by the employer to the local authority (§§ 28a - 28r SGB-IV). The responsible authority is the local health insurance office which distributes the information to the other insurances. Since the health insurance companies have had different client groups in the past (e.g. judges, advocates and public employees) the processes differs a lot. Although today one is free to choose a health insurance company many processes still differ, there emerges huge potential for a harmonization by building/introducing integrated E-Government. However, since the MRN has little executive power it can only present or suggest common solutions. Nevertheless the 3rd group is of special interest to the MRN since the individual local offices will only loose little influence by a harmonization (since the process is mostly dictated by federal law). On top of that, bigger companies in the region showed interest in participating in the corresponding implementation project in order to provide the service themselves – i.e. link to the service on their intranet pages.

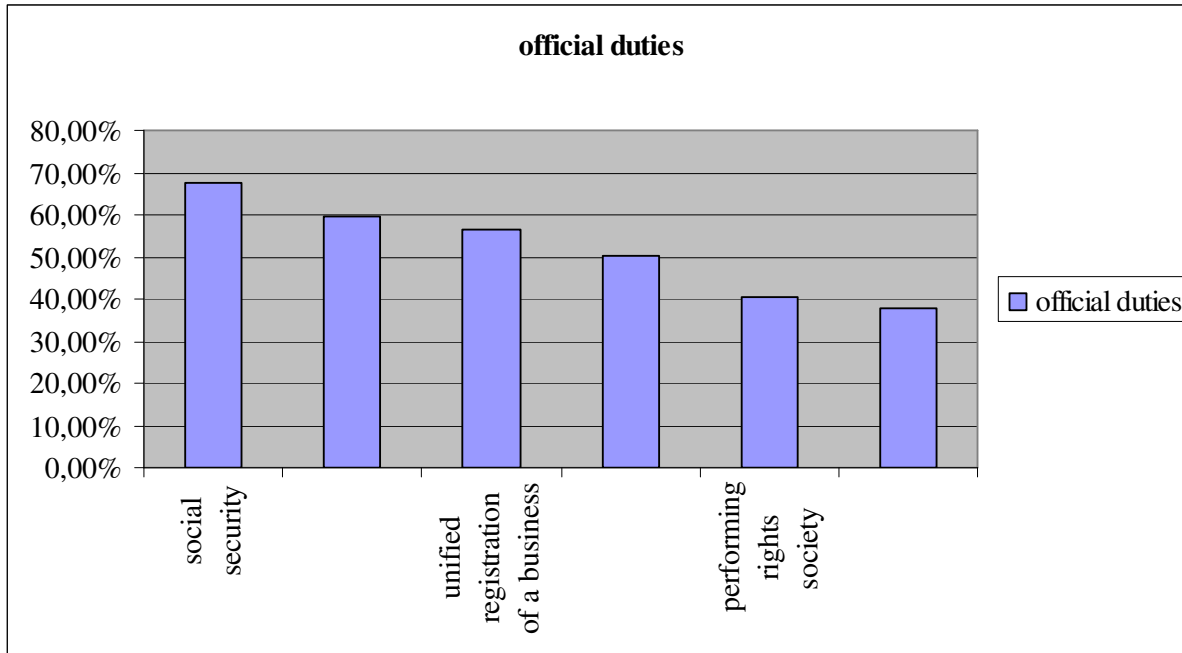


Figure 4: Results group 3 – official duties

DISCUSSION: INTERPRETATIONS AND LIMITATIONS OF THE RESULTS

The main limitation of the presented survey is that our participants belong to a special type of interest group. As mentioned before, the organization who distributed the questionnaire is an association of self-employed private citizens which represent the opinion of small to mid-sized entrepreneurs. Hence, we can expect other interests as if the survey was conducted among students, workers, unemployed or retired persons. However, the overall approval for E-Government in our group was overwhelmingly positive and many services were requested to be provided online. Considering that the investigated group consists of (self-employed) businessmen, this is little surprising result. As previous studies found out, the most relevant E-Government services are the business related ones. Hence, the basic conditions of the represented survey are similar to a large number of other E-Government user groups which are predominantly companies, not private citizens. Since 99.8% of Germany's registered companies are small to mid-size we can assume they have similar needs when interacting with public administration. It could also be shown that our participants belong to the group who has strong interest in online service provision. We suggest conducting similar surveys in other metropolitan areas to verify our results and to identify the most valuable services for a regional E-Government service portfolio.

Another limitation is the methodology itself. Since we count absolute nominations in a certain user group some useful and innovative programs might not have been respected – especially the services and categories we can not ask for. E.g. the BASF AG sponsored a portal (<http://wishyouwerehere.de>) for its foreign employees to get a first orientation in the MRN including dealing with public authorities. The very innovative portal can be considered a kind of informative platform or a guide that leads to and helps with online services that are provided in the MRN. Although the portal does not establish any technical connection between the services, the portal is a first step towards regional cooperation – if however only on an informative level and only for foreigners as a private service. The presented survey on the other hand was conducted among people that mostly live in the MRN for a longer period of time and are well “settled” – i.e. have their own business and are organized in a regional association.

Our summary on the research hypothesis is ambivalent. The first questions which services are the most promising to be implemented as a prototype could, of course, be answered easily. According to the results of this study the MRN has decided to implement the top nominees from each group and implement it in the regional portal by the end of 2009. Currently the preconditions are discussed in order to implement the service of car-registrations not only in a public administration but also in the office of a car vendor. Common license plates on cars in the whole MRN (currently each of the 15 districts has its own license plates with individual abbreviation) are discussed. It is already accepted that the citizens should not be forced to re-register their car anymore (and change their license plates) when moving within the MRN (Alpar and Olbrich, 2007). A common process of applying for an issuing a parking permit in the MRN (group 2) is also discussed and almost every

municipality agreed on it. In 2010 it is planned to harmonize the (virtual) process following a process set based on high level Petri-Nets as it is described in (Olbrich and Simon, 2006). Concerning the application for the social security, new software is already in testing stage that can be integrated as a service and therefore adjusted to additional requirements – such as legal framework (Alpar and Olbrich, 2005; Simon and Olbrich, 2007).

Our second question concerning the right level to offer E-Government services could not be answered satisfactorily. Once our participants were asked directly, they approved harmonization and cooperation efforts on a regional level with 85%. Hence, we can conclude that people in the MRN feel more connected to the region they live in than to their city/municipality. This seems little surprising since the MRN only has three major cities (Mannheim, Heidelberg and Ludwigshafen) in which only about 1/4th of the population live. Nonetheless, 85% in favor for a regional E-Government-program is still an overwhelming approval rate. Asking, however, for the specific services the MRN has influence on (i.e. services from group 2) the total amount of nominations were far less significant as in the other groups. Only two services with higher relevance could be identified in the second group. In total nominations our participants rather requested classic E-Government services to be provided (i.e. services that can be found in group 1) and expected help with official duties (i.e. services that belong in group 3). We can therefore conclude with some confidence that the people of the MRN are not much interested in additional services to be provided. The common services of the public administration seem sufficient for a regional E-Government program. However, our participants would like them to be provided on a broader (i.e. regional) scale.

This leads us back to the classic top-down-approach most E-Government programs still follow (see section 1). As figure 5 illustrates the common top-down approach (e.g. Peristeras und Tarabanis, 2000) does not sufficiently support regional E-Government. In order to successfully implement specific services top-down and bottom-up must go hand in hand (Klischewski, 2003). We believe a crucial success factor for the implementation of E-Government – i.e. interactions between agencies and services on a regional level (Bajaj and Ram, 2003) – is the coordination of these two approaches in the individual projects and the program management. Organization aspects, interoperation (on different bureaucratic levels) and collaboration in implementation projects should therefore be the key elements in the E-Government research agenda (Marchionini et. al., 2003).

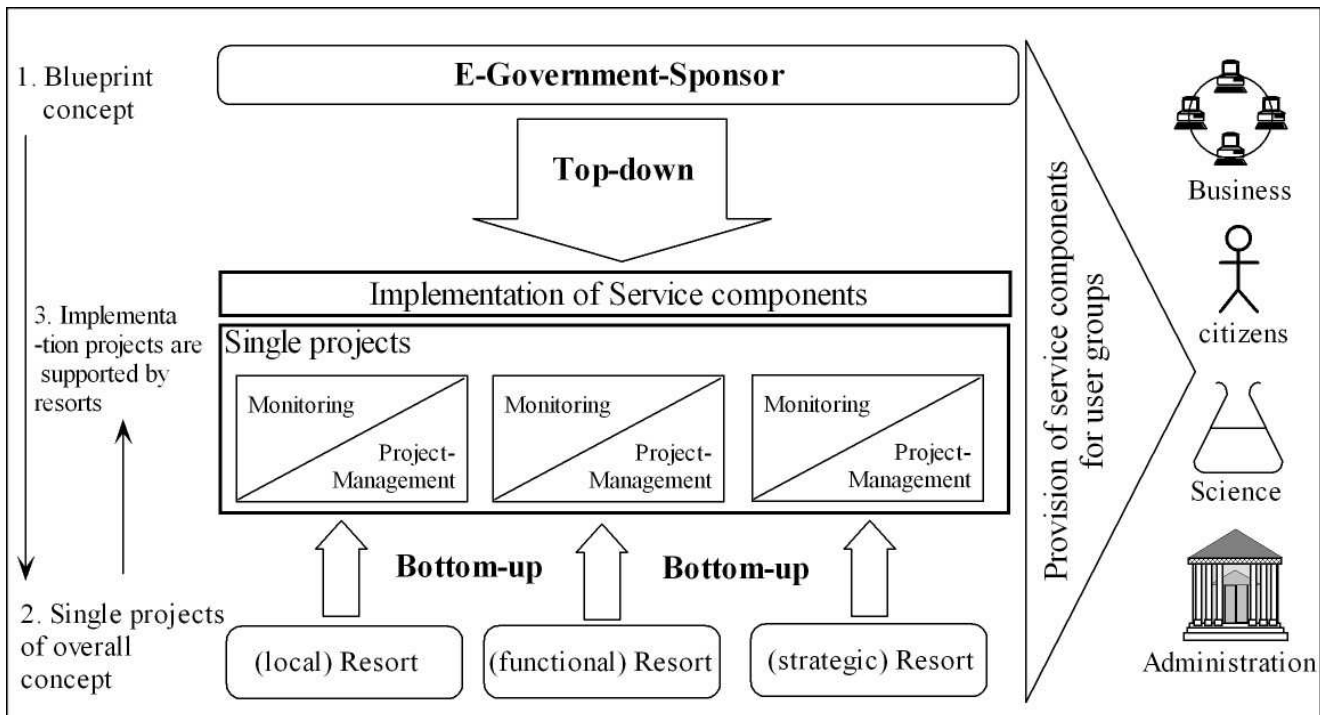


Figure 5: Integrating different E-Government implementation strategies.**SUMMARY AND CONCLUSION**

Public administrations are in need to redefine their role in society. Challenges like flexible work force, neo-urbanization, aging societies and restricted budgets are leading towards a tough competition between regions. One way of addressing these challenges and a level of competition is the provision of E-Government services. As in every competition at the market, rules are set (i.e. guidelines and standards are given top-down) and alliances are made - e.g. in the MRN between multiple states, districts and municipalities. The Ministerial Conference on Regional Planning supports that view by stating 'As drivers of the social, economical and cultural development the European metropolitan areas will preserve the capability and the competitive position of the European Union' (MKRO, 1995). Conversely the E-Government programs often do not support that vision to the fullest as they still focus on the classic hierarchical structures. We believe that E-Government programs should not be bound to classical structures like national, state municipal borders. In order to face big challenges of the century authorities should focus on structures we experience in the reality today. Thus, services must on the one hand be bound to given standards such a public law, E-Government guidelines and frameworks and on the other hand be flexible in order to fulfill local requirements and be open for interoperation between bordering regions. The European Union offers a big opportunity regarding the concept of metropolitan areas as our survey in the MRN showed.

For practice our empirical findings conducted in the MRN imply that the usual top-down-approach is not efficient in E-Government programs. We have shown that, unlike the civil offices (where a localization is welcome) E-Government services must be provided on the adequate aggregation level – e.g. where other related services are provided, too. This aggregation on an adequate distribution level is crucial for E-Government programs to be accepted. On top of that, in heterogeneously structured areas such as the MRN, different needs and services are requested by the companies and citizens. Politicians on the local level are advised to work closely together with their local interest groups if they want to see revenue on their E-Government expenses. As a rule of thumb our survey suggests that you should have the standard services for your program to be accepted and carefully choose which additional services should be provided additionally. The choosing of this additional services depends largely on the level of distribution and hence on regional factors. Still, more surveys, interviews and user acceptance tests should be conducted in order to verify our results. As a next step we plan to compare European metropolitan areas on a maturity scale – i.e. which level did they already achieve and to what degree are they able to execute governmental tasks (online).

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