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The main goal is to enhance the quality and quantity of intellectual exchange among researchers, educators, scholars and practitioners dealing with major issues of public administration and public policy in the Central and East European regions.

Content

Stanislav Klazar, Juraj Nemec,
Jiri Pribil, Marketa Sumpikova

**E-governance and its Application
in Area the of Programming Public
Expenditures: The Case for the
Czech Republic 1and Slovakia /p.3**

Anastasia Golubeva,
Irina Merkuryeva, Nikita Shulakov

**Development of E-government
in St. Petersburg: Evaluation of
Web Sites Performance
and Usability /p.15**

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E-governance and its Application in Area the of Programming Public Expenditures: The Case for the Czech Republic* and Slovakia

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1. Introduction

The main features of modern “European Administration” are defined by the important document “European governance: a White Paper” (European Commission, 2001), as openness, participation, accountability, effectiveness and coherence. The contents of the “White Paper” represent current trends of changing from government to governance, or further to “public leadership” (Bouckaert, 2002), representing the next step in public administration systems reforms where all stakeholders benefit from mutual co-operation.

Modern governments must use a large range of tools and instruments to achieve the necessary quality level of governance, and shall utilize all suitable new technologies in the delivery of any type of governmental services. E-government/governance represents one such important emerging tool, with increasing importance during last ten years, when the use of the internet took on its worldwide character.

E-government/governance is ready to support better achievement than any of the main modern governance characteristics. In our paper we want to focus just one dimension of this relationship – the impact of e-government/governance on the efficiency and effectiveness of public expenditure.

Public expenditure programs spend between 30 and 60% of GDP in developed

countries. Because public money/taxpayer’s money is used, the principle should be that any expenditure program and any expenditure item is realized in an environment where openness, transparency and publicity principles dominate. Ex-ante, during the process, and ex-post information about the processes and outcomes shall be available to anybody interested.

In the first part of our paper we investigate the potential of e-government/governance concerning the improvement of processes of preparing, awarding, realizing and evaluating public expenditure programs. The main areas are ex-ante audit of intended public expenditures, selection and/or similar decision making processes, and processes of ex-post, performance based audits of finished expenditure activities.

The second part of the paper focuses on evaluating the current level of use of e-government/governance tools in two CEE countries, the Czech Republic and Slovakia, with the main focus on the Czech Republic.

2. E-government/governance

Over the last few years, it has become evident that information – inevitably linked with Information Technology (IT) – has become of critical importance for the success of any organization, including the public sector system. New technologies (personal computers, the internet, mobile phones) are fundamentally changing our everyday lives. With the growing complexity of IT solutions and information systems which all functions of modern organizations vitally depend on, with growing investments in this field which are becoming a heavy burden even for very

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rich organizations, and with a tremendously rapid development of technology offering new solutions to business problems, these issues are entering the everyday agenda of top managers.

As an outcome of such processes on the level of the public sector, a popular new expression – **e-government/governance** – was coined. E-government simply means modern government that performs all its functions and provides all its services through intensive use of electronic means for information processing, computers, networks, the internet, etc. Electronic means are only not used for internal information processing and communication within governmental agencies but also for communication with other agencies, citizens and businesses (Vintar, 2002).

E-government/governance means that government is taking advantage of the new technology development to provide people with better government services. The basic aims of e-government/governance are to improve the ability of all people to participate in democracy and to enhance the efficiency and effectiveness of all kinds of government services.

E-government/governance can be directly linked to the main dimensions of “good governance” (Leitner, 2003), especially:

- Coherency of policy making: it supports better quality co-ordination of policy making both on the horizontal and vertical levels;
- Participatory democracy: it supports more active participation of all players in policy making processes;
- Consistency, efficiency and effectiveness of policy implementation: it supports co-operation and networking in policy implementation phase, makes them faster, simpler and more cost-effective; and
- Transparency and openness of political processes: it provides general access to information at very low cost.

As indicated by some research, e-government/governance may play a crucial role also in connection with limiting corruptive behavior in the society and the govern-

ment. Choi (2004) tested the following (as well as other) hypotheses:

1. The greater the degree of e-government, the lower the level of corruption in the country.
2. The more developed a country's ITC infrastructure is, the lower the level of corruption will be.
3. The greater the transparency through e-government is, the lower the level of corruption in the country will be.
4. The higher the accountability through e-government is, the lower the level of corruption in the country will be.
5. The greater the empowerment through e-government is, the lower the level of corruption in the country will be.

The most important correlation has been found for the first hypothesis; data shows that the level of e-government has a greater impact on corruption than any other variable (variables like the level of economic development of the country, the size of government and the scope of government regulation). Hypotheses 2 – 5 were also statistically significant. Such findings serve to confirm that e-government/governance is one of the key tools in building new modern governance systems.

According to the Green Paper (1998), we can distinguish governmental e-services by the three main functions they serve:

1. Information services to retrieve sorted and classified information on demand (e.g., WWW);
2. Communication services to interact with individuals (private or corporate) or groups of people (e.g., e-mail or discussion forums); and
3. Transaction services to acquire products or services online or to submit data (e.g., government forms, voting).

Taking into the account the main dimensions mentioned, we suppose that e-government/governance will be able to improve the quality of governance by for example:

1. Making it easier for people to have a say in government (e.g., to register a motor car or a new company from his/her

- home every day of the week is more flexible, accessible and faster);
2. Providing integrated services (because of the fact that different governmental organizations will communicate more effectively with each other). (E.g., after an accident, it may be necessary to contact several different governmental organizations – a hospital, the fire department and the police. Due to the modern ways of sharing information and integrating their services, only one call will be necessary);
 3. Better information services relative to government law, regulations, and policies. (E.g., to fill in a tax form online will be more convenient due to implementation of cross over check points, quotations of possible inputs and validation of formal requirements).

However, it is necessary to stress that e-government/governance, similar to any other public governance tool, is not just one-dimensional; it does not just have a positive character. Certain important fears are connected with introducing it that modern government should cope with:

1. Citizens can be very quickly divided into 2 groups, one with the ability to use e-government, the second group without. There seems to be only two remedies for this threat – community access to the internet and improving the ability of citizens to use new IT technologies. Community access to the internet (in libraries, offices, etc.) for people who are not able access the internet from their homes, and focus on public information programs and educational programs in using the new technologies should be the priority for the e-government policy⁵;
2. There is a fear of the “Big brother is watching you” phenomena; this means that the government can know too much about the people and use the information in not appropriate way. To face this

- problem it will be necessary to review and strengthen all legislative measures designed to protect privacy (for some skeptical remarks see, e.g., Kumar A., 2002); and
3. Sometimes is it noticed that government will have to rise to the challenge of e-government methods being far too impersonal. The authors of this paper strike back because there will still remain many situations for which dealing with the human officer will be not expendable.

The current scale of use of e-government/governance

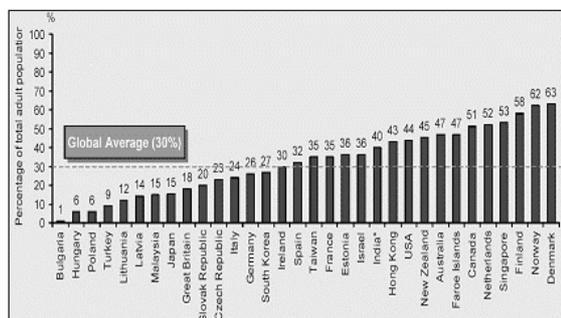
In this section, we utilize the results of a representative international study completed by Taylor Nelson Sofres Interactive in November 2003. The basic method of collecting information was the questionnaire which was used in 32 countries from around the world. The regional insight revealed an interesting finding: it is now evident that the top users of e-Government are Scandinavian countries (see Chart 1). A possible explanation for this is the significant increase of broadband in this region and it also seems that the internet has matured to the level where many people use it as their primary source of information; the growth of e-Government is self-evident then.

Regions of the Americas and of Western Europe have for a long time been above the average (except Great Britain and the possible reason here is that there is much to do to convince the citizens of the benefit of e-Government and online access – Brits still prefer other delivery channels such as the telephone or face to face communication).

The Czech Republic is a leader in using e-Government among the transition countries. Internet penetration in companies has reached over 90 % and we suppose it could be the reason for such high e-Government usage (there is no doubt that people use the internet in companies for personal use also). Poland with 6 % penetration is far under the global average, but does not leave the line of other transition countries.

⁵ The National Computer Literacy Program launched in February 2003 is aimed at giving the public at large (i.e., people who may not have had any previous experience with computers) the possibility of learning the basics of computer literacy, including the use of the internet. This project met with extraordinary acclaim. In the first two months more than 10,000 candidates enrolled for courses and more than 210 regional training centers were set up (mostly in schools).

Figure 1
Percentage of population who used e-government in 2002/2003



Source: *Government online, an international perspective 2003, global summary. TNS Study. November 2003.*

The authors identified 5 basic groups of e-Government users within the last decade – Transactors, Providers, Consultants, Downloaders and Information Seekers. This approach allows one to create and measure development trends (Table 1) for individual groups as defined below:

- Non users – have not used the internet to get or provide information or transact with Government;
- Transactors – used the internet to pay for government products or services through the use of a credit card or bank account (e.g., rates, driving license, recycle bins, traffic fines);
- Providers – used the internet to provide personal/household information to the government;
- Downloaders – used the internet to print government forms that were then sent by post or fax (e.g., tax form to claim government rebates);
- Information seekers – have used the internet to get information from a government website; and
- Consultants – used the internet to express a point of view or to participate in community consultations with the government.

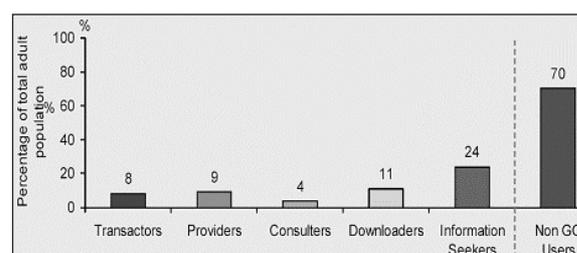
Table 1
Change in the users of e-government between the years 2002 and 2003 (in percentage points)

	Increase (+) Decrease (-)
Transactors	+2
Providers	+2
Consulters	No significant change
Downloaders	+2
Information Seekers	+2
Non GO Users	-3

Table 1 describes changes in involvement of different kinds of e-government users. The number of users from all groups (except Consultants) is on the increase. This indicates two trends:

- On one hand, e-government is going to become an integral part of e-business without exceptional; and
- On the other hand, rates of increasing participation of citizens in democratic processes do not grow significantly, limiting this aspect of e-government/governance potential (see also Chart 2).

Figure 2
The users of e-government in 2003



Source: *Government online, an international perspective 2003, global summary. TNS Study. November 2003*

A bit different results arise from a similar study for North America (the US and Canada). There is stable penetration of Downloaders and a rapid decrease in Providers. We have no explanation for this development. We did not uncover any relationships between the perception of e-government online safety and the penetration of Providers (this group should be the most sensitive).

Table 2
E-government changes from 2001 to 2003 (North America)

	2001	2002	2003
Number of respondents	1507	1501	1500
Transactors	10%	12%	13%
Providers	16%	17%	14%
Consulters	N/A	7%	8%
Downloaders	19%	24%	24%
Information Seekers	36%	37%	40%
Non GO Users	54%	52%	49%

Source: *Government Online: A National Perspective Report*. Leger Marketing. August 2003

Some other general trends results from Table 3. The demographic pattern (55 percent penetration for users below 20 years of age) indicates an increasing trend for the future.

Table 3
E-government penetration and demographic pattern

	2000	2001	2002
Internet User	22	26	28
Non-Internet User	78	74	72
Demographic parameter	Penetration in % of adult population (2002)		
<20	55		
20 - 29	44		
30 - 39	34		
40 - 59	24		
60 +	05		
Male	32		
Female	25		

Source: *Government online, an international perspective 2003, global summary*. TNS Study. November 2003.

3. The potential of E-government/governance in the area of public expenditure

As already indicated above, e-government/governance has an important link to the level of efficiency and effectiveness of public expenditures. Web based applications (the ones we focus on) can be used in all phases of processes of allocation and use of public expenditures. We may find at least the following areas where e-government/governance may play a significant role:

- Allocation of public funds (including ex-ante audit and programming of public expenditures);
- Realization processes of public expenditures (mainly public procurement); and
- Auditing and control of public expenditures (mainly interim audit of awarded programs, and ex-post, performance-based audits of realized programs).

Though this phase may still be underestimated, e-government/governance may play already play a very important role in public policy making processes that are the main base of any public expenditure decision. In this phase, information and communication functions of e-government/governance are the key factors to allocating limited public resources effectively.

According to standard economic theory (Haveman and Margolis, 1970) and also according to the “good practice” policies of many international organizations (EU financial control rules), ex-ante audits of any public expenditure decision shall be a compulsory part of governmental activities, focusing on the 3E dimensions – economy, efficiency and effectiveness (in some cases dimensions like outcomes, impacts, internal rate of return and many others are included, too).

In the past, such processes were normally an internal issue of respective responsible organization. Today, the internet provides many possibilities to improve processes of ex-ante auditing by involving all (or at least most) of the stakeholders whose views should be taken into account.

The change from incremental subjective budgeting to program budgeting (Wright and Nemec, 2003) represents another important

dimension and perspective for e-government/governance. Programs are not only prepared on the basis of communication with all stakeholders, but they should be publicly and transparently announced to all interested parties. A web based application can be tailored to fit the needs of any kind of public expenditure program and its budget, provided that there will be a central point (for example, a government portal) to reduce the cost of searching the net for any stakeholder.

The role of e-government in public procurement processes is already fully recognized in all developed, but also many developing, countries. Publishing new tenders on net is efficient as the number of internet users increases and the unit costs of publication decrease. Publishing tenders and all other procurement documentation via the internet increases transparency and improves the chance to obtain “best value” for public money. Today, the internet is used to support all phases of procurement processes; in some cases, it even represents the core base for realization of certain procurement processes (for example in Romania, e-procurement is the standard and the only tool to procure certain items in defined branches of government).

The role and impact of e-government in the ex-post phase of realizing public expenditure programs shall also not be underestimated. Publishing reports and findings via the internet (centrally or in a decentralized way) is not only a tool for transparency and openness, but it supports the level of accountability, and serves as a learning tool as well.

4. The level of use of E-government/governance in the Czech Republic

In this section, we only analyze the Czech Republic (taking into account space constraints), and it is the most highly developed country from this point of view.

The Czech government realizes the importance of e-Government. We can cite the government document (E-Government and Other Projects, online www.mfcr.cz): “The E-Government project in the Czech Republic is aimed at providing citizens and economic entities with the opportunity for swift and straightforward

electronic communication with the state authorities, thereby increasing the transparency of public authority, while reducing the cost of public administration. Within the framework of developing an information society, the project will also involve legislative support of electronic public administration and e-commerce. The government has approved a White Paper on E-Commerce as the basic document for the promotion of electronic trade.”

In this section, furthermore, we would like to specifically mention “community portals” which will play a major role in public participation in government. The emphasis is on making the right information available at the right time. The common tools to enable communication between a citizen and the government are what are called “community portals.”

The most often visited community portal in the Czech Republic is the web page of Ministry of Finance (www.mfcr.cz) with 11000 hits per day. The second is the official webpage of the Ministry of Interior of the Czech Republic (www.mvcr.cz) with 4500 hits. The third is the website of the Czech Statistical Office and the Public Administration Portal of the Czech Republic. In following text we introduce two portals including their structure, impact and limits.

The Public Administration Portal

Let us start with the Public Administration Portal administered by the Ministry of Informatics. The vision of the Ministry of Informatics is as follows “...the ‘Public Administration Portal’ project, which was launched in August 2003, is aimed at creating a single portal that would offer remote access to information about the services of various public administration institutions to both citizens and legal entities. The information section of this portal will contain information about official procedures that apply to various situations in people’s lives. The portal also offers free information about the Land Registry, as well as the full text versions of Czech and EC legal regulations.” (Vision of Public Administration Portal, online [http:// portal.gov.cz](http://portal.gov.cz))

The transaction section of the portal enables users to sort out certain matters (in particular tax returns and matters lying within the competence of the Ministry of Labor and

Social Affairs) directly via remote access and relying on electronic signatures.

It should be “the electronic gateway for the public to administration and government services in the Czech Republic.” (Quote comes from the “Welcome” page of the Public Administration portal (<http://portal.gov.cz/wps/en/en.html>). The aim of this portal is to provide help for citizens in finding information and communicating with public administrative authorities. The services currently offered by the Portal are based on 3 mutually interconnected databases:

- Legislation (enables searches for up-to-date versions of the laws of the Czech Republic, including EU directives and regulations);
- Contact list for public administrative authorities (is present, but not too accessible because of a bad navigation tool bar); and
- Do it online – transactional services.

Unfortunately, the pages seem to be a bit confusing. The scope of interest is too wide and the structure of the web page is too deep. Authors of the web did not follow the recommendation of the guru of web design usability (www.useit.com) “to be flat and clear” (understood to mean building low level websites with clear links) and it is the main reason the portal is “only” third. Today it is not the gateway for e-government for ordinary user access directly to specialized parts of e-government (especially the Ministry of Finance). This is a pity because the Ministry of Finance portal is not able to offer such a wide range of services as to serve as a real “gateway.” The “gateway” should deliver links to the different areas of e-government and provide comprehensive guidelines to the e-government services. Authors of this paper suppose there is still much to do.

Ministry of Finance Portal

As mentioned above, the most frequently visited website from “community portals” has for some time now been the website of the Ministry of Finance of the Czech Republic. It looks plain and more tabular than the Public Administration portal. When using a Front Page based application for measurement of download speed, we determined that this site is twice as fast as the other websites.

Online services on this site are wide-ranging, but we concentrate on the ones concerning public finance – taxes. The website of MF CR provides users with online assistance and delivery of tax returns. All kinds of taxes are ready for online processing such as personal income tax, corporate income tax, VAT, excise duties, inheritance and gift tax, and real estate transfer taxes. An authorized web based application is able to validate basic form criteria and does not allow the user to process an incomplete tax return (or other tax form). An appropriate reference guide follows every step of the process and the user is given some feedback each time. It is possible to send a request for help to the public authority (appropriate tax administrator). All tax rates and allowances are updated so it is not necessary for the taxpayer to study all amendments in the law.

There are some studies (Vitkova. 2002 and 2003, Sandorf, 2001) that calculate the administrative costs of taxation with respect to economies from online reporting. We follow the results of recent research in the Czech Republic (Vitkova, 2002) and calculate the extent of economies. The time saving aspect for the tax administrator is calculated to be about 70 % (transcription, validation and comparison of inputs with other public authorities such as the Czech social security administration) and for the taxpayer about 30 % (sample size of 154 taxpayers). The savings mentioned above

Table 4
Storage costs of tax and accounting reports (in mil. Czech crowns)

	Whole tax system	Personal income tax	Corporate income tax	VAT	Road tax	Transfer tax
Storage costs	28097	6612	6220	12148	1955	1162
Other costs	148376	5884	103531	34050	3608	1303
Savings for taxpayer (30% of storage costs)	8429,1	1983,6	1866	3644,4	586,5	348,6

Source: Vitkova, 2002

are increased by new amendments of the Accounting Law – allowance to store all accounting and law records in an electronic form.

We assume a very low additional cost of buying hardware and software due to present saturation (PCs and appropriate software are already commonly used). The largest e-government economies are calculated for personal income tax, VAT and transfer and road taxes. On the other hand, corporate income tax is not cost sensitive in e-government on-line processing.

There is a drawback of online processing: the problem of authorization of electronic documents. Electronic signatures might have been the best tool to overcome this obstacle but it failed. Only very few taxpayers have the certification to use their own electronic signature in the Czech Republic. The main reasons are assumed to be price (30 EURO per year), incompatible laws and the suspicious tendencies of taxpayers. That is why most online taxpayers prefer using online applications for tax returns and then print the form and send it through the mail). The full potential of e-government is not yet utilized. A substitute solution for the absence of electronic signatures is using special web based applications (e.g., www.podatelny.cz), but the number of application forms is still limited.

5. E-government/governance and public expenditures management in the Czech Republic and Slovakia

In part four, we indicated the most important areas where e-government/governance may help to improve processes of preparation, implementation and evaluation of public expenditure programs. It is necessary to stress that in both selected countries, representing a part of the most developed CEE region (Slovakia and the Czech Republic joined the EU in 2004), e-government/governance is not comprehensively developed as of yet (some barriers have been already indicated above). Because of this fact, there is no chance to expect that it is already being used in an incomprehensive, intentional and systematic way to cover all mentioned phases of public expenditures management.

However, some first interesting attempts already exist which show the way ahead. In this part we provide two examples from two different areas – the use of the internet in processes of drawing resources from EU funds in the Czech Republic and the main aspects of electronic support to public procurement processes in Slovakia.

E-government and EU funds: The Czech Republic

The Czech Republic introduced the pilot project titled “Tenders for Funds from Structural EU funds.” The web based application consists of two basic parts:

- Identification of applicant; and
- Description of the proposed project, including a simple evaluation of the project.³

Identification of Applicant (Identifikace žadatele), Chart 3, is intuitive. It should be supported with database of for the demographic and economic situation in relevant regions (derived from the address); some structural projects are eligible only to applicants from “relatively poor” regions. By correctly completing the Address field automatically eliminates inadmissible structural sources (funds, operation programs, etc.).

The second part of this web based application is the Specification of Project (Specifikace projektu) – Chart 4. One very important part of project submission is to choose the right (appropriate) source (structural fund). The rolling menu is helpful for Applicant at this stage. There are names of individual financial sources and a brief description.

The choice of particular financial source will affect the number of projects and the level of “Own source/Requested sources” (Vlastní/Požadované zdroje). It is common that there is a different ratio for co-financed projects from different structural funds. The web application automatically reports insufficient own sources and the applicant is forced to adjust the estimates (see next picture).

³ There is one issue connected to this. The question is, if all the evaluation criteria shall be publicly known (before and within the process of application) to all applicants or not. The common practice in CR is that the criteria are not public and the decision of the administrator about whether the bid was accepted or not does not need to be justified. The process transparency decreases and the opportunity for inefficiency increases.

Figure 3
Pilot project – Tenders for Funds from Structural EU funds

Figure 4
Specification of the project, evaluation criterions

The “Own source/Requested sources” point is not the only criterion for evaluation of project. The other can be the present value of project costs. This value is calculated by web based application and is dependent on chosen interest rate.

The web based application provides useful information for the applicant through the indication of a numerical order of his application amount and other applications for the same financial source. The applicant receives prompt feedback whether his application is competitive or not.

This is only a pilot project; it is one of the possible ways how to make the application for funds from the Structural Funds of the EU more accessible to applicants. The number of evaluation points and characteristics of the project can be wider and may be mutually connected (to meet formal and subject criteria). The number of incomplete or unsatisfactory applications can be reduced to minimum and indirect administrative costs will, thus, be significantly reduced.

On the other hand, direct administrative costs (costs on the side of the administrator) will be reduced as well. The output of web based applications will be directly saved to database and actualization can be prompt. The preparation and evaluation time for the project will be reduced and the efficiency of the process will increase.

It is clear that without e-certification (signature), however, it will be necessary to have a physical copy of a contract, but information processing will still be much more efficient using online communication.

Prompt publication of the results of evaluated projects seems to increase the transparency of the process and can provide useful feedback for subsequent applicants. The conditions for this are more than convenient. The government supports the participation of the Czech Republic in the IDA program (Interchange of Data between Administrations) as of January 1, 2003. This program focuses on the use of information and communication technologies for the support of swift and effective electronic exchange of information between the public administrations of individual EU Member States and EU authorities. Czech participation in this program can be perceived as

one of the prerequisites for the connection of the Czech Republic to the information infrastructure of the EU.

Electronic media and public procurement in Slovakia

Compared to some other countries (US, Romania), there is no e-public procurement system in Slovakia as of yet. There are many reasons for this such as the non-existence of functional mechanisms to implement laws on electronic signatures or the fact that there are EU delays in preparation of new public procurement directives which are also expected to include sections on e-procurement.

However, the necessity and potential of the use of the internet in public procurement processes is already recognized in Slovakia, as expressed, for example, by the two following important documents:

- Government decree 389/2000 from November, 2000, on publishing of tender intentions, tenders, tender documentation and tender results using telecommunication media; and
- Transparency International “good practice” guidelines, showing all phases when information about the procurement process should be displayed to participants and to general public.

The Decree is the first official governmental document concerning the use of the internet in public procurement. It does not include any obligations, but at least provides conditions concerning publishing of most important procurement documents via the internet, and leaves free space for extra activities as decided on by respective bidders.

Transparency International Slovakia is really active in the public procurement area, as this is an area which is very corruption sensitive. TIS published several documents/guidelines (see literature) in 2001 – 2003 providing good-practice advice for public procurement processes. Respective documents provide a list of internet supported information that should be published to increase the transparency and effectiveness of public procurement in Slovakia (Table 5) at every and all levels of the public procurement system.

Table 5
Transparency International Slovakia guidelines on publishing public procurement information

<i>Public procurement phase</i>	<i>Information to be published</i>	<i>Executive body</i>
Before the concrete process starts	Internal anti-corruption system	All procurement organizations
	Internal Code of Ethics in Public Procurement	All procurement organizations
	Procurement program	Procurement entities
	Ex-ante audits for major items	Procurement entities
	Integrity Pact	Procurement entities
	Guidelines, forms, manuals	Public Procurement Office
	List of qualified procurement officers	Public Procurement Office
	Issuing the list of qualified bidders	Public Procurement Office
Preparation of tender document, publishing of notices, pre-qualification	Information about the intent to sign an Integrity Pact	Procurement entities
	Preliminary notice	Procurement entities
	Tender notice	Procurement entities
	Results of qualification	Procurement entities
	Call for offers	Procurement entities
Tender documentation	Tender documentation	Procurement entities
	All communication (clarifications) with bidders	Procurement entities
	List of non-selected/non-qualified candidates, including clarification	Procurement entities
	Minutes from opening of tenders	Procurement entities
	Results of tender	Procurement entities
	Minutes from tender evaluation (secret parts excluded)	Procurement entities
	Contract (if not impossible)	Procurement entities
	Minutes about any change in contract	Procurement entities
	Ex-post audit (internal)	Procurement entities
	Ex-post audit (external)	Auditing bodies
	Publishing of good and bad practice examples	Public Procurement Office
	National yearly procurement report	Public Procurement Office
	Yearly procurement reports	Procurement entities
Complaints and remedies	Complaints	Procurement entities
	Decisions of Public Procurement Office on complaints	Public Procurement Office
	Cases, court decisions	Public Procurement Office

Not surprisingly, the list included in Table 5 represents, at this moment, only a quality of standard that is not much followed by procurement bodies. Recent TIS research proved that, for example, state administration district offices in most cases in 2003 did not provide the above-mentioned information via their web pages; these bodies did not even create some important documents such as procurement plans/programs at all. However, the existence of such a list at least indicates that major changes in favor of electronic support

of public procurement processes might be expected in Slovakia relatively soon.

5. Conclusions

E-government/governance importance steadily increases in all developed countries, as do many factors supporting quick development of this inevitable tool/mechanism of good governance. CEE countries started taking their first steps in the area of e-government/governance during last few years following the

massive increase of internet use in the late nineties.

However, current achievements (as clearly shown from examples of two selected countries, Slovakia and the Czech Republic) are still limited, and this is true even concerning the general use of the internet to fulfill three basic e-government/governance functions – information services, communication services and transaction services.

Taking into account this fact, it comes as no surprise that the really great potential of e-government/governance in the areas of effectiveness and efficiency for public expenditures is minimally used in CEE conditions and only a few non-related cases of good practices could be found.

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Development of E-government in St. Petersburg: Evaluation of Web Site Performance and Usability*

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Abstract

This paper analyzes functional performance, effectiveness and usability of St. Petersburg government sites. Investigation of the level of web penetration, functional advancement and user-friendliness of selected sites under external approach reveals visible variation in accessibility and usability, implying the need for development of interactive elements. Internal evaluation is suggested for a strategic approach to web sites improvement aimed at the integration of agency network presence.

1. Introduction

Digital technologies serve as a basic source of transformation in economies and societies around the world; development of modern information communications technologies (ICT) augments the competitiveness of national economies and contributes to global integration processes. During the last few years the rapid spread of ICT lead to a visible increase in private sector efficiency. The wide expansion of the internet has provided ample opportunity for the growth of the electronic community. The public sector cannot stand aside of these processes. Requirements for 21st century governments are stated in terms of “good governance” demanding democratic, responsive, efficient, participative, inclusive and transparent policy-making. Internet-based technologies not only modify the habitual functions of public agencies, but also introduce irreversible changes to the fundamental relations between

government agencies and the public. Virtually all administrative reform programs are integrated with e-government concepts. People turn to on-line services seeking information that would be too costly or time-consuming to obtain in a traditional manner. Programs and projects related to the e-government phenomena are developing worldwide, and Russia is no exception in this process.

Among the first signs of e-government development in Russia is a rapid growth of the number of on-line government agency representatives. These establishments include web portals for federal and regional governments, sites of executive authorities and numerous informational and educational initiatives. Unfortunately, since the ongoing projects of government internet endorsement are often at the very beginning stages, most efforts are spent on project design, and much less is done for strategy elaboration, goal setting and monitoring of these project results.

Our research is focused on the shortcomings associated with this design-based approach, which can be summarized as an overall deficiency of strategic planning in web site development and low attraction of evaluation and monitoring procedures. Although Russian authorities have little or in some cases no experience with information technologies, we already know from non-government structures that evaluation of web site performance is supposed to be done along with web design at the very beginning of the project and to be maintained continuously thereafter. Development of web sites is not self-sufficient; it is supposed to be a user-oriented approach where visitor satisfaction is a key determinant for project evaluation. For this reason, the purpose of our research is to develop a tool for efficiency and usability measurement of government web sites.

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The remainder of this paper contains several sections. Section 2 provides background on the general trends in Russian e-government development. Section 3 describes the results of federal and local initiatives implemented in the city of St. Petersburg and analyzes the major deficiencies of the current policies and solutions. Two approaches to the assessment of government web site performance and usability – internal and external evaluation – are suggested in Sections 4 and 5; implementation of external evaluation procedures is demonstrated for a sample of functional executive committees' web sites. Section 6 concludes with recommendations for further development and promotion of the city government agency web sites.

2. National Environment: Development and Implementation of Federal e-Government Programs

The need for a systematic approach to the development of e-government structures was first formally recognized by Russian policy-makers in 2002, when the federal program “e-Russia, 2002 – 2010” was adopted. Promotion of e-government principles was one of the top priorities identified by the program along with establishment of the proper regulatory and legal environment for ICT, for the dissemination of internet infrastructure and for e-education. The major goals of the program were to increase economic efficiency in the public and private sectors, to expand the usage of information technologies in the government departments, and put most of the regular government functions online. According to the original schedule, by 2010 up to 65% of all internal and at least 40% of inter-departmental communications at various federal, regional and local agencies were to be conducted electronically (Skidén, 2003).

The program stimulated amazing changes at various government levels. The first stage of “e-Russia” implementation was marked by large-scale investment into computer equipment, establishment of intranet and G2G communications systems, first launches of e-procurements and development of internet portals for federal and regional authorities.

Annual ICT expenditures in most government departments grow steadily, although

these growth rates still remain behind the overall ICT market. The major funding source for ICT introduction is the federal budget (76%), supplemented by external loans (4%), non-budget funds and technical aid (20%). The “e-Russia” program contributes only about 15% of overall ICT investments; in relative terms, this amount represents about 0.2% of the GDP or 1% of federal budget expenditures (Shalmanov, Chachava et al., 2004).

When attempting to evaluate the penetration of ICT in the country governance, one should remember that in 2001 only 20% of Russian ministries and federal departments were represented on-line. By 2004 the situation changed significantly – rapid growth of the number of department web sites is considered as one of the main achievements of “e-Russia.” Some of the web sites developed within the last few years are worthy of mention here, including automatic management systems introduced by the Ministry of Railway Transport, the State Customs Committee and the Ministry of Taxation. The government bodies reckoned as the leaders in ICT investments and efficiency are shown in Table 1. It can be readily seen from the table that the most efficient investment programs are run by the departments that perform financial or property management functions; as it follows from further analysis, the same pattern is observed on the regional level in the case of St. Petersburg.

Table 1
Federal Agencies ICT Investments and Efficiency, 2001 – 2003

Rank	Department	Points*
1	Ministry of Taxation	76
2	State Committee on Customs	76
3	Ministry of Railway Transport	72
4	Ministry of Finance/Treasury	60
5	Ministry of Education	54
6	Ministry of Property	48
7	Ministry of Communications/ Ministry of Economic Development and Trade	44

* Points were assigned based on expert opinion, internal agency data and other information sources. The numbers shown were determined as total ITC expenditures multiplied by an expert efficiency ratio; points range from 0 to 100.

Source: CNews Analytics

The growing interest in implementing new electronic technologies into the governance of the country was further supported by Russian administrative reforms that mandated federal agencies to provide immediate public access to information on their activities, including legislation. Meeting these requirements inevitably leads to bringing the government web sites to the standards of transparency and openness. However, some obstacles arise in the course of this process. Although, during 2003, 14 ministries and departments increased the amount of information provide by 1.5 – 2 times, no visible changes occurred in the information content and structure of 15 major department web sites. As a result, by the end of 2003, only 6 ministries and departments met openness requirements⁴.

The federal e-Russia program was supported by the corresponding regional-level legislative initiatives. An experimental network of regional internet portals was run in 7 regions: Kaliningrad, Novgorod, Perm, Tula, Cheliabinsk, Khanty-Mansiysk and St. Petersburg. Yet, the regional initiatives develop slower due to additional obstacles such as lack of funding, an inconsistent legislative base and the absence of technological standards and information supply rules.

Vacancy and opposition to electronic solutions observed in some federal agencies along with an insufficient recourse base at the regional level warn against excessive optimism in the ICT area. Even the most advanced economies often claim e-governments as inefficient due to high costs. These programs require enormous initial investments that might never be paid back. Bringing public-government relations on-line might not be demanded, especially in countries with low internet penetration and a digital divide between different areas or population groups.

Still, in the case of Russia, there are fierce arguments in favor of further e-government development. In a vast country, internet technology can facilitate overcoming distances, time and communications barriers, including provision of direct access and connection to

central government agencies. Russia has a huge potential for ICT sector expansion. Internet users already represent 10% of the adult population in urban areas, which is a critical penetration point – this barrier is used as an indicator of mass consumption for any technology and drastic market growth expected afterwards. This is far below the standards of the countries of Western Europe and Northern America, but the market is expanding at considerable rates. In 2003, the number of internet users increased by 25% while internet traffic grew by over 180%; similar trends are taking place in the registration of new domains (Shalmanov, Popova, et al., 2004).

Based on these arguments, we believe that the key requirement for successful and efficient e-government development is ensuring and stimulating broad public involvement. For this reason, this paper focuses on the e-government components classified as government-to-consumer (G2C) and government-to-business (G2B) relations. These are the components working beyond the scope of internal government operations and which require public demand for internet technologies as a way to obtain certain goods or services from government agencies.

We consider user friendliness of government web sites as a key feature making citizens choose the electronic communication mode with government agencies. This property stimulates demand and justifies investments into ICT. We restrict further considerations to the case of St. Petersburg to illustrate the opportunities of regional e-governments and to investigate the efficiency of the recent undertakings.

3. Regional e-Government Developments: the Case of St. Petersburg

In this section, we describe the developments that federal initiatives get at the regional level taking St. Petersburg as an example. We outline the legislative infrastructure and historical trends of e-government achievements in the city, give a sketch of different agencies on-line presence and evaluate functional performance of regional executive committee web representatives.

⁴ The Ministry of Taxation, the Ministry of Education, the Ministry of Defense, the Ministry of Nature, the Federal Commission for Securities and the State Nuclear Supervision Agency

3.1 Legislative and Historical Background

There are strong prerequisites for e-government development in St. Petersburg, the second largest city in Russia, following Moscow in the level of information technology development. In 2003, the number of people dealing with the internet exceeded 750 thousand, and there were over 100 internet providers operating in the city⁵.

The national ICT development strategy was supported enthusiastically by regional governments. The principal legislative initiatives aimed at the development of e-government in the city included the regional target program "Electronic St. Petersburg" and the strategy of transition to the information society. It is remarkable that St. Petersburg is one of the leading regions in local co-funding of ICT programs.

The structure of the St. Petersburg government comprises three traditional branches: legislative, executive and judicial. The City Assembly represents the legislative branch. The City Government headed by the Governor and Administration, which consists of 25 functional committees, 13 industrial departments and 19 territorial branches, realizes executive functions. The judicial branch incorporates the Statutory Court and magistrates. The local governance system is represented with 111 municipalities.

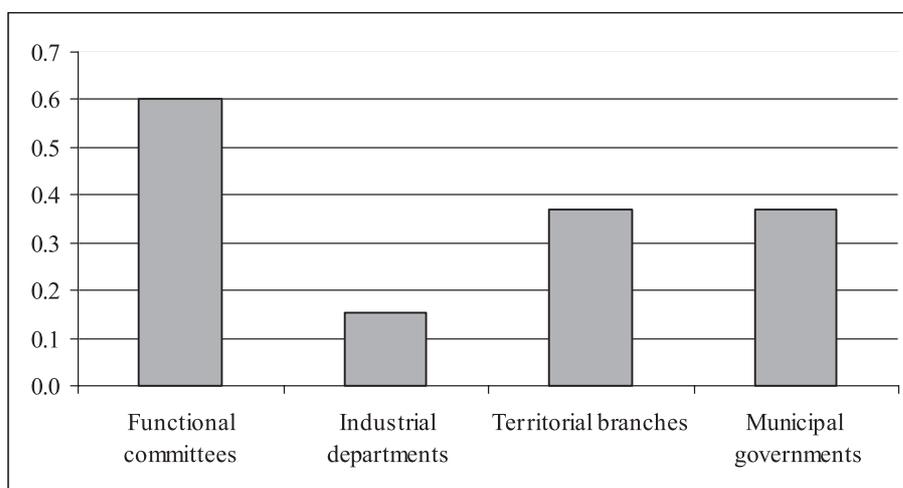
The above-mentioned legislative initiatives created a basis for creation of the web sites for St. Petersburg government agencies. However, prior to 2002, there was no central information resource, or an official web representative of executive au-

thorities. Dispersed individual establishments did not follow any uniform strategy in information sharing; records for over 60% of government agencies were not listed on the web at all; the existing representatives in many cases did not carry official status.

In January, 2002, the official portal of the St. Petersburg government was launched (www.gov.spb.ru); this establishment united all city government agencies and established new requirements to internet projects developers on the volume of submitted information, use of modern technologies, and quantity of services offered on-line.

As a result of both centrally coordinated program and numerous private initiatives, by 2004 all branches and local governance were, to a varied degree, represented on-line. The official city government portal provided basic uniform information on all executive authorities; in addition, there were separate web sites for the Legislative Assembly and the Governor (www.assembly.spb.ru, www.gubernator.spb.ru). Individual executive authorities are represented on-line to a different extent with a general positive trend in the number of establishments. Figure 1 illustrates the ratio of different type agencies present on-line at the moment of the study. The highest web presence (60%) is observed among executive functional committees; territorial

Figure 1
On-Line Presence of St. Petersburg Regional and Local Government Agencies, 2004 (Ratio of the total number of agencies in the category)



⁵ New Economy Foundation, URL: <http://www.neweco.ru/main.html?r=124&id=1047544970>

branches and municipal governments share second place (37%) and the level of industrial department expansion remains as low as 15%. Obviously, these statistics on web presence are closely linked to agency resources and the range of powers and functions.

Taking into consideration the fact that the highest penetration rate is observed among functional executive committees, we limit further considerations to this type of agency, keeping in mind that all evaluation techniques described below can easily be transferred to other government structures. Apart from high web presence, the nature of executive committee functions provides the broadest opportunities for development of on-line interactions with the public, making them especially interesting for thorough investigation. We proceed further with description and assessment of the functional opportunities provided on executive committee web sites.

3.2 Functional Advancement of Executive Committee Web Sites

At the start of our evaluation, we attempted to describe the level of e-government functional development in executive committees. The purpose of this research was to locate selected agencies in the functional development stages. The theory commonly identifies a few stages of e-government evolution such as initial presence, informative stage, transaction development and complete integration (Drozhzhinov, Serikov et al., 2002). For the purpose of this paper we used the following 5-step scale to describe functional advancements of executive committee web sites:

1. Initial establishment. This stage corresponds to the original placement of an agency on-line; first-stage representatives of this type contain the most essential agency-specific information. At the very basic level it could assume a single home page creation; further developments might include provision of contact information and links to the physical government structure, visiting rules and hours, agency descriptions (information on the performed functions, history, and organization structure). Further opportunities are presentation of strategic vision, including agency mission and goal setting, information on the leaders and key persons;
2. Directory elaboration. This is the second logical development stage for an agency that has already established an initial representative when web sites are used as a "directory" providing contact information, links to the physical government divisions, descriptions of agency functions and provided services. By gradual and consistent extension of the information provided at the initial establishment stage, web sites climb to the next development level. A complete agency directory would include full-scale information on agency subdivisions, functions performed and contacts, relevant links to other federal and local government agencies, affiliated structures, mass media and cooperating organizations from the public and private sector. It often contains useful city information in the area of agency competence or even a complete phone directory;
3. Information source. Further extension of information provided forces the government agencies to offer unique data not available or problematic to obtain from other sources, such as statistical databases, legislation, official or other relevant publications. Apart from reader-oriented materials, an informative e-government gives access to downloadable forms, applications or instructions for using agency-specific services. This stage presumes development of the network representatives oriented to a transition towards continuous information updates on the web sites. To achieve this goal, agencies normally start to issue regular news and press releases; they also utilize web sites as billboards announcing calls for ongoing competitions, grants, target programs and tenders, publishing job offers and social programs reviews. Announcements are further supplemented by the results, schedules and reports on agency activity. In addition, sections for comments on hot political issues from agency officials and experts along with the answers to frequently asked questions can be published at this stage;
4. Interactions development. At this stage further development is hampered without

- availability of external feedback and active involvement of site users. Some solutions aimed at development of site interactivity include e-mail service, subscriptions to agency news, bulletins and site updates, organization of direct enquiries to policy-makers and appointment scheduling, elaboration of discussion forums, on-line conferences, addition of live effects, availability of on-line services using electronic forms; and
5. On-line transactions. The ultimate development stage assumes complete integration of electronic services where all agency functions can be performed through on-line systems or even incorporation of additional on-line features that are not available in the traditional mode. This includes the possibility for on-line purchases and payments via electronic system, forms and reports submission and proceeding, registration for services, participation in tenders and e-procurements.

Development stages listed above generally take place in the listed order; however, it is not exceptional that the later stages can occur to the detriment of the earlier ones. We used the suggested scale to evaluate all 14 web sites of functional executive committees. Each site was ranked by an expert on a 10 – point scale – this was the

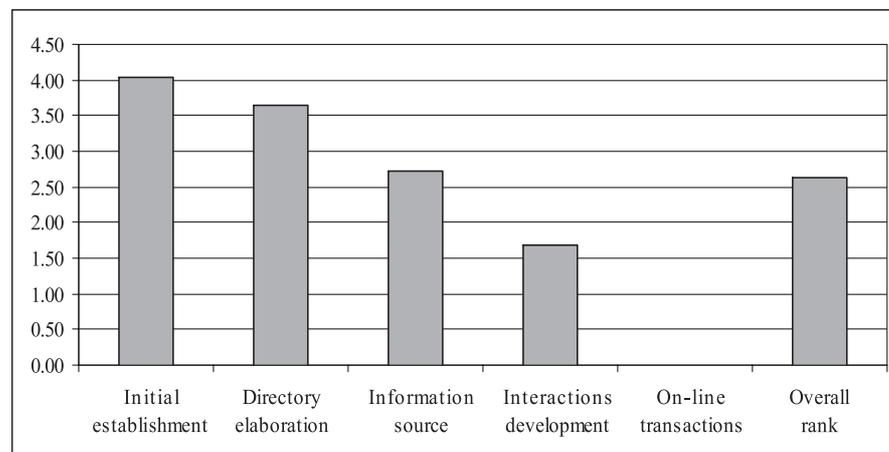
maximum score any agency could get on each of the 5 development stages. A development stage earned the highest rank of 10 if virtually all originally listed features were present on the web site at the moment of investigation. A minimal 0 score was assigned if there were no signs of relevant functions at all. Since no agency could be expected to maintain all possible features, we conclude that the development stage is “complete” if it reached the 5 point benchmark. In this section, we did not attempt to evaluate the quality of provided

services or information; the fact of certain options being present on the web site was enough to earn points. We further proceed to the detailed qualitative analysis of web site options offered.

The suggested evaluation technique allowed us to place agencies according to their global network penetration degree. Given a short history of city e-government undertakings, we would expect the agencies to be approaching the third development stage serving as an information source with a slow expansion to interactivity. Formal evaluation confirms this hypothesis; Figure 2 summarizes the result of executive committee functional evaluations.

An overall agency rating shows that the current usage of e-government potential stays at the level of about 25%. Keeping in mind a high variation between web establishments of different committees, the general picture

Figure 2
Functional Evaluation of Executive Committees Web Sites:
Overall Results



clearly shows that there is a sufficient field for improvement even in the most developed area of initial establishment (rank 4.05), followed closely by directory elaboration (3.65) and information sources (2.72). Interactions development are at the very beginning stage with a rank of 1.70, and on-line transaction opportunities are not exploited at all. Hence, the picture suggests that there is no stage, even initial establishment, that can be considered as one conquered by all agencies.

Analysis of agency-specific estimates shows that there are a number of agencies that left the initial establishment stage far behind; some are done with the directory elaboration and even completing information sources development (Table 2). As follows from the table, the three leading agencies are the Accomplishment and Roads Committee, the Building and Architecture Committee and the Housing Committee. Six agencies are beyond the stage of initial establishment (ranks highlighted in bold), two are done with directory elaboration with six more being very close to this line. A group of comparatively low developed agencies sites include the Culture, Transport and Physical Training and Sports Committees.

The question to be asked is about the performance level of those functions represented at agencies sites: what is the general situation concerning which are areas most developed? The results of discussion in this section can partly be used to evaluate how close on-line representatives try to get to the users; however, this is merely an intention, and the fact that there is an offer itself does not prove that

the public is actually using these options. Figure 3 shows the frequency distribution for the most popular on-line features. In accordance with the initial development stages, the most popular options include contact information on the main body and subdivisions, extended agency descriptions in terms of organization structure, key persons and performed functions. The information development stage is mostly represented by billboards, agency-related city information, legislation databases and news publications.

However, this approach, based on the analysis of agency web sites in terms of functions and development stages, has serious limitations. The features offered by web masters alone have low or even no meaning for the target audience if they are not user-oriented. The quality of suggested features can vary greatly limiting or extending the possibilities of actual use. At the same time, if the visitors do not want or are not ready to use the government web sites, little utility can be extracted from electronic service delivery. The users needs have to be identified and the user's perspective should be considered at the very begin-

Table 2
Functional Evaluation of Executive Committee Web Sites: Individual Results

Agency	Initial establishment	Directory elaboration	Information source	Interactions development	On-line transactions	Overall rank
Accomplishment and roads committee	5.56	4.44	3.75	3.75	0.00	3.75
Building and architecture committee	7.78	2.22	4.38	2.50	0.00	3.75
Housing policy committee	4.44	4.44	3.75	3.75	0.00	3.54
Land use committee	5.56	4.44	3.13	2.50	0.00	3.33
Public property management committee	7.78	4.44	2.50	1.25	0.00	3.33
External affairs committee	4.44	4.44	3.75	1.25	0.00	3.13
Education committee	5.56	7.78	1.88	0.00	0.00	3.13
Economic development, industrial policy and trade committee	4.44	2.22	3.13	0.00	0.00	2.29
Information and communications committee	4.44	2.22	3.13	0.00	0.00	2.29
Physical training and sports committee	0.00	4.44	1.88	3.75	0.00	2.08
Finance committee	5.56	0.00	2.50	1.25	0.00	2.08
Culture committee	0.00	5.56	2.50	0.00	0.00	1.88
Transport committee	1.11	2.22	1.25	1.25	0.00	1.25
Tourism and resorts development committee	0.00	2.22	0.63	2.50	0.00	1.04

ning of the web site development process; this is one of the key aspects in making information provided and services demanded meaningful.

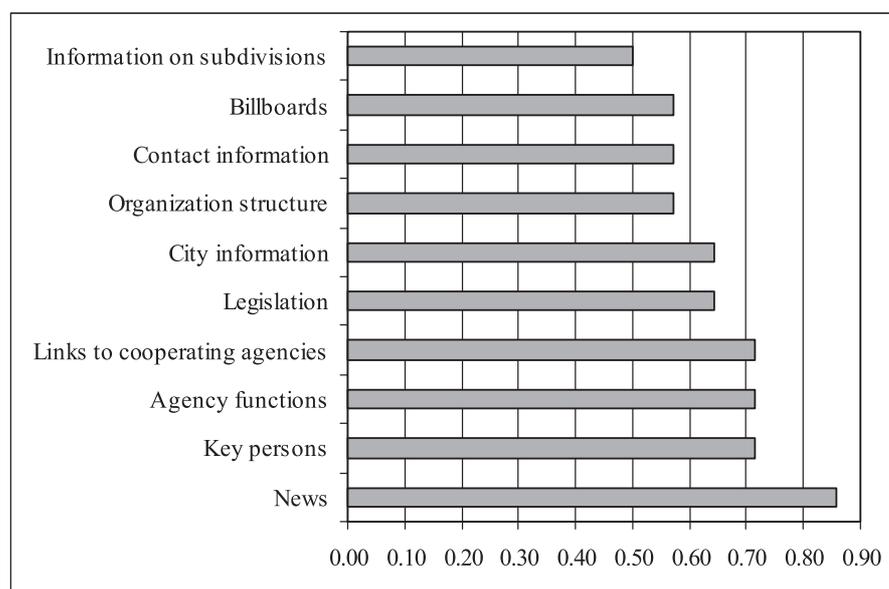
Since the primary problems associated with e-government development is lack of consideration and strategic planning about built-in user-friendliness evaluation techniques, the following sections discuss two approaches to the evaluation of government site performance and usability based on external and internal performance measurements.

4. External Evaluation Methods

The previous sections allowed us to conclude that many government agencies have already established a net presence; they are gradually extending the range of functional opportunities as they climb identified development stages. However, web site development can not be restricted to the introduction of new functional opportunities. Only properly constructed and maintained sites would provide a visible increase in the efficiency of agency performance; in this section we are facing “doing it” versus “doing it well” prospective. The general need for tracking site quality is recognized at least by the web managers of government agencies sites; most sites exploit standard monitoring systems, such as built-in counters and visitors tracking systems from SpyLOG and HotLog, yet interviews with agency representatives show that, in most cases, these results are not analyzed and used properly to improve site performance.

The most straightforward method that can be suggested to analyze user-orientation of the government sites is to explore open information readily available from the site itself. The

Figure 3
Popular Features Offered on Executive Committee Web Sites (Frequencies)



basic idea of this approach is to model user experience and attitudes with a web site, including a test of services. There is some previous research developing external evaluation methods to assess user-friendliness of the government web sites (Performance Audit Report, 2002). This method assumes preliminary establishment of relevant evaluation criteria and later application of those criteria to the evaluated sites; in this case an independent expert acts as a user attempting to interact online with a government agency.

We suggest the following three features to be considered in order to evaluate web site user-orientation: functionality, accessibility and usability. For each feature we define a set of criteria that can be modified or used with proper weights depending on the type of government agency under consideration. When formulating criteria, we tried to avoid questions that are not easily quantifiable and can not be cleared from personal attitudes, involvement and tastes such as direct questions about design, etc. Identified criteria are examined in section 4.1.

4.1 Evaluation Criteria

External evaluation criteria are structured around the main features of functionality, accessibility and usability. Each feature is represented by at least 2 criteria; criteria are further

broken into separate evaluated options. Table 3 outlines the entire evaluation system.

Functionality is the closest feature to the overall functional descriptions provided in section 3; however, in this case we go beyond just the recording of a function being present at the web site and try to give a quantifiable expert evaluation to the function performance. Functionality is measured by four criteria: audience orientation, coverage, information currency and accuracy, and interactivity. Functionality shows the extent to which a web site provides consistent, comprehensive, reliable information and opportunities for interactions between agencies and users. Criteria for functionality measurement are:

- Audience orientation shows how clearly an agency defines the target audience for
- Coverage relates stated purposes to site content. It measures the range of completeness and relevancy of services and databases offered on-site, sufficiency of full-text information provided and depth of coverage for news and current political issues. In terms of functional development stages outlined in section 3, this criteria assesses the quality of directory and information provision;
- Information currency and accuracy analyzes whether the site content is relevant and up-to-date; it considers indications of last

a web site, its strategic goals, links to the physical structure and provision of initial instructions for site usage. This criterion is important, since failure to provide adequate initial audience orientation results in ongoing difficulties with further navigation;

Table 3
External Evaluation System: Features, Criteria and Evaluated Options

Features	Criteria	Evaluated options
Functionality	1. Audience orientation	Contact information, physical location, key persons, departments directory, visiting rules and hours, agency description (history, functions, organization structure), statement of purpose (mission, goals, target audience)
	2. Coverage	Description of services, quality of databases (publications, legislature, statistics), downloadable documents, news, billboards, reports on current activity, comments from officials, phone directories
	3. Information currency and accuracy	Timeliness of information updates and reviews, relevancy and consistency of content, assigned responsibility for pages, absence of grammar and spelling errors, number of pages under construction
	4. Interactivity	Performance of e-mail and subscription service, intensity of interactive functions employment (inquiries to policy-makers, discussion forums, message boards, conferences), live effects, completeness of transactions (bills payments, service orders, tender participation, form and report submissions, product purchases)
Accessibility	1. Access to the site	Accessibility via city government portal and search engines, reflection of agency name in URL, descriptiveness of document titles, site retrieval time, availability at different moments
	2. Access to site content	Availability of instructions for site usage, provision of alternative technologies and formats for downloadable documents, options offered to users (text vs. graphical mode, etc.), special software requirements and supply of free downloads, friendly printing options, foreign languages
Usability	1. Architecture, design and layout	Logical user-oriented content organization, readability, use of symbols, aesthetics, consistency of format, layout (organization, page length, typography, frames), advanced display features
	2. Links	Relevancy of provided links, absence of dead links, descriptive comments, frequent user options
	3. Navigability	Exploitation of conventional navigation models, clear identification of navigation elements, identifiable self-location, site map, distance between site points, local search engines
	4. Metadata	Appropriate metatags and section headings, structure and clearness of in-body text, descriptive page titles

page updates, responsibility for separate pages and spelling and grammar mistakes. This criterion is of primary importance to those users looking for proof of reliability; and

- Interactivity evaluates the quality of available on-line transactions and interactions, including performance of e-mail service, declaration of site downtimes and service limitations, quality of communications beyond e-mail and opportunities for open public discussions (such as on-line forums, conferences or message boards). Corresponding functional stages are “interactions development” and “on-line transactions.”

Accessibility shows the extent to which the site and its contents are available to a wide range of users with varying level of skills and technology. Two sets of criteria used to evaluate this feature are access to the site and access to site content.

- Access to the site estimates the accessibility of the site from outside via the main search engines and from other government agency sites. It includes the speed of response and availability of the site at different times. A special feature is availability of back-link to the central government portal which identifies the degree of ICT policy unification and increases opportunities to find relevant information from different government agencies; and
- Access to site content shows how operational a site can be after being initially found and whether all sections can be easily accessed by different types of users. The relevant characteristics here are compatibility with popular web-browsers, supply of alternative operational modes for higher technologies, options for slow connection and turning off the graphics, elimination of printing problems, availability of downloadable non-standard software and provision of alternative formats for downloadable documents. Language selection also falls within this category, since lack of this option complicates the access to information for foreign or non-resident users.

Usability shows the ease and enjoyment with which users can make their way around the site looking for necessary information,

products, services or communications. Four relevant criteria are listed below:

- Architecture, design and layout evaluate readability of pages, appropriate use of semantics and advanced display features, aesthetics and length and layout of pages. An important option is logical rather than functional organization of content around user needs; a typical example of contrast between a functional and a user-oriented approach to web site development occurs when a user is expected to be familiar with agency structure in order to use the site efficiently;
- Links include availability, relevance and quality of external links to other government agencies and relevant organizations such as non-government agencies, affiliated structures and mass media. It should envisage informative descriptive comments for links allowing the user to avoid inefficient wandering in irrelevant areas. It should highlight links to the new sources of information and the availability of user-tailored options such as special opportunities for frequent users, offers to subscribe to agency news and information updates, minimization of dead links and pages under construction;
- Navigability characterizes how easy it is to operate the site; it includes keeping users aware of their location on the site, involvement of conventional navigation models, presence of navigation links on all pages, availability of a site map, availability of built-in search engines and basic search options;
- Metadata and metatags provide the search engines with information about web site contents and help to find information source. We evaluated presence of metatags, availability and descriptiveness of sections headings and pages titles.

4.2 Evaluation Results

Evaluation criteria described in section 4.1 were applied to eight executive committee web sites. When looking at the original list of web representatives (Table 2), we omitted those sites that ranked below 2 on the functional development scale (Culture, Transport and Tourism and Resorts Development Com-

mittee). We also excluded three sites that, although maintained at agency information support, did not carry official status or only represented a very limited area of agency activities (Accomplishment and Roads, Information and Communications and Physical Training and Sports Committees). Among those mentioned, Accomplishment and Roads Committee serves as a bright example of a semi-private initiative, recognized as the best one in the course of functional evaluation.

The resulting sample is shown in Table 4; it does not carry any statistical properties, but rather provides a base for further comparisons. For the purpose of this research, we assigned equal weight to all three features when we conducted the evaluation of eight selected functional executive committee web sites. Each relevant option offered on the web site was evaluated using a 4 – point scale (0 – an option is absent or its performance is not acceptable; 1 – option performance is poor or below average level, 3 – option functions on average/normal level, 4 – option scores excellent at above average level). Criteria rank was calculated as the sum of individual option ranks and then normalized on a 10 – point scale; the feature estimate was obtained by averaging three criterion ranks.

this result shows that executive committee web sites are almost equally developed in terms of quality and functions performed. On the contrary, accessibility and especially usability vary significantly serving as the major source for the overall agency-specific differences. The top ranking site for the selected type of agencies belongs to the Land Use Committee followed by Economic Development, Education and Finance Committees. The highest overall user-friendliness rank exceeds 6; on a 10 – point scale this is a much better result than the one observed for functional development. This outcome is encouraging from the standpoint of strategic vision of e-government development – it is much easier to add new functions to the user-oriented web site than to fill unclaimed resource with inflated information.

Other positive aspects uncovered during detailed external examination include a sufficiently high level of legislative database development; this achievement is apparently due to mandatory openness requirements. Basic contact information is generally representative of the real situation, and most sites are accurate in terms of content consistency and lack of spelling errors. Description of agency functions and provided services is also at

Table 4
Functional Executive Committees: Sample for External Evaluation

Agency name	URL	Rank on functional scale	Code
Building and architecture committee	www.kga.neva.ru	3.75	BA
Housing policy committee	www.kgp-estate.spb.ru	3.54	Dw
Public property management committee	www.commim.spb.ru	3.33	PP
Land use committee	www.kzr.spb.ru	3.33	LU
External affairs committee	www.kvs.spb.ru	3.13	EA
Education committee	www.kobr.spb.ru	3.13	Edu
Economic development, industrial policy and trade committee	www.cedipt.spb.ru	2.29	Econ
Finance committee	www.fincom.spb.ru	2.08	Fin

Estimation results are presented in Figure 4. Sections a, b and c provide separate diagrams for the three features – functionality, accessibility and usability, – and section d shows overall site ranking. The lowest variation in rank is observed for site functionality;

a high level on virtually all sites. Turning to individual comments, Education Committee can be noted for remarkably comprehensive news coverage.

The most frequent problems and corresponding directions for improvement include

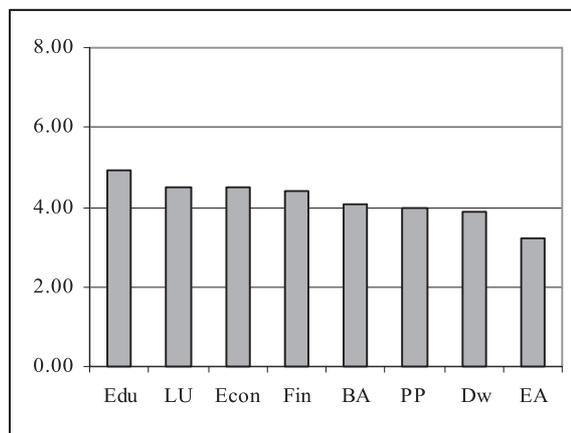
the lack of an explicit purpose statement by some agencies. Currency of the content often needs more attention: although news sections are among the most developed option, some agencies need to improve their presentation form. To give some examples, the Building and Architecture Committee does not give news headings; the Housing Policy Committee provides only occasional news updates. A number of agencies foresee more advanced interactive mechanisms, such as discussion forums, but these features often do not function properly and mailing options are difficult to find at certain sites (e.g., Finance Committee). City portals lack some relevant links to agency web sites and a few site names are difficult for perception and to memorize. The Economic Development Committee had a very long retrieval time and many other agencies were often unavailable in the course of the study.

In general, external usability analysis shows that the content of the web sites is relevant to the specifics and functions of the agencies considered; despite the uniform functional distribution, a high variation exists in site usability. The next section continues this discussion taking into consideration the visitor perspective on site performance.

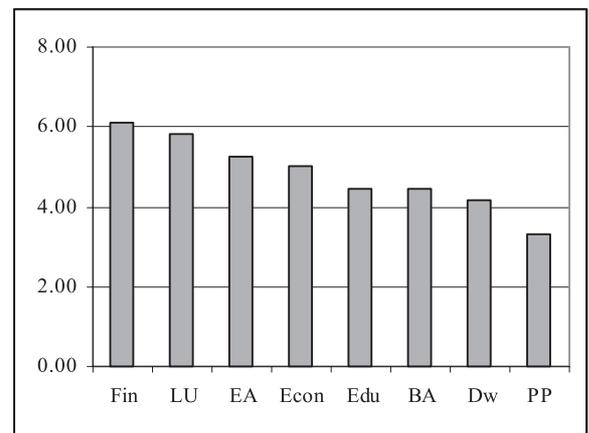
5. Internal Evaluation Methods

The external evaluation method presented in the previous section still carries important problems in and of itself. It allows us to obtain expert information sufficient to give single-time site evaluation. Experts are acting based on the preliminary judgment about visitor qualities and preferences; however, this approach would be meaningless if the original assumptions about site visitor behavior were violated.

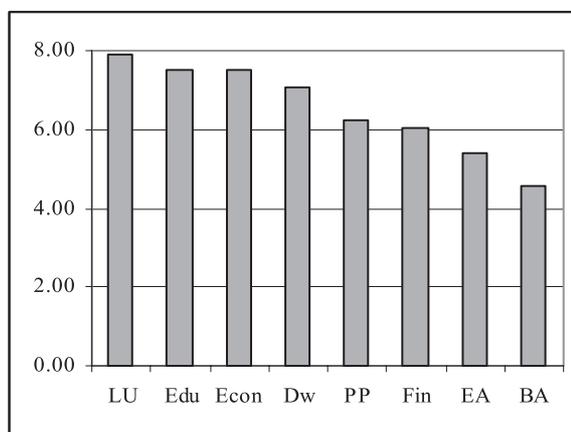
Figure 4
External Evaluation Results



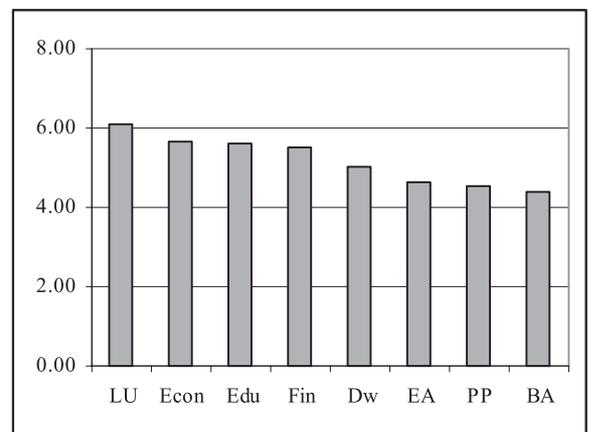
a) *Functionality*



b) *Accessibility*



c) *Usability*



d) *Overall rating*

Ideally, a wise policy maker would like to obtain information about “real” visitors, the popular ways they make around agency site, problems and positive emotions they get during the course of G2C interactions. There are different methods used to collect information on users; the most traditional are polls and surveys (Larsen, Rainie, 2002). However, the traditional approach tends to be pricey and often provides poor results due to selection bias, high non-response rates and systematic observation errors (for example, questions about session durations would inevitably lead to answers that poorly represent reality).

Another option is to avoid surveying errors and make use of the crucial internet property: on the web we can partly track attitudes and behavior of the actual audience without the need for sampling. This section presents a visitor-oriented evaluation approach elaborated by SitePattern research and successfully implemented for private sector studies. We provide our vision of visitor values, identify the sources and parameters of government site effectiveness, discuss traditional approaches to increase effectiveness, identify typical government-specific web sites features and suggest possible solutions.

5.1 The Visitor Universe

The web has become a place where visitors have all kinds of preferences. Some surf for mere fun, some surf for earnings, some surf to satisfy curiosity. Still, for any visitor, there is a driving force that makes them follow links, read content and interact with the web sites. This force has many faces; it is versatile and its nature is changing even within a single day. The interest for business-related sites is substituted by chats and leisure portals as the working hours are over. Some sites gain visitors, some sites lose them and some never even manage to attract visitors at all. But does this mean that some sites are more effective than others? In order to answer this question, we need to define “effectiveness” as such.

The most common way to evaluate a web site is to look at the amount of visitors it attracts, i.e., its popularity. If we follow this logic, the government web sites are hardly popular at all. Compared with information portals or search engines, traffic is minimal. The driving force does not bring millions of

visitors to read about things like law, rules and regulations, and this is mostly what the government web sites are all about. But some visitors come, those who are interested in that rather special field of knowledge. And the goal is to increase that amount of interested visitors, along with effectively delivering the information they are looking for. These two parameters in combination can be regarded as a measure of governmental web site effectiveness.

5.2 Low-Traffic Sites: Personal Approach

Let us consider the web site of some specific sector of city administration, such as the Public Property Management Committee (www.commim.spb.ru). The site is purely informational in nature, presenting a narrow field of knowledge connected with real estate, laws and regulations and it has some historic background information. The traffic on this site is rather low, so let us consider improving this parameter using traditional methods of web site promotion.

Using the traditional methods it is possible to generate traffic for such a site, if proper creativity is used in the banner campaigns and printed materials. Let us imagine that the population of the site grew to thousands of visits a day. The traditional evaluation of site popularity can be considered as high, but does it make the site more effective? In order to answer this question we need to step back a little and formulate the purpose of our site, and see what its objective is in communication with visitors. Of those, some can be mentioned:

- Delivering government property-related real estate events;
- Deliver history briefs and structure of committee;
- Easy access to contact information to authorities;
- Area of activities information;
- Information about new regulations; and
- Feedback from visitors.

So, in order to measure the success of a visit, the delivery of the information in those areas needs to be confirmed. Unlike news portals and other wide-field informational sites, the Property Management Committee is

mostly interesting to those visitors who have some academic or practical background in the field of government property. The average visitor would not be interested in the special narrow information sector that is presented on site. So the campaign for attracting more visitors would probably fail, giving too low CTR. But even if it succeeded in getting visitors to the site by having a flashy creative, they will not read the information which is not interesting to them, so that the time spent on site will not be longer than 30 seconds. Direct campaigns are not effective in the case of narrow information sector area web sites.

The only important visitors of such sites are those who found the site themselves because of a special interest in the given objective areas. In fact, the majority of the small and medium business web sites have a similar pattern of being a narrow and special information sector with limited target group. The population of such sites is often very low, below 100 visits a day, but every such visit should be cherished: these visitors were looking for the site and deliberately entered it. This thoughtful choice brings a totally different quality to the visit and it is these visits that should be carefully analyzed in order to evaluate site effectiveness.

It is very important to get as much feedback from the visitor as possible. Every visitor is an important recipient of information, and the amount and quality of perception is the best performance indicator for such a site. Behavior tracking and its interpretation through a specially conducted visitor survey are the tools that can be applied here, but with one significant difference: the analysis can be even performed for every single individual or unique visitor due to the fact that the population of the site is not measured in millions. Besides, by surveying the visitors it will be possible to find information on demand to improve the content of the site.

5.3 Measure-Tweak-Measure

Although the majority of the millions of web sites are devoted to narrow and specific areas of information and have low traffic, there are no tools that are specifically designed to analyze the traffic on such sites. The modern tools use high levels of aggregation without the possibility of understanding the visitors

on a personal level, or tools are just too expensive to be applied to minor traffic sites.

When addressing low traffic sites, we collect and analyze visitor intelligence data from the view-through tracker. Along with browser-based behavior trackers, this approach gives an opportunity to make precise conclusions about site effectiveness and formulate suggestions for improvement. Repeated measurements can help to optimize the frequency of updates, introduce new content on demand and bring the effectiveness and population reach to a new level. Options provided by visitor behavior tracking are discussed below.

In order to improve agency understanding of visitor behavior and make competent conclusions about site effectiveness and existing problems, it is important to know exactly what visitors did during their web site sessions. Some visitor related questions that can be answered from collected data analysis include the following:

- Web behavior statistics: popular paths, exit moment and points, frequencies, traffic, length of sessions, repeated visits and frequency distributions, regular visits to different sections; origins of the visits; information on requested documents;
- Visitor electronic distribution: the number of visits and platforms which visitors use, including browsers, connection speed and screen resolution, geographical and socio-demographic spread of users;
- Site structure review: recognition and understanding of site structure by the visitors, review of navigation system (identification of bad exits and orphaned pages), life cycle of the site, content wear off, identification of most popular contents and site features; and
- Interactions promotion: responses and origins of web-inspired e-mails and electronic forms, requested on-line transactions.

Hence, the suggested approach can be viewed as a permanent built-in monitoring system serving as a helping hand for strategic development of government agency web sites.

5.4 How Good is Your Helping Hand?

How can the visitor traffic of narrow and special information sector sites be increased? After all, the quality of the visits is only impor-

tant if there are any. Of course, search engines and correct keywords are of importance, but there is another area that is of a higher interest: partner web sites and portals.

In Sweden, where the internet infrastructure is one of the most advanced in the world, and penetration of the internet in households is over 60%, about five years ago all governmental web sites had different addresses, designs and webmasters. Now the tendency is clear: all related web sites are merging and forming large portals. These portals attract visitors with versatile information in different sectors, creating a network of resources that generate cross-interest and boost traffic on all resources involved.

The effect behind such partnerships is connected to the widening of the range of subjects covered by the sites involved. One subject raises interest in another and this chain can lead to a traffic exchange across all partnerships, giving an increase in traffic to all sites involved.

“View-through” tracking technologies can reveal the traffic exchange between sites and help to make critical decisions about the content relevance: where the links work best, how much traffic they generate and what is the quality of the visits generated by the link exchange.

6. Conclusions and Recommendations

This paper analyzed development of e-government in Russia in the case of St. Petersburg. Investigation of functional advancement of city government agencies showed visible expansion of on-line penetration in the course of recent years. Yet, government agencies realize only about a quarter of internet opportunities in the improvement of G2C relations. Since the highest web presence was observed among functional executive committees, these agencies were selected for evaluation of site performance and user-friendliness using the external evaluation technique.

The range of on-line services provided by executive committees is generally consistent with agency functions; the most popular features commonly include contact information, agency descriptions, billboards, agency-related city information, legislation databases

and news publications. However, accessibility and usability of web-sites studied vary visibly. Factors that serve as an obstacle to efficient and user-friendly visits to the web sites, sometimes making them time consuming, costly or frustrating, include failure to provide a proper purpose statement, irregular content updates and the malfunctioning of certain features.

Common practical problems of government web sites comprise low traffic and unawareness of the traffic level or any other aspects of site performance by key agency representatives; immediate switches from the key figures to “technical people” suggest that there is often a lack of a strategic approach to the development of agency web resources. Numerous private undertakings, such as the web site maintained under informational support of the Accomplishment and Roads Committee can be considered as evidence of public readiness to get involved in e-communications; however, government agencies are a few steps behind, failing to satisfy the existing supply. Gradual introduction of interactive and transaction elements should change the situation.

Policy makers should further promote adoption of best practices in the field of e-government and design and develop web sites that efficiently serve user needs. Special emphasis should be placed on systematic communication with current and potential users, analysis of user behavior, and assessment of the site’s user-friendliness by the agencies as well as effective communication of key information to users. In order to follow these recommendations, we suggest an internal web site evaluation approach that can explore web site visits and the nature of these visits, in the end affecting user attitude towards the government. A need for an integrated web presence for all government agencies is identified as an ultimate purpose of government on-line integration.

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Components of a Policy Paper

Presentation of the Issue

What is the problem that requires action?

Scope of the Problem

What is the history and current context of the issue? How did it become an issue? Who is affected and how severely?

Consultations

What are the views or positions of groups who will be significantly affected? What are the concerns of other ministries/agencies who will be affected?

Options for Consideration

What three or four distinct options should be considered? What are their implications? What are their advantages and disadvantages?

Additional Issues:

Consistency with the government's priorities; the effectiveness of available options in addressing the issue; the economic cost-benefit; the effects on taxpayers; the impact on the private sector; environmental impacts; the fiscal impact on the government; the disproportionate impact on various groups or regions; the complexity and timing of implementation; public perception; and constraints raised by legal, trade, or jurisdictional issues.

Recommendation (s)

What is the proposed course of action? Why was it chosen over other possibilities?

Implementation Issues

What are the financial impacts of the proposed course of action? What are the implications for government operations? Will the proposal require regulatory or legislative changes? What is the proposed means of evaluation?

Communications Analysis

What is the current public environment? What are the key issues of contention, and how can they be addressed? What is the position of key stakeholders, both inside and outside the government, on the proposal, and what communication vehicles should be used for each? How does the proposal relate to government reform priorities? What is the objective of communication on this issue? What is the key message?

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The title should be a brief phrase adequately describing the content of the paper.

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An abstract is a summary of the information in a document. The abstract should not exceed 250 words. It should be designed to clearly define the contents of the paper. The abstract should: (i) state the principal objectives and scope of the research; (ii) describe the methodology employed; (iii) summarise results and findings; and (iv) state the principal conclusions. References to literature, bibliographic information, figures or tables should not be included in the abstract.

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The introduction should supply sufficient background information on the topic and also provide the rationale for the present study. Suggested guidelines are as follows: (i) the introduction should first clearly present the nature and scope of the problem that was researched; (ii) it should provide an overview of the pertinent literature used; (iii) it should state the research methodology employed and, if necessary, the reasons for using a particular method; and (iv) the principal results of the investigation should be stated.

Results

This section should contain an overall description of the topic and present data gathered during the research project. The manuscript should utilise representative data rather than repetitive information. Data that will be referenced several times in the text should be provided in tables or graphs. All data, repetitive or otherwise, should be meaningful. Results must be clearly and simply stated as the section comprises innovative research findings for an international community of academics and practitioners.

Discussion

This section presents principles, relationships, and generalisations indicated by the researcher's findings. This should not restate information present in the results section, but should: (i) point out any exceptions or lack of correlation; (ii) define unresolved issues; (iii) show how the results and interpretations agree (or contrast) with previously published work; (iv) discuss the theoretical implications of the work, and any possible practical applications; and (v) summarise the evidence for each conclusion. The primary purpose of the discussion section is to show the relationships among facts that have been observed during the course of research. The discussion section should end with a short summary or conclusion regarding the significance of the work.

Acknowledgements

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References

Only significant, published references should be cited. References to unpublished data, papers in press, abstracts, theses, and other secondary materials should not be listed in the references section. If such a reference is essential, it may be added parenthetically or as a footnote in the text. Secondly, authors should verify all references against the original publication prior to submitting the manuscript. Stylistically, authors should utilise the in-text parenthetical reference system with complete references alphabetised at the end of the text.

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