

Accounts Chamber of the Russian Federation

E-Government Projects Efficiency Evaluation Approaches

Report at 4th INTOSAI work seminar on Performance audit

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1. State-of-the-art and prospects of e-Government in the Russian Federation

The implementation of e-Government concept in the Russian Federation has started on the basis of a system framework starting from the approval of the “Electronic Russia” Federal target program in 2002. The objective of generating “Electronic Russia” program has not been extracted as a separate project within the Federal target program, anyhow the significant part of measures is kept, directly or indirectly, within “electronization” current logic of the public management system.

“Electronic Russia” program covers 9 years (2002 – 2010); within this period measures have to be taken aimed at the informatization of Russia. Amount of about 2.5 billion US dollars shall be invested within the Federal target program framework.

The Program assumes the achievement of a new level of government activities’ transparency owing to the establishment of up-to-date infrastructure of government information systems ensuring effective informative interaction between authorities and citizens; establishment of information infrastructure supporting effective government management processes; reform of normative regulation of information technologies’ market; creation of educational programs aimed at the improvement of computer literacy of Russians; and formation of a large-scale communications’ infrastructure. By 2005, the program implementation shall result in connecting all Russian institutes of higher education and more than a half of schools to Internet, creating electronic libraries, introducing tele-medical systems, etc.

The Program shall comprise three general stages.

The preparation work aimed at further implementation of program procedure has been performed at the first stage, which was completed by the end of 2002. As far as e-Government is concerned, the principal attention was paid to the analysis of international experience, present conditions and prerequisites for its implementation; proposals were made concerning legislation perfection in the sphere of employing information technologies in the social and economic area. Moreover, the government portal concept was elaborated, along with layouts of economic portal, government purchasing system, and public sector enterprises’ monitoring system.

At the second, current, stage of the Program, which shall continue until 2005, it has been planned to create the basis for implementing interactive on-line services aimed at rendering services to citizens, businesses and government, in particular, represented by various ministries and agencies.

These projects include such issues as developing and implementing administrative electronic schedules, making government portals, organizing electronic government purchasing systems, forming unified state information resources including a unified information resource of independent state financial control authorities affiliating the Accounts Chamber and controlling and accounting authorities of the Russian Federation constituent regions, totaling 89.

The unified state information resources need to be interconsistent, accessible for all public authorities and, to a great extent, to citizens and businesses through Internet sites and portals.

Among informatization programs presently implemented at governmental level, socially important projects play a special role. The said project include plans for wide-ranging introduction of information technologies to education and educational processes. Tele-medical networks are operating in 40 regions of the Russian Federation; patient care institutions of the whole country are bound to be contacted to the said networks within the next few years.

By the middle of the third stage (2005 – 2010), the formation of a unified telecommunication infrastructure for public authorities and local government bodies shall be accomplished, along with completion of the transfer to electronic documents circulation performed by federal government bodies and a substantial part of authorities of local and municipal level. A package of measures aimed at creating a unified public authorities' dataware system shall be put into practice.

The studies performed by both Russian and foreign analysts have shown that Russia is demonstrating high rates of development in the informatization sphere. The Russian information technologies' market has shown much higher rates of development in comparison with similar foreign markets over the past two years.

In accordance with the Ministry of Communications data the attendance of regular Internet users has expanded by 39% over the recent year totaling 13 million people at present. Russia is currently facing an objective aimed to eliminate the gap between the availability of Internet access for the population of various country regions and different welfare level, as soon as possible.

Presently, all ministries and departments use Internet sites for the placement of information covering their activities. Some of organizations, e.g. Ministry of Taxation of the Russian Federation and Rospatent, are now offering their interactive services through Internet.

On the other hand, a number of factors complicating the generation of e-Government still exist.

Activities in the informatization of public authorities are under-coordinated. Consequently, ministries and departments generate similar databases, incompatible systems and network isolated one from another.

Along with "Electronic Russia" program around 30 more federal target programs providing to a greater or lesser extent for the backing of separate departments' IT-projects are being financed by the federal budget funds. These are so called sectoral programs.

The informational disconnection of government structures is enhanced through the non-availability of the federation-wide data communications network in the country, able to serve as a protected environment for data exchange.

Furthermore, the unequivocal information on citizens, enterprises and property is not available, since there is a great many of information resources with imminent contents in departments.

Within the frameworks of an administrative reform performed in the Russian Federation a considerable overpatching is required for the government bodies' operating schedules in an effort to subsequently implement electronic services for the population and businesses. Considering this matter, it is necessary to note that the "Electronic Russia" Program has foreseen the forming and introducing of electronic administrative schedules describing in detail operating procedures of ministries, intradepartmental and interdepartmental interactions, creating and implementing concepts of government informational resources' unification

The analysis gives a possibility to draw a conclusion regarding the availability of considerable possibilities for the increase of the efficiency in using public funds as well, for the sake of public authorities' informatization, at the expense of increase in the accounting clarity for the funds appropriated for information processes' implementation, holding hardware and software tools' purchase tenders, common for several government bodies, and other arrangements.

2. Approaches to Performance Audit of e-Government projects

The urgency of performance audit of public investments into information systems development is apparent. We assume to be based on INTOSAI standards and foreign public financial control authorities' working experience to ensure the execution of workable and comprehensive audits of budgetary funds' efficient use by the Accounting Chamber.

However, subject to the distinctive features of e-Government generation, being a state mega project, as well as conditions for its implementation in the Russian Federation, we assume to follow certain basic audit approaches. Some of them are as follows:

1. Considering the substantial resources' capacity and the length of implementation characterizing e-Government projects, the said projects' efficiency has a direct impact on virtually all spheres of government bodies' activities, hence it shall be necessary to organize and ensure a permanent audit and monitoring of IT-projects on all the critical stages of their life cycles.

2. The accomplishment of actually permanent e-Government project implementation audit shall be obviously possible only under integrating monitoring system elements and audit directly into IT complexes and binding them together with a unified state control system.

Such information systems should ensure the timely registering and authentic accounting of the information and documents essential for the performance of public management and state control functions. The access of supervising authorities to the information mentioned shall ensure the rapid performance of status analysis, rather than returns, using up-to-date statistical measurement methods.

The planning of control arrangements based on the preliminary analysis of the whole IT projects' information, available in public management accounting automated systems shall enable the economical and practical use of supervising authorities' resources; it shall permit the performance of the project audit history in a unified information system.

3. Performance audit types are correlated with different stages of IT project life cycle. In order to ensure the integral and complete pattern of IT project status and its implementing and developing tendencies it shall be necessary to keep its audit history in a unified information system. This shall enable to correlate the data of various projects and audit types and promptly reveal the project discrepancies and imperfections.

We suppose to single out the following types of IT Performance audits:

Audit of IT project concept;

Audit of planning expenses and implementation arrangements;

Audit of estimate of expenditure performance;

Audit of goods and services purchasing;

Audit of peopleware;

Audit of goals' achievement.

While settling specific objectives of control at appropriate life cycle stages, the types of Performance audit mentioned represent interconnected and mutually dependent arrangements,

especially if we consider that a great many of IT projects, having a prolonged life cycle, pass several internal development rounds, called iterations, every one of which may have critical conditions for the project effectiveness and, accordingly, shall require audit.

3. **General Problems in organizing Performance Audit of e-Government projects**

The organization of e-Government audit shall require performance of large-scale operations aimed at the creation of necessary conditions and settlement of legal, organizational, methodological, manpower and other problems. We would like to single out some problems which are characteristic for Russia.

Legislation Imperfection

One of essential problems impedimental to the active implementation of Performance audit to the Accounting Chamber practices is represented by the legislation imperfection. Notwithstanding the fact that Article 2 of the Federal Law “On the Accounting Chamber of the Russian Federation” vests it with powers to determine the efficiency and expediency of public funds’ expenditures, the order of the realization of the said Article provisions has not been specified by the legislation at present in force yet. At the same time in accordance with the determination of efficiency and frugality, enunciated in the Budget Code, the classification of the activities in budgetary funds use as “ineffective” requires special evidence aimed to prove the existence of alternative, more effective variant of activities. The appropriate legal machinery purposed to obtain and present the evidence mentioned and to perform the efficiency evaluation, accordingly, is not available at the present moment.

Current Budget System shortcomings

The current budget IT expenditures management system in Russia has a number of serious shortcomings of objective and subjective nature, predetermining the low efficiency of budget funds use and problems in evaluating realized projects’ effectiveness and choosing efficiency factors:

- alignment of the Russian Federation budget system for public funds’ mastering, rather than gaining a particular outcome;
- absence of special expense item for IT-projects in the budget classification;
- lack of organizational standards for managing IT-projects;
- disuse of clear efficiency criteria in planning procedures.

Federal target programs providing for financing IT-projects have a number of shortcomings from an efficiency audit point of view:

- programs contain expected outcomes of the program measures’ realization. However, quantitative or qualitative indicators showing the outcomes produced are unavailable making the objective control on program measures’ efficiency impossible;

- considering the unavailability of indicators, showing outcomes produced, in programs, the performance of a current situation objective analysis aimed at comparing and determining actual ways of development is impossible. The unavailability of current values as per factors and trends’ analysis as well prevents from the reasonable adjustments of target values, necessary to be obtained, and connecting them with specific arrangements;

- analysis of expenses and benefits is unavailable;
- programs suffer from planned overload of the government sector by functions subject for disposal to the private sector;

- programs do not often clarify which social problems or strategic development problems of a wider range shall be settled by arrangements offered, that is which final social effect shall be obtained through expenses;

- the coordinating machinery is not clearly described in regional and federal programs with intersecting objectives (for example, the informatization of educational institutions).

However, the working out of methodology of evaluating efficiency of government investments in the information systems development, and in e-Government projects in particular, is one of the most complicated problems.

4. Approaches to the evaluation of public IT-projects' efficiency

When evaluating the efficiency of IT-projects it shall be expedient to consider IT-expenses as IT-investments, and IT-project as an investment project. Considering IT-project an investment project shall purport the necessity of economic justification of the required expenses and evaluating the efficiency of the prospective investments, from the economic point of view.

Classical methods of evaluating investments projects efficiency presume the necessity of evaluating "profitable" and "expenditure" project parts with their subsequent integration when calculating the project "money flow".

However, the sphere of applying financial methods of evaluating efficiency of government investments in the development of information systems is rather limited. This matter may be clarified by the information technologies' effect being expressed not only in the obvious financial factors, but in qualitative, hardly formalized advantages, the conjunction of which with organization's general economic results is not at all evident.

Evaluating the "expenditure" part of the investment project on the information systems' development shall not represent considerable difficulties. The principal problem is in evaluating outcomes and IT-projects' implementation effects, i.e. in evaluating the "profitable" part of the project. It shall be possible to decompose the "profits" resultant from the government investments in the implementation of information systems in government authorities, on the following components:

- Reduction of current operational costs.
- Reduction of administrative-and-management costs.
- Reduction of capital expenditures requirements.
- Minimization of lost profits.
- Increase of quality and efficiency of services rendered to external organizations and natural persons.
- Arrangement of conditions for the growth and development of the state in postindustrial economy conditions.

The objective of the economic evaluation of profitable part of three initial components of government investments in information systems is the least complicated. In order to settle the said objective, the performance of rather big volume of laborious work on analyzing current and prospective resources expenses within the frameworks of organization's activities processes subject to automation is required (it shall be realized using an activity-based costing method). Given the availability of management accounting system in an organization, the settlement of the said objective shall be simplified to a certain extent. We should note the absence of any fundamental problems given the calculation of appropriate financial end economic factors.

The objective of economic evaluation of the IT-project impact on the lost profit volume seems to be more complicated. Two following problematic situations for the settlement of which the generation of appropriate information systems is required, may serve as an example:

- Problem of under-collection of funds by customs and taxation offices;
- Problem of state property management inefficiency.

At present time customs and taxation offices collect only a part of funds they could have collected. Many of the State Customs Committee (SCC) problems have been caused by the non-availability of the information regarding persons performing the customs clearance – whether they are honest taxpayers or one-day firms with a zero balance. The evaluation of the economic effect volume received in future as an outcome of introducing information system ensuring the interdepartmental coordination between the SCC and Ministry of Taxation of the Russian Federation (MTRF) may be obtained by expert means only.

The greatest problems shall emerge in the process of economic evaluating IT-projects aimed at the achievement of long-term objectives (for example, establishing an independent informational society), e-Government projects being the said objectives.

In order to evaluate the efficiency of projects mentioned the development of quantitative factors assessing the quality and efficiency of the services' rendering shall be possible.

Thus, it shall be possible to evaluate the reduction of time spent by business representatives in order to cooperate with a particular government body. The said evaluations shall allow calculating the alterations of financial and economic factors of a particular company resultant from the quality increase and the efficiency of its interoperation with a government body, for example, calculating the decrease in company's expenditures resultant from the reduction of time outlays. In its turn the decrease in expenditures shall cause the increase in profits and, consequently, the increase in the tax revenues of the budget. However, it shall be impossible in principal to evaluate the appropriate economic effect on a government scale qualitatively.

To evaluate the impact of simplified interoperation with government bodies (as an outcome of IT introduction) on business activities of small and medium businesses, as well as the changes in state economy structure resulting from IT investments, economically (in the form of economic factors) shall be nothing less complicated.

Obtaining the evaluations mentioned shall be possible using the expert questioning method only. At the same time, the adequacy of such evaluations is disputable being conditioned by a multifactor nature of some companies' economic efficiency and by complicated cause-and-effect relations among separate companies' efficiency increase and economic indices of the country as a whole.

Notwithstanding the fact that the development and growth of the state economy is one of the IT investment projects objectives aimed at establishing an open information-oriented society, it shall be even more difficult to obtain the economical (monetary) evaluation of "profitable" part of the projects mentioned, due to evident reasons. In order to evaluate such projects it shall be feasible to use either qualitative or, at the most, non-monetary factors. At the same time quantitative factors shall serve not only for the evaluation of the effect, but rather for control of the arrangements (activities) performance, required achieving the long-term objectives of the project.

In addition, the quantitative evaluating the "profitable" part of investment project on the information system establishment shall be impeded by information technologies' being 'intermediaries'. Information technologies affect the outcomes of financial and economic outcomes of the company activities not straightforward, but indirectly, through management technologies. The information technologies' objective shall be in supporting and accelerating the

realization of activities of a ministry (or department), a branch or the country as a whole. Hence, information technologies per se shall not improve the efficiency of a company performance, but supply its management staff with a new weapon – technologies, while the efficiency of their utilizing shall be directly dependent on the perfect adjustment of a bridge from the information technologies' possibilities to the efficiency of performing functions assigned to a specific organization.

Due to this reason, quantitative monetary evaluations received shall be of a subjective character to a certain extent, even in the most ordinary cases, when evaluating the impact of introduced information system on the reduction of administrative costs of an organization is required. This is conditioned by a necessity of attracting experts for drawing a distinction between information technologies and human factor in every particular case.

Accordingly, in contrast to commercial investment projects, a higher complexity shall be characteristic for government investments in information systems' development, as well as the impossibility of obtaining adequate quantitative evaluations of investments' economic effect – in some cases. This may be explicated by the following circumstances:

1) The government IT-projects shall be directed towards a farer prospect (for example, educational projects, projects aimed at establishing an independent informational society), substantially decreasing the possibilities of tracing cause-and-effect relations of factors determining the investments' economic effect and aggravating the appropriate quantitative evaluations;

2) Multifactor nature and complexity of cause-and-effect relations shall impede the evaluation of public institution efficiency increase, being the outcome of IT introduction, character of impact on financial and economic factors of particular companies, and especially on the state of economy as a whole.

The fundamental complexity of obtaining adequate evaluations of economic effect gained from investments in information systems for government purposes shall force the search of alternative approach in evaluating IT introduction, having allowed using both monetary and non-monetary factors.

Under conditions impeding the evaluation of the effect of government investments in information systems development, it shall be expedient to perform the effect evaluation basing on hierarchic (considering various management system levels) indicators' systems (both monetary and non-monetary) characterizing the extent of project objectives' achievement.

Non-monetary efficiency indicators of state run public authorities'

When constructing the hierarchic indicators' system characterizing the extent of objectives' achievement, a great variety of efficiency factors expressed in different units of measurement may be used; such as the following, for example:

- the completeness of data accounting,
- the time period required for the operation performance,
- the network capacity of data transmission channel,
- a number of staff personnel hooked to local network,
- the processing power of computing machinery expressed as a mean nonproductive wait for computing machinery facilities' operating outcomes,
- other issues.

The nature of non-monetary factors used shall be determined by a problem specificity; therefore the development of a universal factors' system applicable in any circumstances is fundamentally impossible.

However, it is supposed that the determination of typical, base indicators of IT-projects' efficiency shall be possible.

5. Effectiveness Evaluation indicators of E-Government Projects

The efficiency of IT expenses within target programs' frameworks shall be measured on the basis of programs' effectiveness indicators. The general approach shall consist in formulating general intents and particular objectives for every program area, and every particular objective shall have indicators developed for the solution of the objective (achievement of a scheduled status), current indicators' values revealed and target values hypothesized. At the same time, in case the values of indicators, obtained after the program implementation, are less than scheduled thresholds, the expenses for the program mentioned shall be deemed ineffective.

Thereby, it shall be necessary to formulate typical indicators of finite effectiveness, applied in programs, within the framework of expenses efficiency criteria determination.

The following basic criteria are suggested for the telecommunication sphere:

- the number of telephone lines per 100 people;
- the number of residents per 1 provider. Additional factors:
 - providers' structure as per the number of customers;
 - providers' structure as per the nature of services rendered;
- the number of public Internet access stations per 100 residents.

Additional indicators:

- the number of public access points except for private (non-commercial) initiatives,
- the number of extensible (open to general use) public access points,
- the number of equipped Internet libraries.

For evaluating the soft hardware procurement:

- The availability of Internet accessing soft hardware for the population. Additionally:
 - the availability of computers for the population,
 - the availability of telephone lines and modems for the population (having computers);
 - the availability of software environment necessary.

The analysis of soft hardware procurement indicators shall serve to determine which equipment is not available for the population in order to ensure access to the information networks.

For evaluating the readiness of users, both public institutions and businesses:

- the number of staff personnel using IT at workplace;
- the number of computers per one employee;
- the number of staff personnel using tele-work (performance of all the work or a part of it far from the ordinary activity places by employees, ordinarily at home, using the IT facilities), etc..

For evaluating the Internet attendance:

- Internet attendance quantity (all the people using the network on regular or irregular basis);
- the number of registered (or regular) users, having Internet access at workplace, at home or at study place;
- population percentage using Internet/IT regularly. Additional indicators:
 - the total number of Internet users (in the context of usage places – home, job, educational institutions, public Internet access points, Internet-cafes, mobile Internet, etc.),
 - usage frequency (monthly, weekly, daily);
 - social data (age, sex, income and occupation);
 - type of IT usage (electronic mail, shop visiting, information search, etc.);
- percentage of households regularly using IT;
- IT usage type and nature by households and individuals.

For evaluating e-Government implementation level:

- the number of Internet sites of central government ministries and departments meeting the specified criteria of filling, updating, interactivity, etc.;
- percentage of firms using Internet
 - in the context of branches of industry, company dimensions;
 - percentage of firms having their own sites;
- the number of government services available on-line;
- the part of population using the government on-line services;
- the volume of government purchases which may be performed in on-line mode;
- using government on-line services for information, for form feeding or gaining transaction services;
- the share of tax declarations submitted in electronic format;
- e-Government “overall maturity” ratio determined as the level of on-line services satisfaction, etc.

The level of customer relationship management methods’ usage, government sites visitors withdrawal fields’ existence, as well as the nature of the said withdrawals shall be considered in the “overall maturity” ratio.

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¹ Scientific Design and Experimental Design Works – *Прим. перев.*