# Regulating IT projects and information systems audit in public and state administration of the Republic of Croatia

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**Abstract – According to the State budget data, around a billion kunas (131.763.000 €) yearly is spent for IT projects in public and state administration in Croatia. Their success is of extreme importance for general development and fulfilment of state goals. Therefore, it is necessary to regulate the areas of preparation, monitoring and management of IT projects through legislation, and define the role of information systems audit in public and state administration, in order to ensure efficiency of investments in IT projects, avoid „double" or irrational procurements, supervise fulfilment of the procurement objectives, minimise dependence upon single IT solutions and services supplier, and avoid delivery of half-solutions which are later upgraded on the account of the customer. This paper will present the need to systematically regulate preparation, execution, management and supervision of IT projects in public and state administration, as well as the information systems audit, in order to ensure clear and transparent management of IT projects and enhance control over their realisation as well as over the quality of IT solutions implemented. Regulation of these questions would result in better use of resources intended for computerization of public and state administration, better support to the citizens and significant savings in areas of IT investments and maintenance of IT systems, as well as increased security of data and information systems themselves.**

## I. INTRODUCTION

General condition with IT projects in public administration in Republic of Croatia was clearly explained by Darko Parić, Assistant Minister of Public Administration for e-Hrvatska: „Condition of IT in the state is worse than we thought. There is no control or strategy and no one is in charge of a billion kunas that is allocated to all IT projects via state budget. Computerization projects are implemented throughout all ministries while it is not taken care of is there an overlap. Ministries behave as fortresses and complete the projects for themselves exclusively [1]."

Such enormous investments are not visible in practice – state and public administration of RoC has achieved something one would call initial computerization (using computers as sophisticated typing machine, using databases in electronic version instead o fin paper archives). However when electronic mail is mentioned, it has not become a form of official administrative communication, despite regulations of the General Administrative Procedure Act [2] and other regulations. One still communicates officially via classis, paper method with a signature and stamp by an authorized body.

Furthermore, interoperability for data is achieved in enormously small amount and in a few segments only (such as enrolments to schools and faculties). In practice, bases of similar data often overlap, even those with identical data should they be run by two or more various subjects. As stated by Darko Parić, Assistant Minister of Administration, "Every citizen is listed at least 16 times in various subjects of public administration with his basic data [3]."

Business practice of IT-oriented suppliers looked upon state and public administration as they were large source of money that orders a lot and asks very rarely in general. That was prior to the recession in 2009-2010. All negativities such as addiction to a particular supplier, non-standard solutions and purchase of non-tested programmes have become widely spread in the system of state and public administration.

Economic crisis as well as new understanding of state IT that is visible over the past year, opened two generally opposite demands:

a) It is necessary to ensure investment savings within state IT sector, due to general needs for rationalization.
b) It is necessary to increase efficiency of state IT sector, including investments, in order to have them as "engines" of stepping out of economical crisis.

These two conditions are opposite just on a first sight – because both regulation of prepare, realization, management and supervision of IT projects in state and public administration and revision of computerization systems, that are subject of this paper, may help in achieving both goals.

We would like to mention that Ministry of Public Administration of Republic of Croatia will be mentioned several times in this paper. The reason for such is that, according to present structure, the Ministry performs administrative and expert tasks that refer to development of computerization system of state administration and rationalization of IT resources in public administration bodies [4].

## II. PROJECT PREPARATION

Most often, project preparation within system of state and public administration is not fruit of systematic consideration and particular methodologies, but is run due to the idea of "working things out" or "speed up on subject", however without honest intention for system reform and business administration processes in particular. Computerization is important, but itself cannot solve issues beyond its control such as usually unsettled business processes.

Another, even worse impulse for IT projects' start up, is "just to spend money" meaning not to "lose" money from budget. In such cases usually over dimensioned and useless IT solutions are being purchased.

All this goes into favour of importance of proper preparation of projects in state and public administration. How to make it?

Republic of Croatia does not have to develop some new methodology for preparation and leading of projects at all. All it has to do is to use an existing and good solution that European Union runs for its projects, which is Project Cycle Management (further: PCM) [5]. This methodology, that is actively used by European Commission for its projects and is generally used in EU-financed programmes, pays a great attention to project preparation phase and includes asset approve for project financing.

PCM includes Logical Framework Approach (LFA) that was originally developed in late 60's as assistance to the American Association for International Development to improve planning system and project evaluation. LFA was brought in due to the planning being too unclear and without clear defined goals that would be used for supervision and evaluation of efficiency (or non-efficiency) of a project.

LFA is a core tool used within Project Cycle Management.

• It is used during the identification stage of PCM to help analyse the existing situation, investigate the relevance of the proposed project and identify potential objectives and strategies;

• During the formulation stage, the LFA supports the preparation of an appropriate project plan with clear objectives, measurable results, a risk management strategy and defined levels of management responsibility [6].

It is exactly what we need in Croatian state and public administration – fully developed, checked and available methodology that may easily be implemented in practice.

When a concrete need and concrete project were identified for funding, via use of PCM and LFA; one essential area that is a part of project preparation phase – and that is bidding documentation preparation, in accordance with public procurement regulations.

Republic of Croatia has a modern and quality Public Procurement Act that is in force as of January 1, 2012 [7]. Current law on Public Procurement Act, more than previous regulations, provides public customer choice of a quality performer and generally clear explanation of quality of delivery of goods, works and services as conditions that are to be met by a bidder. According to Article 25, Para 1 of the Act, "public customer freely chooses between open and limited procedure of public procurement" (*open procedure* of public procurement is when any interested party may submit an offer while *limited* one is *procedure* where any interested party may ask for participation in procedure while only those recognized and approved by the customer may submit an offer).

Also, public customer may rank offers according to two criteria, naturally one must previously be determined for implementation: economically the most favourable offer and the lowest price. Economically the most favourable offer may include various criteria linked to the subject of procurement, such as quality, price, technical advantages, esthetical and functional characteristics, operative expenses, post-sale service and technical assistance, delivery date or deadline and realization deadline.

Existing methodology implied by European Union PCM (in national frames to be implemented with small changes, *cum grano salis*), with existing Public Procurement Act are a good frame for quality prepare of project, its financial approve and prepare of public procurement procedure for its realization.

Over the past several years Croatia is implementing projects in accordance with EU methodology (PHARRE, IPA...). Also, for system of public procurement provides certain education programme [8]. Taken into consideration, one would conclude that only a small effort from responsible bodies, firstly Ministry of Public Administration, in the field of adjustment and larger implementation of existing knowledge – in order to put state and public administration project on higher level. Minimum investments would pay off in the very first year.

## III. PROJECT MANAGEMENT

A project can be considered as achievement of a specific objective, which involves a series of activities and tasks which consume resources. It has to be completed within a set specification, having definite start and end dates. In contrast, project management can be defined as the process of controlling the achievement of the project objectives. Utilising the existing organisational structures and resources, it seeks to manage the project by applying a collection of tools and techniques, without adversely disturbing the routine operation of the company [9].

Problem with managing projects may be represented by classic pyramidal administrative hierarchy where each person performs strictly defined job description. Such hierarchy is typical for state administration but also for the most of public administration.

Management of computerization project cannot successfully be performed in a classic administrative way, where a project manager, in the most part of state administration, would be "hidden" within IT department that is hierarchically under the secretarial cabinet. Internal

communication would be a classic one: Head of Department – Secretary to the Organization – Manager-in –charge of other hierarchy unit – person whose name is listed. It would be too slow and totally unadjusted to project management.

How to deal with it? There are two ways: one would be to define role of project manager in regulations that define work and internal management communication, while the other would be to give authorities to project manager to directly communicate via decision of Head of organization, Minister or Chief. The other way is an easy one, quick and does not require any particular adjustments. However, in order to run the project successfully, one must give authorities to project leader, because in classic administrative hierarchy, direct communication and horizontal leadership have never existed.

When executing EU funded or World Bank funded IT projects in public and state administration, project management organization is in most cases required to be established formally. Both the beneficiary and the supplier appoint project managers who collaborate closely during the entire project execution, perform regular reporting, establish clearly defined communication lines and escalation levels, document important decisions made on project meetings and continuously monitor project risks in order to timely implement risk management decisions. Independent third party supervision also plays an active role in the project, as well as independent third party quality assurance. This is the model that should be applied to management of IT projects in public and state administration regardless of the source of their funding, given the certain level of complexity of impact of the project that should require establishment of formal project management mechanisms. Implementing this approach to IT projects in public and state administration, although primarily established due to regular audits of the status of cost, schedule and achievement of project objectives by EU or World Bank bodies, would increase their efficiency.

However, in order to perform such activities in accurate manner, systematic education of project managers in public and state administration is required. It is not sufficient to simply appoint project managers and give them the responsibility for managing projects, without ensuring they have proper previous experience and level of education obtained. For example, in order to obtain a widely recognized professional certificate in project management, PMP (Project Management Professional), often sought for proposed key experts responsible for managing the project or the supplier's team leadership in the public tenders, the candidate has to satisfy the following educational background, project management experience and project management education requirements [10]:

- secondary degree, minimum five years unique non-overlapping professional project management experience during which at least 7,500 hours were spent leading and directing the project, 35 contact hours of formal education, or
- four-year degree, minimum three years unique non-overlapping professional project management experience during which at least 4,500 hours were spent leading and directing the project, and 35 contact hours of formal education.

Setting up the exact requirements for the project managers in public and state administration is a task that must be performed by responsible legal and regulatory bodies, taking into account experiences and trends from the professional project management community. Systematic approach to appointment of capable project managers would certainly demand additional financial and other resources to be reserved by the public and state administration bodies, but comparing the cost with the risk of failed and poorly implemented projects due to improper project management, the investment can be easily justified.

## IV. PROJECT RISK MANAGEMENT

In order to ensure project management will be performed effectively, organisations need to have project management methodology defined, personnel pursuing project management responsibilities educated and experienced, and project management recognized as a necessary tool for obtaining the organizational goals. One of the most critical areas of project management is the management of project risks, which are an inherent part of every project. Only by timely recognizing, reporting, analysing, evaluating and making sound decisions on how to manage the project risks, the project objectives will be met. Risk conditions could include aspects of the project environment that may contribute to project risk such as poor project management practices, or dependency on external participants that cannot be controlled [11].

A necessary prerequisite for effective IT project risk management in public and state administration bodies is to develop appropriate risk awareness and risk management culture. This requirement for a proper risk management culture establishment is normally imposed by regulations in insurance and banking industry sectors, such as Basel II and upcoming Solvency II regulations, as a starting point for development of enterprise-wide risk management systems. Risk management culture in organization can be achieved by adopting formal policies, processes and procedures defining the framework for risk management system, organizational roles and responsibilities, supported by planned educational and awareness efforts, where all employees should recognize the role they have in identification, reporting, analysing and assessment of risks they may face in their field of work. The same approach is utilised in establishment of high risk awareness culture within the project team, with goal to enable each team member to identify and communicate the project risks he is aware of in executing the project tasks assigned to him.

Considering the formalised environment for projects in public and state administration bodies, best practice approach to establishing a high project risk management culture will be by clearly documenting the project risk management plan within the project management documentation and update it regularly with new risks reported and decisions made on their treatment in accordance with the organization's risk tolerance limits. The crucial point in this process is the reporting of risks, because project manager has to support the team members to state their concerns without fear of being dismissed as irrelevant, in conflict with some other initiatives or not taken seriously.

To overcome such problems, project managers together with the project team have to work on establishing effective communication mechanisms and ensure positive relations between the team members, external stakeholders and internal upper and lower hierarchical levels. Poor communication is the reason most IT projects fail, according to a Web poll released by the Computing Technology Industry Association (CompTIA). Nearly 28% of the more than 1,000 respondents to the survey said poor communication is the number one cause of project failure [12].

## V. PROJECT MONITORING

When talking about supervision of IT projects, state and public administration know one model of supervision very little implemented in Croatian practice. However its range and consequences could be much larger and more efficient. We are talking about administrative supervision. In his classic paper "Administration Law" Borković says: "Among types of control done over administration, control within administration is pointed out (administration control). To organize such control means to regulate relationship between administration and authorities of higher and lower positioned bodies within it. The essence of such control is that it does not leave the frame of administration structure and is done in a way that one administrative body supervises the other one [13]."

Administration supervision is not based on idea of some internal administration police that shows up every once in a while should some difficulties in work occur [14]. Sometimes the term "supervision" is a cause for misunderstanding of administrative board as a model of control for "wrong procedure", even though the goal of it should be something different. More than 50 years ago Eugen Pusić defined it as follows: "Usually responsibility bears certain negative connotation of some gap made by the responsible party. On the contrary, control that follows continuous check up on successfulness of performance administrative programs, under changeable circumstances, does not have any implication of guilt, non-direct in any way from the side of those who were responsible for the implementation [15]."

The existing institute of administrative supervision is the way to control quality of implementation of IT projects, not in the negative meaning of "control" but in the way of help, assistance, consulting and addressing persons in charge of project implementation. Additionally, central bodies, precisely Ministry of Public Administration, may – should the shortage in personnel require so – engage external experts in accordance with their specialty. Those external experts would perform concrete supervisions for concrete, limited period of project and would not require increase of number of public servants. By such, along with existing positive regulations and resources, quality supervision over projects would be achieved.

## VI. INFORMATION SYSTEMS AUDIT

Revision in state and public administration is regulated by the State Office for Revision Act [16]. According the Act, state income and expenses, financial reports and financial transactions of local self-governmental units, public sector units, legal persons financed by the budget, legal persons established by the Republic of Croatia or local (regional) self-government unit, units of local and regional self-government that have majority in stocks and shares and using assets of European Union and other international organizations or institutions for financing public needs – are all subjects to the state revision.

Revision is, according to the State Office for Revision Act, questioning documents, documentation, reports, systems of internal control and internal revision, accounting and financial procedures and other records that present financial reports and results of financial activities in accordance with accepted accounting regulations and standards. Revision is procedure of check up on financial transactions towards legal using of assets.

According to the strict regulation of the Act, revision covers estimating and marking on efficiency and economical activity performance and estimating efficiency of business goals or goals of individual financial transactions, programmes and projects [17].

So there is no legal obstacle for State Office for Revision to take over business of a revision of IT projects in state and public administration. An obstacle may be a factual one – which refers to skilled and trained state revisers and personnel team of the Office. State revisers should definitively be educated on performing such type of revision, because up-to-date revision was most usually account one and financial one. Such would assist in achieving revision of IT projects within existing revision system.

In the case of lack of skilled staff and extremely complex projects at the same time, State Office for Revision should contract external experts with proper international certificates.

One of the most widely accepted and recognized international professional certification for information systems audit is CISA, Certified Information Systems Auditor, administered by ISACA. ISACA is an independent, non-profit, global association, ISACA engages in the development, adoption and use of globally accepted, industry-leading knowledge and practices for information systems. In order to become a CISA, applicant has to fulfil certification requirements in terms of passing the CISA exam, adhering to the ISACA code of professional ethics and proving relevant professional experience in the following domains [18]:

- The Process of Auditing Information Systems,
- Governance and Management of IT,
- Information Systems Acquisition, Development and Implementation,
- Information Systems Operations, Maintenance and Support,
- Protection of Information Assets.

Incorporating requirement for information system audit function within organizations, who perform regular, risk based audits of information systems, is also a regulatory requirement already established for financial institutions. This function may be outsourced to external third parties who obtain approval by the relevant supervisory body for performing such service, or educated personnel can be employed within the organization for this function. The

information system auditor should be independent of the area under the review and base the findings on objective evidence. Having information system audits systematically undertaken for public and state administration information systems would enable timely recognition, reporting and management of weaknesses in information system controls' design and implementation. The situation in public and state administration is that existing internal auditors in most cases do not have specific IT audit knowledge, but, internal auditors can help IT departments address on-going business changes and growth by providing recommendations that enhance key areas of the IT project management life cycle [19].

Enhancing public and state bodies' internal auditors with specific IT audit knowledge, appointing dedicated IT auditors or establishing this function within organization, mandating it with relevant laws and regulations, will minimise the risk of over sizing or under sizing information system controls (and other resources) procured together with the new information systems.

## VII. INFORMATION SYSTEMS GOVERNANCE

Successful preparation, execution, management and monitoring of IT projects in public and state administration require well established information system governance principles. Effective information system governance enables an organization to maintain high quality information to support decision making process, generate value from the IT investments, achieve operational excellence through efficient application of information technology, maintain IT related risk at an acceptable level and optimise the cost of information systems. It also enables the organization to comply with relevant laws, regulations, contractual agreements and policies. A widely accepted information systems governance framework in organizations worldwide is COBIT framework. COBIT has evolved from an audit framework in 1996 to a governance and management of enterprise IT framework in 2012.

COBIT 5 defines a set of enablers to support the implementation of a comprehensive governance and management system for enterprise IT [20]. Enablers are broadly defined as anything that can help to achieve the objectives of the enterprise. The COBIT 5 framework defines seven categories of enablers:

1. Principles, policies and frameworks,
2. Processes,
3. Organisational structures,
4. Culture, ethics and behaviour of individuals and of the enterprise,
5. Information,
6. Services, infrastructure and applications,
7. People, skills and competencies.

The COBIT 5 process reference model subdivides the governance and management processes of enterprise IT into two main areas of activity - governance and management. Each domain contains a number of processes. Although most of the processes require ‘planning’, ‘implementation’, ‘execution’ and ‘monitoring’ activities within the process, they are placed in domains in line with what is generally the most relevant area of activity regarding IT at the enterprise level [21]:

- To evaluate, direct and monitor,
- To align, plan and organize,
- To build, acquire and implement,
- To deliver, service and support,
- To monitor, evaluate and assess.

COBIT 5 also introduces the goals-cascade principle, which allows the definition of priorities for implementation, improvement and assurance of governance of enterprise IT based on strategic objectives of the enterprise and the related risk. This overarching framework covers in essence all the activities necessary for preparation, execution, management and monitoring of IT projects in public and state administration. Having such a powerful tool at hand, IT managers in public and state administration bodies can utilize COBIT 5 framework to ensure successful and cost-effective delivery and implementation of IT projects in alignment with the organizational goals and public expectations.

The additional benefit is found in COBIT Process Assessment Model which serves as a basis for assessing an organization's IT governance and management processes against COBIT 5. The model provides an enterprise-level view of IT process capability, an end-to-end business view of IT’s ability to create value, and helps IT managers gain upper management members buy-in for information system change and improvement initiatives.

## VIII. CONCLUSION

Quality of preparation, execution, management and monitoring of IT projects in public and state administration of the Republic of Croatia and information systems audit is often under the requirements and standards for large and important projects and resources invested in this sector. None of the segments analysed in this paper is adequately covered in today’s Croatian public and state administration, which is not only methodically and from the project management aspect unacceptable, but also presents irrational use of limited government resources.

It is necessary to emphasize again that the amount discussed is around a billion kunas yearly – only 10% savings in these projects means a yearly amount large enough for building a couple of schools (bigger school building with practicums and sport gym costs around 34 million kunas) [22]. Additionally, poorly managed projects do not achieve result for which they have been initiated, which is primarily facilitating and accelerating administrative procedures.

Use from the current situation, where the system for management and monitoring of projects and IT audit is almost non-existing, and interoperability is not introduced adequately, have only large hardware and software vendors – procurement of hardware and software in such a system are much larger than necessary, and the lack of interoperability requires for each segment to develop its own software.

In this work we tried to prove that such a situation can be significantly improved with reasonable investments in implementation of standards, codes of professional practice

and education. We as well dare to say that visible positive developments would emerge very quickly, within one to two years, and their effects would be many times greater than the required investments.

Obstacle to improving the current situation can be just the lack of will, not even the lack of experts or the lack of methodology.

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