

ELECTRONIC CRIMINAL RECORD IN GREECE: PROJECT MANAGEMENT APPROACH AND LESSONS LEARNED IN PUBLIC ADMINISTRATION

**Demetrios SARANTIS
Dimitris ASKOUNIS**

Abstract

The implementation of eGovernment is a burgeoning phenomenon across the globe. However, a review of the IS literature reveals the inability of public administration organisations to complete information technology projects successfully. Unless governments learn to manage the government transformation projects, these e-dreams will turn into global nightmares. The shortage of studies on eGovernment implementation presents a knowledge gap that needs to be plugged. This paper describes and analyzes the computerisation of the existing paper-based criminal record system in a public organisation in Greece. Our intent is to present an application of a goal driven project management methodology named eGTPM in order to use it as a methodological reference when navigating in the open sea of information technology project implementations in the area of public administration. The successful implementation of the specific project indicates that the application of eGTPM approach could provide a solution to achieve government transformation objectives more effectively and efficiently.

Demetrios SARANTIS

PhD candidate, School of Electrical and Computer Engineering, National Technical University of Athens, Greece

Tel/fax: 0030-210-7723640

Email: dsaran@epu.ntua.gr

Dimitris ASKOUNIS

Assistant Professor, School of Electrical and Computer Engineering, National Technical University of Athens, Greece

Tel/fax: 0030-210-7723640

Email: askous@epu.ntua.gr



*Transylvanian Review
of Administrative Sciences,
25E/2009 pp. 132-146*

1 Introduction

Over the last few years rapid progress has been made in moving from conceptual studies, “whitepapers” and initiatives to the actual deployment of eGovernment systems (Lenk and Traunmüller, 2002). Whereas private corporations have been using information and communications technology (ICT) to improve the efficiency of their business for two decades, public sector agencies have only started to consider it rather recently. Nevertheless, governments are now aware that offering their services online will help them to reduce costs (UK Prime Minister, 1999; Norris, 2004) and accelerate and simplify (Mora and Ticlau, 2008) the service provision. In that context, various services such as applying for a passport, registering as a voter or filing tax returns have been made available online in several countries (UK Cabinet Office, 2002).

However, the judicial domain has so far not shown as much interest for ICT as other public administrations (Schaad, Spadone and Weichsel, 2005). One reason often heard when speaking to responsible staff is that the judiciary world seems to be afraid that computers will take away some of its independence. Still, the room left for increasing the efficiency of current judicial administrations is recognized by both judicial professionals and citizens; hence it is not surprising that most governments agree on the fact that ICT solutions need to be adopted in their judicial administrations (German Federal Administration Office, 2001; Prinz and Kolvenbach, 1996).

One notable exception to this pattern of low usage of ICT in the judicial system is the Greek Criminal Record Information System (CRIS), which aims to replace the manual paper-filed criminal records in Greece with an electronic repository and also allows each Greek citizen to apply electronically for his criminal history record.

National governments cope with considerable challenges trying to locate the right pathway of implementing and managing successful eGovernment projects (Heeks, 2005). The management of government transformation projects is, in significant part, the management of technology, people, organisation, and knowledge. As interest and pressure for new and expanded eGovernment increases, public managers find themselves making decisions about information and information technology for which they are often unprepared or ill-equipped (Gil-Garcia and Pardo, 2005). In the specific case study the application of the electronic Government Transformation Project Management (eGTPM) approach to manage the implementation of the presented government information system led to significant results.

This paper is organized as follows. Section 2 analyses the existing situation realising the necessity for a change. In Section 3 eGTPM approach is presented. Section 4 illustrates the application of eGTPM approach in the specific case and section 5 discusses the results and the lessons learned. Section 6 provides the conclusions and possible future enhancements.

2 Background

2.1 The Criminal Record Issuance Procedure

Criminal records archive comes under the jurisdiction of the Hellenic Ministry of Justice (HMJ). The Independent Department of Criminal Records (IDCR) of the

Hellenic Ministry of Justice and the Criminal Records Services (CRS) of the several Public Prosecutor’s Offices of the Courts of First Instance (PPOCFI) throughout the country issue copies of criminal records for general and judicial use according to the provisions of Articles 576 and 577 of the Criminal Procedure Code(CPC). Persons born abroad or in unknown places or persons whose place of birth is certified as unknown by the competent authorities come under the jurisdiction of IDCR, whereas persons born in Greece come to the jurisdiction of the PPOCFI of their place of birth. Copies of criminal records are issued after submission of citizen’s application to the appropriate PPOCFI, to the Citizen Service Centres or by phone dialling 1502. Applications in question are submitted in special forms, in which useful administrative information has been included to aid in filling them out, as well as the basic legal rules that govern the operation of the criminal records institution.

The Greek national criminal record system is manual and includes paper-filed criminal record repositories maintained by IDCR and PPOCFI which currently provide services to more than 6,000,000 citizens nation-wide. The criminal record file daily updating rate is considerably high. After receiving the application for the copy of criminal record the clerks of the public agency transfer it to the corresponding PPOCFI of the applicant’s birth place. The officers complete a full manual check of their paper files and then answer by sending a fax or by regular mail including the copy of the criminal record.

2.2 Challenges and Objectives

The need for the computerisation of criminal record files and electronic provision of criminal record service becomes more apparent, when considering the specific challenges emerging in the current situation (Table 1).

Table 1. The size of the problem.

Organisational Aspect	Systems Aspect	Non-Governmental Stakeholders Aspect
>1800 public organisations use criminal record service	Inaccurate criminal record files	2,000,000 employees use this service
> 10 public administration services depend on criminal record service	Lack of integration with existing back office justice systems	Private organisations use the service (hiring procedure)
Large amount of paper files are carried among citizens and public organisations	Lack of cooperation with public administration back office systems	Inefficient exchange of data with European member states
> 30 days for the service provision		

Disclosure of a past criminal record is compulsory for some professions including child and home care workers. Employers and voluntary bodies seek checks on potential employees and volunteers through the PPOCFI as part of their overall recruitment process. The potential employee can request the disclosure, although these requests are mainly submitted to the PPOCFI by employers. Manual processing of files involves

several steps and is a long-winding affair. Citizen requests are serviced at a slow pace. Public employers' ability to carry out checks on the paper based files is limited and dependent on the condition of the files and the accuracy, consistency and completeness of applicant's identification data. Furthermore concern had been expressed about the completeness, timeliness and accuracy of criminal history records, especially with respect to court disposition reporting. Public administration officers discover that a lot of paper-filed records lack a court disposition that had occurred and was confirmed by the district attorney in the local area responsible for prosecution. Arrest events sampled are inaccurate when compared with charging, disposition, and/or sentencing information in criminal records. As a result checking of criminal records is slow and inconsistent. Citizens experience delays in the issue of criminal records. The delays lead to backlogs of applications impacting on employers who can not recruit until their disclosures are issued. Currently, the dispersed and fragmented information sources throughout the PPOCFI provide local and state law enforcement officials with dangerously incomplete information.

The expected benefits of computerising and integrating all available criminal record information motivated the conceptualization of the implementation of an information system, which would increase public safety, facilitate decision making in the public policy process (Cardellini, Casalicchio and Colajanni, 2001; Checkland and Holwell, 1998), and provide the possibility of on line application for criminal record. In order to achieve those goals, CRIS aims to:

- Maximize standardization of data and communication technology among law enforcement agencies, jails, prosecuting attorneys, courts, corrections, and licensing
- Eliminate redundant data collection and input efforts
- Reduce or eliminate paper-based information exchanges
- Improve work flow within the justice system
- Provide complete, accurate, and timely information to justice practitioners in a single computer session
- Maintain security and privacy rights respecting justice information
- Facilitate the electronic provision of criminal record extract service to the public

2.3 Project Scope

The overall aim of CRIS is to develop electronic filing of criminal records that will produce an automatic edition of the applicant's certified criminal record and simultaneously provide to the citizen the possibility of online application submission for the criminal record extract. The criminal record entries are kept in the repository the same time with the relative paper ones. The specific project has been implemented for IDCRI and 6 PPOCFI (Athens, Piraeus, Patra, Thessalonica, Iraklio, and Volos) out of 63 in total in Greece.

Criminal Record Information System (CRIS) has been implemented as an accessible web-based query application, which provides timely and accurate information on offenders. A steering committee consisting among others of representatives from the

six PPOCFI and the IDCR have orchestrated and supervised the project through its elaboration and preparation phases.

The public criminal record request service is a web-based information delivery application which allows citizens to request the extract of their public criminal records. Identification of the citizen takes place at the public agency in order to receive the criminal record document.

2.4 Design and Use

Main goal of the system is to keep autonomous PPOCFI systems in tact while enabling communication between them in such a way as to create one unified virtual system. The software implemented is a typical automated case management system based on client-server architecture allowing data storage and criminal record interchange between the PPOCFIs. The complete records, meanwhile, remain in each PPOCFI's criminal record repository or in the criminal files of the IDCR. Searches are made on the basis of name and other identifiers. Each PPOCFI or IDCR end user is differently qualified with a user ID and a password to access the system, and then view, add and issue criminal records. There are several different levels of passwords based on the qualification of the end users. An often neglected, but very effective form (Schaad, 2003) of enforcing organisational security and control properties is through separating duties, e.g. by assigning roles that are strongly separated and mutually exclusive to principals who work with critical resources.

CRIS rests on a unified network architecture, which uses as much as possible the existing infrastructure. On top of the network rests a logical architecture, which incorporates the rules of information exchange in a secure fashion. Based on the logical architecture the formats of data exchanges have been defined. When any PPOCFI in Greece sends an encrypted inquiry to another PPOCFI, it travels over an IP-based network. A so-called "ask-the network" network approach is applied where each PPOCFI can, in effect, poll any or all of the other 5 PPOCFIs plus the IDCR when seeking criminal record information.

The integrity of the criminal record files is assured through automatic computer edits, quality control checks, and periodic record validations by originating PPOCFIs.

3. eGTPM Methodology

The existing management procedures, applied in government transformation projects, are based on the hard-rational, bottom-up approach (Winter, Smith, Morris and Cicmil, 2006; Gupta, Kumar and Bhattacharya, 2004; Checkland, 1989; Morris, 2002; Yeo, 1993; Winch, 2004). Most of the projects are organised attempting to define the necessary activities and the analytic project plan prior to the final milestones. As a result most of them delay having exceeded the pre-defined budget. On top of that they do not cover the full spectrum of the stakeholders' expectations leading to incomplete results or projects that cope with sustainability issues.

eGovernment Transformation Project Management (eGTPM) (Charalabidis, Sarantis and Askounis, 2009) approach has been used during the implementation of the specific project. eGTPM (Figure 1) provides a sound basis for project management

in eGovernment area, being a result-oriented approach to project management and offering a radical departure from the more traditional project management methodologies, focusing on what must be achieved, the goals, rather than on trying to predict timescales and resources for activities. Following, the basic concepts of the methodology are concisely presented:

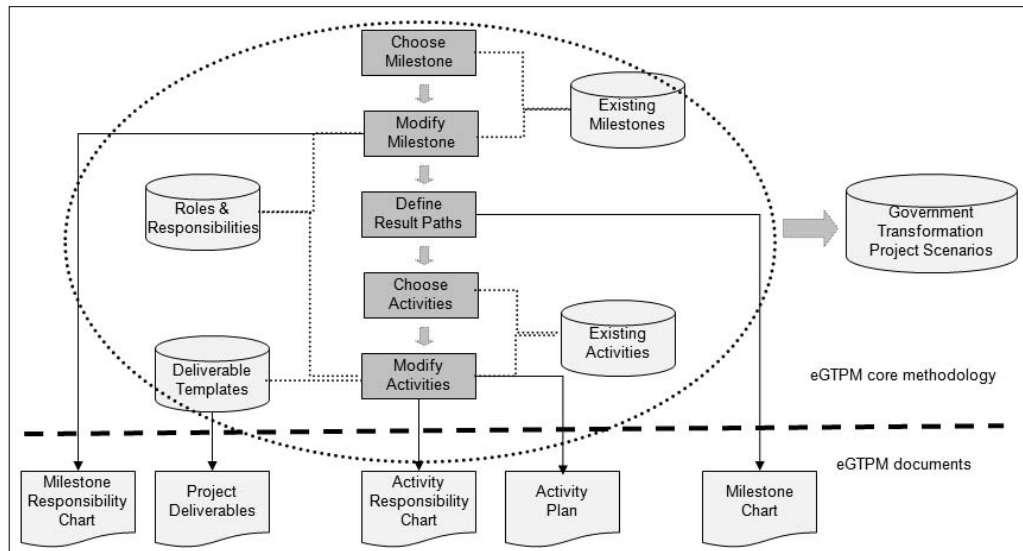


Fig. 1. eGTPM methodology overview.

Concept 1: Milestone (Sub-goal). Successful project management of government transformation projects require bringing the disparate organizations, business processes, technologies, agendas, cultures and people together to create a harmonious and workable solution. In eGTPM the milestone is defined as a practical and tangible step within the project described as a state, which must be reached to meet the final objective.

Concept 2: Knowledge Management. Existing best practices and already successfully implemented eGovernment projects could pave the way for approaches that can exploit model driven design and provide domain specific ways of implementing safe and challenging goals. An attractive alternative for building the project plan from scratch is the selection of an appropriate pre-configured project plan using an eGTPM eGovernment project scenario. Government transformation project scenarios are stored in the Scenario Repository. The selected project scenario serves as a basis for the public organisation specific project plan. Because every eGovernment project is unique, the project scenario allows removing, changing or editing the initial scenario elements.

Concept 3: Deliverable templates. eGTPM exploits the fact that government transformation projects deliverables present a considerable number of common features. Based on this commonality, it proposes the generation, reuse, and customisation of deliverable templates formed in the level of contents definition.

Concept 4: Project Planning. In eGTPM, by concentrating on the results, a plan is devised which is more flexible to the changes that will undoubtedly arise during the project. Furthermore, the project manager is able to build a management framework attuned to the unique demands of the specific project environment. An eGovernment project usually addresses several needs or purposes in an organisation; it usually has a composite goal and the plan is therefore multi-dimensional. This means that several aspects of the project are worked in simultaneously. In order to bring out the multi-dimensional aspects of project work, the element of the result path (Figure 2) is used. A result path is a series of milestones that are closely related to each other.

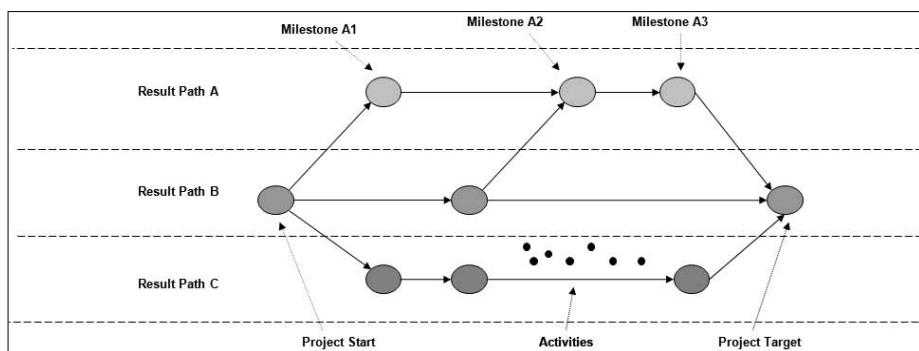


Fig. 2. Milestone plan and result paths.

Concept 5: Stakeholder Analysis and Responsibility planning. eGTPM identifies the project stakeholders which are affected positively or negatively from the results. During the stakeholder analysis their areas of interest, the kinds of contributions to the project, the expectations of the stakeholder, the power of the stakeholder and the appropriate strategy to work with the stakeholder are identified in the stakeholder table. In this way the project support is increased and the appropriate informative channels are discovered.

4. Project Management according to eGTPM

The milestones (sub-goals) with their corresponding descriptions have been selected to structure the CRIS milestone list. The milestones that have been chosen aim to cover all aspects of CRIS project. They reflect what we wish to focus on in the CRIS project.

4.1 Milestone Plan

The milestone plan (Figure 3) is the project's global plan. The development of the CRIS milestone plan has been performed at the start of the project. The purpose was for all core project members and stakeholders to acquire a common understanding of the goals and how the project shall progress. This was essential to gain commitment from them. Moreover, project participants agree on which milestones are specifically critical to the project so that everyone understands the severe consequences if these milestones are not reached in time or are realised with poor quality.

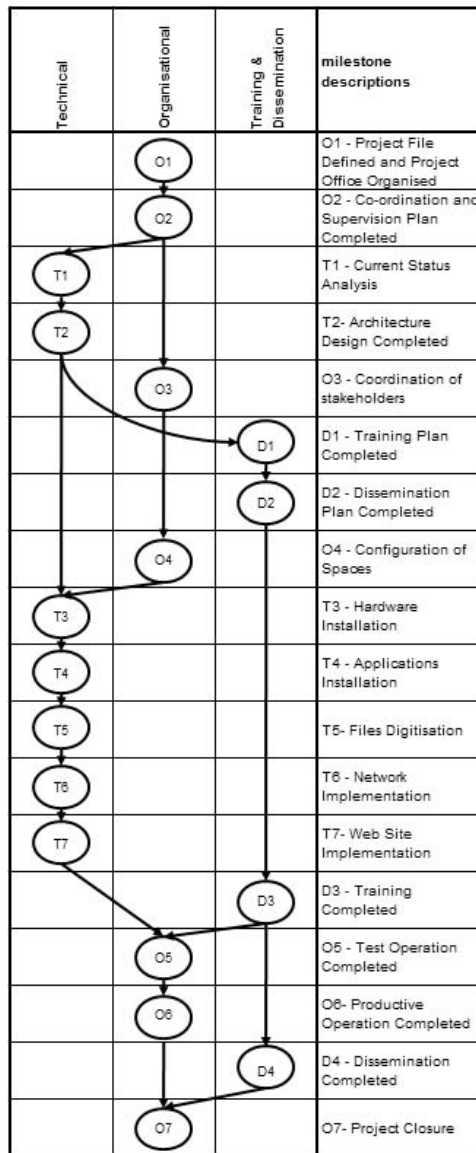


Fig. 3. CRIS Milestone Plan.

4.2 Milestone List

Following the Milestone List is presented. It includes all the project milestone information.

O1 - Project File Defined and Project Office Organised

A file containing the overall plans of a project and defining any other important documents. It includes a record of project data/documents in scheduled time basis.

O2 - Co-ordination and Supervision Plan Completed

Implementation of the co-ordination and supervision plan. Appointment of the co-ordination, supervision and certification project committee.

T1 - Current Status Analysis

Analysis and documentation of the current procedure. The elaboration of all criminal record data aiming at the automation of process of control up to now certified at the manual paper-based system of elements.

T2- Architecture Design Completed

Design of the architecture solution. The design covers the hardware, software and network demands of the project.

O3 - Coordination of stakeholders

Improvement of the communication and coordination among project stakeholders is targeted. It articulates and formalizes the roles and responsibilities of each stakeholder improving the project effectiveness and efficiency. Benefits for each stakeholder are ensured.

D1 - Training Plan Completed

Implementation of the training plan. It includes the design of the training sessions and the design of the essential training material.

D2 - Dissemination Plan Completed

Implementation of the dissemination plan. It includes the design of the dissemination actions and the design of the essential dissemination material.

O4 - Configuration of Spaces

It includes works to configurate the spaces appropriately. Spaces include computer rooms and criminal record data entry rooms.

T3 - Hardware Installation

It includes installation and testing of the essential equipment. Equipment includes personal computers, peripheral equipment, all server types (application, database, web, antivirus, file, print etc.).

T4 - Applications Implementation

The creation of a central database, and the automatic briefing afterwards, in the IDCR in which the total of files of penal registrations of central service and services of penal registration of six district attorney's offices of judges of a court of the first instance will be contained.

T5- Files Digitisation

The digitalisation of files of penal registration of IDCR and the six PPOCFI and their import in the information system

T6 - Network Implementation

Creation of a safe telecommunications and administrative node in the Central Service of Ministry of Justice with the future perspective that all PPOCFI of the country will be included in the electronic system

T7- Web Site Implementation

A public website is developed in order to provide the essential web forms to the citizen to apply for his/her criminal record extract.

D3 - Training Completed

The training material is designed and produced and the training courses take place. Training specification and material planning is taking place according to customer needs and directions.

O5 - Test Operation Completed

CRIS operates in test operation. Each PPOCFI checks its own system. Problems are identified and solved. Provisional delivery report is produced.

O6 - Productive Operation Completed

CRIS operates in full operation. The system is checked using the network. Problems are identified and solved. Full delivery report is produced.

D4 - Dissemination Completed

Dissemination material is produced and dissemination activities take place. Dissemination specification and the relative material planning is taking place according to customer needs and directions.

O7- Project Closure

The typical and substantial project termination is taking place. All the contractual commitments are met.

4.3 Activities and Deliverables

The milestones are composed from activities that are structured using the relative activity plans. Activity planning is the drawing up of a detail plan to achieve the milestones of the milestone plan. Detailed activity planning is not illustrated in this paper due to space constraint. It is through activity planning that we determine how to reach the milestones within the time limits and with the resources allocated.

4.4 Responsibility Chart and Project Schedule

A major part of project planning is performed with the help of the responsibility chart (Figure 4). The milestone responsibility chart clarifies the role of the different participants necessary to achieve the milestones. eGTPM provides a predefined pool of responsibilities which has been extended-modified properly. In order to complete the responsibility chart the following roles have been identified in the CRIS project: Minister of Justice, Supervision Committee, Project Manager, Working Group, Key Users, End Users, IT Support, Legal Advisor, Security Expert, Business Consultant, Application Consultant, Technical Consultant, Analyst / Programmer.

Responsibility Chart		Role												
Responsibility		Minister of Justice	Supervision Committee	Project Manager	Working Group	Key Users	End Users	IT Support	Legal Advisor	Security Expert	Business Consultant	Application Consultant	Technical Consultant	Analyst / Programmer
D - takes (final) Decision														
d - takes decision with consultation														
P - manage Progress														
T - provides Training														
C - must be Consulted														
I - must be Informed														
A - available to Advice														
X - eXecutes the work														
Milestones														
O1 - PF Defined and PO Organised			D/P	X										
O2 - Co-ordination and Supervision		D	d/P	X										
T1 - Current Status Analysis		I	D/P	X	C	A		A		A				
T2- Architecture Design Completed		I	D/P		C	A	A	A			X	X		
O3 - Coordination of stakeholders	A	D	P/X	C	I	A								
D1 - Training Plan Completed		D	P	X	C	A	I				C	C		
D2 - Dissemination Plan Completed		D	P	X	C	A	I				C	C		
O4 - Configuration of Spaces		A	D/P	X	I/A	I/A	A							
T3 - Hardware Installation			D/P	C			A	C	C			X		
T4 - Applications Implementation			D/P		A	A	A	A	C	C	A	A	X	
T5- Files Digitisation			D/P	X	C	C		A						
T6 - Network Implementation			D/P				A		C			X		
T7- Web Site Implementation	I	I	D/P	X	C	A	A		A	C		A	X	
D3 - Training Completed			D/P	X	I	I	I			A	A	A	A	
O5 - Test Operation Completed	I	D	d/P	X	C									
O6 - Productive Operation Completed	I	D	d/P	X	C									
D4 - Dissemination Completed			D/P	X	I	I		A						
O7- Project Closure	I	D	d/P	X										

Fig. 4. Responsibility Chart (automatically generated by the eGTPM Tool).

5 Results Discussion and Lessons Learned

Responsible authorities, IDCR and PPOCFI, are now delivering reliable more checks than that those under the old arrangements. The effectiveness of the authorities is currently monitored by output volumes, disclosure accuracy statistics and turnaround times. These measures show that the service is more comprehensive and consistent than before, criminal record extracts are more accurate and complete, assisting prosecutors and judges better balance the need to protect the public from harm by defendants out on bail versus the need to protect the constitutional rights of defendants.

The impact of a national CRIS system, extended to the rest of PPOCFIs, could be particularly significant in pre-trial release and bail decisions, which typically must be made within 36 to 72 hours after arrest. Criminal history information is also used in the preparation of pre-sentence investigation reports. These are used by judges in arriving at a sentence suited to offenders, and are subsequently used by the courts and corrections departments in assigning offenders to appropriate institutions.

More generally, public employees and citizens have found that the service provides more consistent information and is more thorough than before. Constituent benefits

include citizens' time save, organisations and companies' quicker hiring procedure and increase of citizen satisfaction.

Citizen satisfaction has been substantial because the time in receiving a record has decreased tremendously. Prior to launching this service there was a lag time in obtaining a public criminal record anywhere from 1 month up to 2 months. Today, the application returns the majority of applications within the same day and all are returned within 5 days increasing citizens' satisfaction. Giving governmental entities, individuals, businesses and employees the convenience of requesting a record 24 hours a day/ 7 days a week is why the service is so successful and continues to grow.

The following lessons have been derived from the specific project:

Design: Criminal record file transition was a huge task. Nearly 2.6 million records had to be entered in CRIS. The well known adagio "garbage in, garbage out" fitted very well in this case; the data entry quality in the courts and prosecutors' offices was quite poor. This problem got so relevant that a specific project of the Ministry of Justice was finalized to clean up the National Criminal History Record database. It was found that the internal staff was unable to cope with the work load. A large part of the work was outsourced, but progress had to be monitored closely from the public officials.

Legal and regulatory framework: Often legal rules and internal regulations need to be adapted to enable administrative procedures to be carried out electronically. There is a tendency from public employees to bypass the system and do paper work outside it. The PPOCFI supervisors interacted closely with them and did not allow anyone to bypass the system. For example process monitoring, issue of work orders and work progress monitoring is done only through the system screen.

Actors: The importance of consulting with potential users of the service at the earliest opportunity to gain a clear understanding of how they are most likely to access the service, and responding promptly and effectively to such feedback. With respect to complete and accurate criminal history records, each PPOCFI is the sole, direct provider of a key source document: the case disposition. As a result, any serious effort to improve disposition reporting, and to make criminal history records electronically available real time, included each PPOCFI as an equal partner in development, problem-solving and maintenance. To realize this partnership, however, the second principle was also acknowledged: the courts want to collaborate because they are, and need to be, a major user of an electronic, real time criminal history record communication system. The courts want the repositories to succeed, but to accomplish this; the repositories must recognize the courts as a central client for their criminal history record services.

Cooperation situations: When working within the modernising government agenda, public sector organisations need to recognise within their plans the possibility that the public and users may not be supportive of or appropriately equipped to achieve the government's ultimate aim of non-paper based transactions. Organisations may need to develop a strategy to achieve that aim therefore, for example by considering the use of incentives and other mechanisms over a period of time to encourage interactions

to be in the preferred form, if this form provides the best value for money overall in terms of efficiency and effectiveness.

Transforming administrative culture: In assessing the utility of systems and processes, organisations should test operational staff productivity, and systems and processes' adaptability, to circumstances which challenge normal operating conditions; for example, one off events such as assumed priorities suddenly being changed.

Risk Management: Efficient project management may require potentially courageous decisions to defer the introduction of a new service so that fully tested processes and systems, operated by well trained staff whose operational productivity has been fully established, are in place at service commencement. The problems and costs arising from delays, and the damage to reputation risk, may be less in practice than those which may arise from going live with a system not fully fit for purpose. Organisations need to consider carefully the relative risks of each alternative when deciding the way forward.

6 Conclusions and Future System Enhancements

In the context of this paper CRIS implementation using the eGTPM approach has been presented. The system is simple, reduces time and effort and allows employees to perform more value added work. The benefits have accrued to the citizen and the central government. Services are quicker and the department has become more responsive. All internal processing of applications is now screened based, generating greater efficiency.

The application is significantly different from other service delivery applications, as one of its goals was to reform the central government. Reforms of this kind need a champion within the organization and in the specific case success was largely a result of the involvement of the information technology expert of the Ministry of Justice. Identification of key staff to form the proper project team, constant monitoring and marketing of the concept to citizens and employees also contributed to the success of the project.

The application of eGTPM approach on the specific project resulted to satisfactory results covering the expectations of all the stakeholders (Ministry of Justice, IT contractor, the Managing Authority of the project, government, employees, citizens, enterprises etc.) involved in it. The goal oriented nature of the approach gave the opportunity to cover all the different aspects and issues that have arisen during the implementation in a timely and cost efficient manner. The project contractor and the contracting authority are now equipped with an amount of eGovernment project implementation knowledge which is easily exploitable in future projects.

To the extent that a national CRIS system provides information that is more complete, timely, and verifiable than is presently available, the system is expected to improve the functioning of the criminal justice process. Available evidence indicates that extending CRIS to cover the rest of PPOCFI could improve the coordination between judicial and other criminal justice agencies (especially law enforcement) responsible for timely record update actions, strengthen field audits of reporting procedures and record quality. Significant improvements are likely to be in the areas of

criminal investigations, police booking and intake, pre-trial release and bail decisions, and pre-sentence investigation reports.

The quickest way to gain early benefits from a CRIS integration initiative would be to identify the most crucial existing paper exchange points in the justice system and electronically bridge those exchange points improving the interoperability state (Sarantis, Charalabidis and Psarras, 2008) of the public organisation. Once these crucial exchanges are automated then other less critical exchange points can be bridged. This approach will allow for incremental adoption and will lower risk while maximizing benefits. An example of how virtual systems operate is when court officer enter the criminal record decision data into their own system and that same data is immediately transferred to CRIS in a way that eliminates re-keying of critical information. One positive side effect of eliminating redundant data entry is increased accuracy, due to elimination of successive re-keying of data from one system to the next, which creates cumulative data errors.

In view of the enlargement of the EU, it is important to address issues concerning increase of transparency and openness in the judiciary field, and hence facilitate the cooperation and democratic development in member states. CRIS cannot access criminal record databases abroad, nor does it have the powers or remit to do so under legislation. It cannot, therefore, check the criminal history of foreign applicants nor can it check criminal history during periods which Greek applicants may have spent abroad. A possible improvement could be the integration with other European countries criminal record registries. A possible enhancement in this direction would be the co-operation of CRIS with the Network of Judicial Registers (NJR), a European pilot system aiming to act as the model for European Criminal Record Information System (ECRIS) (European Commission, 2008) creating a network for the electronic exchange of data between the criminal/judicial registers of different member states.

References

1. Cabinet Office of the UK, 2002, Directgov webpage, <http://direct.gov.uk>.
2. Cardellini, V., Casalicchio, E., and Colajanni, M., 'A Performance Study of Distributed Architectures for the Quality of Web Services, 2001, Proceedings of the 34th Hawaii International Conference on System Sciences, vol. 9, p. 9019.
3. Charalabidis, Y., Sarantis, D., and Askounis, D., 'Knowledge-driven Project Management for Achieving Electronic Government Transformation', in Weerakkody, Janssen, and Dwivedi (ed.), *Handbook of Research on ICT-Enabled Transformational Government: A Global Perspective*, IGI Global, 2009.
4. Checkland, P., *Soft Systems Methodology*, Wiley, 1989, chapter 4.
5. Checkland, P., and Holwell, S, *Information, Systems, and Information Systems: Making Sense of the Field*, New York: Wiley, 1998.
6. European Commission, Electronic Interconnection of Criminal Records- Establishment of the European Criminal Records Information System, Adopted Proposal for a Council Decision, 2008.
7. German Federal Administration Office, 2001, BundOnline [Online] available at <http://www.bund.de>.
8. Gil-Garcia, J.R., and Pardo, T.A., 'e-Government Success Factors: Mapping Practical Tools to Theoretical Foundations', 2005, *Government Information Quarterly*, vol. 22, pp. 187-216.

9. Gupta, M., Kumar, P., and Bhattacharya, J., *Government Online Opportunities and Challenges*, Tata McGraw-Hill Publishing Company Limited, 2004.
10. Heeks, R., *Implementing and Managing eGovernment: An International Text*, Sage Publications Ltd, 2005.
11. Lenk, K., and Traummüller, R., 'Electronic Government: Where are We Heading?', in Traummüller and Lenk (ed.), *Electronic Government: First International Conference*, Springer, 2002, LNCS, vol. 2456, pp. 173-199.
12. Mora, C.M., and Ticlau, T., 'Managerial Approach to Public Administration', 2008, *Transylvanian Review of Administrative Sciences*, 24E, pp. 87-97.
13. Morris, P.W.G., 'Science, Objective Knowledge and the Theory of Project Management', 2002, *Proceedings of ICE Civil Engineering*, vol. 150, issue 2, pp. 82-90.
14. Norris, D.F., 'e-Government Impacts at the American Grassroots: An Initial Assessment', in Traummüller (ed), *Electronic Government: Third International Conference*, Springer, 2004, LNCS, vol. 3183, pp. 371-376.
15. Prime Minister and Minister for the Cabinet Office of the UK. 'Modernising Government', 1999, presented to Parliament, London.
16. Prinz, W., and Kolvenbach, S., 'Support for Workflows in a Ministerial Environment', 1996, *Proceedings of the ACM conference on Computer supported cooperative work*, pp.199-208.
17. Sarantis, D., Charalabidis, Y., and Psarras, J., 'Towards Standardising Interoperability Levels for Information Systems of Public Administrations', 2008, *The Electronic Journal for e-Commerce Tools & Applications (eJETA) Special Issue on Interoperability for Enterprises and Administrations Worldwide*, vol. 2, issue 3.
18. Schaad, A., 'A Framework for Organisational Control Principles', 2003, PhD Thesis, Department of Computer Science, University of York.
19. Schaad, A., Spadone, P., and Weichsel, H., 'A Case Study of Separation of Duty Properties in the Context of the Austrian "eLaw" process', 2005, *Proceedings of the 2005 ACM symposium on applied computing*, pp. 1328 - 1332.
20. Winch, G., 'Rethinking Project Management: Project Organizations as Information Processing Systems?', 2004, *Proceedings of the PMI research conference*, Project Management Institute.
21. Winter, M., Smith, C., Morris, P., and Cicmil, S., 'Directions for Future Research in Project Management: The Main Findings of a UK Government-Funded Research Network', 2006, *International Journal of Project Management*, vol. 24, pp. 638-649.
22. Yeo, K.T., 'Systems Thinking and Project Management - Time to Reunite?', 1993, *International Journal of Project Management*, vol. 10, no. 2, pp.111-117.