

# A Critical Assessment of Project Management Methods with Respect to Electronic Government Implementation Challenges

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**Abstract** In taking forward both the Government Modernization and the Civil Service Reform agendas, renewed emphasis is being placed on project management approaches and techniques for achieving objectives more effectively and efficiently. After elaborating on specific electronic government project implementation challenges and giving an overview of state-of-the-art project management approaches, the paper examines the weaknesses of three commonly used methods in the light of the e-Government project challenges. The analysis identifies gaps in the methods, contributing to a better understanding of the factors that lead to success or failure. The resolution of such methodological limitations could lead to the enhancement of project management methods when applied to future projects.

**Keywords** e-Government information systems · Transformational government · Information systems · Systemic approach · Systematic approach · Information technology project management · Public administration systems

## Introduction

The inability of governmental organizations to successfully complete public information technology (IT) projects threatens to undermine efforts to implement e-Government. An increasing number of governments are formulating ambitious action plans to move service delivery to the Web, to enhance information to citizens and to improve public sector workplaces. As the Organization for Economic Cooperation and Development (OECD) (2001) states “Unless governments learn to manage the risks connected with large public

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IT projects, these e-dreams will turn into global nightmares. Governments must get the fundamentals of IT right if they want to harvest the huge potential of going online”.

e-Government project failures are all too common—some make the headlines, but most are quickly forgotten. A survey of e-Government projects in developing and transition economies revealed that as many as 85% are a partial (unattained goals) or total (abandoned implementation) failure (Heeks 2003a). Although the exact numbers are uncertain, and depend on how success is measured, only a minority of government transformation projects are successes (Collins and Bicknell 1997; Palmer and Felsing 2002; Corner and Hinton 2002; Heeks 2006; Iacovou 1999; James 1997; Standish Group 2004).

The reasons for failure are many and varied, including: lack of internal ownership, absence of vision or strategy, poor project management, inadequate technological infrastructure and obstacles to data interchange (Heeks 2003b). Lack of a business case, overreliance on technology as the main driver for e-Government and the lack of sufficient administrative reform to accompany e-Government are also cited (Schware 2004).

As implementation projects for transforming government mature and become closely interrelated, the need to tackle project management emerges. Without the appropriate project management method, those who commission an e-Government project, those who manage it and those who work on it do not have the necessary tools to plan, organize, monitor and re-schedule tasks, responsibilities and milestones. High-level government officials indicate that they are not only seeking a different systematic approach, able to realize the domain specificities, but they demand a tool able to carry forward good practices in e-Government transformation and to support the reuse of already traveled pathways. Those involved are often unclear about responsibilities, authority and accountability and, as a result, confusion surrounds the project. Without a project management method, projects are rarely completed on time and within acceptable cost, and this is especially true of large e-Government projects. To tackle the issue of successful e-Government project implementation, the main research issue of this paper is to identify and ground the gaps in contemporary project management methods to allow researchers, project managers and decision makers to tackle them more efficiently and effectively. The analysis is based on a solid methodological framework for screening existing methods, identifying core issues and formulating points for embellishment.

This paper is organized in six sections. The second section introduces the methodology applied, while section three highlights the specific challenges encountered during the implementation of e-Government projects. Section four examines the elements of conventional project management, focusing on the challenges identified previously and relating them to the weaknesses of project management. In the fifth section, the outcome of the analysis is used to identify a set of gaps in the project management methods concerning government transformation projects. Finally, section six presents conclusions and future perspectives of this work regarding new approaches that could be used to improve the rigor and relevance of e-Government transformation project management research.

## Research Methodology

The research methodology used is based on identifying specific implementation challenges in e-Government projects, based on the literature, and comparing their coverage in some widely used project management methods, in order to identify the gaps in the project management of e-Government projects.

A review of current literature is used to identify factors found to influence the success of e-Government initiatives. This review includes the scanning of top journals, book chapters and case studies in information systems and public administration with a focus on e-Government initiatives (Torraco 2005). The analysis focuses on deriving the specific management and implementation challenges found in e-Government projects. We analyze the most popular project management approaches for e-Government implementation: PMBOK, PRINCE2, and GDPM. However, software implementation methods (such as RUP, SSADM, SDLC, RAD, and agile methods) are beyond the scope of this research.

The study utilizes a methodology that is based on exploratory research. Available literature and case studies (see the [Appendix](#)) have been reviewed and augmented by the authors' personal experience in e-Government project implementation. This type of exploratory research (Kotler and Armstrong 2008) was chosen because it can provide significant insight into a given situation, facilitating the identification and structuring of new problems. The different project management approaches have been analyzed regarding the coverage of the previously identified e-Government challenges based on the following sources:

- Extensive research in bibliographic databases of academic literature in project management
- Project management documentation
- Professionals' and practitioners' project management case studies ([Appendix](#))
- Web search facilities and articles concerning features of contemporary project management approaches.

As an output, the core weaknesses of project management approaches are identified and described and then the identified weaknesses are mapped to the related e-Government project challenges.

Finally the gaps are formulated according to their relevance to the e-Government project challenges, followed by a discussion of the issues implicit in the gaps and their implications for practice.

## e-Government Implementation Challenges

The selection of the appropriate project management method is significant for the healthy development of e-Government projects. However, until now, an appropriate project management framework has not been thoroughly developed, as most proposed models are generic and do not directly target the specificities of e-Government transformation.

The models and methods applied in private sector projects have been viewed with much skepticism in the literature on public administration (Boyne 1996; Ranson and Stewart 1994). The main dissidence is summarized in Sayre's (1953) standpoint that public and private organizations are 'fundamentally alike in all unimportant respects'. Allison argues that 'the notion that there is any significant body of private management practices and skills that can be transferred directly to public management tasks in a way that produces significant improvements is wrong' (Allison 1996). This is rarely alluded to by those supporting the introduction of private sector management practice into government transformation projects.

There is no agreement on which project management method is effective and efficient for the implementation of e-Government projects; none has been particularly successful so far. Various critics note that management is characterized by the adoption of fads (Goldfinch

2007), which are usually abandoned after a few years in the face of less than impressive results before a new fad is embraced equally enthusiastically (Brindle and Stearns 2001).

If public and private information systems projects are fundamentally different, there is little point in seeking to apply the existing private sector project management methods without considering these differences and adapting these methods.

Most project management methods follow a hard, rational approach, focusing on data (not information), technology (not people), processes (not services), and management structures (not knowledge) (Bennetts et al. 2000). This point of view relates partly to their roots in engineering, where scientific principles dominate, and partly to the prevailing image of e-Government systems where technology and IT jargon take centre stage (Avison and Fitzgerald 2008).

Government projects demand flexibility and the ability to address change. Yet, the identified gaps in the traditional project management methods are usually cemented with more measurement, more control and more rules (Gupta et al. 2004) as governments are exhorted to adopt more planning, more measurement, and stricter methods (U.S. Government 2003).

Hard, rational ‘best practice’ does not seem to deliver, and needs to be tempered with a softer, more behavioral, knowledge-centric and systemic approach. According to US Office of Management and Budget Branch Chief, Daniel Chenock (Cohen and Eimicke 2003), “e-Government is about transformation. It is citizen-centered—not program centered. It is not just a tool but part of a whole system of technology, process and organization that brings change. e-Government is not in isolation of other management challenges”.

The principal challenges concerning e-Government project management, extracted from the literature, are enumerated in Table 1, together with the sources, and the challenges are briefly discussed below.

### Human Resources

Several roles are required in order to implement and manage successfully public sector information systems, each with different skill emphases in the organizational, business, legal and technological areas. Often experts in one domain need further education in the other areas (Earl 1990). Relatively low public sector salaries cause problems in staff retention and are the most important reason information systems professionals move elsewhere (Garden 1988).

### Work Milieu

Public sector organizations usually have more formal decision making procedures regarding IS implementation, and are less flexible and more risk-averse than their private sector counterparts (Bozeman and Kingsley 1998; Farnham and Horton 1996). Bureaucratic structures stem from the requirements of monitoring bodies, demands for accountability and interdependencies with other public sector organizations. As Rainey et al. (1976) note, ‘the coercive nature of most government actions might be cited as a fundamental justification for constitutional checks and balances and extensive formal control mechanisms’.

### Relations Within and Across Organizational Boundaries

Public agencies face a variety of stakeholders, each of which places demands and constraints on managers. Metcalfe (1993) argues that ‘government operates through networks

**Table 1** List of e-government challenges

No.	Challenge	e-Government differentiation	Source
1	Human resources	Skills inadequacies in knowledgeable personnel	Bacon 1991; Perry and Porter 1982; Willcocks 1994; Caffrey 1998; Brown 2001; Dawes and Pardo 2002; Ho 2002; Moon 2002; Holden et al. 2003
2	Work milieu	More bureaucratic	Buchanan 1975; Fottler 1981; Rainey 1983; Rainey et al. 1976; Boyne 2002; Bozeman and Kingsley 1998; Farnham and Horton 1996; Bozeman and Scott 1996; Bozeman et al. 1992; Bretschneider 1990
3	Relations within and across organizational boundaries	Greater interdependence, external review and control, large number of stakeholders with conflict interests	Bretschneider 1990; Bellamy 2000; Harris 2000; Landsbergen and Wolken 2001; Burbridge 2002; Dawes and Pardo 2002; Rocheleau 2003; Willcocks 1994; Metcalfe 1993; Brown 2003; Kim and Kim 2003;
4	Project failure impact	Loss of public trust	Willcocks 1994; Margetts 1991a, b
5	Goals definition	Ambiguous	Baldwin 1987; Chub and Moe 1988; Solomon 1986; Dawes and Nelson 1995
6	Project dimensions	Multiple and interrelated	Bellamy and Henderson 1992; Margetts and Willcocks 1993; Taylor and Williams 1990; Eason 1988; Morton 1991; Page et al. 1993; Margetts and Willcocks 1993
7	Planning horizon	Short term planning, formal methods used, large scale projects	Bozeman and Bretschneider 1986; Fottler 1981; Kenny et al. 1987; Rainey et al. 1976; Ross 1988; Willcocks 1994; Box 1999; Gauch 1993; Bretschneider 1990;
8	Best practices	Lack of exploitation	Lee et al. 2005; National Audit Office 1991; Satyanarayana 2004
9	Legal and regulatory issues	Influenced from legal norms and political requirements	Snellen and Schokker 1992; Bretschneider 1990; Dawes and Nelson 1995; NGA 1997; Landsbergen and Wolken 1998; Chengalur-Smith and Duchessi 1999; Harris 2000; Dawes and Pardo 2002; Mahler and Regan 2002
10	Politics driven nature	High involvement of politicians	Snellen 1991; Metcalfe and Richards 1990; Earl 1990; Bretschneider 1990; Bajjaly 1999; Heintze and Bretschneider 2000; Mahler and Regan 2002; Brown and Brudney 2003; Edmiston 2003; Rocheleau 2003; Roy 2003

of interdependent organizations rather than through independent organizations which simply pursue their own objectives'. Furthermore, the requirements of the various external constituencies are likely to conflict (e.g., taxpayers and service recipients, consumer groups and producer groups). Hence, the objectives of e-Government systems development are often contested by various groups concerned with the system. Conflict is related to change, disintegration and coercion (Hirschheim and Klein 1989). Typically not all stakeholders involved in a project share the same common, objective and well-defined goals. Some welcome the development of a new system whereas others strongly oppose it; much depends on the interactions they have with the system (Markus 1983). Attitudes are often determined accordingly to organizational politics and expected gains. e-Government systems frequently redistribute power among key actors, where power is broadly understood as an individual or group's ability to cope with uncertainty and enforce their interests in the face of resistance (Rahul 2005).

### Project Failure Impact

Government initiatives to reorganize the public sector embody a number of serious risks that are not found in the private sector, such as waste of public resources, corruption, misconduct and socially created disasters. These can lead to a loss of public trust in government (Margetts 1991a, b; Willcocks 1994).

### Goals Definition

The goals of public organizations are usually vaguer than those of their private counterparts because organizational purposes are imposed through the political process, rather than selected by managers. In order to get policies adopted, politicians must build support among diverse groups and ambiguity can be an asset in this context. Crisp and clear goals may prove unacceptable to some members of a political coalition. According to Nutt and Backoff (1993), 'this ambiguity provides a sharp distinction between strategic management in public and in private organizations'. Public sector managers have multiple goals imposed upon them by the numerous stakeholders, whereas Farnham and Horton (1996) argue that private firms pursue the single goal of profit: 'it is success—or failure—in the market which is ultimately the measure of effective private business management, nothing else'. By contrast public agencies are pushed and pulled in many directions simultaneously and their managers need to balance conflicting objectives. A common consequence is that performance targets are inherently unclear, and that private sector techniques, such as management by objectives, are likely to be inappropriate.

### Project Dimensions

Analysis of e-Government projects indicates that their project structures are constituted from several dimensions. In contrast with most classical IS projects which are typically described as purely technical projects, government transformation project outcomes are the result of a more complex interaction between technical, managerial, political, social, cultural and legal factors (Gil-García and Pardo 2005; Dawes and Pardo 2002). Government IT-based systems have too frequently been designed, introduced and run with little concern for the social, organizational and political contexts in which they have to operate (Eason 1988; Morton 1991; Page et al. 1993; Margetts and Willcocks 1993). They call for

new organizational structures and skills, new process optimization, new forms of leadership, and perhaps even a redefinition of purpose. They also call for a significant broadening and organizational transformation. The human resource, political and organizational contexts surrounding IT have often been neglected and tend to reassert themselves as significant implementation problems in the public sector (Willcocks 1994).

Heeks (2006) detects seven dimensions—summarized by the ITPOSMO acronym—which should be considered during an e-Government project design: information, technology, processes, objectives and values, staffing and skills, management systems and structures, and other resources.

### Planning Horizon

Planning is viewed as being more difficult in public sector IS, largely due to the potential instability at senior levels of government as a result of the election process (Bozeman and Bretschneider 1986; Fottler 1981; Kenny et al. 1987; Rainey et al. 1976; Ross 1988). Public sector projects are often of a larger scale, endeavoring to deal with the whole, or a regional population (Willcocks 1994). The concern to promote the public interest has been contrasted with the desire of private firms to meet the demands of individual customers. Box (1999) argues that ‘the decision rule of ability to maintain or change a service in accord with the majority view of the public interest is different from the market-driven service rule that uses individual preferences as the basis for governmental response’. Public information systems, with a focus on consistency, are planned using a formal method (e.g., life cycle) in order to have a more reliable approach to systems design and to allow management to monitor the development process (Gauch 1993; Bretschneider 1990).

### Best Practices

In general, the management of government transformation projects is, in significant part, the management of technology, people, organisation, and knowledge. e-Government requires cross-agency cooperation because of the functional needs for scale, consistency, and integration. Existing practice shows that designers and managers of e-Government systems benefit from re-using or exploiting existing frameworks, patterns or contents of successfully implemented projects (National Audit Office 1991; Satyanarayana 2004). Existing best practices, experiences and even failures pave the way for new initiatives to embed good governance principles and achieve public policy goals (Lee et al. 2005).

### Legal and Regulatory Issues

The authority of public organizations derives in part from legal and constitutional arrangements. Formal legislation and the concept of legislative intention play an important role in shaping the clientele for public services (Bretschneider 1990). Public agencies act only under the legislation and within the power delegated to them under their authorizing statutes. The implementation and management of e-Government systems interacts with laws, regulations and policies in order to cope with legal constraints and overcome policy barriers (Snellen and Schokker 1992; Dawes and Nelson 1995; NGA 1997; Landsbergen and Wolken 1998; Chengalur-Smith and Duchessi 1999; Dawes and Pardo 2002; Mahler and Regan 2002). Laws and regulations that pre-date the deployment of IT continue to



restrain innovation (Harris 2000). Hence, e-Government systems require a close alignment with legislation and regulations.

### Politics Driven Nature

Politics tend to dominate public sector projects, where the change agents involved are usually motivated by self interest and/or the political situation favors the initiative (Chowdhury et al. 2006). The focus of key players is sometimes on strategic policy and at other times on personal needs and goals, often connected with electoral impact, short-term kudos and corruption (Heeks 2006). This explains why the benefits of IT are not been evenly distributed within government organizations: the primary beneficiaries are usually those functions favored by the dominant political-administrative coalitions, and not those of technologically inclined middle managers, clerical staff, or ordinary citizens. In fact, IT is being widely applied in government only with the full approval of all levels of the managerial hierarchy. e-Government projects need to obtain strong political support, which becomes a critical factor in introducing technological innovations in public sector organizations (Cats-Baril and Thompson 1995; Bajjaly 1998; Borins 2000; Abramson and Littman 2002; Clements 1999; Nedovic-Budic and Godschalk 1996).

### Contemporary Methods in Project Management

Rather than summarizing the current conceptual base of project management, our intention is to examine the state of the art of contemporary applied methods concerning government transformation projects.

As Winter et al. (2006) states, the most dominant strand of project management thinking is the rational (Checkland 1989), universal, deterministic model—what has been termed the ‘hard’ systems model (Morris 2002; Yeo 1993; Winch 2007)—which emphasizes the planning and control dimensions. Most popular textbooks and methods (presented below) are based on this approach. Hard project management methods focus on time, cost and quality (Andersen et al. 2002) as the traditional measures of success but they have been criticized for failing to deal with human issues (Cicmil 2003; Cicmil and Marshall 2005; Cooke-Davies 2004); community perception, legal acceptability, political and social impacts (Jaafari 2001); and benefits, stakeholders and communications (Thiry 2002).

Many well established methods are commonly used by public or private sector organizations that are trying to plan, organize and monitor e-Government projects. In this section we present an overview of the commonly used approaches: Prince, the Project Management Institute (PMI) Method and Goal Directed Project Management (GDPM). A brief description of each method is provided and their weaknesses in the face of the above e-Government challenges are presented.

A review of current literature in project management and IT implementation is used to identify factors found to influence the success of e-Government initiatives. Hard and soft issues of government transformation projects require different management approaches and skill sets (Thiry 2004), which need not be mutually exclusive and can be applied together (Yeo and Tiong 2000). A broader view of the hard methods can be found in Jenkins (1969), Quade and Boucher (1968), and Yeo (1993) while soft or systemic methods are discussed by Flood (2000), Bell and Christina (2006), Bennetts et al. (2000), Midgley (2000), Kazi and Spurling (2000), Checkland and Scholes (1999), and Yeo (1995).



### Projects in Controlled Environments (Prince)

Projects in Controlled Environments (PRINCE) is a project management method covering the organization, management and control of projects, developed and maintained by the UK Office of Government Commerce (OGC 2005). Since its introduction, PRINCE has become widely used in both the public and private sectors and is now the de facto standard for project management in the UK. The latest version, PRINCE2, is designed to incorporate the requirements of existing users and to enhance the method towards a generic, best practice approach for the management of all types of projects. PRINCE2 is a process-based approach, providing an easily tailored and scalable method for the management of all types of projects. Each process is defined with its key inputs and outputs, together with the specific objectives to be achieved and activities to be carried out. The method describes how a project is divided into manageable stages enabling efficient control of resources and regular progress monitoring throughout the project. The various roles and responsibilities for managing a project are fully described and are adaptable to suit the size and complexity of the project, and the skills of the organization.

### Project Management Institute (PMI) Method

The Project Management Institute (PMI) published the first Project Management Body of Knowledge Guide (PMI 2001) as a white paper in 1987 which describes the sum of professional knowledge in an attempt to document and standardize generally accepted project management information and practices. Generally accepted does not mean that the knowledge and practices described are or should be applied uniformly on all projects; the project management team is always responsible for determining what is appropriate for any given project. The Guide is process-based, where processes overlap and interact throughout a project. Processes are described in terms of:

- Inputs (documents, plans, designs, etc.)
- Tools and Techniques (mechanisms applied to inputs)
- Outputs (documents, products, etc.)

The PMBOK framework splits the project processes into five distinct process groups: initiating, planning, executing, controlling and closing. This does not imply that the project has to go through each group in this order; the groups are used to structure and categorize the different processes. PMBOK also identifies several knowledge areas: integration management, scope management, time management, cost management, quality management, human resource management, communications management, risk management and procurement management.

### Goal Directed Project Management (GDPM)

Goal Directed Project Management (GDPM) is a powerful, pragmatic approach for gaining consensus from stakeholders on the overall objectives of a business program or project (Andersen et al. 2004). It provides a single-page, top-level view of the goals of the project (a milestone plan), which is used as a high-level communications and control tool. GDPM complements, not replaces, detailed product or activity-based approaches that project managers are used to producing. The milestone plan shows planned achievement against the key management objectives, and the activity plan shows achievement against the detailed delivery tasks.

GDPM is a management philosophy accompanied by a set of tools and principles for planning, organizing, leading, and controlling projects. The method is characterized by its practical and “psychological” approach to both focusing a project group on common goals and on controlling the progress of each individual. The focus on results provides a direct link between the project plan and the organization’s business plan. The business plan should state the final goal for the project, and may also reflect one or more intermediate goals for the project. It is, therefore, straightforward for the organisation and project planners to ensure the project is synchronized with the organization’s needs and plans. The GDPM method allows project sponsors and team members to focus most of their attention and effort on project issues and not on project management methods and/or tools.

Table 2 presents the more important weaknesses of the three generic project management methods for the e-Government domain (see also Wideman 2002).

### Gaps Identification and Discussion

e-Government projects have now become the end-to-end transformation of all the activities performed to design, market, sell, produce, deliver and support a set of related products and services, to deliver business value from the government to its citizens/enterprises. This is a modern view with a focus on public services, while the traditional project management methods tend to be activity-centric to deliver cost savings and productivity improvements quickly. Although the latter approach is easily cost justified, its emphasis on the IT enablement of individual processes through the development and deployment of specific applications raises various major issues.

As discussed above, e-Government project management should strike a balance between systematic aspects and systemic aspects of e-Government implementation. Apart from technical aspects, political, economic, human and social issues ultimately drive the management cycle (Flood 2000; Bell and Christina 2006; Bennetts et al. 2000). Without considering such factors, and the interplay that exists between them, little progress will be made in improving e-Government project management.

Project management of government transformation projects does not have to mean the rigid application of a complex method: the best results are likely to come from an intelligent application of principles from existing systematic or systemic methods to suit the nature and scale of the task at hand.

The value of the conventional project management techniques described in the previous section, together with their convergence around common themes, indicate a solid foundation for e-Government projects. However, the specific nature of e-Government transformation projects, analyzed in the third section, together with the weaknesses of the contemporary methods and techniques, suggest limitations and gaps, as shown in Fig. 1. Project management approaches based on the rational paradigm have difficulty coping with these issues. This implies, as shown in the analysis below of specific gaps, the need to integrate systemic approaches into the contemporary systematic project management methods (Bell and Christina 2006; Bennetts et al. 2000).

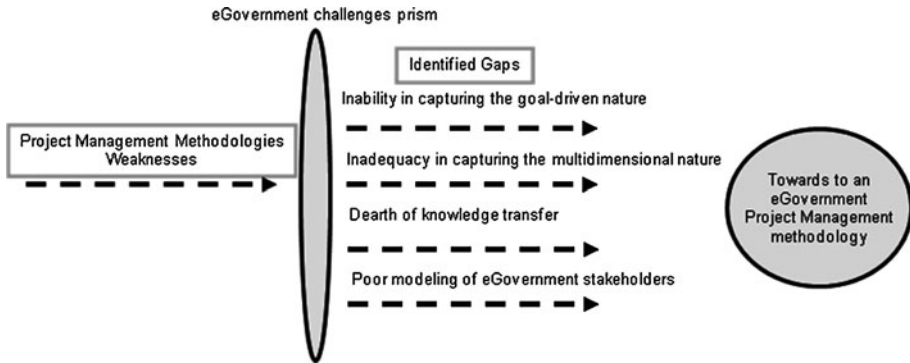
#### Gap 1: Inability in Capturing the Goal-Driven Nature of e-Government Projects

e-Government projects are primarily goal-driven projects. While much government strategy is pitched at a high level, the e-Government project objectives are designated by officials at various levels, from politicians to employees. Such projects, with their attendant

**Table 2** Weaknesses of project management approaches

Relation with e-government challenge	Weakness	Description	PRINCE 2	PMI	GDPM
5	Definition of the detailed project plan at initial stage. Complicated activity diagram	Unnecessary time is spent managing and documenting the project causing significant delay	Applies	Applies	
6	Inadequate management of organizational change	Essential organizational changes during implementation are not addressed efficiently	Applies	Applies	
6, 8	Generic—must be tailored to suit the occasion	It is a method and not a cure. People who use it should tailor it efficiently to the project in hand	Applies	Applies	Applies
3	Unclear responsibilities transfer risk	Because of the various roles and responsibilities involved, participants in the project can easily blame each other when something goes wrong	Applies		
6, 8	Excessive division (reductionism) often results in a lack of knowledge	Splitting up a project often results in a lack of knowledge of the project by responsible persons like the Project Manager	Applies		
3	Lack of project roles	Human factors are not within the scope of the method	Applies	Applies	
8	Not systematic knowledge reuse	Lessons learned are recorded but they are not exploited in future projects in a systematic manner	Applies	Applies	Applies
5, 10	Bottom-up structure	The project is structured in a bottom-up manner, not in a top-down one	Applies	Applies	
10	Not covering the original need, solution generating and feasibility studies	It takes the view that the go ahead has been agreed and that the project now needs organizing and controlling	Applies	Applies	Applies
5, 10	Planning is an ongoing effort throughout the project	It does not cover the necessity of continuous project planning update	Applies	Applies	
7	Not a full project management method	It does not cover the full project management spectrum, it is used to increase the project management effectiveness of other models or methods			Applies
5, 10	Schedule concentrated	Too much time could be spend on project design rather than the actual implementation	Applies	Applies	Applies

organizational complexity, require substantially more executive direction. Many of the decisions are political, not technical (Reeder 1998) and there has often been inadequate planning at a high enough level in the early stages of the projects. The improvement of



**Fig. 1** e-Government project management gaps

public services requires clear leadership from the top and better delivery on the ground (OPSR 2003).

Political leaders or senior officials usually apprehend the broad vision, or sometimes more specifically, they set the goals that they expect from transformation projects. However, their roles (and knowledge) do not normally extend to perceive how the goals should be achieved. It is the responsibility of project managers to identify, design and implement the essential steps to achieve the final goals. Because of inadequate planning, projects may suffer from major management changes leading to delays and changes in objectives. A review of the above project planning documents indicates that important aspects of some initiatives had not been addressed and their milestones were in a state of flux (CGRHR 2003).

A review of central government informatization policies in nine European countries found that political involvement in informatization policies is almost negligible (Snellen 1991) and politicians consider informatization as just another tool like finance, personnel and organization (Margetts and Willcocks 1993). Moreover, governments with professionalized administrations are more likely to adopt and apply IT (Danziger et al. 1982; Dutton and Kenneth 1977). Their managers have a good sense of the potential uses of IT in their own interests and, where their interests coincide with government interests, they push IT application aggressively and effectively (Kramer and King 2003).

It is here where the first, and perhaps the most important, gap in generic project management methods is identified. They usually structure project implementation in a bottom-up manner, attempting to define the necessary activities and the project plan prior to the final milestones. Such an approach can lead to a very good plan to achieve the wrong objective. Duncan et al. (2002) identifies the inability of public organizations to build effective e-Government business cases. Business cases for work that crosses departmental/national boundaries are difficult to construct: it is hard to show where the benefits will accrue and who should bear the cost. We would argue that government transformation projects demand a top-down project management approach. The high-level goal should be decomposed into its fundamental structural elements, leaving on the one hand the responsibility of setting the goals to politicians and charging, on the other hand, the responsibility of achieving the goals to the implementers. At the strategic level, communication needs to be clear, consistent, focused on the essentials and delivered in plain language (Dawes 2008). At such a level, answers are expected to be given to key questions such as: Which are the main goals? How long it will take? Who is responsible for each goal?

## Gap 2: Inadequacy in Capturing the Multidimensional Nature of Projects

The nature of government transformation projects is manifold, composed of different elements, much more complex, unpredictable and multidimensional and demanding a different approach than the singular one that dominates traditional methods. Many projects, if not all, include IS development but the technology factor is rarely the critical one. Such projects also include other important dimensions, such as policy development, process reorganization or organizational change. During a government transformation project, an organization is adopting new technology that is likely to trigger or require major organizational change. Markus argues that there is a significant difference between such projects and traditional IT-project management, as well as between such projects and traditional organizational change management (Markus 2004). Traditional IT-project management has a technical focus, neglecting issues related to final goals and sustainability, while organizational change management has a strong people focus but has little to say about how IT affects organizational change (Markus and Bashein 2006). In the traditional project management methods, shortcomings in managing the soft aspects are more often a cause of failure than problems with the technology (Heeks 2006). While implementing e-Government projects, we need an integrated approach for managing organizational change in situations where IT is the main change driver. For larger projects that cross ministerial or even national boundaries, cross boundary communication can become difficult. In addition the communication with citizens is important and this is often neglected.

Over and above, public organizations seek a single umbrella under which to consolidate their e-Government projects (Duncan et al. 2002). The engineering approach is simplistic and insufficient to adequately understand the nature and complexity of public sector organizational change. ICT-related innovation in government transformation projects should be seen as an on-going social process that unfolds in the context of complex, negotiated relationships (Kling and Lamb 1999). A ‘socially rich view’ (i.e., based on socio-technical assumptions) seems to better conceptualize the role of ICT in the current e-Government environment (Cao et al. 2004; Sorrentino and Virili 2004). The socio-technical approach takes into consideration important factors such as the social and organizational context of the technologies and the people (staff and citizens) who use them (Avison and Fitzgerald 2008).

Project management and implementation methods utilize the notion of stages or phases in order to divide a project systematically. They also use a straightforward activity-based project plan structure which does not depict the singularity of each project area. Because of the special character of government transformation projects and the multiplicity of different factors involved, a gap is identified concerning the methodological structure of project planning. Grouping the essential steps of similar content in project paths is not covered adequately, except in GDPM (Andersen et al. 2004) where this notion is realized to some extent. In any case, not only should all the essential dimensions be considered within each project path but the management procedures should also cover the interrelationships and interactions among them.

## Gap 3: Dearth of Knowledge Transfer

Considering the complexity, the unfamiliarity of the new projects and the substantial rate of e-Government project failures, there is a clear gap in knowledge transfer and reuse. There seems little provision within the existing project management and implementation methods for the systematic transfer of best practices and lessons learned from completed

transformation projects. Knowledge is wasted moving from one project to another. Failures are not exploited to improve designs and lessons are not learnt (Heeks 2006). National governments and public organizations face considerable challenges trying to locate the right pathway to implement and manage successful projects. Organizations typically begin a project implementation with a blank piece of paper instead of utilizing proven solutions. Islands of good practice exist patchily in e-Government initiatives and they should be appropriately exploited. Jaeger (2003) argues that much can be learned by studying specific e-Government initiatives and taking a step forward; the effective gathering and reuse of lessons learnt could prove critical to long term success. The reuse of components is negligible, pushing up costs, increasing the support load and delaying implementation.

Patterns could be developed as sets of activities that reoccur in different situations; they could have a context and could be seen as a generic solution to a problem. Because most project management methods are generic, specific methodological patterns and templates are not supported. As Heeks (2006) states, the public sector has been poor at thinking up 'another way', partly because like Winnie-the-Pooh it bumps into project failures so often it hasn't the time to step back and think. Thus, there is a deficit concerning piloting and reusability. Even though general directions are provided, existing methods do not provide structured patterns and they do not generate deliverable templates customized to each category of government transformation projects. Good practice could be disseminated in a variety of forms including standards, patterns, project scenarios, types of deliverable and deliverable contents from broad national guidelines for whole areas to local agency pathways. However, the recommended practices are rarely analyzed, designed or disseminated using formal (or even semiformal) project management modeling techniques.

#### Gap 4: Poor Modeling of e-Government Stakeholders

Unlike other projects, where the stakeholders are few and obvious, governmental projects feature numerous stakeholders who may not appear until the initiation of the project or, even worse, until their interests are being opposed. As Ho and Pardo (2004) state, in some cases stakeholder involvement refers to all possible stakeholders; in other cases, stakeholders are viewed more narrowly as only those who are direct users or direct recipients of the benefits of a system. How the stakeholders are identified and expressed in e-Government projects varies considerably within and among public sector organizations. Common stakeholder groups include citizens, enterprises, politicians, public administration managers, administrative civil servants, public sector IT staff, IT companies, business consultants, collaborating public organizations, financial institutions, etc. A dearth of sustained executive leadership (Duncan et al. 2002) is a common feature. Consequently, there is a gap in identifying the stakeholders, leading to inadequate project staffing. Moreover, ownership and sponsorship of individual projects is hard to define causing delays. The intended beneficiaries of the project should be clearly identified and the benefits that will accrue to each stakeholder group should be specified (Irani et al. 2005; Krishnaiah 2006). It is only then that all the stakeholders can work harmoniously towards the ultimate goal of the project (Bhatnagar 2002).

Given the nature of e-Government initiatives, it is important to include within the initial planning ambit the questions of resistance, conflict and complex stakeholder relationships. A review of the literature reveals that such a viewpoint is lacking owing to an excessive emphasis on the rational features of project management like measurement, control and rules.

## Conclusions

This article concludes in identifying four gaps in contemporary methods of project management, when applied to e-Government projects, namely:

- Inability in capturing the goal-driven nature of e-Government projects
- Inadequacy in capturing the multidimensional nature of projects
- Dearth of knowledge transfer
- Poor modeling of e-Government stakeholders

These gaps have been derived from a thorough analysis of e-Government project failure factors, showing that the e-Government project management field needs to develop intellectually beyond its current conceptual base. The identification of such gaps is meant to inform e-Government practitioners and researchers and to serve as an input to the e-Government project management research agenda.

The main argument of the paper is not that the extant concepts, methods and tools should be abandoned, but rather that a new approach is needed, in order to enrich and extend the field beyond its current intellectual foundations, filling the identified gaps and connecting it more closely to the specific challenges of electronic and transformational government projects.

We have argued that traditional project management methods and techniques do not, alone, meet the needs of e-Government transformation because of the scope and the nature of the projects. A change is required in the way that e-Government is managed, with a transformation management system that looks at the whole project lifecycle, combining hard and soft characteristics of project management methods and confronting successfully the special challenges of government transformation projects. Failure to do this is likely to cause damage at both the organizational and national levels in the race for competitive advantage in a digital society. The complex problems of e-Government projects cannot be solved just by a systematic approach as these projects have emergent properties peculiar to themselves. The systemic approach to systems analysis would appear to be promising and such projects seem to lend themselves to the use of action research methods as the merger of research and praxis could produce highly relevant research findings (Baskerville and Wood-Harper 1998). Appropriate e-Government project management approaches may be determined through the use of action research in adopting systemic approaches for e-Government project planning, scoping, monitoring, reviewing and controlling processes. Such collaborative research between researchers, implementers of e-Government projects and public sector decision makers could compare systematic and systemic approaches to e-Government project management based on the gaps identified gaps by the current research (Flood 2000).

Being conscious that technological innovation cannot be analyzed independently of organizational change (Markus and Robey 1988; Orlikowski 1992), we have chosen to give priority to analytical perspectives that originate not only from the information systems field, but also from the organizational and human aspects of e-Government project implementations.

Overall, the authors consider that a critical assessment of project management's methods and a discussion of their strengths and weaknesses can assist future research efforts in this area. A more scholarly review and assessment of e-Government initiatives can lead to innovative project management pathways concerning the structure and evolution of such projects.



As the interest in, and pressure for, new and expanded e-Government increases, public sector managers find themselves making decisions about information and IT for which they are often unprepared or ill-equipped (Gil-García and Pardo 2005). Recognition of the complexity and risks involved in these types of decisions suggests a goal-driven method to manage all the aspects of e-Government projects. Specifically designed tools could also greatly assist the application of such a method, leading to reusable project artifacts and the sharing of knowledge on achievements and problems faced.

## Appendix

See Table 3.

**Table 3** Project management case studies

Method	Source	Year
Prince 2	The APMG Group Limited, The National Health Service	2003
Prince 2	The APMG Group Limited, The Cheshire Constabulary	2002
Prince 2	University of Western Australia Library	2005
Prince 2	The APMG Group Limited, Electricity Supply Board Ireland	2002
Prince 2	The APMG Group Limited, Reading Borough Council	2002
Prince 2	The APMG Group Limited, The Fleet Information Management Unit	2002
Prince 2	The APMG Group Limited, Ericsson Services Ireland	2002
Prince 2	The APMG Group Limited, Prince2 and PMI/PMBOK A Combined Approach at Getronics	2002
Prince 2	Authors involvement, Ano Liosia Municipality, Greece	2008
GDPM	NOVE-IT, Reorganisation of the IT of the Swiss government	2001
GDPM	Monitor Management Control Systems, Aker Kvaerner MMO	2002
GDPM	Metaxiotis K., Zafeiropoulos I., Nikolinakou K., Psarras J. Goal directed project management methodology for the support of ERP implementation and optimal adaptation procedure, Information Management & Computer Security	2005
GDPM	IBM Business Consulting Services, Belgian Post Group: iPromis—Business Transformation	2004
GDPM	Robert Lockwood, Goal-directed development of new products, World Class Design to Manufacture	1995
GDPM	Authors involvement, e-Government Interoperability Framework, Greece	2008
PMI	PMI, New Zealand Wind Farm	2004
PMI	PMI, Saudi Aramco Haradh Gas Project	2004
PMI	PMI, Quartier International De Montréal	2004
PMI	PMI, HUAWEI TECHNOLOGIES, Chinese Telecom Giant Establishes Competitive Edge	2004
PMI	PMI, Denver International Runway Project: Project Management Ensures the Largest Runway in the United States is Compiled on Time and Under Budget	2003

**Table 3** continued

Method	Source	Year
PMI	PMI, China Telecom Corporation Limited	2006
PMI	PMI, AT&T Project Management Centre of Excellence: Communications Leader Promotes Project Management Leadership	2008
PMI	PMI, TLC Family Care Health plan	2007

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