

A Proposal of Governmental Project Management Maturity Model¹

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Abstract

The concepts of the Governmental Project Implementation System (GPIS) and Governmental Project Management (GPM) are briefly introduced. A GPIS is a system that contains the regulations, organizations, processes, project managers, contractors and other elements influencing the management of public-sector projects in a given country. The GPM covers processes of GPIS development and maintenance. Next, the Governmental Project Management Maturity Model (GPM3) is defined and described. A GPM3 is a GPIS / GPM maturity model consisting of the Initial, Local, Governmental, Cooperating, and Optimizing levels. Finally, the article points out the benefits of introducing GPIS and GPM and using GPM3.

Introduction

Administrative units at any level (country, state or province or land) have their own public administration. Public administration is a set of collaborating organizations subject to activities of its government (e.g., Bluntschli, 2000, p. 25; Heywood, 2004, p. 75; Parker & Gallagher, 2007; Held, 1989, p. 2). In the public sector, the set of organizations composing a particular administrative unit forms one higher-level organization. This feature distinguishes the public sector from the other sectors in which there are numerous independent, often competing companies in every administrative unit. Governments shape the way that public administration functions. Public-sector projects are one area of government activities.

A public-sector project is a project performed by any public organization in an environment established by its government. The effectiveness and efficiency of public-sector projects depends both on the activities of the public organization and the government by which it is governed. The government-created environment of projects' implementation may cover processes, methodologies, practices, organizations (including auditing offices and public-sector Project Management Offices), databases, project managers, project management maturity models, project contractors and other elements, all of which define, shape or influence the way public-sector projects are implemented. It will be referred to as the Governmental Project Implementation System (GPIS). The GPIS is controlled by governmental laws, executive orders and other activities and documents, specific to the individual administration. The process of influencing and shaping the GPIS by the government will be referred to as the Governmental Project Management (GPM).

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It is worth to compare GPM with lower levels of project-oriented management. Table 1 summarizes the main differences between project management, Organizational Project Management, and Governmental Project Management.

Table 1. Levels of project management

	Project Management	Organizational Project Management	Governmental Project Management
Subject	Project	Projects, programs, portfolios of an organization	The Governmental Project Implementation System
Responsible	Project manager	Organization’s Board	Government
Elements	Project processes and structures	Organizational processes and structures	Regulations, guidelines, organizations...
Influence on projects	Direct	Direct / Indirect	Indirect
Benchmarking, knowledge transfer	Other projects	Other organizations	Other governments
Sector	Any	Any	Public

According to the Capability Maturity Model (CMM) (Paulk et al., 1993), one type of tool for improving organizational project performance is the project management maturity model. As stated above, a public administration managed by its government is a specific type of organization. Therefore, specific types of maturity models may also be applied to the governmental level of project management.

The purpose of this article is to build a maturity model for governmental project management that can be used for improving both GPIS and GPM processes. The addressees of this model are primarily the governments overseeing the administrative units, which through the implementation of GPM processes affect the form, structure and quality of their GPISs and GPMs

In the following section we briefly review attempts to evaluate project management maturity in several countries. The next section describes the methodology of GPM3 development. The description of GPM3, its levels, and exemplary practices is placed in the next section. After description of GPM3, you may find a section showing the development of the US Federal GPIS and GPM in terms of GPM3. The article ends with conclusions showing the possible applications of GPM3.

Literature Review

Literature has not yet described a maturity model for government project management that can answer the question of how mature governmental project management is in a given administrative unit. But similar questions were asked by researchers in several countries, who investigated the average level of maturity of project management in the public institutions of a given administrative unit.

For instance, in Australia, such studies were conducted by Young et al. (2014) using P3M3®. For projects, the average management maturity level was between 1 (benefit management) and 3 (risk

management). The maturity of other areas (governance, financial, control, stakeholders, resources, generic) was at level 2. For programs, maturity was ranked at 1 (benefits, governance, stakeholders), 1 to 2 (risks, control, generic), and 2 (finance and resources). The highest level of maturity was found for portfolio management. In this area, governance, stakeholders, control, risks, benefits, and generic areas were at level 2. Levels 2 and 3 were found for finance and resources.

Prado & Andrade (2015) distinguished the public sector as the subject of part of their project management maturity studies in Brazil. The Prado Project Management Maturity Model (Prado-PMMM) has five levels, from 1 (Initial) to 5 (Optimized). The model covers seven dimensions: Competence in Project and Program Management, Competence in Technical and Contextual Aspects, Behavioral Competence, Methodology Usage, Computerization, Usage of Structural Organizational Structure and Strategic Alignment. The average score for all examined public institutions was 2.5.

In New Zealand, KPMG conducted public-sector project management maturity studies (KPMG, 2011) using P3M3®. The study found that 80% of organizations are at level 2 or lower on a scale of 0 – 5, with 50% of them at levels no higher than 1.5.

In Ghana, maturity studies were conducted (Ofori & Deffor, 2013) in which public-sector institutions were also identified. A questionnaire verifying the achievement of level 2 in the Kerzner (2005) model was used in this study. The study found that public organizations in Ghana on average remain on the embryonic level of maturity.

The Kerzner's maturity model (Kerzner, 2005) was used also in the Brazilian state of Pernambuco to study the maturity of project management in the public-sector (de Souza Silva & Gomes Feitosa, 2012). The study found that public organizations in the state of Pernambuco are below level 2 (common procedure) in Kerzner's model.

However, these studies do not account for one important factor: the impact of GPIS and GPM on project management in public-sector institutions. They treat each public institution as a separate unit. But a public administration is an organism composed of cooperating organizations and regulated by its government. Hence, to adequately describe the level of maturity of public-sector project management in a particular administrative unit, one also needs to take into account the governmental level: the maturity of GPIS and GPM. The maturity model used for such assessment will be called the Governmental Project Management Maturity Model (GPM3).

The lack of a Governmental Project Management Maturity Model is an important gap that this article is trying to fill.

The Methodology of GPM3 Development

As the knowledge about maturity models develops, several methods of their creation have been defined. Such methods have been proposed, for example, by de Bruin et al. (2005), Mettler & Rohner (2009), Becker et al. (2009), Maier et al. (2012). The most general phases of maturity model development are planning, development, evaluation, and maintenance. In the planning phase, one must define the purpose of model development, including its scope and audience. A review of existing maturity models for similar models should be performed. In the development phase, it is necessary to determine maturity levels and fill them with adequate practices. In the evaluation phase, the model should be validated. In the maintenance phase, in addition to performing assessments, a results database and the maturity model itself should be maintained.

A particular, frequently used method of maturity model development is to build them on the basis of existing models. Maturity models are often built on the basis of CMM (or CMMI®, SEI, 2010) (e.g. Hopkinson, 1996; Ibrahim, 2000; Niazi et al., 2005; Rosemann & de Bruin, 2005). This approach can be considered a variant of the above-described methodology, where the set of major maturity model constructs is predefined. For models built on the basis of CMMI®, these include definitions of maturity levels. This process must be based on a deep knowledge of the practices applied in the field of interest. The premise of applying this method of maturity modeling can be similar to the structure of the main objects of the reference model and of the model being created.

The description of the planning phase may be found above in the Introduction and Literature Review sections.

In our case, CMMI® has been selected for the basis for the development phase. CMMI® refers to the implementation of projects in an organization. Our maturity model refers to the project management capabilities of public organizations in a given administrative unit (country or state). The GPM3’s analogy for CMMI®’s organization is the administration as a whole. The GPM3’s analogy for CMMI®’s project is a public organization – a component of the administration. In CMMI®, the organization influences the way it performs its own projects. In GPM3, the government influences the way in which its organizations operate (in the area of project, program, and portfolio management). The correspondence between CMMI® and GPM3 is schematically presented in Figure 1.

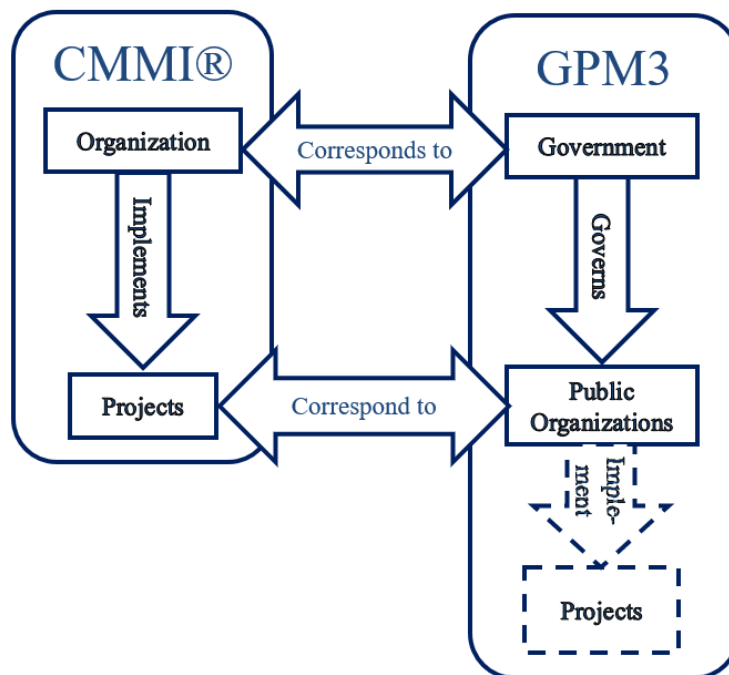


Figure 1. CMMI® and GPM3

Following Dettbarn et al. (2005), the grounded theory (Glaser & Strauss, 1967; Strauss & Corbin, 1998) for gaining knowledge of governmental project management practices (including programs and portfolios) was applied. Development included analysis of 262 literature items, 345 documents and source materials, and 37 interviews with governments’ project management stakeholders (the full list of these items may be found in Gasik, 2017). Data were collected from

67 administrative units at the country and the state level. We have identified over 2200 project management practices during our research. After collecting these practices, we assigned them to individual levels of the CMMI-based model. The resulting model was evaluated by performing an attempt to analyze the development of the US Governmental GPIS / GPM with its use. The maintenance of the model was left to further works.

The Specification of GPM3

In this chapter, we describe the Governmental Project Management Maturity Model. For each level, we describe its general characteristics, give examples of practices, describe the benefits of achieving a given level, and compare GPM3 levels with CMMI® levels. We provide only some examples of practices identified by us during the research.

1. The Initial Level

At this level, there is no awareness of the importance of project management for the success of the government and the whole administrative unit. Governments sometimes use the term "project", but do not recognize the importance of project management for the proper functioning of the administrative unit. Projects are considered a form of technical activity. Governments believe that the efficiency of projects depends primarily on technical skills.

Exemplary Practices

The most common form of government involvement in public sector projects at this level is the allocation of resources and expectation of results (Judah, 1857, Kozak-Holland & Procter, 2014). There are no organizations specialized in the implementation of projects. National audit chambers are not qualified in project management and avoid audits of projects. And if they do perform such audits, they focus on the technical aspect and on individual activities, not on full project management processes (NIK, 2014). Public sector projects can be implemented under the general regulations concerning public contracts (if any), which do not take into account the specifics of projects.

In the late stage of this maturity level, regulations on individual projects may be enacted, but they do not relate to their management, or they relate to it in a minimal way, usually by requiring the submission of management products (schedule, reports). They do not require the use of project management processes (e.g. RCL, 2009, RCL, 2016).

CMMI® and GPM3

This level corresponds to the initial level of CMMI®. Using this analogy, the characteristic of this level would be organizations implementing their projects in an ad hoc and chaotic manner. At this level, the government usually does not provide a stable organizational and legal environment for project implementation. The success of project management in such administrative units depends on the competence and heroism of people, and not on the use of proven processes. In such administrative units, government projects are often abandoned or they exceed the estimated schedule or budget.

2. The Local Level

At the Local Level, individual public-sector organizations or groups of organizations, like sectors of public administrations, apply project management practices in a systemized way. They create regulations, guidelines and standards for projects implemented by themselves. Entering this level

usually begins with the public organization's increased interest in the management of individual projects.

Public institutions, as separate organizations, implement project management best practices such as those described in project management standards, methodologies (PMBOK® Guide, Prince 2® etc.) or organizational-level maturity models. These practices may be implemented through issuing the regulation of all specific sectors of public administration, issued by a ministry or equivalent body (but not by the whole government). If the maturity assessment of an organization, according to any maturity model (CMMI®, OPM3®, P3M3® or any other), would result in a rating higher than the lowest level of maturity, then the public administration to which this organization belongs reaches the Local Level.

Exemplary Practices

The entry onto this level usually begins with the interest of the government in the management of individual projects. In the US in 1956, the Navy began the Polaris project, for which the PERT technique was developed (Lenfle, Loch, 2010). In Australia, some management processes were developed in the early 1960s for constructing the Sydney Opera House (Kouzmin, 1979). Therefore, we may say that the United States entered the Local Level of GPM during implementation of the Polaris project. This level was further developed after 1960, when Robert McNamara introduced the DoD Program Planning and Budgeting System (PPBS), emphasizing the up-front analysis, planning and control of projects, and several other processes and techniques (Morris, 1994). The first regulation in the United States requiring application of a specific methodology project management methodology across all the organization of one sector were recommendations for using the Cost / Schedule Controls System Criteria (C/SCSC) published in 1967 by the Department of Defense (Abba, 1997).

Currently, many countries and states remain at the Local Level, applying a variety of project and program management practices for specific projects, agencies or entire departments, but which do not cover the entire public sector of a given country. For instance, in Brazil, the Central Bank has developed an integrated methodology for project management (Banco Central do Brasil, 2013), used only for this bank. In the state of Alaska the Office of Project Management & Permitting operates, supporting project management in the Department of Natural Resources (<http://dnr.alaska.gov/commis/opmp/>). In Ireland, the National Road Administration has published Guidelines for Project Management (NRA, 2010). In Chile, the Ministry of Housing and Urban Development published Recommendations for project management (MINVU, 2009) for its agencies. In California, for technology projects, the California Project Management Methodology (CTA, 2011) was developed. In the state of Kansas, the IT project management methodology was published (OoITS Kansas, 2008). Within departments of American states, Public Project Management Offices are established, for example the Project Management and Development Branch in the Real Estate Services Division in California (www.dgs.ca.gov/RESD/About/Project-Management-and-Development-Branch). EPMO Vermont (<https://epmo.vermont.gov/>) is involved in public IT projects.

CMMI® and GPM3

The Local Level might correspond to the managed level of CMMI® and OPM3® if all public-sector organizations were to introduce an organized approach to project management. However, such a situation usually does not occur, because after the introduction of effective project

management in numerous public-sector organizations, governments usually decide to implement GPIS, influencing project management, in all public administration.

Benefits

At this level, the benefits of project management are observable only in public organizations that implement their own practices for project management. The knowledge gathered, which remains with the institution at the Local Level, would need to be shared to raise GPM to a higher level in other organizations. Ideally, the government, because of examples of success in the organizations at the lower level, realizes that the introduction of structured project management provides benefits. It then introduces these processes for the whole area of its operation. This moves it to the next level of maturity.

3. The Governmental Level

At the Governmental Level, the government recognizes the role of project management for government, administration, and the whole administrative unit's development, and becomes actively involved in shaping the approach to the management of all projects performed in its administrative units. The main manifestation of this commitment is the preparation by the government of laws, regulations, executive orders, standards, and guidelines on project governance and management.

There are six main areas of Governmental Project Implementation Systems: governance, portfolio management, organizations supporting project management, project management processes, actor management (including project managers and vendors), and stakeholder engagement (Gasik, 2016). They are described in more detail in the following sections.

i. Governance

In the area of governance, the structures and processes accountable for making the most important project decisions are implemented. Accountability for these projects and decisions is unambiguous. Governmental audit chambers play an important role in project implementation. They provide independent insight into the current status of public projects execution.

Exemplary Practices

Issuing any regulation may be perceived as an act of governance. Probably the first regulation concerning all the projects of a specific country was Circular A-109 issued in 1976 by the American Office of Management and Budget (OMB, 1976). This document required the use of the proven methods of DoD's C / SCSC approach in all federal departments for their projects.

Implementing a gate-review process is an example of a governance practice (OGC, 2007). The purpose of gate reviews is to assess project status and make the most important decisions concerning further project or program implementation. Gate review processes have been implemented, among others, in Victoria (DTF Victoria, 2013), Texas (TPDF Texas, 2013), Queensland (QTT Queensland, 2013), New South Wales (NSW Procure Point, 2013), and New Zealand (SSC New Zealand, 2013).

American GAO (www.gao.org) and the Australian ANAO (www.anao.gov.au) make examples of national audit chambers engaged in project audits. The recommendations of these audits play substantial role in making decision concerning future project or program execution, including eventually decision about killing it. Some audit chambers also elaborate recommendations on

practices and processes of project implementation designed for public organizations (GAO, 2009, GAO, 2012, ANAO, 2010).

ii. Portfolio management

There are defined rules for including projects in the portfolios of individual organizations or in a governmental portfolio at the Governmental Level. The rules for project or program initiation are defined – but not necessarily the exact criteria, which may be specific to each type of program or project, or for separate governmental sectors. There are also rules for portfolio maintenance and control.

Exemplary Practices

The GPRA (White House, 1993) regulation describes how to build a portfolio of programs in US federal organizations. The methods of selecting projects for implementation are defined in India (PMD India, 2013). In Norway, the quality-at-entry procedure, defining the ways of project initiation, applies to all major projects (Magnussen, Olsson, 2006, Klakegg et al., n. d.). In New Zealand, guidelines for major projects and programs monitoring are in effect (SSC New Zealand, 2011). In New South Wales, guidelines for the evaluation of all public sector projects with respect to the value they deliver were developed (CPE NSW, 2013).

iii. Organizations

Governmental level Project Management Offices exist whose main goal is to support project implementation in their respective administrative units. They monitor major project implementations by collecting performance data. They perform or support tasks for other Governmental Level activities, like maintaining project management processes, facilitating stakeholder engagement, implementing project manager education and certification, maintaining registers of authorized project suppliers, etc.

Exemplary Practices

In the United States, the Office of Management and Budget, which supervises the implementation of key programs, reports directly to the president (www.omb.gov). In the Australian state of Victoria, there is the position of Minister for Major Projects, responsible for all major projects (www.majorprojects.vic.gov.au). In the UK, the Infrastructure and Project Authority works within the structures of the Office of the Prime Minister.

(<https://www.gov.uk/government/organisations/infrastructure-and-projects-authority>).

In Bahrain, the Strategic Projects Directorate operates

(www.works.gov.bh/English/Projects/strategic).

In Singapore, the Centre for Public Project Management functions

(<https://www.gov.sg/sgdi/ministries/mof/departments/cp2m-1>).

In India, there are several organizations involved in the management of public sector projects at the federal level. NITI Aayog (www.niti.gov.in) is responsible for the selection of projects for implementation, and MoSPI (www.mospi.gov.in/programme-implementation-pi-wing) for monitoring their implementation.

iv. Processes

Management standards and/or methodologies exist for projects and programs. They are valid for both the supplier and the customer. There may be different methodologies for different sectors (e.g., specific to construction projects or to IT projects), and these methodologies cover governmental projects, usually above some financial threshold. Methodologies are customized for specified classes of projects. These methodologies should cover or be supplemented by change management processes. They also cover business effect evaluation processes.

Exemplary Practices

PMBOK® Guide (PMI, 2017) has been recognized as a standard in the United States by ANSI. Prince 2® (OGC, 2009) was developed at the request of the British government for use in government projects in the UK. In the state of New York, a project management methodology based on the PMBOK® Guide has been developed by a group of experienced project managers. This methodology applies to all projects in the state of New York (IT, software, engineering, business development, etc., NY SOT, 2003). The Australian state of Tasmania has developed guidelines for Tasmanian Government Project Management (OEG Tasmania, 2011). The Tasmanian ICT Policy Board has recommended applying these guidelines to all projects implemented by the Tasmanian public sector. In Michigan the Project Management Methodology has been developed (MDoIT Michigan, 2004). This methodology is based on the standards of the Project Management Institute (PMI, 2017). It is very complex, involving an extensive set of forms. In Scotland, guidelines applicable to all government projects and programs have been published (<https://www2.gov.scot/Topics/Government/ProgrammeProjectDelivery/Principles>). In Canada, the Policy on the Management of Projects (TBoCS, 2010) is in effect.

v. Actors management

Regulations concerning the education and skills of public-sector project managers are introduced at this maturity level. A system of project manager training, education, and knowledge transfer is present and working effectively. A certification system is implemented. There is a system for improving the qualifications of other key public project stakeholders, such as sponsors and key decision makers. The public procurement system covering public-sector projects, specifying the rules of public tenders and especially the rules for applying for tenders, is established. A register of public project suppliers and project managers may exist.

Exemplary Practices

The institutions involved in public projects implementation designate professional development of their employees as their statutory goal (e.g., OoA Missouri, 2013; see also www.planningcommission.gov.in/sectors/index.php?sectors=pamd). They provide training in public projects management. Comprehensive training for project managers, including the basics, soft skills and advanced topics is done in the state of Michigan (MDTMB Michigan, 2013). Training is provided both in the traditional (e.g., DOI Vermont, 2010) and the e-learning mode (WSDOT Washington, 2013).

Having a certificate issued by a recognized body (like the Project Management Institute's PMP®) may be the basis for recognition as a qualified project manager (Darlymple, 2011; PMO Maine, 2013). Certificates that qualify to manage public projects are also issued upon completion of training organized in a given country (e.g., PAI Ireland, 2013; DTMB Michigan, 2013a). A more

advanced requirement is the completion of studies of public projects management (University of Oxford, 2012).

The requirements to be met by companies implementing public projects are defined in order to facilitate the management of contracts by contracting their execution only to qualified companies. Such requirements concern the experience and the characteristics of the company – in which case we are dealing with the *direct qualification* – or they specify certifications required from the companies implementing public projects – such an approach I call the *indirect qualification*. To directly enter the register of qualified suppliers, companies must provide evidence of having qualified managerial staff, experience in implementation of projects and good financial standing (DB Hong Kong, 2013). The condition of indirect qualification (DoFD, 2012) is met by having CMMI ® (SEI, 2006), or OPM3 ® (PMI, 2017a), or P3M3 ® (OGC, 2010) certification. Based on directly or indirectly defined requirements, registers of qualified public project contractors are maintained (DoFD Australia, 2012; see also www.oa.mo.gov/facilities/vendor-links).

vi. Stakeholder engagement

Stakeholders are engaged in projects at the Governmental maturity level. Information about public-sector projects, especially business cases, plans and performance reports, is publicly available. The channels of communications between project stakeholders and project teams are established and working. There are well defined rules for community representatives' involvement in public projects and programs.

Exemplary Practices

Internet tools are used as communication tools. In the simplest case, only the project identification data are published (e.g., DTPR Alaska, 2019). The portals also contain data on major projects, their annual reports (MPA UK, 2013) and information on project status (e.g., CDoT California, 2013; AoT Vermont, 2013). Internet portals may be a source of knowledge about prospective contracts for subcontractors (e.g., MeO Sakatchewan, 2013), as well as about awarded and executed contracts (e.g., MPMO Canada, 2019). Project status meetings may be open for public (Ross, 2014).

Dialogue between project teams and stakeholders, including stakeholders in the project, and taking their opinions into account are necessary from the very beginning of project initiation (AoT Vermont, 1996). In Western Australia, consultations are held with stakeholders such as indigenous peoples, subcontractors, community members, suppliers, consultants, local governments, residents, state agencies, and land owners. The consultation process consists of identifying stakeholders, informing them, listening to opinions, joint decision making and delegation of powers (DoSD Western Australia, 2013). After the completion, the results of public-sector projects are made available by the implementing organization to the Independent Evaluation Office (IEO, 2016, www.ieo.gov.in/about-ieo/mandate) which analyses it and makes the results available to the public.

The practices of the Governmental Level may coincide with the practices of the Local Level. The difference between these levels lies in their scope of application: local vs. government-wide. The practices of the Governmental Level cover all public-sector projects (usually above a certain budget threshold) through governance and project management processes.

CMMI® and GPM3

This maturity level corresponds to CMMI®'s Defined Level, in which project management practices are defined for the whole organization. GPM3's subjects – governments – shape their approach to project management in organizations, as organizations do with their projects at the CMMI®'s Defined Level.

Benefits

At this level of maturity, a government as a whole recognizes the importance of project and program management for the development of the state and the country. This increases the probability of success of all projects, programs and the entire portfolio of public sector projects of the country. Best practices are disseminated to all organizational units. Due to the common language stemming from the existence of pan-governmental organizations, processes and methodologies, it is possible to exchange knowledge between government organizations. The government has tools to shape the management of their projects.

4. The Cooperating Level

At the Cooperating Level, the government actively engages in activities that increase its public-sector projects' chances for success. The government is no longer only the party that defines the path of public-sector project execution and controls its fulfillment; it also does its best to assure project success.

Public projects may face problems specific to a public administration. These problems relate, for instance, to laws, regulations, practices, groups of specific stakeholders, the structure and operation of public institutions, and any clearances and approvals needed for public projects. Removing issues using (dedicated) institutions is a practice at this level of maturity. Project teams may submit problems to these institutions and expect help in solving them. The institution providing such help may do it alone or may organize inter-institutional teams consisting of representatives from other competent institutions.

Exemplary Practices

In India, governmental project support is implemented by the Project Monitoring Group (PMG, www.pmindia.gov.in/en/role-of-project-monitoring-group-pmg/). To PMG, through the e-PMS electronic platform (Cabinet Secretariat, 2014), anyone may report problems encountered in project implementation (public or private sector). PMG is the point of contact between project teams and the government organizations that can help in accelerating the implementation of the stalled project. PMG itself does not solve problems, but directs them to the appropriate ministries and monitors the problem-solving process. This may take the form of meetings of the staff of the Cabinet Committee on Investment, representatives of ministries and representatives of projects.

In Australia, at the Commonwealth level, within the Ministry of Infrastructure and Regional Development there exists a Major Project Facilitation Agency (www.business.gov.au/advisory-services/major-projects-facilitation-agency). It supports the implementation of projects that are important for the development of the country's economy.

In the United States, in large projects, the government side together with the contractor performs Integrated Baseline Reviews (GSA et al., 2005, p. 34.203), the purpose of which is, among others, to identify project risks and developing plans to mitigate these risks.

A support may be provided also by single individuals. Their knowledge and expertise can assist the implementation of public-sector projects at various stages. EPMO North Carolina (OSCIO, 2013) may assign advisors to a project. Their main task is to verify and supervise project management. These advisors may, among others, evaluate the ability of managers to carry their project, recommend actions on the further course of the project to the state director for IT, check whether the agency is prepared for the next steps of the project, identify risks, recommend corrective actions and possibly escalate them, be a mentor for the project manager, provide necessary data to be taken into account in project plans, check the tender specifications.

Another personalized practice is assigning so called “project patrons”, i.e., persons whose role is to represent the project at the government forums and other community meetings (DoSD Victoria, 2013). They have more external roles than advisors, whose role is internal to the projects.

Introducing the partnership approach to project implementation is another practice of the Cooperating Level. A partnership is a form of cooperation between customers and suppliers, characterized by a greater level of openness, communication, mutual trust and information exchange, and by gain and pain sharing (OGC, 2003). Such an approach is conducive to product success. Performing common project reviews with representatives of both parties, the private supplier and the public client, is an example of the partnership approach.

It is possible to support the execution of only one specific project phase. For example, in the Australian state of Western Australia, the agency conducting a project that is important to the development of the country (government or private) supports the project launching process. There are three levels of involvement, depending on the size and importance of the project (DPC Western Australia, 2009). The lowest level is the provision of training, and the highest – assignment of a person to lead project launching at the parliamentary level.

The minimum level of facilitation provided to project implementation is the preparation of documents that are needed to obtain the necessary permits and clearances (DoGS California, 2013). When an initiative is submitted to OPMP Alaska (2013), a coordinator is assigned to it. He / she helps the proponent to launch the project, including obtaining permits and clearances.

CMMI® and GPM3

This maturity level aligns with the Quantitatively Managed Level in CMMI®. The GPM3's Cooperating Level only slightly resembles its CMMI® equivalent. Their common characteristic is focus on the performance of project management processes.

Benefits

At this level, the government is not only the party that defines the paths of public sector project execution, but the one that provides the best expertise and impetus to its projects. Removal of the problems facing the project and inclusion of professionals from specialized governmental organizational units increase the chance of project success. Their knowledge and expertise can assist the implementation of public sector projects at various stages of their implementation. It is worth noting that governmental support may also cover projects other than public sector ones. That contributes even more effectively to the country's development.

5. The Optimizing Level

The Optimizing Level is where mechanisms for continuous improvement of GPIS and GPM are implemented. There are two forms of the Optimizing Level: The Individual Optimizing Level and the System Optimizing Level.

i. The Individual Optimizing Level

The Individual Optimizing Level is focused on the component public-sector organizations. The project management processes in each individual public organization are continuously improved. Regulations requiring use of particular organization-level maturity models (e.g., CMMI®, OPM3® etc.) by each organization are issued.

Exemplary Practices

In Australia, for organizations subject to the Financial Management and Accountability Act of 1997 (Parliament of Australia, 2005), the P3M3® was adopted as the methodology for assessment and improvement of project management maturity. These organizations must perform an annual evaluation of their project management maturity and report their results to the Ministry of Finance (DoFD, 2012). In Canada, a policy requiring continuous assessment and improvement of program management in public organizations has been implemented (TBoCS, 2013). The aim of the establishment of MPA in the UK (www.gov.uk/government/groups/major-projects-authority), among others, was to work with departments to create project and program management capacity.

In the United States, the Program Management Improvement and Accountability Act was enacted (PMIAA, US Congress, 2015). A practice of the Individual Optimizing Level described in this document is the requirement that there be a program management improvement policy in each federal organization. It also requires nomination of a senior executive officer responsible for enhancing the role of program managers in his/her agencies.

ii. The System Optimizing Level

The System Optimizing Level is focused on improvement of the GPIS and GPM as a whole. Two main practices at this level are establishing advisory bodies for public project implementation and implementing processes for continuous GPIS process improvement.

A project management advisory body analyzes the current state of GPIS and searches for best practices and for ineffective methods. On this basis, suggestions for improvement of the GPIS's structure and processes are formulated and submitted to appropriate governmental units. An audit chamber, having deep insight into public-sector project processes, may play a role of the advisory body.

The following directions for GPIS improvements at the System Optimizing Level may be defined (Gasik, 2016): general (such as applying maturity models for the organization's maturity assessment), business (such as reducing implementation cycle time or maximizing the social effects of projects), managerial (such as better risk or personnel management processes), operational (establishing project management institutions, e.g., the central PMO for major projects), and knowledge-related (such as organization and delivery of training and promotion of the knowledge of project management methodologies).

The GPIS improvement processes at the System Optimizing Levels deal with the whole GPIS, and not with particular institutions like at the Individual Optimizing Level. Exemplary

improvements may concern regulations, government-level institutions, or methods for project manager training or certification, valid for the entire administrative unit.

Exemplary Practices

Placing the requirement of GPIS and GPM improvement in national long-term strategies is a practice of general nature. This is required, for instance, by Hawaii's strategy of development (Hawaii OIMT, 2013). In India, the 12th 5-Year Plan requires improvement of national project management capabilities (Planning Commission, 2011, p. 12).

An organizational practice of the System Optimizing Level described in PMIAA is the establishment of the Program Management Policy Council at OMB. The Deputy Director of OMB is responsible, among others, for establishing a strategic plan for project and program management in the federal administration. In the UK, the Programme and Project Management Council (PPMC) was established, with the aim of improving methods of project implementation in the British government. Currently, the Major Projects Authority is responsible for functions related to the improvement of British projects and programs implementation. They analyze and draw conclusions from the implementation of the UK's largest projects (IPA, 2016a; Infrastructure and Project Authority was a predecessor of MPA). One of the objectives of running OeG Tasmania (2011) is to advise on improvement of project management methodologies. In Scotland, the Project and Program Management Center of Expertise (PPM-CoE) was established, whose task, among others, is to improve the capacity for project and program management (www2.gov.scot/Topics/Government/ProgrammeProjectDelivery). A group of experts generating recommendations for the improvement of GPM operates, for example, at the US Government Accountability Office.

Practices of the System Optimizing Level are visible, for example in Michigan State project management methodology, which focuses on gathering knowledge from completed projects in order to improve future projects (MDoIT Michigan, 2004). One of strategic goals of EPMO Missouri is process improvement (www.oa.mo.gov/information-technology-itsd/it-governance/enterprise-project-management-office). In Norway, the Concept Research Programme, located at the Norwegian University of Science and Technology, assists in and analyzes the development of the project initiation system (NTNU, 2013). The purpose of the program is to improve the use of resources and improve the effects of large infrastructure projects.

CMMI® and GPM3

The GPM3's Optimizing level is the equivalent of CMMI®'s Optimizing Level, where processes aimed at permanent improvement of project management processes are executed.

Benefits

At the Optimizing Level, the GPIS is continuously improved. Processes that use the knowledge accumulated from previously implemented projects operate to improve the management of projects in individual organizations or to improve the GPIS as a whole. Therefore, the probability of success is even greater than at the Cooperating Level.

The Governmental Project Management Maturity Model is schematically presented in Figure 2.

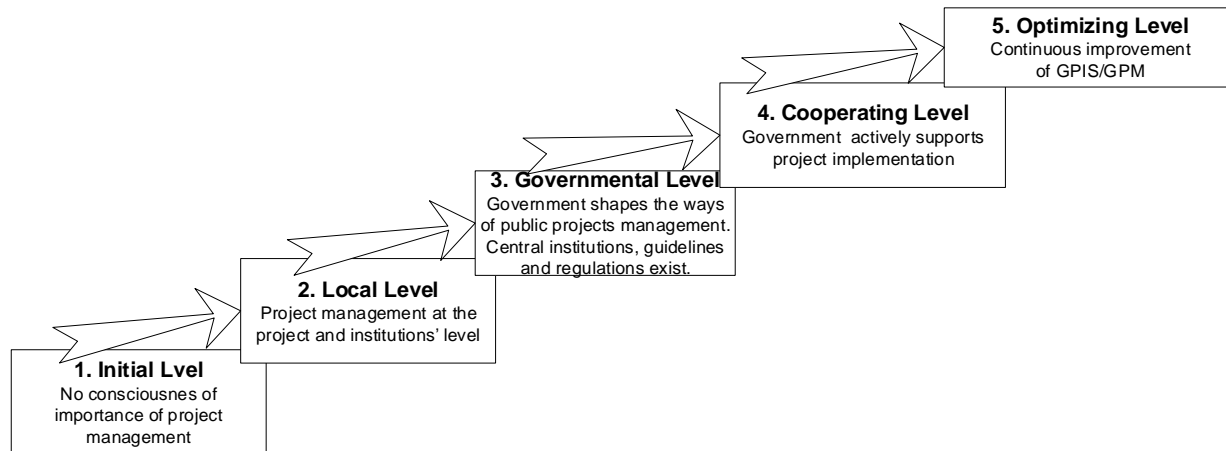


Figure 2. Governmental Project Management Maturity Model

The American Way of GPIS and GPM Improvement

Let us look at the way the US Federal Government developed its approach to project management.

The first endeavor called „project” was the Manhattan Project with its goal of building the first atomic bomb. It is difficult to talk about the implementation of any deliberate project management methods in this project. According to many observers, its main success factor was the personality of its manager (or commander, as it was a military project), General Leslie Groves (Gosling, 2010). Such an approach is compliant with the specification of the Initial GPM3 level.

The Department of Defense in one of its military projects of 1950’s organized the first Project Management Office (called then the Special Projects Office, Polmar, 2003) which implemented the first project management methods, e.g. PERT (Malcolm et al., 1959). Later on, in the 1960s, the Minister of Defense, Robert McNamara implemented reforms in his department, which required the development of project plans (Lenfle, Loch, 2010). In 1967 the application of C/SCS method (a predecessor of Earned Value Method) was mandated to use in Department of Defense projects (Abba, 1997). All these practices belong to the Local GPM3 level, as they covered only the DoD’s projects.

The next, Governmental GPM3 level was achieved by US federal Government in 1976, when the Office of Management and Budget published Circular A-109 (OMB, 1976), which included uniform guidance for the acquisition of major systems for the whole Federal Government.

In 1984, the Federal Acquisition Regulations were published (GSA et al., 2005) containing among others a section on Major Systems Acquisition regarding the implementation of major projects. This section requires performing Integrated Baseline Reviews under which the contract parties jointly analyze the course and problems of the project. This is a practice of the GPM3 Cooperating level.

The US Government started its way to achieving the Optimizing level, when at the end of the 1980s DoD commissioned and in the early '90s CMM (Paulk et al., 1993) was published to improve the implementation of projects.

In 2015, PGMIAA (US Congress, 2015) was adopted which orders government organizations to improve implementation of their programs. A Program Management Policy Council (PMPC) was also required by PMIAA. As one of PMPC’s goals is the improvement and strengthening of

program and project implementation in the whole American federal administration, implementation of this act leads US Government to GPM3 System Optimizing level.

Table 2 shows the roadmap of development of the US federal Governmental Project Implementation System and Governmental Project Management. The US federal Government since mid ‘50’s of XX century progresses from the Local to the Optimizing GPM3 level. Showing the US Federal Government’s journey through consecutive levels of GPM3 make an evidence that GPM3 may be successfully used for evaluating GPIS/GPM development.

Table 2. The development of US Federal Government GPIS / GPM

Project / Milestone	Date	GPM3 Level
Manhattan Project	1941 – 1946	Initial
DoD: Special Projects Office, PERT, C/SCS	1955 – 1967	Local
OMB: Circular A-109	1976	Governmental
Federal Acquisition Regulations	1984	Cooperating
Capability Maturity Model	1991	Individual Optimizing
Program Management Improvement and Accountability Act	2015	System Optimizing

Conclusions

This article attempts to systemize the area of public-sector projects management, introducing concepts such as the Governmental Project Implementation System, Governmental Project Management and the Governmental Project Management Maturity Model.

Project management tries to meet the demand of project managers for ways to manage a single project. Organizational project management tries to meet the demand of the boards of organizations for ways to organize the company to efficiently manage its projects, programs and project portfolios. Governmental project management tries to solve the problem faced by governments: how to organize the management of projects and programs in the public sector of a country or state in order to provide stable management and development that is consistent with the administrative unit’s capabilities.

GPM3 can be seen from the perspective of the development of government capabilities. Government capability is the ability of government to perform its activities in an efficient manner (Bäck, & Hadenius, 2008). Capabilities should be stable, i.e. they should produce substantially similar outcomes in similar situations (Weaver, & Rockman, 1993: 6). Government capability development is the processes shaping governmental capabilities (Ndou, & Sebola, 2016). Capability development is a process in which people, organizations and society as a whole unleash, strengthen, create, adapt and maintain capacity (Bester, 2015). Capabilities can be developed in all areas of government activities such as transport, defense, culture, security or health. But to be able to develop any governmental capability, government should have the

capability to perform interventions (or changes). Implementing any change is equivalent to the capability of implementing projects and programs. Hence, the capability to implement projects and programs decides how efficiently any government can increase their capabilities in any elementary area. Therefore, GPM3, in line, for instance with the problem-driven iterative adaptation of Andrews et al. (2018), can be considered a meta-tool for governmental capability development.

The Governmental Project Management Maturity Model, like other maturity models, may have three types of applications: descriptive, prescriptive, and comparative (de Bruin et al., 2005; Pöppelbuß et al., 2011).

The descriptive application of GPM3 generates an assessment of the current state of the GPIS and GPM in given country or state. Therefore, it can be used to assess the level of effectiveness of public investment as made, for example, by the International Monetary Fund (Dabla-Norris et al., 2010). Studies of governmental project management maturity also can complement the above-mentioned existing research on the average maturity level in public institutions in different countries. A full methodology for assessing public-sector project management in any administrative unit should consist of these two types of maturity assessments.

The prescriptive application shows the roadmap for improvement of GPIS and GPM. Thus, it can be a tool that helps improve the manner in which public administration functions, affecting the well-being of whole communities. For instance, it may be used by organizations specialized in supporting supranational development and aid organizations, which are currently more focused on managing individual projects rather than on organizing the GPIS and GPM. With the GPM3, those organizations will be able to define characteristics and roadmaps for development of project management capabilities tailored to a given country.

The comparative application enables comparison of the GPISs and GPMs between sibling administrative units. For instance, in a country with a federal structure consisting of autonomous states, it will enable comparison of the maturity of GPIS / GPM in these states.

This model could become the basis for defining the area of knowledge that, tentatively, could be called Comparative Public Project Management – which will become part of the long-established discipline of Comparative Public Administration (e.g. Riggs, 1954; Heady, 2001; Fitzpatrick et al., 2011; Jreisat 2012).

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