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Project management processes simplified

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Abstract

Project management involves the application of a number of knowledge areas and processes to projects, some being applied more and some less rigorously, depending on the characteristics of the project considered. This article motivates the grouping of these processes under three headings, *i.e.* core, facilitating and continuous processes. It also arranges them in a flow diagram format to summarise the entire field of project management on one page.

Keywords: project management, project processes, core processes, project management model, project flow diagram

Abstrak

Projekbestuur behels die toepassing van 'n hele aantal kennisvelde en prosesse op projekte. Sommiges word strenger as ander toegepas, afhangende van die eienskappe van die spesifieke projek onder beskouing. Die artikel motiveer die groepering van hierdie prosesse onder drie hoofde, naamlik kern-, ondersteunende- en deurlopende prosesse. Dit rangskik hulle ook in 'n vloeidiagramformaat wat die hele veld van projekbestuur op een bladsy opsom.

Sleutelwoorde: projekbestuur, projekprosesse, kernprosesse, projekbestuur-model, projek vloeidiagram

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1. Introduction

Generic project management knowledge, skills and processes apply to all projects, albeit some to a larger and some to a lesser degree, depending on the characteristics of the specific project. This means that the processes for each project are, to some extent, unique to suit its specific scope (the work to be executed or objectives to be achieved). It is thus not the processes which change or become less important, it is only that some are more or less accentuated, as dictated by the nature of the specific project.

It is against this background that the main project management processes are grouped under three headings in this article. The basic principles of this arrangement are discussed by briefly summarising the constituent processes entailed in each main process under each heading and confirming its relevance and the reasons for its grouping.

The result is a very simple (one page) presentation which might be useful:

- As an introduction to or orientation towards the field of project management;
- To put the project management processes in perspective;
- To ensure that all project management processes are addressed; and
- A practice guide in poster format

2. Related references to the *PMBOK* of the PMI

The above principles are confirmed by the various editions of the Project Management Institute's (PMI of USA) publications: *A Guide to the Project Management Body of Knowledge (PMBOK)* (PMI, 1996; 2000; 2004):

> *The processes identified and the interactions illustrated … meet the test of general acceptance — they apply to most projects most of the time. However, not all of the processes will be needed on all projects, and not all of the interactions will apply to all projects* (PMI, 1996: 34; PMI, 2000: 37).

or

> *This does not mean that the knowledge, skills and processes described should always be applied uniformly on all projects. The project manager, in collaboration with the project team, is*

> *always responsible for determining what processes are appropriate and the appropriate degree of rigor for each process, for any given project* (PMI, 2004: 37).

Both the 1996 and 2000 editions of the *PMBOK* distinguish between 'core' and 'facilitating' processes as follows:

> *Core processes — Some planning processes have clear dependencies that require them to be performed in essentially the same order on most projects. For example, activities must be defined before they can be scheduled or costed* (PMI, 1996: 30; PMI, 2000: 33).

and

> *Facilitating processes — Interactions among the other planning processes are more dependent on the nature of the project* (PMI, 1996: 32; PMI, 2000: 34).

Both editions illustrate these in figures depicting relationships between processes. Although the above refer to the planning process group only, it is stated that the same principle applies equally to the other phases or main process groups of a project. Illustrative figures for the other phases are, similarly, provided.

The 2004 edition of the *PMBOK* conveys the same principle in terms of interactions by stating: "Other interactions among the processes within the Planning Process Group are dependent on the nature of the project" (PMI, 2004). It illustrates each of the main process groups by way of charts depicting interactions between processes.

3. Proposed grouping of main processes

Considering the above and in an attempt to convey the total concept and field of project management in a simplified way as an introduction or to novices, three main process groups are distinguished.

The three types of main process groups suggested are 'core', 'facilitating' and 'continuous' processes. They are defined as follows:

3.1 Core Processes

Core processes are pre-requisites to or essential for the planning and execution of any project. They are, to a large extent, interrelated and mostly carried out sequentially to cater for interdependencies (with obvious iterations between them, especially during planning).

3.2 Facilitating processes

Facilitating processes are more supportive and dependent on the nature of the project. They are not always all required (or required to the same extent) on all projects. They can, in many cases, be performed in parallel to the core processes. In some cases, however, some of them can only be assessed or conducted after the core process are completed or sufficiently advanced to avail information required for or by them. They may thus lead to iterative work in necessitating partial or complete revision of the completed (up to then planning) processes.

3.3 Continuous processes

The 'new' main group defined is called continuous processes. They are those (prominently) present from inception to final close out of a project. They are organisational or managerial by nature and impact directly and throughout the project on all other processes. They also, to a large extent, embrace the main functions of the project manager himself.

3.4 Conclusion: Proposed Grouping of Main Processes

The above main groups and the constituent processes included under each are visually illustrated in flow diagram format as Figure 1: Project Management Processes Simplified. The diagram also summarises the entire field of project management as defined by the Project Management Institute (nine knowledge areas - indicated in bold font) in a very simple format on one page.

The names of the knowledge areas were (deliberately) chosen as the descriptions in the text boxes to (also) represent the respective constituent processes (although abbreviated for simplicity). The reasons for this were ease of reference to the well-known knowledge areas, to readily introduce any novice to the total field of project management and to simplify the one page poster format.

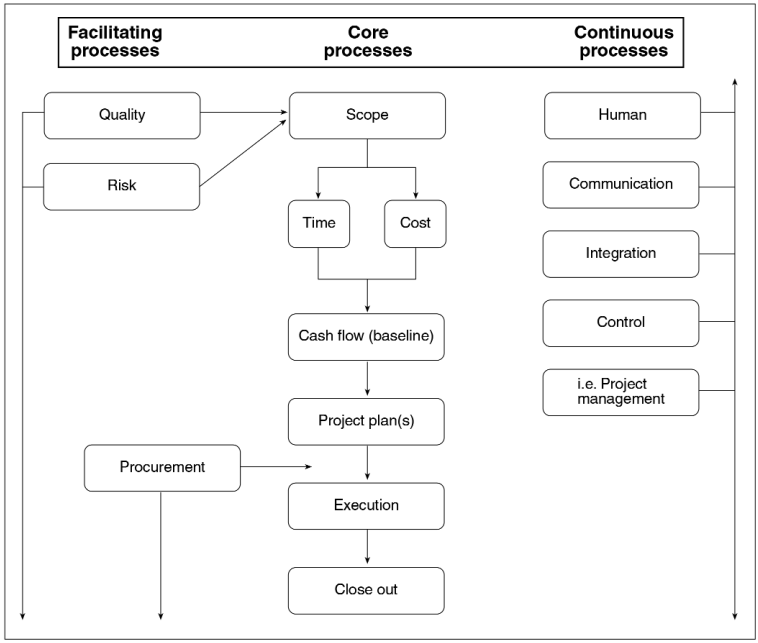

Figure 1: Project management processes simplified
Source: Basson 1996: authors own diagram

4. Constituent processes

The respective sub-processes included under the descriptions of each of the 'constituent processes' below are summarised to indicate the basic contents of the planning aspects of each 'constituent process', rather than repeating all the processes and interactions from any edition of the *PMBOK* or related literature.

The purpose of including any descriptions of sub-processes is to, also, serve as background to motivate the placing of a specific 'constituent process' under a specific heading or main type of process only and not to convey detailed information on such a 'constituent process' itself.

4.1 Core Processes

These are the essential processes for the planning and execution of all projects as defined in sections 2.0 and 3.1, above, and consist of basic sub-processes and elements as summarised below:

4.1.1 Scope Management

This entails project scope management during the initiation and planning stages, *i.e.*

- Statement of Work (SOW): What
- Milestone schedule: by When
- Specifications: how Well
- Work Breakdown Structure (WBS): Tasks and Logic
- Resources: by Whom, with What
- Responsibilities (LRCs, RAMs): Roles / Participation

Scope Management must be a core process as it defines the project in terms of its objectives and requirements, without which no project can exist. It also includes the basic planning processes as basis for most other processes.

4.1.2 Time Management

It includes the time planning processes and may entail scheduling to any technique (or combination of techniques) and various levels of detail, as summarised below:

- Activities (Tasks): from WBS
- Duration of each activity: with Team
- Logic diagram: Interdependencies
- Time Plan(s): Bar Charts: Gantt/Linear
  Line of Balance
  Networks
  PERT
  CPM
  Precedence
  Critical Chain

Due to its essence as a main project constraint, time planning, however rudimentary or elaborate of nature, must be part of the core processes. It can be performed in parallel with cost management

4.1.3 Cost Management

Cost Management refers to the project cost management process during the initiating and planning stages, *i.e.* estimating to various repetitive degrees of accuracy:

- Activities (Tasks): From WBS
- Resources and resource rates: Labor, materials, etc
- Cost of each activity: Estimates
- Role (add) up: Budget

Cost Management should, by virtue of its essentiality on any project, and, however basically estimated or determined in detail, be a core process.

4.1.4 Cash flow (Baseline)

This text box combines the time and cost results in the form of a time-related budget or cash flow. In graph format it will, typically, be the baseline *e.g.* Earned Value Management and is a core product following from the preceding core processes.

4.1.5 Project Plan(s)

The project plan summarises all the above planning processes for final evaluation, approval and go-ahead. It also provides the basis for execution. The main project plan may include various sub-plans, depending on the method of execution, e.g. sub-plans for tasks distributed to others or packages to be procured. It is a core document based on the core processes up to this stage and essential for those to follow.

4.1.6 Execution

The next core process is execution, *i.e.* converting planning into reality. Should no portions require procurement, *i.e.* the entity is self sufficient enough to handle all aspects on its own, execution follows directly after the approval of the project plan.

4.1.7 Close out

The close out actions concludes the execution process. It includes the final acceptance of deliverables. It forms part of overall project close out under 'integration management'.

4.1.8 Conclusion: Core processes

The above ('core') processes are, clearly, all essential to the planning and completion of any project. It may even be stated that without these there can, in fact, not be a project or a final outcome.

4.2 Facilitating Processes

These are the facilitating or supporting processes as defined in sections 2.0 and 3.2, above. Their sub-elements are, apart from project specific aspects, already in place for routine or repetitive types of projects. 'Routine' projects are those types of projects handled by the entity on a regular basis as part of its normal business. They are thus only freshly developed for project specific (unique) tasks on routine projects and, largely, re-developed for new types of projects or ventures.

These processes are listed below, together with their main sub-elements:

4.2.1 Quality Management

Quality planning for new types of projects can be summarized as generating the following documents:

- Quality policy
- Prescribed standards / processes
- Benchmarking and Tests
- Quality plan:
  - Systems
  - Processes
  - Procedures
  - Checklists

The above descriptions for facilitating processes apply to quality management for which policies, systems, procedures and specifications exist on routine or repetitive projects, but will have to be largely re-developed for new endeavours.

The impact on time durations and cost rates of adhering to ('normal') quality standards are known and automatically discounted in the durations and rates of repetitive tasks. Most of these are determined or factored from historical data for projects of the same kind. For new types of projects, the durations and rates have to be freshly determined, in many cases from first principles and taking cognisance of the quality processes entailed. The horizontal arrow indicates that new information on quality is fed into the system prior to time and cost planning being effected (or finalised).

The control functions for quality are executed from inception to close out on all processes and for all projects (routine or new) as depicted by the vertical arrow in Figure 1.

4.2.2 Risk Management

The following aspects of risk management are executed during the planning stage of new projects:

- Planning
- Identification: Sources, Risks
- Quantification / Analyses: Impact/Ranking/ Amount & Probability
- Evaluation
- Response: Transfer
  Retain (reserve)

Largely, the same principles and arguments presented in sections 2.0 and 3.2 for 'Facilitating processes' and for 'Quality Management' in section 4.2.1, above, apply to 'Risk Management' to motivate it as a supplementary ('facilitating') process.

For most routine or repetitive projects handled by an organisation very few new risks are present. 'Routine' risks are, as for 'routine' quality, already taken care of in 'routine' time durations and cost rates. New ventures, on the other hand, may involve many new risks with completely different impacts on durations and rates and will have to be determined and assessed from scratch.

Some risks can only be determined once planning is advanced, but are, again, project specific. "For example, on some projects, there may be little or no identifiable risk until after most of the planning has been done and the team recognises that the cost and schedule targets are extremely aggressive and thus involve considerable risk"

(PMI, 1999: 32; PMI, 2000: 34). The latter is confirmed in the *PMBOK* of 2004 (although slightly differently phrased) (PMI, 2004: 46).

The latter situation will lead to iterative planning processes.

4.2.3 Procurement Management

Procurement, where required, entails the following for each package to be procured:

- Scope (and WBS): For each package
- Source investigations
- Procurement documents
- Contract type
- Tenders (Bids) : RFI, RFP, RFB, RFQ
- Evaluation, Selection, Appointment, Agreement (= Contract)
- Contract management
- Contract close out

Procurement is a typical 'facilitating' process as defined in sections 2.0 and 3.2, above. Many organisations are able to execute projects entirely within their own organisations, *i.e.* no need for procurement (e.g. the manufacturing industry or Research and Development projects), while others have to source certain or most tasks out to external parties (e.g. the construction industry). Only in the latter case will procurement of such external resources be required. Procurement is effected as defined in and after the approval of the project plan (horizontal arrow) and managed during execution (vertical arrow).

4.2.4 Conclusion: Facilitating Processes

The above processes all fit the definitions of 'facilitating' processes in sections 2.0 and 3.2. They are considered at the opportune stage in the planning process and applied to the extent required by the specific project or project type. They impact on the other processes and are controlled throughout the remainder of the project as depicted by the horizontal and vertical arrows in figure 1.

4.3 Continuous Processes

'Continuous' Processes are defined in section 3.3 and are those present from inception to final completion of the project. They also impact on all other processes.

The processes grouped under this heading are indicated and briefly discussed below in terms of the basic contents and relevance of each:

4.3.1 Human Resource Management

This process entails human resource management and human relations in a broad context and may include, *inter alia*, the following sub-items and functions:

- Human resource requirements (from WBS);
- Recruitment / Sourcing;
- Compensation schemes / agreements;
- Team formation (including Stakeholders);
- Project organisational structure (or OBS);
- Leadership;
- Team building;
- Negotiation;
- Conflict management;
- Performance evaluation (Post mortems); and
- Dissolving the team (if required)

The above commences at the first interaction when the project manager meets with his superior or client upon his appointment and lasts until final appreciation is expressed at close out.

It is one of the most important functions of the project manager and (most probably) the single most determining aspect leading to project success or failure.

4.3.2 Communications Management

This includes all aspects of project communications management, i.e.:

- Communications planning : Who needs what, when and how to supply it;
- Information distribution;
- Performance reporting; and
- Closure (and archiving)

Communications management, similar to 'Human', commences when the first information is transferred at inception and lasts until all is archived.

It impacts on all other processes and needs to be intimately managed and taken cognisance of by the project manager.

4.3.3 Integration Management

Integration management entails the items listed below to integrate the project as a whole:

- Develop project plan: Actions, policies, procedures
- Direct and manage project execution (and interfaces)
- Integrated change control (and project plan updates)
- Total project close out

Integration, obviously, is required throughout the entire duration of the project to ensure centralised co-ordination.

It also requires, to a large extent, the personal attention of the project manager to enable him to be fully informed and ensure that there are no loose ends between any participating parties or individual processes, respectively.

4.3.4 Control

Control, in general, entails:

- Manage adherence to systems, processes and procedures;
- Measure performance;
- Evaluate outputs;
- Apply corrective actions (if and where required); and
- Update systems, processes and procedures

Control is applicable to all processes individually, as well as the project as a whole (in an integrated manner) as part of Integration Management. It is, however intensive or rudimentary applied, mandatory from inception to final close out to ensure conformance.

4.3.5 Conclusion: Continuous Processes

The above processes are all essential throughout the entire 'lifespan' of any project. They commence at inception and remain active and of cardinal importance until final close out.

It is, further, suggested that all other processes or 'tasks' can (to a large extent, if centrally managed and controlled) be delegated on a project. The latter processes, however, MUST be retained and executed by the Project Manager (or, at least, be intimately controlled by him on large projects).

5. Conclusion

The above recognises all processes and ensures that all are equally considered on each project so as to take cognisance of each and establish the prominence of their individual roles on the project or project type under consideration.

The proposed grouping of main processes, however, also simplifies or demystifies the total concept of Project Management. It includes all the principles and constituent elements of the entire field of project management, yet presents it in a format enabling every person, even with only a basic knowledge of project management, to understand, use and apply it on any project.

'It is only once one comprehends the full complexity that you grasp the simplicity'

References

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Abbreviations

CPM	:	Critical Path Method
LRC	:	Linear Responsibility Chart
OBS	:	Organisational Breakdown Structure
PERT	:	Programme Evaluation and Review Technique
RAM	:	Responsibility Assignment Matrix
RFB	:	Request for Bid
RFI	:	Request for Information
RFP	:	Request for Proposal
SOW	:	Statement of Work
WBS	:	Work Breakdown Structure