

COMPARISON OF STANDARDS FOR PROJECT MANAGEMENT IN METALLURGY

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Abstract

In metallurgy we can meet with different projects, for example research projects, investment projects, educational projects, strategic - development projects and the like. Project management is the focus of many other industries and by branch, who share their resources and experiences. Project management is followed up by other disciplines, such as the Risk Analysis, Human Resource Management, Cost Management, Portfolio Management of Projects, Program Management of Projects and many others. The effort to successfully complete projects led to the development of various project management techniques, tools and the resources dealing with general project management. The metallurgy is most often used norms and standards for project management such as PMBOK, PRINCE2, IPMA ICB and their handbooks. The paper compares advantages and disadvantages of standards and norms for projects in metallurgy. The first part describes the characteristics of these standards and their processes, components and relationships. The second part deals with comparing these standards, explaining their advantages and disadvantages for projects in metallurgy.

Keywords: Management, process, project, standard

1. INTRODUCTION

Different standards for project have been used for the development of new products over the last 20 years in the steel industry (Vítkovické slévárny, Ltd; EVRAZ VÍTKOVICE STEEL, Inc.; Z-Steel Holding Group, Inc.; ZDB GROUP Inc.; ArcelorMittal, Inc.; VÍTKOVICE HEAVY MACHINERY, Inc.; etc.). In the early 90s are usually used IPMA ICB standard, and there are other world standards PMBOK and PRINCE2. It is not easy to decide which standard to use and create project templates.

In order to understand the project management it is necessary to become familiar with already established practice by internationally recognised standards. The list of the most important and recognised project management standards includes the following:

- Project Management Body of Knowledge (PMBOK),
- PRojects IN Controlled Environments (PRINCE2),
- IPMA Competence Baseline (IPMA ICB),

2. STANDARD - PROJECT MANAGEMENT BODY OF KNOWLEDGE (PMBOK)

The methodology according "A Guide to the Project Management Body of Knowledge" (PMBOK) from the Project Management Institute (PMI) - the base of the methodology was defined in the 1970's by the standards, which were later accepted to the US industry standards. Approach this standard is used for example for Steel Projects [2]. This philosophy was applied to commercial projects and thus PMBOK originated. The basic approach here is the process-based concept of management issues. The current edition is from 2013, marked the fifth edition.

According to PMBOK, PMI recommends viewing the project management in a procedural manner and its methodology aims as covering all aspects of project management. PMBOK divides the management processes into five groups and ten basic areas of knowledge [9].

Project management process groups (see **Figure 1**) - five groups of project management processes:

- Initiating - decision on project implementation and selection.
- Planning - design, maintenance, and changes to the plan for a successful completion of the project.
- Executing - coordination of resources for the project implementation.
- Monitoring and controlling - ensuring the achievement of the goals of the project and monitoring.
- Closing - handover of the project to user.

Ten knowledge areas that are used by PMI and applied in practice:

- Integration - describes the processes required for project coordination (plan development, plan implementation, coordination of changes).
- Scope - describes the processes ensuring all the required works.
- Time - describes the processes for the timely completion of the project.
- Costs - describes the processes associated with the approved budget (resource planning, cost estimation, budgeting, and operational cost management).
- Quality - describes the processes associated with quality planning and assurance for a successful completion.
- Human Resources - describes the processes for the efficient use of labour (organizational planning, personnel, and project teams).
- Communication - describes the processes for proper and timely transmission of information.
- Risk - describes the processes associated with searching for, identifying, analyzing and responding to risks.
- Procurement - describes the processes associated with the provision of supplies and services (demand, selection of resources, contractual relationships).
- Stakeholders - describes the proper involvement of all stakeholders participating in the project.

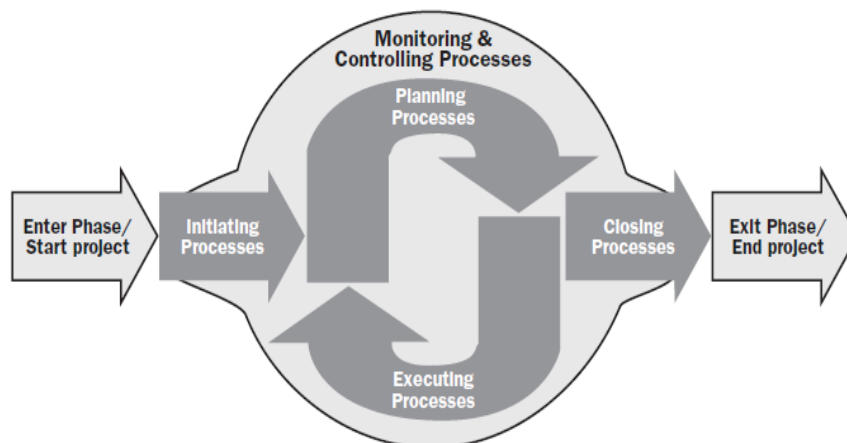


Figure 1 Project management process groups according PMI

3. STANDARD - PROJECT IN CONTROLLED ENVIRONMENTS (PRINCE2)

The methodology according to the PRINCE2 standard - it is a British Standard owned by the Office of Government Commerce (OGC) and is managed by APM Group Ltd. Process concept of the methodology is based on the assignment of the British Ministry of Industry and Trade, which initially used it for the management of government IT projects. Presently valid guide is the "Managing Successful Projects with PRINCE2" of 2009. Approach of this standard (the basis of this standard in 1998 - first draft), for example, was used for the project Casting and solidification - Influence of mould metallurgy on concast surface quality [7]. The aims of this

multinational project involving British Steel, IRSID (France) and CSM (Italy) are to understand the formation of longitudinal facial depressions and cracks in peritectic carbon and austenitic stainless steels, examine techniques for their reduction.

Figure 2 shows integrated areas in the project environment [8].

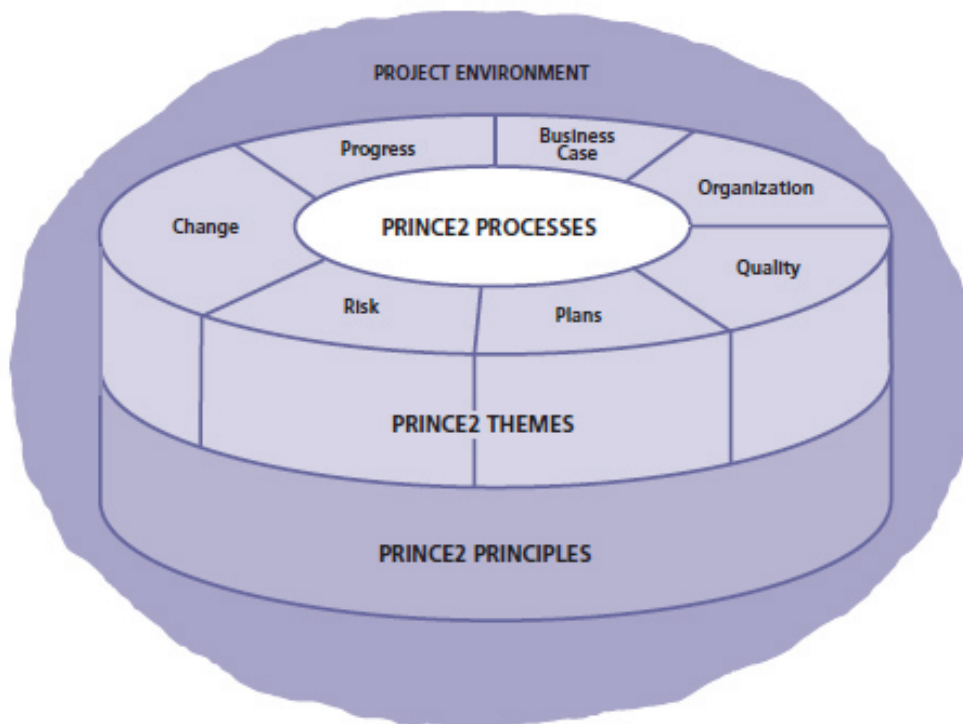


Figure 2 The structure of PRINCE2

The seven PRINCE2 principles:

- Continue business justification - assessment of the reasons for the implementation of the project.
- Learn from experience - learning from previous projects and documented experience.
- Define roles and responsibilities - providing a detailed description of the roles for stakeholders.
- Management through stages - planning, managing and monitoring of stages with continuous evaluation.
- Manage by exception - defining tolerance (in terms of time, funds, and capacities) for each defined power.
- Focus on products - focusing on the benefits and delivery of the product within the project (what and how).
- Tailor to suit the project environment - adapting the methodology to the current project environment.

The seven PRINCE2 processes:

- Starting up a project - the process preceding the project run that aims to ensure the prerequisites for a successful project set-up. It is launched by the mandate of the project, which provides the reason, purpose, and quality.
- Initiating a project - the preparation of detailed and solid plans for understanding the work that needs to be done before it comes to investment in the project.
- Directing a project - the continuous process that takes place throughout the period of a project. It allows the project committee to take responsibility for the success of the project and issue operational instructions as required by the project managers.
- Controlling a stage - the process that describes the controlling activity of a project manager.

- Managing product delivery - the process of delivering products within the project.
- Managing a stage boundary - the completion of a project phase with subsequent control and evaluation of the project status.
- Closing a project - the completion of the project with the registration of knowledge for a successful management of other projects.

4. STANDARD - IPMA COMPETENCE BASELINE (IPMA ICB)

- The European standard IPMA ICB - was created in the sixties of the last century and is managed by a professional organization entitled International Project Management Association [4]. The IPMA ICB standard focuses on competences and skills of the project managers and the team members - see **Figure 3**. Standard IPMA ICB recommends process steps that are applied to specific project situations. Currently the Czech Republic recognises applicable national standard of project management competences linked to the IPMA ICB. Approach this standard is used, for example, for project Productivity modelling of hot rolling [5] and project New strategies for clogging prevention for improved productivity and steel quality [1].

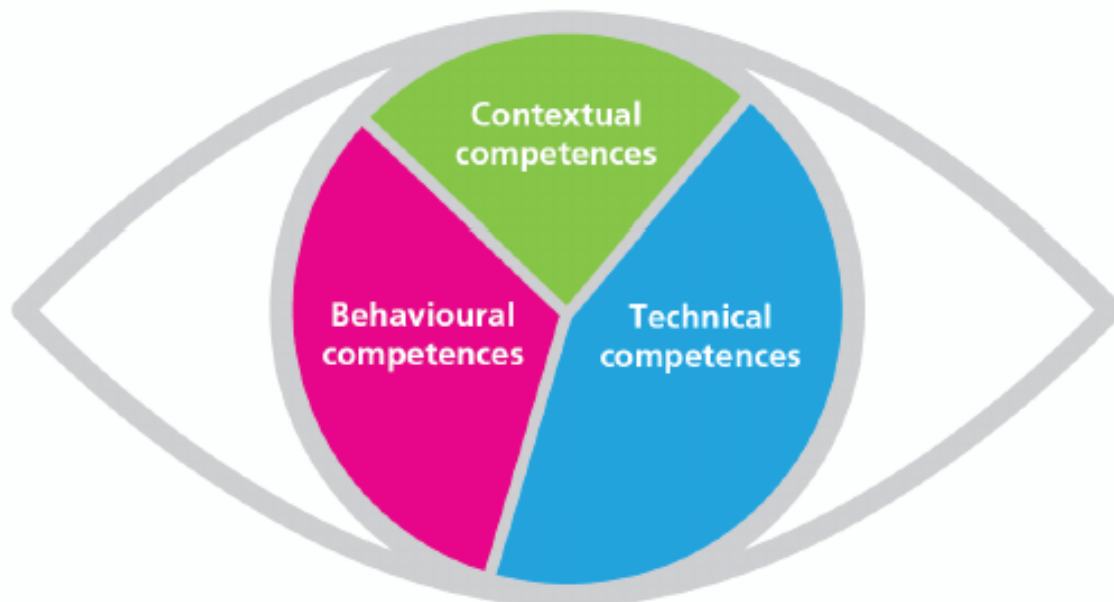


Figure 3 Eye of competencies according IPMA ICB

5. CONCLUSION

To select the appropriate methodology [3], it is important to reflect on the practical use of individual procedures or combinations thereof. Below are the summaries of their findings.

Matches of IPMA ICB and PMBOK:

- Both guides can be implemented in different ways so as to suit the specific needs of the customer. IPMA ICB has forty-six competencies used by the project manager at various levels of the relevant project. PMBOK Guide uses forty-seven processes at various stages in the project.
- IPMA ICB competencies can be applied to the areas of knowledge and groups of processes according to PMBOK.
- The competencies in the IPMA ICB are interrelated, as well as the processes in PMBOK [11]. An output from one process may be used in PMBOK as an input to another process, and equally in the IPMA ICB the information from one competency can link to another one.

Matches of PRINCE2 and PMBOK:

- PRINCE2 defines a project as a temporary organization that is created in order to provide one or more business products according to an agreed business case. PMBOK defines a project as a temporary effort to create a unique product, service, or result.
- PRINCE2 defines the role of the project manager as oriented on achievement of the project goals within the targets set in terms of the time, cost, quality, quantity, benefits, and risks. PMBOK says that the role of the project manager is to cooperate closely with the portfolio or program manager to achieve the objectives of the project and to ensure the fulfilment of the project plan within the program.
- The variables are defined in PRINCE2 as time, costs, quality, scope, benefits, and risks. The same variables are identified as project constraints in PMBOK.
- PRINCE2 topics are comparable with the areas of knowledge of PMBOK. PMBOK also includes the area of public procurement.
- PMBOK and PRINCE2 process groups are very similar and equal. The only difference in PRINCE2 consists in the process of "Launching of the project", which is not contained in PMBOK.
- PRINCE2 has forty competency activities that occur throughout the project in a variety of processes, which is comparable with forty-seven processes in PMBOK [10].

For the area of metallurgy and for their projects, it is possible to use a combination of all standards [13]. For these reasons, the currently proposed projects for TACR (The Technology Agency of the Czech Republic), MIT (The Ministry of Industry and Trade), etc. is used structure:

- Description of the project and its phases.
- Market analysis, demand estimation, marketing strategy and marketing mix.
- Management of the project and human resource management.
- Technical and technological solution of the project.
- The project's impact on the environment.
- Ensuring investment assets.
- Management of working capital.
- Financial plan and project analysis.
- Evaluation of the effectiveness and financial stability of the project.
- Risk management.
- Project schedule.
- Final evaluation of the project.

This structure was used for the projects, for example [6], [12]:

- The dividing line in ArcelorMittal, Inc.
- Reconstruction of steel plant in ZDB GROUP, Inc.
- Adjustment axles in Bonatrans Group, Inc.
- EAF project for EVRAZ VÍTKOVICE STEEL, Inc.
- Agglomeration for ArcelorMittal, Inc.
- Feasibility study for production of railway wheels in BONATRANS GROUP, Inc.
- Carrousel furnace in a tube rolling mill in the Z-Steel Holding Group, Inc.

All of the above standards are designed to increase the success of the project by emphasizing various competencies. PMBOK emphasises repeatable processes, IPMA ICB emphasises competences and skills of the project managers and members of their teams, PRINCE2 accentuates project product in a controlled environment.

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