

BROCHURE
**PROJECT MANAGEMENT
SYSTEM (PMS) FOR PMC
PROJECTS**

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PREAMBLE

The present brochure provides an introduction to ILF's Project Management System (PMS) for PMC projects (PMS-PMC).

The use of the PMS-PMC is regulated in PG2301 of ILF's Integrated Management System (IMS).

The complete ILF PMS-PMC documentation consists of:

- this brochure
(XX0351-ILF-PMC-GEN-BRO-0001),
- the *PMS-PMC System Description*
(XX0351-ILF-PMC-GEN-SYS-0001),
- the *Project Life Cycle Workflow*
(XX0351-ILF-ALL-GEN-WFL-0001),
- the documents listed in the *List of PMS-PMC Documents*
(XX0351-ILF-PMC-GEN-LST-0001), and
- the *PMS-PMC Glossary*,
(XX0351-ILF-PMC-GEN-GLO-0001).

ILF's PMS-PMC has originally been developed for services in the area of Project Management Consultancy (PMC) carried out by ILF for its Customers within the Oil & Gas industries.

ILF has developed the PMS-PMC further to its present form to use it - wherever applicable - in full or partly also for other industrial sectors like Water Supply projects or Power Supply projects.

This document is not confidential and can serve for both internal and external use.



1 INTRODUCTION

ILF Consulting Engineers operates on a worldwide basis and has provided engineering and management services for the Oil & Gas industries as well as for Water Supply and Energy Supply in the last five decades.

In its effort to strive for excellence, ILF has developed its own Project Management System (PMS-PMC) for PMC investment projects. The PMS-PMC is a systematic approach to project management based on best industry practices.

The PMS-PMC can be fully tailored to the needs of our Customers and creates the basis for successful project execution.

This brochure gives a rough overview of the design principles, the structure and the application of the PMS-PMC.





2 PMS-PMC CONCEPT

The PMS-PMC has been designed according to the following principles:

- Starting base is the management framework published by the Project Management Institute (PMI) in the form of the PMBOK® Guide, but, where useful, PMS-PMC refers to other best industry practices.
- Focus on large investment projects especially for the Oil & Gas industries.
- Flexible to meet the requirements of various projects.
- Openness for later extension to other services and/or other industries.
- Provide support to the project manager and his team in setting up the project-specific PMS-PMC.
- Serve as an interactive software-tool utilizing hyperlinks between documents thus not being a set of purely static documents.





3 USER GROUPS

The user groups of the PMS-PMC consist of

- **ACQUISITION MANAGERS**

PMS-PMC supports the pre-qualification and bidding process and demonstrates ILF's project management capabilities. PMS-PMC is also used to define the scope of the PMC services.

- **PROJECT MANAGER AND TEAM**

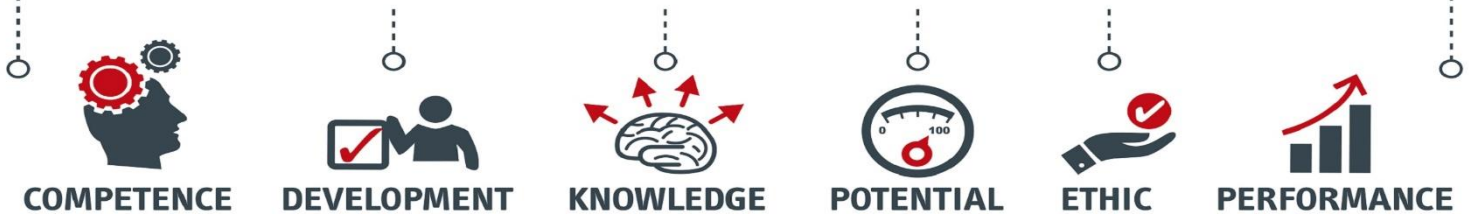
PMS-PMC supports the project manager and the team during project start-up and the preparation of project-specific documentation for all phases of project execution. The project-specific PMS-PMC will determine how to manage the project and will also be used for an efficient induction of new staff.

- **PROJECT AUDITORS**

PMS-PMC provides the auditor a clear and transparent basis for his assessment



BEST PRACTICE



4 ADDED VALUE

ILF's PMS-PMC has been prepared in order to:

- **DEMONSTRATE TO ITS CUSTOMERS ILF'S CAPABILITY IN MANAGING LARGE INVESTMENT PROJECTS**

More and more Customers, particularly from the Oil & Gas industries, demand qualified documents & tools for professional project management, following international best practices. The IMS does not reflect such a demand, as the IMS focuses onto the internal (ILF's) view of any given project.

- **SUPPORT A QUICK PROJECT START-UP**

The project start-up is always crucial. Very often the project managers start collecting documents and templates from various sources or creating project documentation "from scratch". This is both time consuming and inefficient.

- **FACILITATE PERFORMANCE ASSESSMENTS**

It is crucial for an auditor to gain a quick understanding of where the project stands in terms of target achievement. A structured approach and transparent project planning tools are needed to facilitate the assessment.

- **GUIDE THE PROJECT MANAGEMENT ALONG THE WHOLE PROJECT LIFE CYCLE**

The scope of PMC services is extremely complex as engineering, scope, change, time, cost, quality, risk, financing, communication and other processes have to be managed in parallel. The PMS-PMC supports an integrated management approach using project-specific PMS-PMC documentation, saving time and mitigating risks.

- **BECOME THE BASIS FOR CONTINUOUS IMPROVEMENT**

The PMS-PMC consists of generic procedures, which can and shall be improved over time.

- **IMPROVE THE COMMON UNDERSTANDING**

A Glossary is part of the PMS-PMC and will help to create a common understanding and avoid speaking in different languages and meanings.

- **PROVIDE A BASIS FOR STAFF TRAINING**

Training and education of junior staff is important and needs professional training materials. PMS-PMC provides such materials.

CONSULTING



5 PMS-PMC KNOWLEDGE BASES

5.1 Project management basic structure

The *Project Management Institute (PMI)* has, over a period of many years, created a project management framework described in the *PMBOK® Guide*, including best practices and guidelines, for project management.

PMBOK® Guide describes five *Process Groups* carried out during the project:

- Initiating
- Planning
- Execution
- Monitoring and Controlling
- Closing

To carry out these steps, a certain knowledge is required for which the *PMBOK® Guide* describes nine *Knowledge Areas*:

1. Integration Management

Integration Management includes all processes and activities to identify, define, combine, unify and coordinate the various management processes. The overall management of change process including scope and design change control is also part of the *Project Integration Management*.

2. Scope Management

Scope Management covers all activities to ensure that the scope of work is defined according to *Owner's* requirements and broken down into reasonable work levels and their elements (*Work Breakdown Structure*). It also includes the management of technical deviations.

3. Time Management

This *Knowledge Area* covers activities like estimating of project duration, sequencing the line of actions, critical path identification and milestone definition required to produce schedules. It also includes schedule control and schedule change and alteration management.

4. Cost Management

This *Knowledge Area* covers issues like cost estimation, budget determination and cost control.

5. Quality Management

Quality Management comprises all processes related to quality assurance and quality control.

6. Human Resource Management

Human Resource (HR) Management includes all processes related to staffing, organizing, managing and leading the project team, e.g. staff induction, development of qualification profiles, mobilization/demobilization and team building.

7. Communication Management

Communication Management includes the organization of internal and external communication and stakeholder management. Reporting is also part of *Communication Management*.

8. Risk Management

Risk Management includes the identification and analysis of risks, risk monitoring and control as well as the definition of actions for risk treatment.

9. Procurement, Contract and Claim Management

This *Knowledge Area* covers issues like procurement strategy, prequalification, tendering, including bid evaluation, preparation of contracts, contract administration, administration of invoices and payments as well as claim management.

5.2 Structure extension by ILF

Additional Knowledge Areas, see also Figure 1 below, have been defined by ILF to cover specific business requirements with respect to PMC services for the Oil & Gas industries as well as for Water Supply and Energy Supply projects:

1. Health, Safety, Security and Environment (HSSE) Management

This *Knowledge Area* covers occupational health and safety, security issues and environmental protection.

2. Engineering Management

This Knowledge Area covers all processes to ensure that the engineering design follows international best practices and meets *Owner's* expectations.

3. Management of Permitting and Approval Process

The *Management of Permitting and Approval Process* covers the processes necessary to obtain all relevant approvals for construction and operation from the authorities in charge and how to control these processes.

4. Management of Land Acquisition

This *Knowledge Area* covers processes to acquire rights of way, purchase land, and how to control these processes.

5. Construction Management

Construction Management covers all activities to ensure that the facilities of the project are constructed in full compliance with the contracts. It is closely related to *Contract Management* and includes construction supervision.

6. Commissioning Management

Commissioning Management covers all activities to ensure that the facilities of the project are commissioned in full compliance with contracts. It includes vetting of the commissioning programs and supervision of the commissioning including corresponding tests.

It is closely linked with *Construction Management*.

7. Management of Initial Operation

The *Management of Initial Operation* covers all activities to ensure that all measures for initial operation are properly planned and executed. Such measures also include preparation of operation manuals, operation planning and operator training. This *Knowledge Area* is closely interlinked with *Commissioning Management*.



Figure 1: PMS-PMC Knowledge Areas



5.3 Best industrial practice

The PMBOK® Guide in general describes Process Groups and Knowledge Areas, indicating what to plan, monitor and control for the overall project and the interrelation between these activities. A comprehensive Glossary supplements the PMBOK® Guide. Thus the PMBOK® Guide provides the management framework on a generic basis.

Therefore ILF's specific know-how related to project management in the Oil & Gas industries has been prepared in order to make the PMBOK® Guide approach applicable to these industries.

From the Owner's point of view, any upstream, midstream or downstream facility, such as a pipeline or refinery represents long-term working capital used in the income generating operations of the business. He sees such an operating asset as a large investment along the whole life cycle and he reasons in decades - whereas a project is usually a matter of years. In the Oil & Gas industries, the Project Life Cycle shown in below Figure 2 has become a quasi-standard with respect to the management of large investment projects.

The Project Life Cycle consists typically of five phases:

1. **Appraise**
Opportunities identification; feasibility confirmation; project framing and set-up
2. **Select**
Business planning, financing, develop conceptual design package; prepare project execution strategies, environmental and social impact assessment
3. **Define**
Permit engineering; preparation of FEED package; tendering; project execution planning
4. **Execute**
Procurement & contracting; preparation of detail, construction & vendor design; construction; commissioning & trial operation; project execution management
5. **Operate**
 - a) Business control; operation; optimization; maintenance; and later:
 - b) The abandonment



Figure 2: Project Life Cycle



The project starts at the end of the Appraise phase with the project framing or project start-up and ends with the contract close-out. Basically, the project is finished after the operating asset is put into operation and all contracts have been successfully executed.

During the phases Appraise, Select and Define, costs for design changes are relatively low compared to the Execute phase. Usually, the phases are separated by so-called Gates. At such a well-defined milestone a project must undergo a formalized Gate review before entering the next phase of the project, including funding approval. Usually, funding will be provided after successful gate passing. Such Stage Gate Process is common practice in the Oil & Gas industries for many years.

5.4 ILF's knowledge base

Over many years, ILF has created its own knowledge database of know-how consisting of ILF Recommended Practices (RP), Standard Specifications, Samples and other related documents. The Recommended Practices and Standard Specifications are related to engineering design and technical solutions.

Thus the PMS-PMC complements ILF's know-how in terms of (external) project management, but does not replace or supersede RPs. Where useful, references to RPs are given in the documents of the Knowledge Areas.





6 PMS-PMC DOCUMENTS

The PMS-PMC Documents can be separated as follows in two types depicted in below Figure 3: *Structure of the ILF PMS-PMC Document System for a Project.*

6.1 System-specific PMS-PMC documents

PMS-PMC Brochure

This PMS-PMC *Brochure* shall provide an introduction to the ILF PMS-PMC. It shall be used internally and externally.

PMS-PMC Guideline

The PMS-PMC *Guideline* target group is the actual user of the PMS-PMC. As a code of practice and overall guideline for the system it describes how to use the PMS-PMC documentation to setup and implement a project-specific system taking into account the specialties of each individual project.

PMS-PMC Glossary

The *Glossary* includes terms and definitions which shall be binding for all generic PMS-PMC documentation.

Knowledge Area Guideline

A *Knowledge Area Guideline* is an addition to the PMS-PMC Guideline.

It is a *Knowledge Area* specific guidance for the nominated elaboration team of that area, providing the generic area specific *List of Deliverables* to be adopted, the links to other *Knowledge Areas* within the PMS-PMC, the IMS and ILF's *Knowledge Base*, and instructions to adapt the PMS-PMC documentation to the project-specific requirements.

In addition a *Knowledge Area Guideline* includes as an own chapter a high-level description of the objectives and main activities of an entire project lifecycle for a certain *Knowledge Area*. The chapter serves as a source for the relevant section of the *Project Management Plan*.

List of PMS-PMC documents

This list itemizes all PMS-PMC documents as well as all *Knowledge Area* documents and serves as basis for a tool like a project-specific List of Deliverables (LOD).

6.2 Project-specific PMS-PMC system documents

Project Glossary

The *Project Glossary* is based on a specific template and uses the content of the *PMS-PMC Glossary*. After project-specific adaption it is binding for all other project-specific system documentation.

Management Plans

As addition to the related *Knowledge Area* section in the *Project Management Plan*, a *Management Plan* shall provide a more detailed description of the objectives and main activities (the “What”) specifying the sub-activities and the relevant deliverables (the “How”), explaining the sequence of the activities or referencing the project timeline (the “When”), and shall provide the roles and responsibilities of the area (the “By Whom”). Per each *Knowledge Area* a specific template for the corresponding *Management Plan* is provided in the PMS-PMC.

Working Procedures

A *Working Procedure* describes in detail how to perform one or more processes or activities required for the conformance to the requirements of a particular operation in a *Knowledge Area*. Per each *Working Procedure* in a *Knowledge Area* a specific template is provided in the PMS-PMC.

Working Plans

A *Working Plan* provides for the related *Knowledge Area* in more detail the “What”, the “How”, the “When” and the “By Whom” for a *Management Plan* and/or a *Working Procedure*. Per each *Working Plan* in a *Knowledge Area* a specific template is provided in the PMS-PMC.

Other project-specific documentation

Management Plans, *Working Plans* and *Working Procedures* may have specific attachments and/or tools in order to facilitate their use in a project. Such attachments are documents like registers, lists, work instructions, etc. Specific templates for such attachments are provided in respective *Knowledge Areas* of the PMS-PMC.

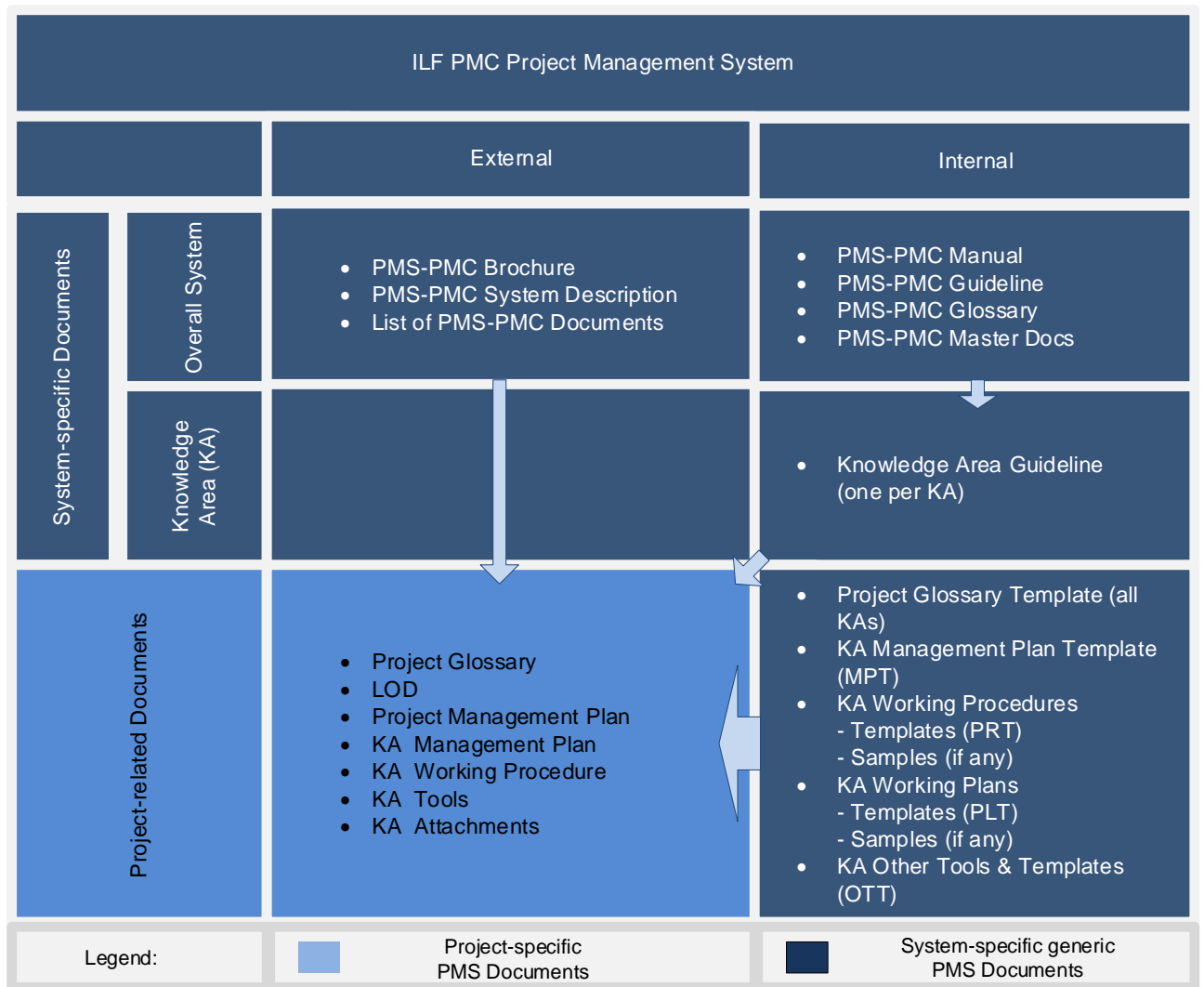


Figure 3: Structure of the ILF PMS-PMC Document System for a Project



7.2 Project execution

PMC services - as services in general - shall be executed according to the general principle "Plan the work and work the plan" in four steps:

1. Initial planning phase

After contract award, the project-specific PMS-PMC documentation shall be prepared based on above Figure 3: *Structure of the ILF PMS-PMC Document System for a Project*, using the project-specific *List of Documents (LOD)*. The list shall be provided in the form of a matrix and by indicating the sequence of the documents and their authors.

The first documents shall be a "Project Charter" and a "Stakeholder Register", both representing important PM tools, and also the *Project Glossary* and the first issue of the *Project Management Plan*.

2. Service execution

The project will be managed according to the project-specific PMS documentation prepared for the project in due time.

3. Performance assessment

The performance of the *PMC* services shall be controlled by means of project audits. Audits shall be planned in advance and be incorporated in the project-specific *plans*. The audits will be performed on basis of the project-specific PMS-PMC documentation.

4. Service close-out

After the *PMC* services have been completed, the experience gained during their execution shall be compiled, together with the performance assessments, and forwarded to the unit within ILF responsible for PMS-PMC in order to improve the system and documents as part of ILF's internal *Lessons-Learned* process.