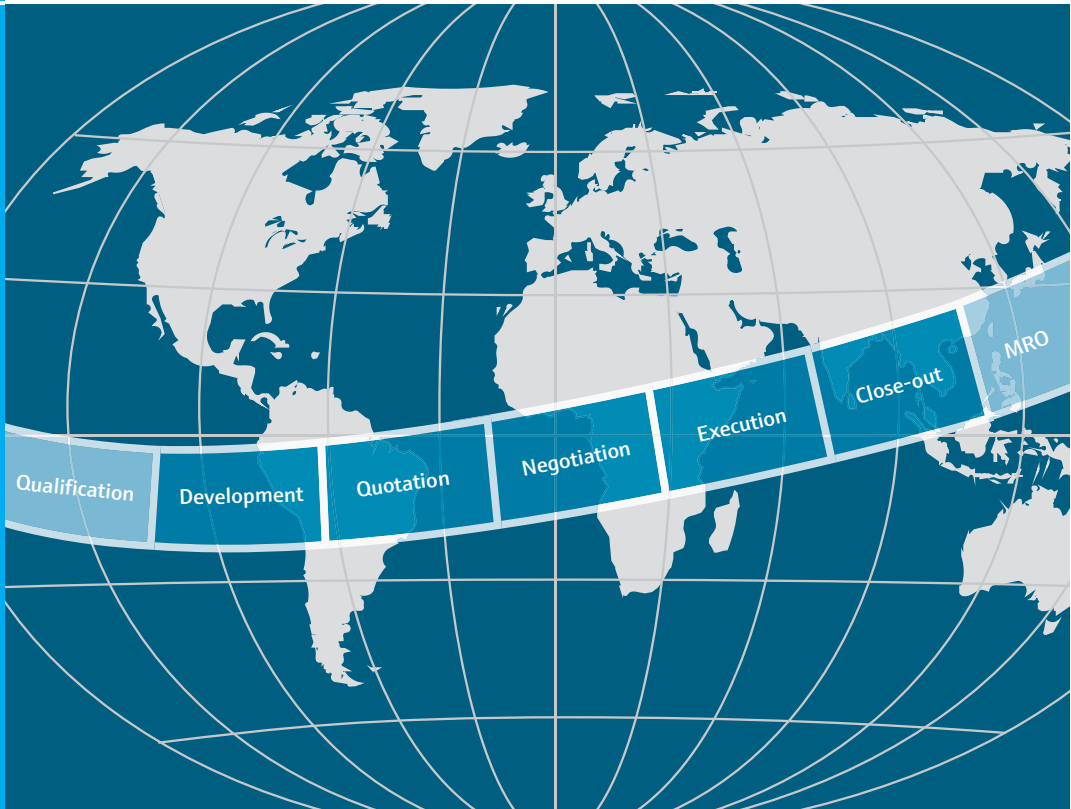


Handling of Customer Projects (Standard 201)

Doing the same things
the same way



1 Introduction

1.1 Goal of this Booklet

This booklet is a short introduction to the Endress+Hauser Project Business Handbook (Standard 201) for the handling of customer projects. This document is for use by customers, partners and employees of Endress+Hauser. It is an extract of the essential aspects of Standard 201 and shows how to:

- Create an overview of the Project Process (Standard 201)
- Increase international collaboration
- Improve the communication and collaboration beyond the project organization
- Improve the quality of project results and customer satisfaction
- Reference guide to Project Business Handbook (Standard 201)

1.2 Scope and Structure

- 1 Introduction
 - 1.1 Goal of the Booklet
 - 1.2 Scope and Structure
 - 1.3 Role of Project Office
- 2 Basics
 - 2.1 Definitions
 - 2.2 Matrix Organization and Team Structure
 - 2.3 Global Programm Management
- 3 The Endress+Hauser Project Process
 - 3.1 Business Process
 - 3.2 Project Management Process
- 4 Risk Management
- 5 Managing the project along the life cycle
 - 5.1 Prerequisites to start the project
 - 5.2 Acquisition stage
 - 5.3 Execution stage
- 6 Driving Collaboration through Communication
- 7 Early involvement of Service in the project is essential to prepare MRO Phase

Legend

reference for further information



Intranet/Internet



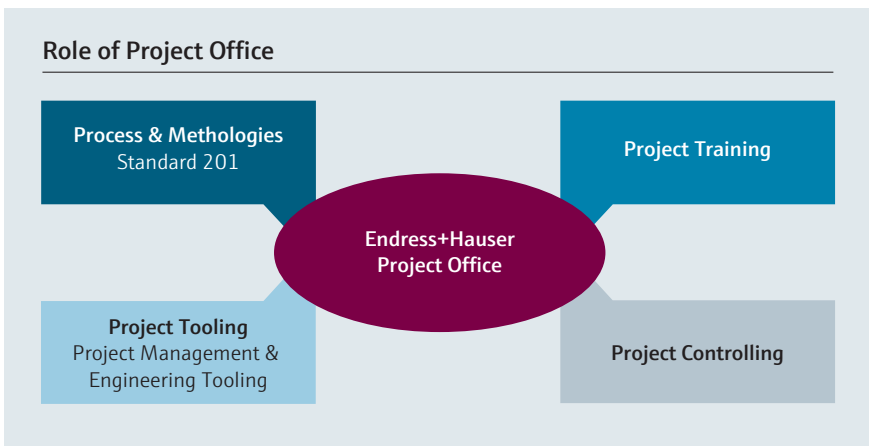
Project Business Handbook

E-mail:
project.office@consult.endress.com

1.3 Role of Project Office

The Project Office defines, develops, disseminates and deploys common procedures (processes, SOPs), methodologies, training and tools. The basic definition for handling customer projects is this Project Business Handbook (Standard 201). Main tasks and responsibilities are:

- Develop harmonized procedures (processes), methodologies and guidelines for handling customer projects for the whole Endress+Hauser Group
- Define rules for internal cross-border collaboration
- Conduct Project Management training/coaching for the Endress+Hauser associates
- Define and roll-out harmonized procedures, tools and measures for Project Management, Engineering and project controlling



Customers' benefit

- Dealing with people who understand project business
- Standardized processes
- "Doing the same things the same way" – harmonized processes to deal with Endress+Hauser in Project Business
- Central organization for fast adaptation of the standard to the business needs



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Project Office



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2 Basics

2.1 Definitions

Project definition For Endress+Hauser, a customer project is a planned endeavor undertaken to create value for our customers, in a profitable way, by combining our core deliverables – products, solutions & services.

Six primary characteristics ■ set a customer project apart from the Endress+Hauser standard (daily) business:

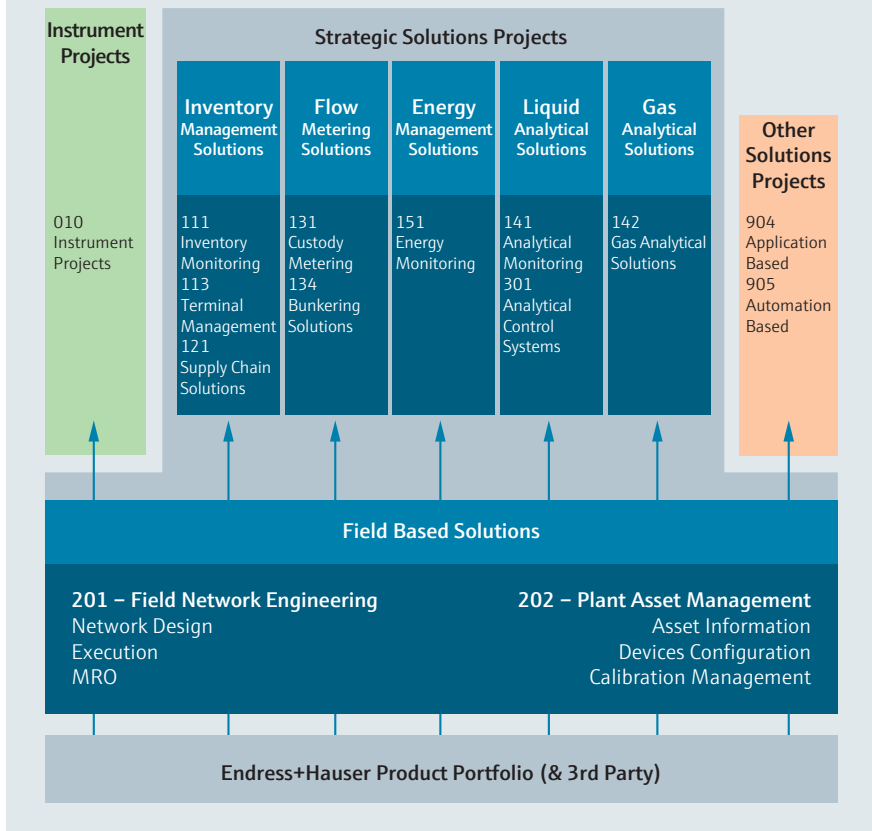
- A definite beginning and end (**temporary nature** ■)
- It produces a unique result (**uniqueness** ■)
- It has an agreement among the customer, contractor, project team, and management on the goals of the project (**goal orientation** ■)
- It requires teamwork among experts from different organizational units (**multi-disciplinarily** ■)
- It contains a certain level of **complexity** ■ and **uncertainty** ■ (risks)
 - Number of involved partners/stakeholders (Sales Centers, Representatives, Contractors, consultants, end user, PCs, 3rd party suppliers ...)
 - Commercial (warranty, terms, pricing, contracts, bank guarantees ...)
 - Contractual (liability, penalties, deliverables ...)
 - Technical (certificates, tagging, inspection, drawings, documentation, special material, complexity of application, special product requirement ...)
 - Organizational (involvement of multiple countries, cultures ...)
 - Logistical (supply chain management, import/export compliance, packing, storage ...)
 - “Many” – Dimensions (Euros, I/Os, line items ...)
 - “New” – Dimensions (Technology, Software, Team composition ...)

Project Business types The Project Business of Endress+Hauser is divided into two Project Business types:

- Instrument Projects
- Solutions Projects
 - Strategic Solutions Projects
 - Other Solutions Projects

This differentiation provides the basis for high repeatability and efficiency of Endress+Hauser Project Processes.

The Endress+Hauser Project Scope



Customers' benefit

- A common understanding of projects and clear defined project focus help to better understand the customers' requirements and accelerate procurement and engineering cycles
- Clear definition of Project Business types to correctly classify projects from the beginning which leads to the involvement of the right people in the project teams



Project Categorization is intended to:

- Identify mandatory activities/templates for the different project categories
- Apply the appropriate Project Management Process, methods and tools (e.g. templates)
- Match Project Portfolio with the appropriate resources
- Achieve the right level of Management attention

The Endress+Hauser project categorization uses the Project type definition and additionally makes use of two further characteristics which help to assess the complexity of the project:

- Project type (Instruments, Strategic Solutions, Other Solutions)
- Project orientation (National, International)
- Project value (XS, Small, Medium, Large)

Project Categorization

Project orientation	Project type	Project value	Project category
National	Instruments	XS	D
		Small	C
		Medium	C
		Large	B
National	Strategic Solutions	XS	C
		Small	B
		Medium	A
		Large	A
International	Instrument	XS	C
		Small	B
		Medium	B
		Large	A
International	Strategic Solutions	XS	B
		Small	A
		Medium	A
		Large	A
National/ International	Other Solutions	XS	B
		Small	A
		Medium	A
		Large	A



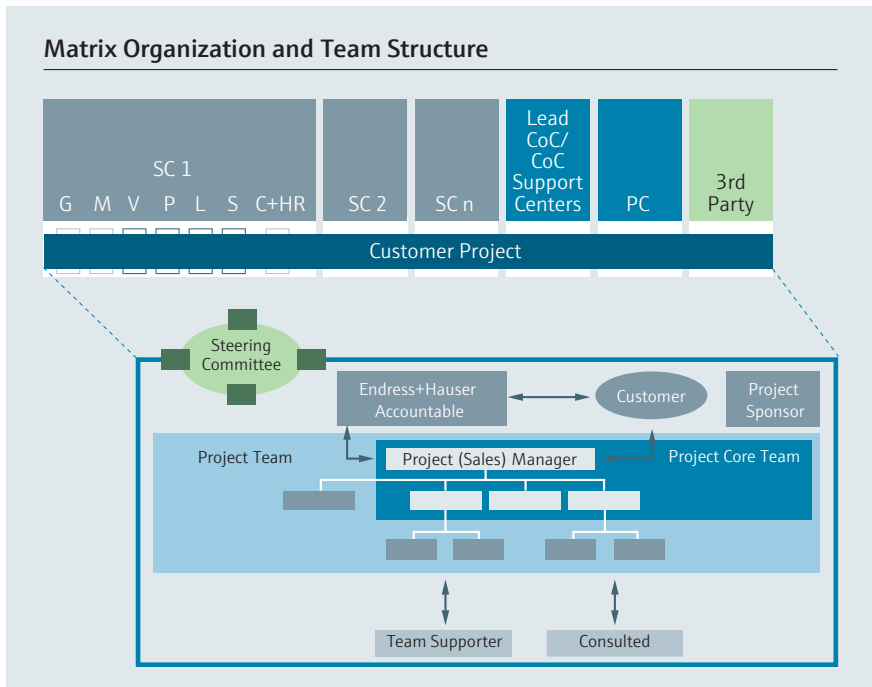
Customers' benefit

- Appropriate selection of people according to complexity
- Scalable application of the processes related to the complexity
- The appropriate project management approach
- Clear project classification and development of a management plan from the beginning leads to selection of the right people
- Scalable work processes to the project complexity – standardized and proven work breakdown structures and process management

2.2 Matrix Organization and Team Structure

Matrix Endress+Hauser resources projects in a matrix structure to involve the right people at the right time to ensure the biggest value for the customer.

We are focused on providing innovative Products, Solutions and Services to a diversified portfolio of industries through superior project delivery expertise and quality designed to meet the most demanding schedule needs while meeting the highest safety standards.

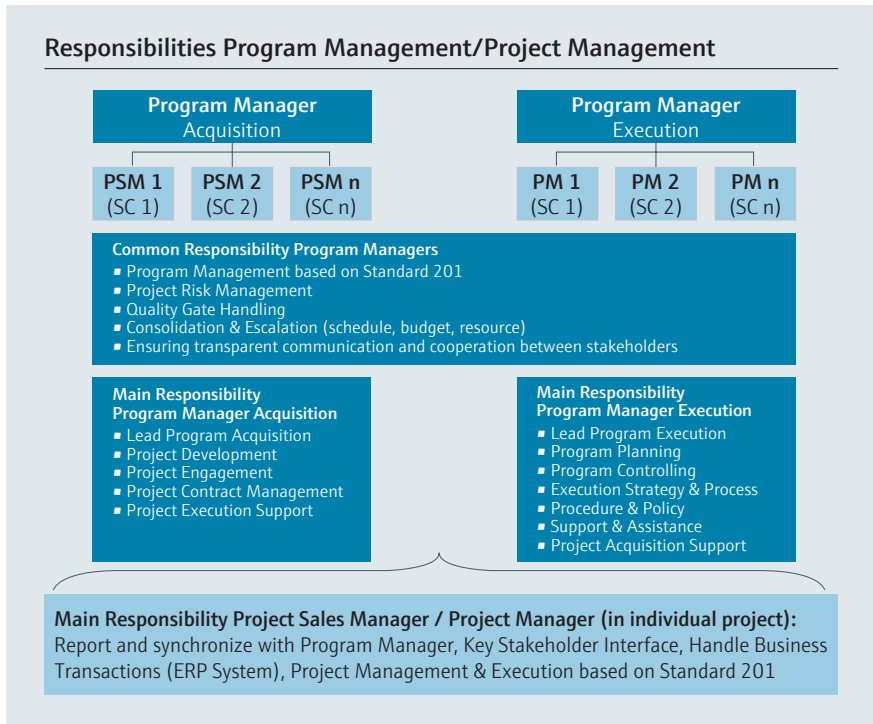


Customers' benefit

- Flexible project teams with clear responsibilities
- Expert support from people out of other entities e.g. the Production Centers or 3rd Party suppliers
- Organizational agility to deal with the level of project complexity

2.3 Global Programm Management

For managing the rising number of global projects professionally Endress+Hauser established a global Program Management with dedicated responsibilities for Project Manager and Program Manager.



Customers' benefit

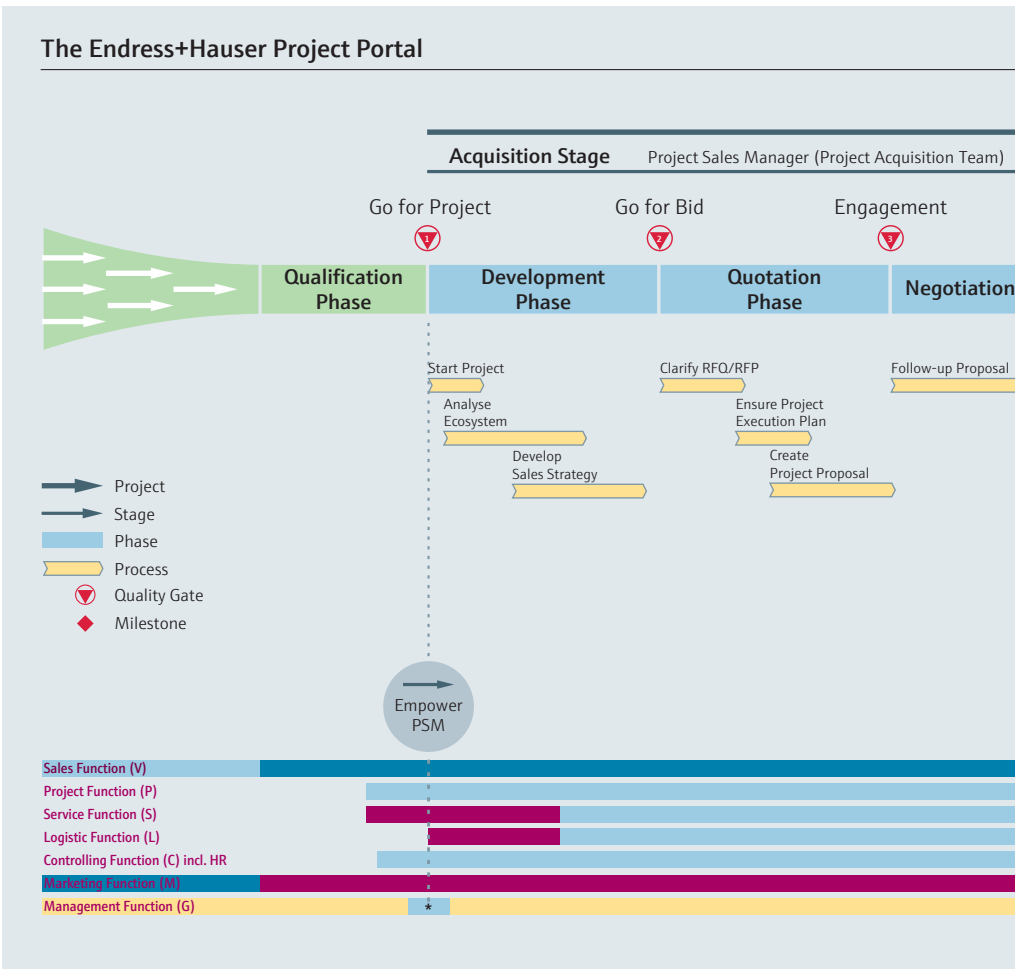
- Consistent, reliable and excellent delivery performance for international Projects/Programs
- Avoidance of frictional loss through uneven individual interests
- Centralized program management with global collaboration for local execution
- Single point of contact for management of the entire program



3 The Endress+Hauser Project Process

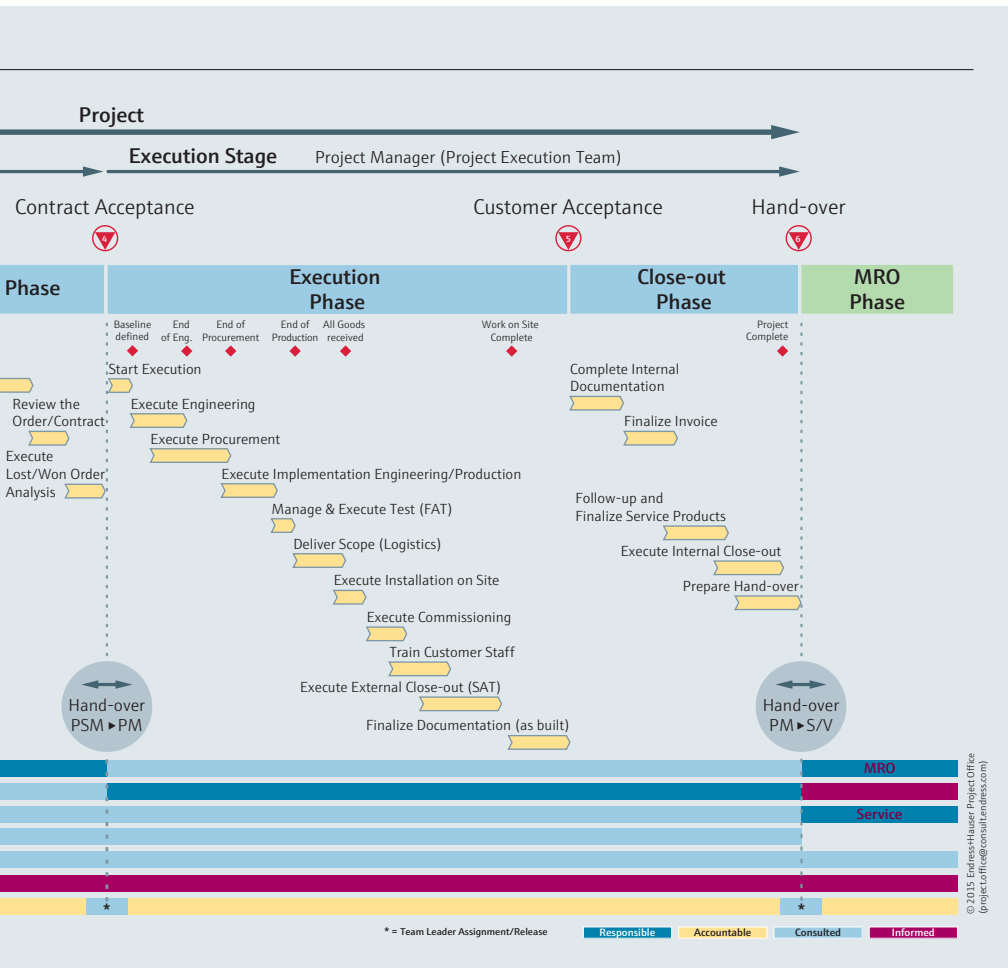
3.1 Business Process

A standard process is an agreed, repeatable way of doing something. Standard 201 is the worldwide co-ordinated process model which serves as central framework for the work on customers' projects within Endress+Hauser.



Customers' benefit

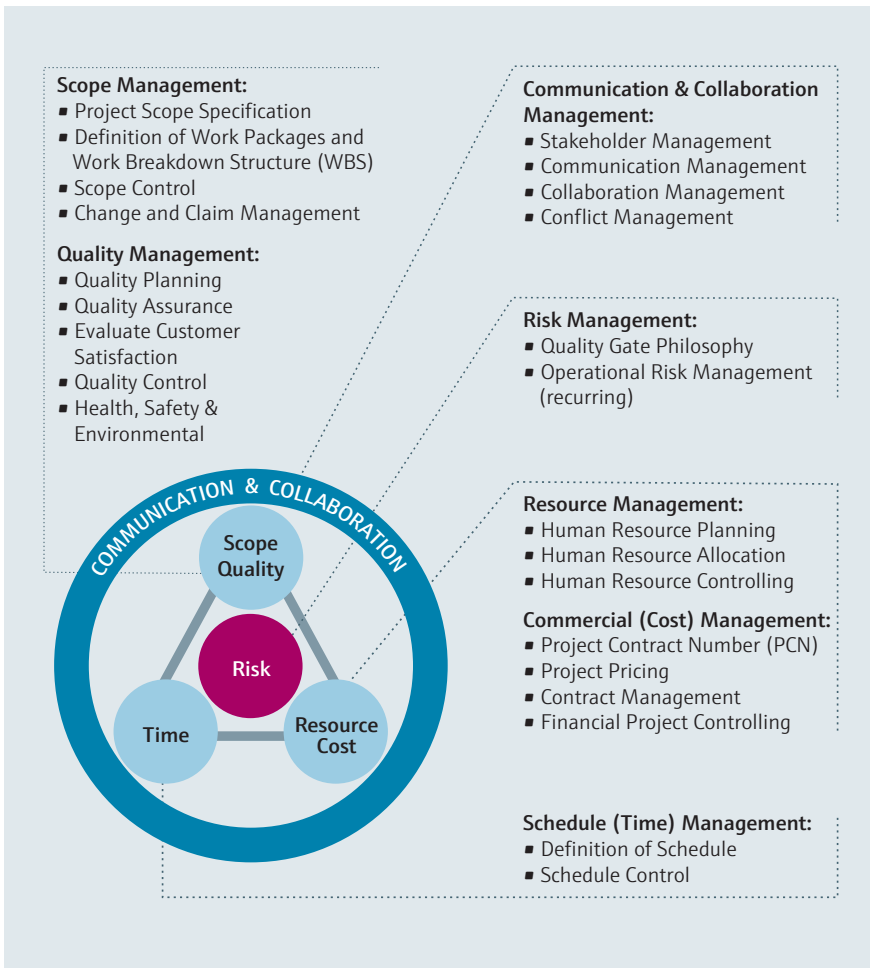
- Harmonized processes to deal with Endress+Hauser in Project Business
- Clear communication and reliability
- "Doing the same things the same way"
- Reduce costs of project delivery by providing productivity tools and embedded resources during basic and detailed engineering



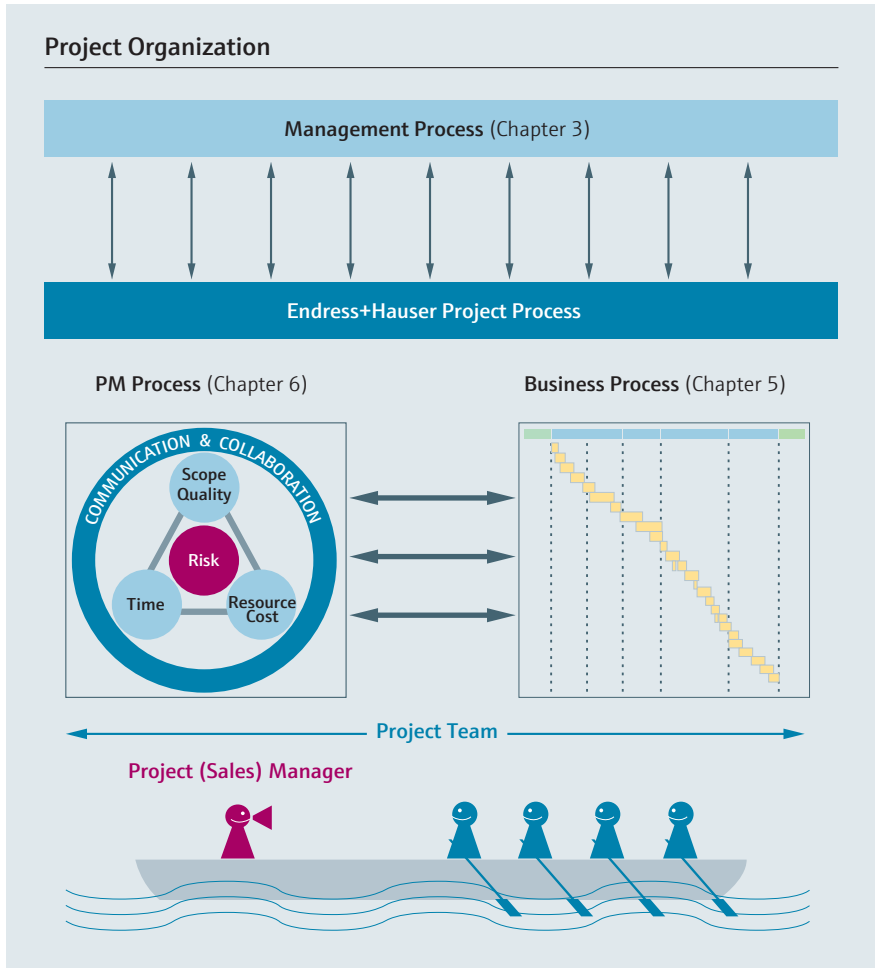
3.2 Project Management Process

The Project Management Process is the management process to handle the project and support the business process. The Endress+Hauser definitions are in line with the PMI (Project Management Institute) framework (PMBOK® Guide).

An agreed common discipline of planning, organizing and managing resources to achieve the predefined project goals and objectives leads to a faster and proper execution of the projects.



Both the Business Process and the Project Management Process have defined interfaces and are closely linked together to the Endress+Hauser Project Process.



Customers' benefit

- Organized way to achieve the predefined project goals and objectives in a smooth way
- Professional communication and collaboration between all project stakeholders



www.PMI.org



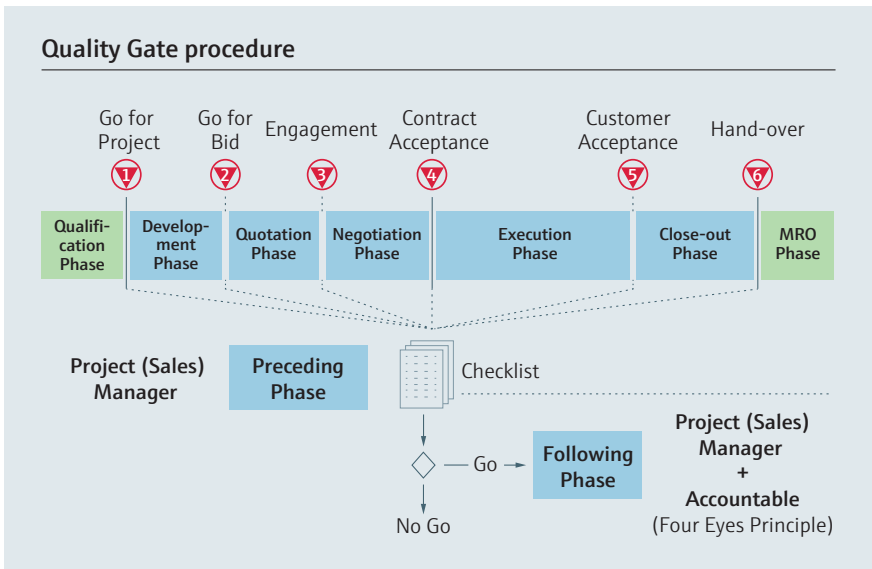
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4 Risk Management

Risk Management for Endress+Hauser Customer Projects consists of two approaches:

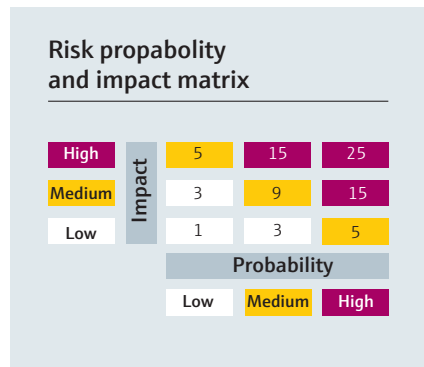
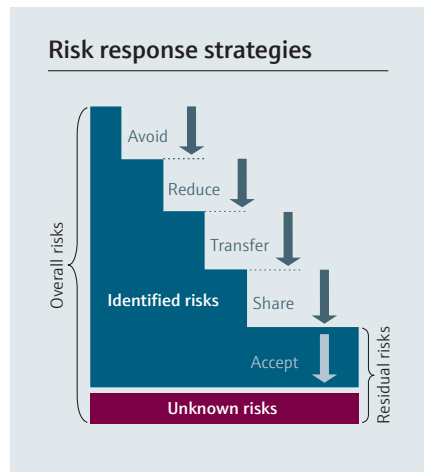
- **The Quality Gate procedure** The risk situation for the subsequent phase is systematically evaluated at the end of each phase, and a conscious decision is taken to continue with the next project phase (or not). The decision is based on the Quality Gates defined in the Business Process.
- **Operational Risk Management** The second approach is a process which is repeatedly applied during the entire course of the project. It commences during Acquisition before or during Development Phase and ends after the project had been closed.

Quality Gate procedure Quality Gates are specific milestones in which the start of the next project phase needs to be approved on the basis of previously defined criteria. The Quality Gate checklists must be completed by the Project (Sales) Manager together with the project team and then submitted to the Accountable (the appointed decision maker) for approval (4-eye principle).



Operational Risk Management (recurring) As a part of the Project Management Process, Risk Management is an ongoing process to identify potential issues that could arise at any stage of the whole project life cycle. The intent is to reduce risk exposure and to mitigate both internal and external project risks.

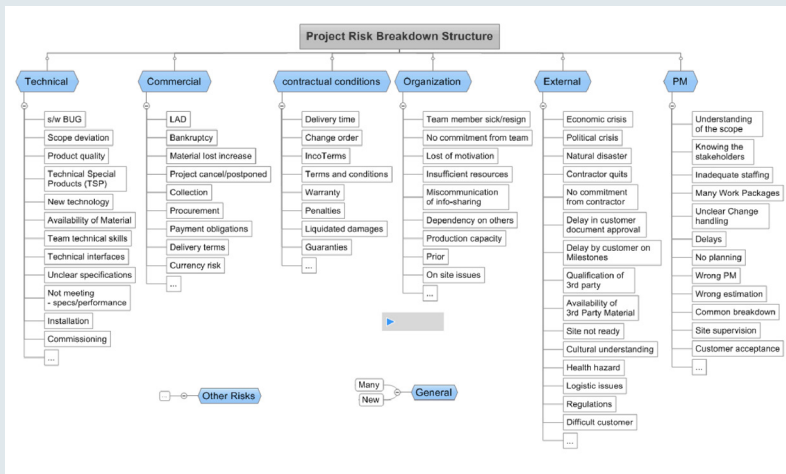
In Endress+Hauser this is done during the project on the basis of a methodological process and it should involve the whole project team.



For systematic risk identification the following best practices are recommended. The goal is to draw up a list of all risks that could compromise the success of a project.

- Asking stakeholder
- Using a risk identification list or a risk breakdown structure
- Learning from the past (lessons learned)
- Reviewing project plans
- Running a brainstorming session

Project Risk Breakdown Structure



Customers' benefit

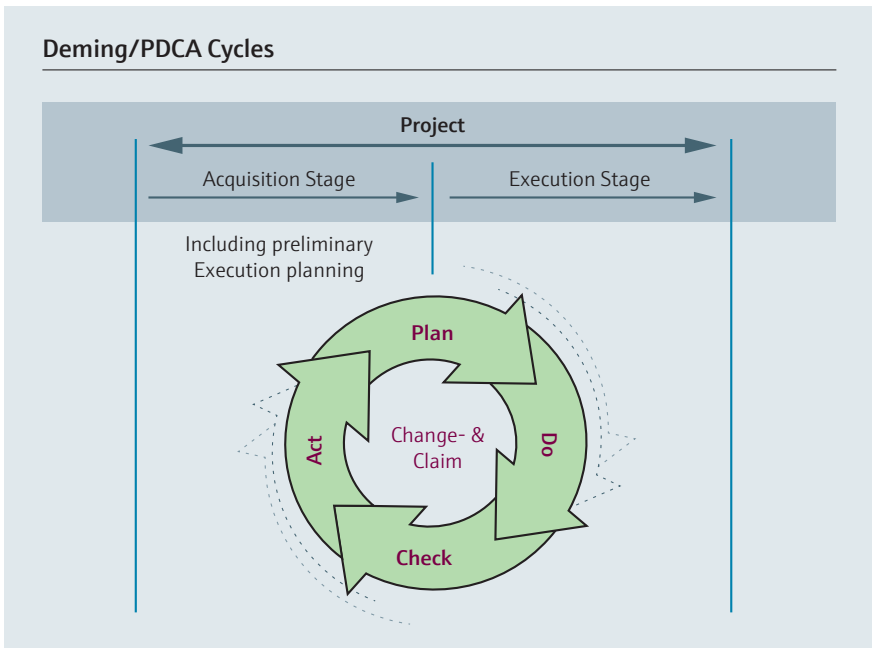
- A common understanding of what is important to the project from a risk and quality perspective
- Faster decisions secured by the management
- Additionally, it leads to higher efficiency and effectiveness
- Risk reduction/avoidance



5 Managing the project along the life cycle

Basic model On the following pages you will find a description of the handling of the project process along the project life cycle. As core activities Endress+Hauser distinguishes between four main steps (Deming/PDCA Cycles) which have to be taken repetitive in any project stage:

1. Plan – project planning
2. Do – carrying out the project work according to the plan
3. Check – identify deviations between plan and actual
4. Act – work with introduce appropriate corrective actions



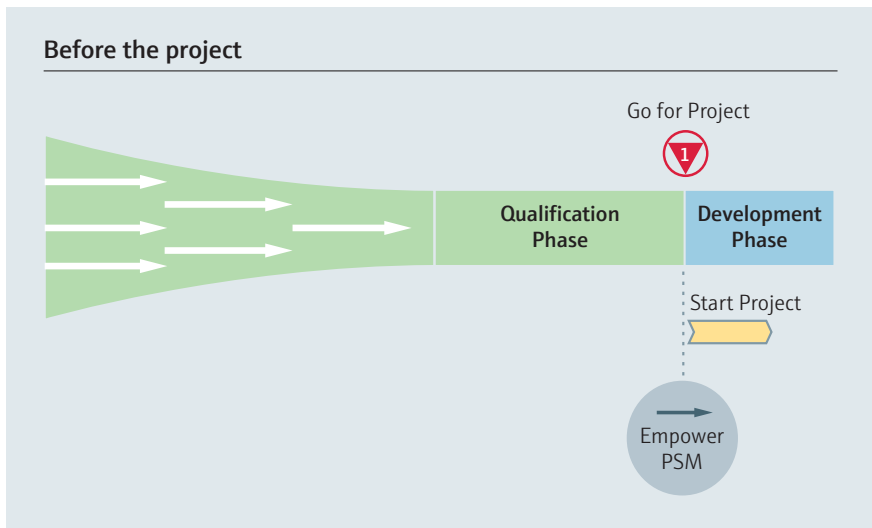
Customers' benefit

- Clear sequence and planning from the concept to the operative plant
- Clear project classification and development of a management plan from the beginning leads to selection of the right people

5.1 Prerequisites to start the project

Selecting the right projects and bringing right people into the project team is a prerequisite to successfully start a project. Communication and getting commitment in the early stage is important. Further prerequisites to start a project are:

- Quality Gate “Project qualified” is approved
- Project Sales Manager (PSM) has been empowered
- Accountable (Decision Maker) has been empowered
- If applicable – usually for more complex projects – Project Core Team/Steering Committee has been assigned/established



Customers' benefit

- Clear rules for the project start guarantee that the project is treated correctly regarding its complexity and that necessary organizational measures are initiated
- Having a project partner selecting the right projects where we see the possibility to add value
- Deep product and application knowledge



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Quality
Gate 1



5.2 Acquisition Stage

5.2.1 Plan (Acquisition Stage)

Proper planning in the beginning pays off in the later stage of the project. The Endress+Hauser Project Business Handbook (Standard 201) defines the following scaleable planning sequence in relation to the complexity of the project:

- Project planning acquisition (Plan)
- Produce an acquisition action plan (WBS Acquisition Stage)
- Define and structure stakeholders (stakeholder analysis)
- Document Project information

Customers' benefit

- Defined contact (Project (Sales) Manager)
- Well structured project from the beginning
- Open and transparent communication





5.2.2 Do (Acquisition Stage)

Complete offering from consultation to engineering and commissioning of complete process automation solutions. Standard 201 specifies the following methods:

- Start Project
 - Establish Acquisition Team
 - Allocate roles and responsibilities
 - Execute kick-off meeting
 - Analyze the project, customer and competition (Project Ecosystem)
 - Develop Sales Strategy
 - Communicate customer's requirements (URS)
- Direct and manage project acquisition
 - Clarify RFQ/RFP (Scope)
 - Identify the Project Manager (Execution)
 - Ensure Project Execution Plan
 - Create Project Proposal
 - Check Proposal
 - Negotiate contract
 - Review the Order/Contract
- Hand-over to execution team

Customers' benefit

- Right balance between technical and commercial experts
- Partner with know-how of product, industry, and application
- Improved quality and faster delivery based on predefined workflows



5.2.3 Check/Act (Acquisition Stage)

For the determination and controlling of deviations during the Acquisition Stage Standard 201 describes the following measures:

- Execute Quality Gates/Manage risks
 - Go for Bid
 - Engagement
 - Contract Acceptance
- Manage deviation of acquisition processes
 - Conduct acquisition reviews
 - Check project proposal
 - Execute Lost/Won Order Analysis
- Collaborate and communicate
 - Internally and externally

Customers' benefit

- The Plan–Do–Check–Act measures lead to better quality and improved reaction time to change requests
- Early detection and communication of deviations



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Quality
Gate checklists

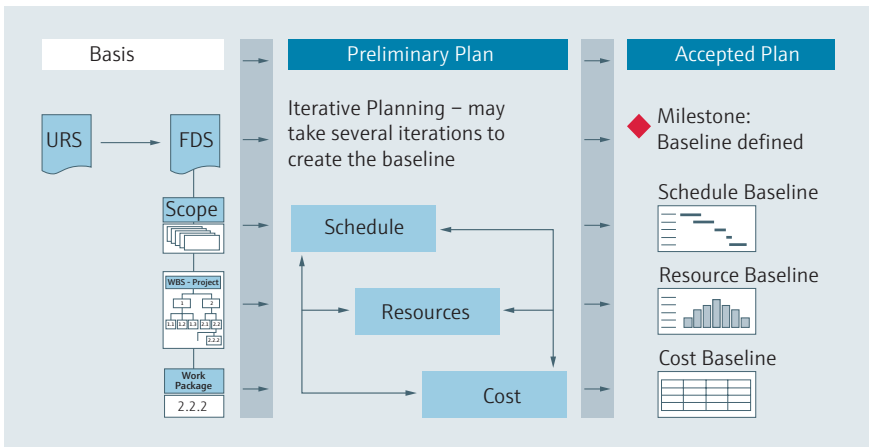


5.3 Execution Stage

5.3.1 Plan (Execution Stage)

The fundament of project planning is built by the Work Breakdown Structure (WBS). The complete project scope is broken down into manageable work packages with clear allocation of responsibility.

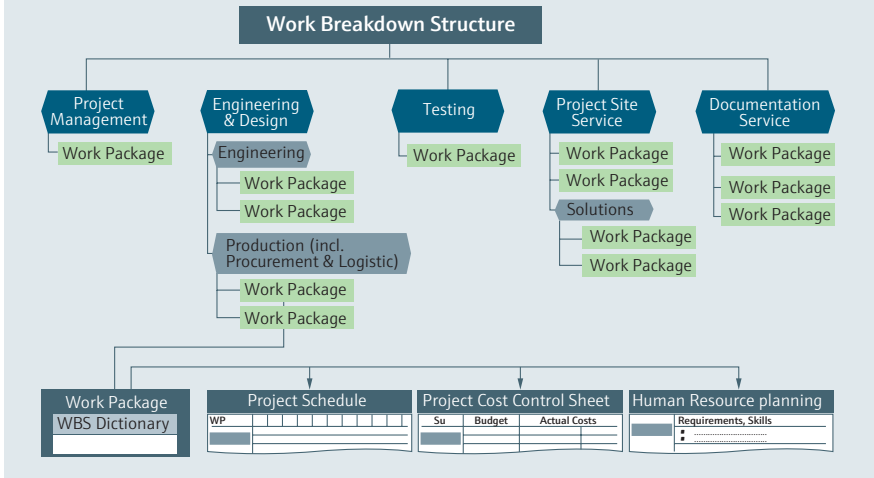
- Project Planning Execution (Do)
 - Finalize Work Package definition (WP)
 - Review or build the Work Breakdown Structure (WBS)
 - Create detailed project schedule
 - Create detailed resource planning
 - Establish detailed project cost control planning (Baseline Budget)
- Establish baselines (scope, schedule, cost, resources)



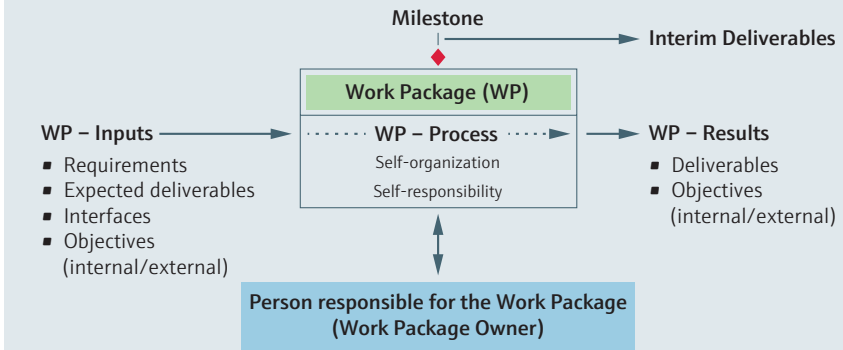
The following basic rules have to be applied in the WBS process:

- **100 % rule** – a WBS describes the complete scope 100 %
- **Mutually exclusive elements** – No overlaps and gaps between Work Packages
- **WP 8 – 80 Rule** – Effort of WP between 8 – 80 hours
- **Deliverables** – WPs focus on the deliverables (not on Scheduled Activities)
- **SMART** – Specific, Measurable, Accepted, Realistic, Timed
- **Decomposition** – Higher levels always describe everything below. Further breakdown on WPs if easier to estimate/assign/control

Project Execution Planning



Work Package Definition



Customers' benefit

- High performance project team with clear allocation of responsibility
- Project team committed to identify customer's requirements



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5.3.2 Do (Execution Stage)

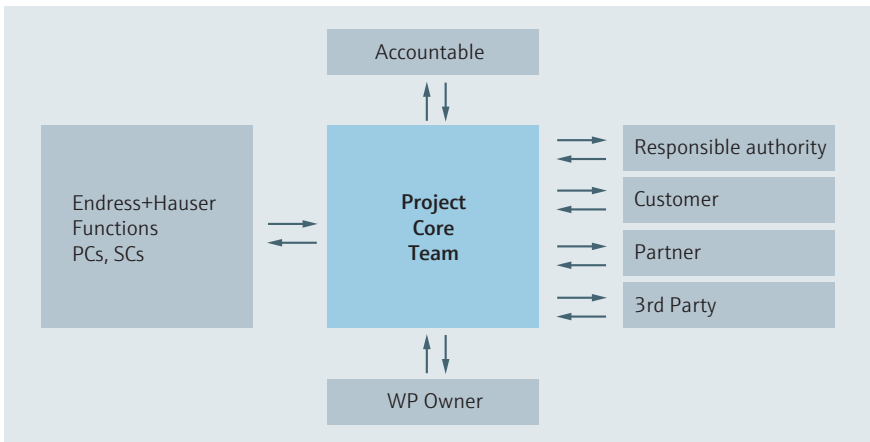
With detailed planning Endress+Hauser starts the execution of the project. The following sub-processes are defined:

Start execution (Execution Phase)

- Build an effective project team
- Plan and establish (IT) team communication
 - Conduct kick-off meeting
 - Finalize Work Breakdown Structure (WBS) incl. Work Package (WP) definition
- Secure resources and gain commitment
- Establish team operation rules
 - Update Risk Management
 - Create Communication plan

Direct and manage project execution

- Execute Engineering (from URS to approved FDS)
- Execute Procurement
- Execute Implementation Engineering/Production
- Manage and Execute Test (FAT)
- Deliver Scope (Logistics)
- Execute Installation on Site
- Execute Commissioning
- Train Customer's Staff
- Execute External Close-out (SAT)
- Finalize Documentation (as built)
- Prepare handover to service for MRO Phase



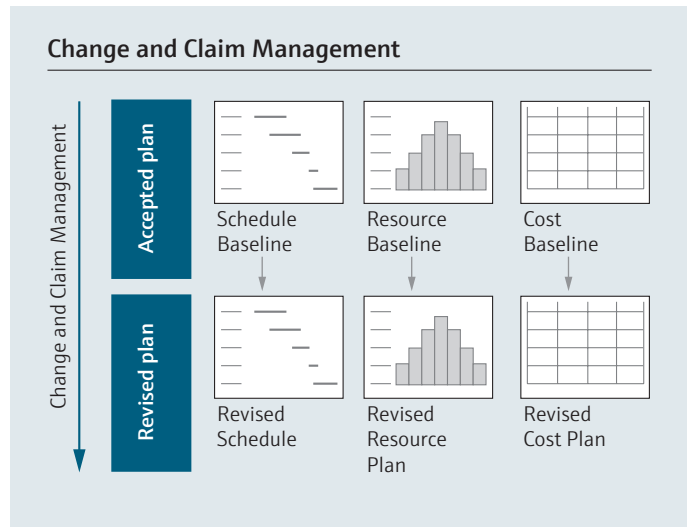


5.3.3 Check/Act (Execution Stage)

The art of Project Management is to detect deviations as early as possible and introduce appropriate corrective actions.

Constant supervision, proper project controlling and constant communication help us to achieve the best results.

- Execute Quality Gates
 - Customer Acceptance
 - Hand-over
- Manage risks
- Manage deviation
- Report project progress
- Execute Change and Claim Management
- Collaborate and Communicate
- Execute Project Controlling



Cost Controlling

Work Package	Budget (Baseline)	Actual Cost	Estimate to complete	Forecast Total	Forecast Variance	Sales Price	Margin
WP 1							
WP 2							
WP ...							

- Labor cost
 - Time registration

- Material cost
 - Material ordered
 - Committed costs

- Other project cost
 - Travel costs
 - Accommodation

Judged by Project Manager and Project Team

Close project (Close-out Phase)

- Complete Internal Documentation
- Finalize Invoice
- Follow-up and Finalize Service Products
- Execute Internal Close-out
- Prepare Hand-over (to service)

Customers' benefit

- Early detection and communication of deviations
- Faster response and handling of project changes and deviations
- Support for the whole Business Life Cycle
- Early detection and fast response to deviations – change management

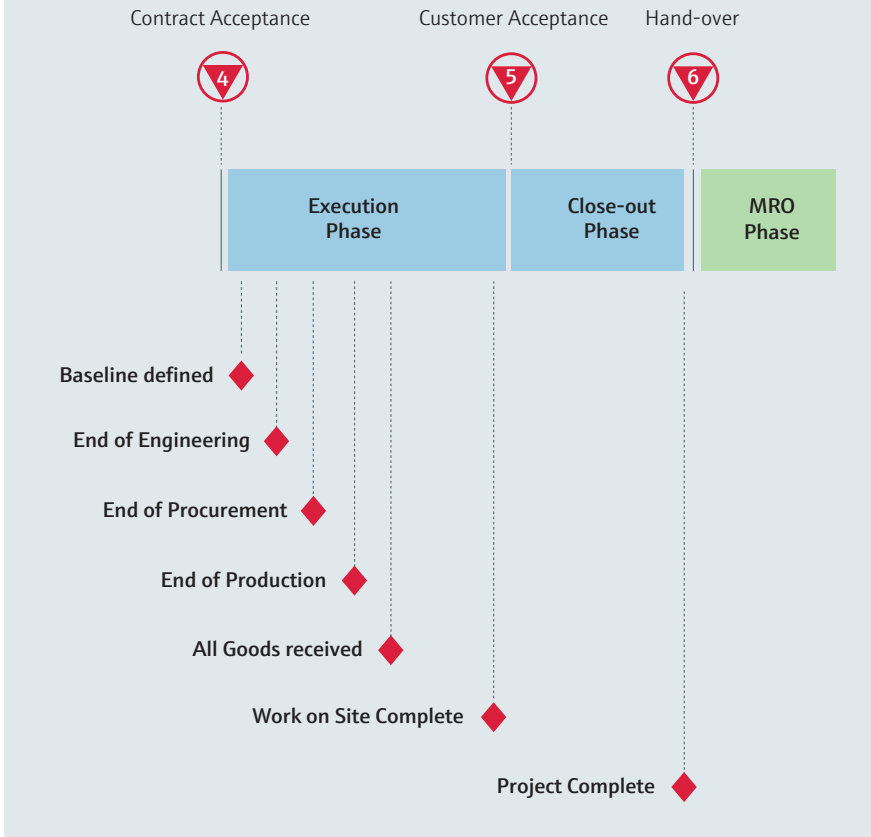


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89–101

Check/Act Execution Stage with Milestones



Customers' benefit

- Clear sequence and planning from the concept to the operative plant
- Predefined checkpoints and test procedures to increase the quality

6 Driving Collaboration through Communication

Initiate	<ul style="list-style-type: none"> Identify Stakeholders <ul style="list-style-type: none"> Internal External
Plan	<ul style="list-style-type: none"> Create Communication Plan <ul style="list-style-type: none"> Sender → Receiver When How What
Execute	<ul style="list-style-type: none"> Distribute Information Manage Stakeholders Expectations
Monitor & Control	<ul style="list-style-type: none"> Check and Report Performances



Communication Plan												
Sender → Receiver (between whom, responsible/owner)	→ Endress+Hauser Functions PC, SC ←	<table border="1"> <tr> <td colspan="3">Team</td> </tr> <tr> <td>WP</td> <td>WP</td> <td>WP</td> </tr> </table>	Team			WP	WP	WP	<ul style="list-style-type: none"> Responsible Customer 3rd Party 			
Team												
WP	WP	WP										
When (plan, frequency)	<table border="1"> <tr> <td colspan="2">Project Management Process</td> </tr> <tr> <td colspan="2">Business Process</td> </tr> </table>			Project Management Process		Business Process						
Project Management Process												
Business Process												
How (basic form, communication, channels/medium)	<table border="1"> <thead> <tr> <th>Face-to-face</th> <th>Audio-video-web</th> <th>Mail</th> </tr> </thead> <tbody> <tr> <td colspan="2">Synchronous communication</td> <td>Asynchronous communication</td> </tr> <tr> <td> <ul style="list-style-type: none"> Dialog/conversation Discussion Local meeting Meeting presentation Workshop Training Social event </td> <td> <ul style="list-style-type: none"> Telephone Voicemail Salesforce.com Telephone conference Video conference Web conference/NetMeeting File & Collaboration Calendar management Web posting (blog/wiki) Social networking </td> <td> <ul style="list-style-type: none"> Email FAX Informal SMS Instant messaging Formal letter Formal report Newsletter </td> </tr> </tbody> </table>			Face-to-face	Audio-video-web	Mail	Synchronous communication		Asynchronous communication	<ul style="list-style-type: none"> Dialog/conversation Discussion Local meeting Meeting presentation Workshop Training Social event 	<ul style="list-style-type: none"> Telephone Voicemail Salesforce.com Telephone conference Video conference Web conference/NetMeeting File & Collaboration Calendar management Web posting (blog/wiki) Social networking 	<ul style="list-style-type: none"> Email FAX Informal SMS Instant messaging Formal letter Formal report Newsletter
Face-to-face	Audio-video-web	Mail										
Synchronous communication		Asynchronous communication										
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What (information content, stakeholder expectation, key objective)	PM Doc. e.g. Schedule, Project Status Report	Component Doc. TI/BA	Product/Project specific Doc. (Solution)	Deliverable								



A communication plan serves to agree on the required communication measures for a project. It describes which information the different project stakeholders (internal/external) can expect at certain points in time.

By creating a communication plan, the communication requirements of the specific project is clarified, and with which communication media these requirements can be fulfilled.

Customers' benefit

- Communication as the key for successful Project Management
- Open communication between all project stakeholders
- Better analysis and decisions based on openness and transparency
- Clear communication, collaboration and accountability among all project stakeholders – supported by use of global standard tools



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7 Early involvement of Service in the project is essential to prepare MRO Phase

Over and above the standard service offerings such as installation, commissioning & service agreements, service discussions for the project need to be initiated as early as possible – preferably during the Acquisition Stage or even before the project is in the Qualification Phase.



Project Service Strategy

- Commissioning + Warranty Extension
- Commissioning Site Management
- Commissioning Technical Supervision
- Training
- Asset & Documentation Management



MRO Service Strategy

- Managed Service Agreements
- Asset Management
- Maintenance Management
- Calibration Management
- Support Service
- Training
- Maintenance/Calibration Optimization
- Spare parts concept

Throughout the project, especially starting in the Acquisition Stage, it is paramount to cooperate among the Endress+Hauser Functions, mostly between V, P and S and across any organizational borders:

- To secure the profits through early identification and management of risks
- To maximize the value delivered to the customer beyond on time plant start-up and correct applications
- To create a framework where the customer relationship is experienced throughout the lifecycle of the products sold (i.e. revenues and relationship extend into MRO Phase)

Customers' benefit

- Broad geographic reach
- Long term collaborative partnership
- Worldwide network
- Broad scope of service offerings tailored to customer's requirements





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