1 Introduction and Purpose

The Eureka Project Handbook shall support the company in assuring that projects are executed and completed within defined targets for quality, cost and schedule.

The Eureka Project Handbook describes key principles to be applied in executing project within Eureka Pumps. In addition, the project work processes for Preparation for execution and the Execution phase are described. These work processes are established, maintained, operated and developed in order to support the planning and execution of capital projects within Eureka Pumps.

The Handbook shall give project management, project members and other stakeholders an overview of essential project activities in the different phases of a project and how to integrate them to create value.

The Handbook shall; Integrate different work processes and disciplines, describing for each project phase; Responsibilities, activities to be performed, applicable tools and techniques, and deliverables to be produced.

The Handbook shall also be a navigational aid for project personnel to; Steering documents, Discipline documents, Best practices, Experience documents and National and international standards.

This handbook shall always be used in conjunction with Eureka`s EPS and other relevant standards and regulations to ensure compliance with all mandatory requirement in relation to execution of capital projects within Eureka Pumps.

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2 Scope

The Eureka Project Handbook describe the production process and is considered as a quality manual for projects. Activities in the following phases are described in separate chapters:

- Preparation for execution
- Execution (engineering, procurement, assembly and testing)

Each project shall apply described practices for relevant processes and activities. Reference is made to the EPS for detailed description of the different processes and activities. If other principles or practices for project work are used, they shall be documented and the experience transferred to the responsible process owner.

3 Definitions

EPS – Eureka Process Management System
DG – Decision Gate

4 Roles & Responsibilities

The Sales, Service and Aftermarket - and Project and Product Department is the owner of the Eureka Project Handbook and has the overall responsibility for its content.

Owners of the different Work Processes are responsible for contributing to the handbook within their respective areas.

All users of the handbook are responsible for submitting proposals for changes and updates of the handbook to the owner of the handbook.

The handbook shall be updated on a continuous basis and shall at any time be synchronized with the EPS.

5 Description

The content of the Eureka Project Handbook is organized in the chapters;
Chapter 1 Introduction
Chapter 2 Work Processes, Management Model and general Project Issues
Chapter 3 Preparation
Chapter 4 Execution

The flow diagrams for work within the different project phases are described in the EPS. These are:

Work Process – Overall Project Execution Process
Work Process – Project Plan and Prepare
Work Process – Project Management
Work process – Engineering
Work Process – Assembly & Testing
Work Process – Project Close and handover to OSS
6 Work Processes, Management Model And General Project Issues

The Business Model describe Eureka`s three business lines including important decision-making processes throughout the whole value chain.

All work processes within the three business lines are aligned with the requirement in the Business Model process.

The Eureka Stage Gate process is shown schematically in Figure 2.1. The basic approach is that there is a series of “gates” to review projects and a series of “stages” to accomplish the work necessary to move the project forward. The Stage Gate process is an approach for making disciplined decisions all the way from the initial sales effort (selecting right projects) through to the completion of any given project (doing projects right).

Figure 2.1 Relation between Eureka`s Business Model and Project Work Flow

![Diagram of Eureka`s Business Model and Project Work Flow]

(+ Support Process: Application/Product Development)
6.1 Project Phases and focus area

Focus and objectives for project phases DG1 to DG7 will change based on the decisions to be taken at the end of each phase as shown in Figure 2.2.1

Figure 2.2.1 Focus and Objectives in different Phases

6.2 Decision Gates

A staged process is used to guide the planning and execution of Eureka projects from the start all the way through to take over by Client. In order to increase the confidence level at succeeding gates, resources and focus should be directed at the risk elements with the lowest confidence level. Gates assess either the quality or the completeness of activities to date, and a gate can only be crossed if the deliverable or activity meets a pre-defined performance standard.

The objective of the decision gate process is to:

- Demonstrate due diligence checks and balances are being applied during execution.
- Provide a mechanism for Eureka to verify quality and readiness to move from one stage to another in a systematic manner.

A decision must be made at each structured decision point whether to;
Hold further activities pending receipt of some final clarifications or supporting information;

Or move into the next sequential phase.

A decision Gate (DG) is a milestone at which a formal assessment is made by the Gatekeeper. A gate review meeting is required to formally cross each gate. The DG`s are:

- DG1 Approval to start the project. After kick-off between sales and project
- DG2 Approval to start procurement of long lead items
- DG3 Multidiscipline design review
- DG4 Hand-over meeting between Project and Assembly/Testing (Sørumsand)
- DG5 Mechanical completion. Ready to start assembly and testing
- DG6 Completion of project. Completion certificate received. Close-out report prepared
- DG7 Transfer of project to OSS
- DG8 Lessons Learned

For DG1 the responsible sales person is the Gatekeeper. The nominated Project Manager is the Gatekeeper for all other gates (DG2, DG3, DG4, DG5, DG6, DG7 & DG8). Gate reviews shall always be done before DG1, DG2, DG3, DG4, DG6, DG7 & DG8 are crossed. DG5 shall be done as part of the MC check out for individual supplier packages.

DG1 is a joint effort between sales and Project. A separate hand-over meeting between Sales and Project shall be held to assure that all essential information for executing the contract (PO) is communicated and transferred in a structured manner. A description of the DG1 review including responsibility, team members, scope and deliverables is described in the EPS.

Placement of long lead items starts (normally) after DG2, typically 4-8 weeks after signing of the Purchase Order with the Client. Exit criteria for awarding long lead items shall be established as an integral part of the milestone approval process if applicable. Before DG2 is achieved a system review including a constructability analysis shall be carried out to assure that the design has reached the required quality and maturity to place orders for long lead items without jeopardizing quality, cost and schedule. A description of the system review and constructability analysis including responsibility, team members, scope and deliverables is found in the EPS.

A final multidiscipline review (DG3) shall take place after the long lead items are placed but not later than 2 months before hand-over to Assembly/testing, Sørumsand (DG4).
DG4 shall take place not later than two months prior to start assembly at Sørumsand. (DG5)

Assembly and testing start after DG5. Mechanical completion is defined when it is confirmed that the equipment received at Sørumsand is in accordance with the drawings and specifications and ready for assembly and testing in a safe manner and in compliance with project requirements. Any omissions and errors shall be recorded in mechanical punch lists. The omissions are categorized as:

✓ Category A: omissions that must be corrected before start testing and
✓ Category B: omissions that can be corrected after testing (FAT)
✓

Reference is made to the EPS for a detailed description of the completion requirements for supplier deliverables.

DG6 is achieved (take-over of the equipment package(s) by the Client) when a successful FAT has been carried out and documented according to requirements in the contract document (PO). To formalize the take-over of the equipment package, a take-over meeting shall be arranged with the Client, and the parties shall sign a commercial take-over certificate. Reference is made to the EPS Project Close and handover to OSS.

Any cat B punch items that are outstanding after the FAT shall be closed as soon as possible.

Before delivery of the equipment package, a Mechanical Completion Check Record shall be filled out that specifies all activities to be executed on the delivered equipment package and our responsibility/role during the following phases (Fabrication, hook-up, MC and commissioning). This is mandatory in order for Eureka to maintain its guarantee obligation.

The Final Documentation shall be completed 6 weeks after successful completion of the FAT.

Transfer of project to OSS (DG7) shall take place no longer than 2 weeks after DG6 is achieved.

As part of the closeout of a project, the Project Manager shall in cooperation with the Head of Projects and Head of Assembly and Testing ensure that proper experience transfer within Eureka is organized and performed (DG8). Experience transfer at the end of each project is an element in improving best practice within Eureka.

Lessons learned reports should focus on the process deficiency that caused the problem (i.e. inadequate procedure, too much of a rush, inadequate training, poor communication, etc.) and recognize that this information is considered essential to improve execution of future projects and shall be an element in improving best practice.

Additionally, change requests may often reflect lessons to be learned for future projects. It is always worthwhile to submit any new knowledge into the various knowledge repositories. Note, in particular, any situations where existing approaches or plans should be updated.
6.3 Project Roles, Responsibilities and General Project Issues

6.3.1 Project Responsible and Project Manager

The roles and responsibilities are linked together in the project organisation. Sales are responsible until DG1 is crossed. The project department is responsible for all activities from DG1 to DG4. The Project Manager is appointed by and reports to the Head of Projects which will have the overall responsibility for project execution, from preparation, including engineering, procurement, mechanical completion, assembly, testing to hand-over and final documentation to the Client.

The Head of Projects together with the Project Manager will identify issues that require processing and resolution in the Steering Committee.

6.3.2 Engineering

The Head of Engineering is responsible to provide projects with competent and sufficient resources, tools and procedures to enable efficient execution of all engineering activities in accordance with the agreed plan for engineering deliverables and the EPS.

6.3.3 Procurement

The Head of Procurement is responsible to provide projects with competent and sufficient resources, tools and procedures to ensure that the procurement activities are executed in accordance with each projects plan and execution strategy.

Procurement is overall responsible for all procurement processes from prequalification to close out of PO. Procurement is also responsible for follow up of all interface-and as-build documentation as specified in the PO`s for sub-suppliers.

The procurement activities shall follow the principles and routines as described in the EPS ("Sourcing").

6.3.4 Assembly and Testing

The Head of Assembly and Testing shall assure that the facilities at Sørumsand, including resources, tools and procedures are adequate for a safe and efficient execution of projects.

The Head of Assembly and Testing shall make sure that equipment and components from suppliers are MC complete in accordance with the PO and requirements described in the EPS before delivery is accepted. Only punch items that can be completed after testing cat B) can be accepted. Any cost associated with closing of outstanding punch items shall be carried by the supplier.

Hand-over of project to Sørumsand (DG4) shall take place no later than two months before start assembly. From that point Sørumsand assume the overall responsibility for the project and the Project Manager will from that point (DG4) start reporting to Head of Assembly and Testing (see section 6.3.1)
6.3.5 Support Functions

The Head of Project Control is responsible for providing support functions e.g. plan, cost, budgeting, risk, reporting etc. Reference is made to the EPS. The degree of detail in planning, frequency of updating of schedules, format for reporting etc. shall reflect a project’s needs and will depend on the type of project and project phase. The plan should include:

- Detailed, integrated and fully networked project schedules showing all project phases
- Schedule risk analysis
- Critical path and key milestones
- Resource loading of critical engineering, assembly and testing to validate execution approach

The number of schedule levels will vary depending on the size and complexity of the project. The lowest level will consist of the detailed work orders, procurement orders and documents to be developed.

Progress monitoring is performed to give an overview of work progress compared to the schedule baseline and make prognosis for the remaining work. The basis for progress monitoring shall be physical progress of the various activities and not expended man-hours. The risk for schedule delays shall be included in the project’s risk evaluation and risk register.

Project cost estimating and cost control shall be in accordance with the procedure described in the EPS. A cost risk analysis shall be carried out before crossing DG1 in order to establish contingency and estimate accuracy.

The Head of Quality and HSE is responsible to assist projects in establishing quality plans and HSE programmes. The quality process covers activities for quality planning, quality assurance, quality control and quality improvement. Reference is made to the EPS “HSE&Q”. The approach to quality management is intended to be compatible with that of the ISO9001. All project personnel shall familiarise themselves with and comply with the safety and security routines applicable to their workplace. All projects, after DG1 to the point of hand-over to the Client shall prepare a Quality Plan and a HSE Programme. The Quality Plan and the HSE Programme shall be reviewed and updated throughout the project phases. The Quality Plan shall include audit and examination activities as applicable to keep track of audits and examination activities.

The Head of Final Documentation shall establish a plan that define roles, tasks and schedule to ensure timely production, review and submittal of all documentation required by and agreed with the Client. The plan shall identify the following:

- System for implementation of final documentation requirements at suppliers
- System for monitoring production and completion
- Final documentation plan
The final documentation requirements are described in the EPS “Project Close and Handover to OSS”

The Head of Document Control is responsible for document control. All project documents shall be handled and stored in accordance with the requirements described in the EPS.

6.4 General Project Issues

6.4.1 Gatekeeper

The Gatekeeper is responsible and accountable for the decisions made at a decision gate.

The Gatekeeper will initiate each project phase through a meeting with relevant persons. The results from the meeting shall be documented by approved minutes of meeting. As a minimum gate reviews shall be performed for gate DG1, DG2, DG3, DG4, DG5, DG6 and DG7.

A description of Eureka’s gate review process is found in the EPS.

In addition to the abovementioned gate reviews, gate reviews should also be considered for critical intermediate contractual milestone deliverables. The need for such project specific gate reviews will be decided by the Project Manager based on the size, complexity and criticality of the project in question.

6.4.2 Steering Committee

Eureka has a permanent steering committee which function as a board for all projects. There are five permanent members of the steering committee

✓ CEO (chairman),
✓ Head of Projects
✓ Head of Sales
✓ Head of Application
✓ Head of Finance
✓ Head of Assembly and Testing

The Steering Committee function as a board for each project and the members of the committee are responsible for follow-up projects critical areas and risks. As a minimum, the Steering Committee shall be involved in the gate crossings for DG1, DG2, DG6, and DG7. How the Steering Committee will be composed for individual projects depends on the projects characteristics. As a minimum a Steering Committee shall consist of the Head of Projects and The Head of Assembly and Testing (see section 6.3.1 for further details)

The Project Manager is responsible for identifying issues that require processing and resolution in the Steering Committee in addition to the requirements above.
6.4.3 Risk and Opportunity Management

The risk and opportunity management process is described in the procedure AKK-04 “Risikostyring”.  
As a general rule, all projects shall establish a risk and opportunity register already in the tendering phase. When the project is won and has crossed DG1, the Risk and Opportunity Management System will be activated. The Risk and Opportunity Management System is the project’s documented way of handling risk – and opportunity elements throughout the project and shall be adjusted to project size and complexity.

Risk and opportunity management can be divided into five steps;

- Identify events that can influence the project (up or down)
- Evaluate these events with respect to probability and consequences
- Develop plans to mitigate downsides and utilise potential upsides to their maximum
- Respond to risk and opportunity as they occur
- Communicate the risk and opportunities and status of actions to the project team and other stakeholders as relevant

The risk and opportunity register shall be updated at regular intervals, normally once per month before the cut-off.

6.4.4 Technology Management

The Head of Application shall assure that an optimal integration of available technology to achieve the best commercial solution for Eureka. The recommended technical solution, which in most cases are defined in the tendering phase shall be described at DG1 in terms of functional and design requirements being important for the following phases of the project. The technology and technical solutions defined at the start of the project (after crossing DG1) should therefore normally not require further detailing in the following project phases.

In case technology qualification programmes and/or new technology are brought into the project an evaluation shall be performed to document the new technology’s benefits and risks before a final decision is taken.

In cases where new technology is introduced into a project, a more comprehensive process shall be implemented in the execution of the project to assure that the functionality fulfils all stated requirements in the contract (PO). This process will tailor decision gates and adjust the work effort associated with critical activities to meet a given requirement.

The process of implementation of new technology is described in the EPS.

6.4.5 Project Experience Handling

The experience handling process is described in the EPS “Project Close and Handover to OSS”.

In order to ensure an effectively implementation of the lessons learned, project managers and/or other project members that have relevant experience and can contribute to the overall effort are invited to important project gate reviews, in particular DG1. Here are some questions to consider before you begin your lessons learned discussion:

- Were the previous project goals attained?
- What didn’t go well? Discuss unintended outcomes that happened during or because of the project and the process that caused them.
- What might have been better handled if done differently?
- What was beyond our control?
- Any other related lessons learned that could be applied to the forthcoming project?

7 Preparation

7.1 Introduction

The preparation phase starts immediately after DG1 and will normally last for 4 week. All activities performed in this phase shall serve as a foundation for all future efforts. Key activities and deliverables in this phase are detailed in the following sub-chapters. The preparation phase activities include these activities most tightly linked to the control of scope of work and the execution strategy of the project. Potential issues, risks, and barriers to project success shall be identified and methods and processes for dealing with such events should be prepared.

7.2 Confirm Project Manager

Project Managers for projects with a value above NOK 50 million will be nominated during the bid clarification process. For projects below NOK 50 million, Project Managers will be nominated when the PO is signed or at the latest prior to DG1. The overall project Managers key tasks and responsibilities are listed in; Roles and Responsibilities for Project Managers (reference is made to the EPS).

7.3 Define project Scope

The scope definition process in the preparation phase is a verification and further detailing of the deliverables defined in the contract (PO) and will serve as input in future project planning efforts. In most cases (see section 7.2) the Project Manager has been involved in the tendering process and is familiar with key characteristics of the project in question. However, a structured information transfer process from Sales to Projects, up to and including DG1 is a prerequisite for a successful execution. The Project Manager and Head of Sales is responsible to ensure that this process is given ample consideration and thought. The formal hand-over from Sales to Projects is taken place at DG1 and the Head of Sales is accountable for the quality and correctness of all data relevant to the contract.
(PO) at this point. Key documents that sets out specific contractual requirements, such as technical specifications, selection of key suppliers, milestone deliverables, schedule and cost should be frozen at this point and any changes shall be formalised in accordance with the change procedure. The frozen scope of work serves as a reference document for the project.

During the preparation phase (after DG1) the Project Manager and key members of his team shall detail the scope further to ensure that the project includes all the work required to complete the project successfully.

### 7.4 Execution Strategy

Development of the Execution Strategy is the second activity in the preparation phase and will serve as the foundation for all future efforts.

The Project Execution Strategy shall be prepared by the Project Manager. The execution strategy shall define how the project scope shall be executed and how resources shall be used to optimally do it. In addition the Execution Strategy, focus on areas/issues that is considered to be critical in terms of quality, cost and time. Quality management of critical suppliers is considered to be the single most important issue to be addressed in the Execution Strategy.

The Project Execution Strategy shall cover the following:

- Project organisation
- Quality and HSE
- Key suppliers
- Engineering strategy
- Procurement strategy
- Project control (cost and plan) and key milestones
- Risk management
- Experience feedback/lessons learned
- Technology Implementation
- Re-use of technology and solutions
- Final documentation
- MC, assembly, testing, and hand-over to Client

The different parts of the Execution Strategy is described in more detail below.

- Project Organisation – an organisation chart shall be prepared showing key positions in the project organisation, both permanent and part time.

- Quality and HSE – A preliminary quality plan and a HSE programme shall be established. The focus here is on clarification of HSE scope and on HSE scope in relation to the design. Ref. Quality and HSE Requirements in the EPS.

- Key suppliers – the quality of selected suppliers is considered to be the single most important area influencing the quality of our total delivery. Key quality assurance activities shall be identified and form part of the inspection/audit plan to ensure that suppliers have a quality management system in place including; Product Quality Planning, Production Process and Product Release
Procedure, Mechanical Completion Procedure, Test Procedure, and any other fundamental technical and organisational requirements in order to achieve the intended quality objective of “zero defects”. Reference is made to the EPS for more details regarding quality assurance of suppliers.

- **Engineering strategy** – a high level execution plan shall be established where all key technical inputs to the procurement plan for long lead and/or critical items and all engineering documentation required by the Client, according to the contract are identified. The plan shall define roles, tasks and schedules to ensure timely production, review and submittal of all documentation required.

- **Procurement strategy** – a procurement strategy shall be developed. The procurement input to the execution strategy shall typically cover the following areas; procurement policy; assessment of current market situation; pre-qualification philosophy and main elements of evaluation criteria; use of single source. A preliminary procurement plan shall be established as part of the execution strategy. All long lead items shall be identified and work to prepare tender documents shall be initiated according to the procurement plan. Reference is made to the relevant procurement procedures in the EPS.

- **Project control** – a high-level project plan shall be established by breaking the project down into phases and key tasks (work breakdown structure) which correspond to the milestone deliverables defined in the contract (PO). All planned gate reviews (mandatory reviews according to this Project Handbook and any project specific gate reviews) shall be scheduled into the high level plan. It is essential that the Scope of Work (ref section 7.3) and the work breakdown structure (WBS) is fully reconciled. For control and monitoring purposes the original cost estimate (as-sold) shall be converted to a project budget in accordance with the cost breakdown structure of the project. Requirements for project control in projects are described in the EPS.

- **Risk management** - a preliminary risk management plan shall be prepared. (ref section 6.4.3)
  The plan shall include a list of identified risk elements (usually prepared in the sales phase and shall be part of the DG1 review), assign probability and impact, mitigation actions and monitoring. Ref. is made to; AKK-04 “Risikostyring”. In order to minimise the risks, experience from previous projects shall be collected and analysed and proper measures implemented as part of the Execution Strategy.

- **Experience feedback/Lessons learned**
  Relevant experience and lessons learned from previous projects shall be collected through Lessons Learned Reports and/or meetings. Lessons Learned must deal with the process deficiency that caused the problem (e.g., inadequate procedure, too much of a rush, inadequate training, poor communications, etc.). Ref section 6.4.5
Technology implementation – in case new technology and/or solutions are introduced into the project it shall be treated as described under section 6.4.4. A separate quality plan shall be established (as part of the project`s quality plan) if new technology elements are introduced.

Re-use of technology and solutions – this activity will normally form an important part of the sales effort in close cooperation with the Head of Application – and the Engineering manager. However, a thorough review shall be undertaken in the preparation phase to ensure that re-use of technical solutions/specifications, qualified suppliers, documentation etc has been properly assessed to take maximal advantage of the possibilities offered by the capture and use of the accumulated knowledge in Eureka together with existing information. A separate report ("Re-use of Technology and Solutions") shall be prepared as an essential part of the preparation phase.

Final documentation – a preliminary final documentation plan shall be established listing all documentation required by the client according to the contract.

MC, assembly, testing and hand-over to client – An overall completion philosophy shall be established covering mechanical completion requirements at suppliers and in the contract with the client. Key assembly and testing activities shall be identified and scheduled.

8 Execution (Engineering, Procurement, Assembly & Testing)

Once the project moves into the execution phase (engineering and procurement), the project team and the necessary resources to carry out the project shall be in place and ready to perform project activities. The Execution Strategy (ref section 7 in this book) should have been completed and baselined. The project team and specifically the Project Manager`s focus shift from planning to monitoring and control. An overview of activities and focus areas in the different phases is included in chapter 2. This chapter should be read in conjunction with the EPS "Project Execution"

8.1 Kick –off Meetings

An internal meeting shall be conducted to kick off execution. During the meeting, the Project Manager shall present the main components of the Project Execution Strategy including any other information that is relevant to the execution of the project such as;

- Contract management
- Project control
- Change management
- Risk management
- Roles and responsibilities of each team member
8.2 Key Activities and Focus Areas during Execution

This section describes the most important activities and focus areas during execution of the project. The contract (PO) and the Execution Strategy established in the preparation phase serves as the basis for all activities in the execution phase. In addition to executing the work and deliver the project according to HSE, quality, schedule and cost requirements, establishing proper monitoring and control mechanism is the most important activity in this phase.

8.2.1 Confirm and Detailing of Project Scope/Deliverables

This activity is a continuation of the scope definition/verification process in the preparation phase, but on a more detailed level to assure that the project is within all agreed parameters. It is in particular important to assure that all technical specifications are clear, concise and, above all, unambiguous on the performance criteria for all milestones defined in the contract (PO). The relevant project team members shall be involved in and have ownership to all specifications, codes and standards to be used on the project. Since a major part of the contract value is bought in materials and equipment from suppliers (70% on average), it is essential that specifications are unambiguous to ensure effective procurement.

8.2.2 Project Planning, Scheduling and Control

The work breakdown structure and the plan prepared in the preparation phase shall be fine-tuned and baselined and the necessary resources shall be mobilized to produce the project deliverables. In preparing the milestone schedule, a workback approach shall be used, starting from the date by which the project must be completed, and listing all of the tasks in reverse order with due dates for each.
To maintain good control and reporting mechanism of key deliverables and events in projects it is essential that milestones are used in the planning, scheduling and monitoring (ref section 7) to identify completion of significant activities and identify cross-dependencies. Milestones shall be built into the plan and shall cover both mandatory milestones according to Eurekas stage gate process and milestones associated with specific projects. Key milestones shall also be defined in the purchase orders with sub-suppliers and form an integral part of the total project schedule. Milestones are pre-planned events or a point in time at which a thorough review of status shall be conducted to ensure that the assumptions and requirements associated with that milestone are being met. Review activities of project´s accomplishments and results at selected milestones shall also be built into the plan and shall take place one week prior to the milestone date to enable timely corrective action to be taken. Monitoring the milestones, which often are the critical path in a project, is essential. By definition, schedule milestones have little or no slack time. All schedule changes must therefore be analyzed for impact to the milestones since such changes will result in deviation from the project schedule.

A project master schedule shall be prepared (the highest level) as an overview of main areas, major activities and dependencies and all milestones (mandatory Eureka milestones and project specific milestones). The master schedule will set the framework for the schedule to be prepare for all phases of the project.

The basis for progress monitoring and reporting is physical progress and actual vs. planned man-hours, including calculation of “earned man-hours”. The following methods are normally used for progress monitoring and reporting;

✔ Reporting of achieved milestones vs. original and current planned dates
✔ Measuring “physical amounts” completed.

Progress shall be measured for direct work. Activities such as management, quality management, project control, administration, etc, are not included in progress management.

Monitoring of the project´s progress shows trends and uncovers deviations from established schedules. The deviation is evaluated and necessary actions initiated to bring the project back on schedule. The basis for such analyses can be:

✔ Progress made compared to planned and historical experience data
✔ A network schedule showing activities, dependencies and critical paths
✔ Earned vs. actual man-hours expected ( productivity)
✔ Completed vs. planned physical work
✔ Resource need and availability
✔ A man-hour forecast for project completion.

Normally, deviations shall be absorbed within the master schedule. Schedule revisions shall only be used for significant deviations in the work.

The project planning, scheduling and control process is described in the EPS. Reference is also made to section 7.4
8.2.3 Planning of Eureka Gate Reviews and Payment Schedules

Eureka gate reviews (DG1 to DG8): All attendees must have reviewed all pertinent documentation and have a good understanding of the project and its performance, the business context in which it is operating, and the exit criteria for the subject stage gate. Members of the Decision Gate Review team should also be familiar with any evaluation review forms/templates that will be used to document findings and support team decision processes. Please Note: The Project Manager should consider the lead time necessary for the team to review all of the deliverables. This will vary depending on the complexity, size and scope of the project. All of the preparation tasks should be included in the Project Schedule and the Gate Review should be included as a milestone.

Payment Schedules: One month prior to submission of the invoice according to contract and/or the plan a countdown plan shall be established listing all outstanding documents/activities to be completed to ensure Eureka gets the approval for payment in due time.

8.2.4 Resource Planning and Control

Immediately after the project plan is form, the level of resources required to undertake each of the activities and tasks listed within the project plan shall be allocated. Although some resources might have been allocated already, a detailed plan is required to identify the;

- Type and quantity of resources required, such as engineering, procurement, testing, inspection, assembly and testing;
- Items and quantities of equipment and materials required during assembly and testing.

For large project it is recommended to establish a resource schedule to keep track of the resource needs on the project and should be kept updated throughout the project.

8.2.5 Cost Planning and Control

A Master Control Estimate is established based on the budget prepared in the preparation phase which again is based on the as-sold budget. The Master Control Estimate is broken down in accordance with the cost breakdown structure of the project and all estimate elements are assembled into the total expected cost (The Master Control Estimate) and shall be used as a reference and is the basis for the cost control.

The budget shall be managed so that costs, cash and working capital are known at all times and actions can be taken to control them.

As a minimum, the following type of cost information shall be managed;

- Actual cost spent and when it was spent
- Earned value for each work package
Cost to complete the final project
Working capital
Cash flow

Requirements for cost control are described in the EPS

8.2.6 Risk and Opportunity Management

The risk and opportunity register developed in previous phases shall be reviewed and updated and the plan for risk and opportunity management shall be confirmed. The register shall be updated at regular intervals. The risk and opportunity management plan shall reflect activities required to reduce the main project risks, such as audits, examinations, verifications, audits etc. and maximize identified upsides. (ref. section 6.4.3 and AKK-04 “Risikostyring”).

8.2.7 Change Management

A scope change is where a request is considered to change the agreed scope and objective of the project to accommodate a need not originally defined to be part of the project.

There are two types of project scope changes;

- Change of conditions and/or requirements stated in the contract (PO). This type of change is in most cases outside scope of work and shall be treated as a variation order request towards the client.
- Changes to the project scope, deliverables, timescale or resources that are per definition inside scope of work shall follow the same procedure in terms of evaluation and approval prior to implementation.

A change request form shall always be used to formally request a change to the project regardless the reason for the change as long as it has schedule and/or cost impact to the project.

It is particularly important to maintain and track changes on interface documents to and from clients. When an interface drawing or any other project document has been approved (with or without comments) a Change Request Form shall always be used to submit a proposed change. The Change Request Form shall include information about technical performance, cost and schedule impacts of the proposed change.

A change requires approval before it can be implemented.

In case the Client introduce changes to a drawing and document that is already released and approved, the same requirement for change control as described above shall apply. The requested changes by the client shall not be implemented before potential cost and schedule impacts have been assessed and a Variation Order Request has been submitted and returned in a form of a Variation Order from the Client. Reference is made to the EPS.
When a change has been approved and implemented, a Change Notice shall be issued to inform all involved parties that the approved change has been implemented. To ensure that changes are monitored through to completion, a change register shall be maintained.

Change management shall be treated according to applicable procedures in the EPS.

8.2.8 Contract Management

Contract management is the management of contracts made with clients and suppliers.

It is the Project Manager’s responsibility to ensure that all internal procedures used to execute, monitor and control the project are consistent with the contractual requirements. It is particularly applicable to the management of change control and contract variations.

8.2.9 Health, Safety and Environment Plan

The preliminary HSE activity plan prepared in the preparation phase shall be detailed and tailored to each project. It is essential to ensure, as part of the qualification process that the sub-suppliers also have an adequate HSE activity plan in place when this is considered important. During the execution phase the HSE aspects of the project shall be further evaluated with main focus on activities related to assembly, testing and operation. The HSE plan is a living document and shall be updated as required throughout the project. Reference is made to the HSE and quality requirements in the EPS.

8.2.10 Quality Plan

The preliminary quality plan established in the preparation phase shall be developed further to include all project audit and review activities. It is recommended to also include planned audits and reviews by the client and audits/reviews at sub-suppliers premises in this plan.

8.2.11 Engineering

The engineering activities shall be performed based on the Execution Strategy laid out in the preparation phase. A document plan is initially developed during the preparation phase and shall be further developed and detailed in the execution phase. The plan shall identify all documents to be produced and shall appear in the project schedule, including activities required to produce them and milestones indicating completion of each version of a document.
In order to simplify and make the engineering process more efficient, solutions, technical specifications and documents shall be re-used to the extent possible so that each project does not have to “reinvent the wheel” when producing documentation. (See section 7.4)

Completion of technical requisitions and other key documents (i.e. P&ID’s, data sheets, 3D CAD of the skid/package, etc.) as input to the procurement process and to comply with the interface documentation requirements in the contract (PO) are the most critical activities at the start of the execution phase.

The most important engineering document to be produced are the P&ID’s. And before these documents are applied as basis for further activities, HAZOP and system design reviews shall be performed in order to uncover possible omissions and minimize late changes.

Furthermore, to ensure early establishment of the layout, early flow of information from all involved disciplines is paramount. The information content and quality of the 3D CAD model shall be checked and quality assured in due time before extraction of production drawings (Constructability review). The level of completion of the upstream information should be linked to defined milestones for the 3D model. Clash checking and input control must be carried out in advance of each milestone. Multi-discipline design reviews shall be performed before long lead items are placed. A final multidiscipline review (DG3) shall take place after long lead items are placed and when reliable sub-suppliers information is available but minimum 2 months prior to handover of project to assembly/testing, Sørumsand (DG4).

When all interface parameters are defined all interface documentations shall be baselined and an interface log or register shall be implemented to track and control any changes that may be introduced throughout the project. The log/register shall cover all interfaces between clients, suppliers and Eureka.

A check list for 3D reviews is available in the EPS

The following documents are relevant for execution of engineering activities; “Engineering” in the EPS.

8.2.12 Procurement

Procurement activities shall be performed based on the Execution Strategy prepared during the preparation phase. The preliminary procurement plan prepared in the preparation phase shall be detailed out and shall include all steps required to procure equipment, materials and services needed for the project ensuring that goals and objectives in the procurement strategy established in the preparation phase are met. The plan shall also describe the process for selection of a preferred supplier (the tender process) and the ordering and delivery of the product (procurement process). Reference is made to “Sourcing” in the EPS.

Supplier Quality

Supplier quality shall be given special consideration all the way through from the activities for pre-qualification to delivery. All suppliers shall have an effective quality system in place and must demonstrate conformance to ISO9001 as a minimum in
order to be pre-qualified. A thorough audit/review of suppliers’ quality systems by qualified personnel from Eureka is mandatory, and no orders shall be placed before it is documented that the suppliers fulfill all quality requirements set out by Eureka, as well as the quality requirements and expectations of our customers. The procurement function in Eureka has the responsibility to develop and maintain documented procedures to ensure that all purchasing products conform to specific requirements. It is essential that the suppliers have a system that is based on prevention rather than detection of failures. This requirement applies both to suppliers and sub-suppliers that are used on previous projects and new ones. This activity is normally done as part of Eureka’s general pre-qualification process and will not be required during the project. In case pre-qualification of new suppliers is required a quality assurance review of the supplier in question shall be undertaken and based upon the result from the review, the Project Manager, Head of Procurement and the Head of Application shall together decide whether the supplier in question meet the pre-qualification requirements.

A stringent quality control plan (or inspection test plan) shall be established for ALL successful suppliers and shall describe, as a minimum the actions that are required at each phase of the process to assure that all inputs and outputs will be in a state of control including system to control the issue of drawings, specifications, procedure etc. and all critical and significant characteristics identified on drawings or specifications derived from reviews and known from lessons learned and suppliers experience. To provide assurance that the stated level of quality is met, control at supplier’s facility shall be undertaken based on a predetermined schedule.

A plan for production of documentation needed during the lifecycle of the project including final documentation shall be established. During the execution special consideration shall be given to items such as weld procedure documentation, material test reports, dimensional inspection records, traceability records, non-conformance reports and the results of any special tests and reviews that may take place during the manufacturing/production process of systems and equipment.

The supplier shall ensure that any sub-suppliers are evaluated and selected on their ability to meet the quality requirements set out in the purchase order.

All records pertaining to quality shall be stored and maintained in a legible form according to the requirements of the purchase order.

For details see EPS – Supplier qualification, Follow up Purchase and supplier re-evaluation.

DG2 Reviews

According to this handbook a formal reviews shall be undertaken prior to placement of key purchase orders like large electro motors, diesel engines, generators and major casting components. In order to pass this gate, the review must confirm that all predetermined contractual, commercial, quality and technical requirements are fulfilled. The project manager will be the responsible gatekeeper. Head of Projects, head of procurement and the responsible project manager shall form the review team. The outputs from the review shall include a decision (i.e., approved, conditionally approved, or not approved) and a clear path forward.

An example of a check list to be used during DG2 reviews is found in the EPS
Gate review requirements for critical milestones shall also apply to our sub-suppliers. The key milestones that mark significant events in the execution of the work shall form part of the purchase order and be an integral part of the project’s overall execution program (see 8.2.2).

The sub-supplier shall monitor and report the progress on this requirement (milestones) to the project on a regular basis (as specified in the purchase order).

Payment of the purchase order price to the sub-supplier shall exclusively be made against completion of each key milestone / critical milestones and verification and acceptance by the project of the same, in accordance with the compensation requirements of the purchase order.

8.2.13 Assembly and Testing

Assembly and testing includes the physical work processes that transform drawings, equipment and materials to the determined package. This activity start with assembly of the individual part and end with completion of the final product and will usually go through the following steps;

- Assembly of equipment and prefabricated parts
- Outfitting
- Mechanical completion
- Testing

Two months before the assembly activities commences at Sørumsand a hand-over meeting shall take place (DG4) between the project and Sørumsand. In this meeting a thorough review of the project shall take place with main focus on issues that might influence the production plan at Sørumsand. It is in particular important to verify the procurement plan against the production plan at Sørumsand to ensure that the two plans are fully synchronized. Any discrepancies must be rectified immediately

Before the assembly – and testing activities can start at Sørumsand, all equipment and materials received at Sørumsand needs to be thoroughly confirmed as complete, tested to the applicable specifications and turned over with documentation to Sørumsand as mechanically complete according to the purchase order requirements. Sørumsand shall not accept delivery of any equipment or components that has not passed the mechanical completion gate review DG3). Mechanical completion check lists shall be prepared in advance and form part of the sub-suppliers purchase order and shall be used to document that the delivery fulfills the mechanical completion requirements.

Punch lists shall be prepared (see section 6.2)

8.2.14 Mechanical Completion (DG6)

A mechanical completion philosophy shall be developed for the specific project based upon Eurekas mechanical completion philosophy, Ref is made to; Mechanical Completion Philosophy...
Mechanical completion shall document that all deliverables from sub-suppliers and ultimately the final product is produced and assembled according to drawings and specifications and that tests and inspections have been carried out in a uniform way.

The main tasks for mechanical completion during the execution phase are;

- Define mechanical completion packages and responsible part
- Define mechanical completion scope of work for equipment sub-suppliers

Equipment sub-suppliers shall carry out and document mechanical completion activities as specified in the purchase orders. Status of equipment and documentation shall be verified before FAT. Documentation for mechanical completion shall reflect the status of the equipment prior to release from supplier. Any omissions and errors shall be recorded in mechanical completion punch lists.

Ref; “MC” in the EPS.

During assembly at Sørumsand, all mechanical completion activities shall be carried out and documented according to requirements in the contract documents (PO). The main tasks are;

- Ensure that mechanical completion activities are transferred and implemented into the assembly schedule
- Carry out mechanical completion

Registration of all omissions i.e. missing information) shall be on punch lists. The omissions are categorized as follows;

- Omissions cat A: Omissions that must be corrected before MC milestone.
- Omissions cat B: Omissions that can be corrected after MC milestone.

Omissions cat B shall normally be cleared before the close out of the contract (PO), and not longer than 4 weeks after the DG6.

### 8.2.15 Transfer to OSS

Maximum two week after the goods are delivered to the client, a hand-over meeting shall take place between project and OSS (DG7). At that point OSS take over the responsibility for all remaining activities to be executed throughout all remaining phases (Fabrication, hook-up, MC, commissioning and operation)

To ensure a smooth transfer from project/Sørumsand to OSS, members from OSS’s commissioning team shall take part or preferably execute the testing - and final MC activities.

The project is responsible for preparation and execution of DG7 gate review meetings.
8.2.16 Final Documentation

Final documentation shall be prepared and delivered in accordance with the contract (PO). The activities in connection with final documentation shall be closely monitored with focus on consistency check and verification. Completion of final documentation is normally a time consuming activity and is also linked to financial penalties relating to milestones if non-compliant (up to 20% of contract value). It is therefore essential that we have dedicated resources that can review and approve documents in line with project deadlines, procedures and standards.

Planning and progress reporting in relation to final documentation shall be in accordance with plan for completion of final documentation. Reference is made to “Project Close and Handover to OSS” in the EPS.

8.2.17 Close Project Contract (PO) and Close Accounts

As soon as the contract is completed and Client has issued the commercial take-over certificate the contract (PO) shall be formally closed in accordance with the procedure in the relevant contract (PO). The accounts used for the project shall be closed and the team members shall be notified that the project is completed. Typically, clients in the oil and gas industry takes delivery when the project is mechanical complete as defined in the contract (PO).

Before take-over by the client (DG4) a formal review shall be performed. The review shall take place minimum 1 week before the planned take-over by the client. See section 7.2.

8.2.18 Close out of Sub-Suppliers Contract

At the end of the project, procurement shall prepare a guarantee log listing all major insurance, guarantee and back charge claims against sub-suppliers. Ref; Close out Requirements

8.2.19 Guarantees

Procurement shall follow up all guarantee issues (client and sub-suppliers) until the guarantee expire date in accordance with: “Project Close and Handover to OSS” in the EPS.

8.2.20 Experience Feedback, File Documentation

The Project Manager shall in cooperation with the Head of Projects and Head of Assembly and Testing ensure that proper experience transfer within Eureka is
organized and performed. Experience transfer at the end of each project is an element in improving best practice within Eureka.

Change requests may often reflect lessons to be learned for future projects. It is always worthwhile what can be learned and submitting any new knowledge into the various knowledge repositories. Note, in particular, any situations where existing approaches or plans should be updated.

A general description of experience handling is included in section “Project Close and Handover to OSS” in the EPS.