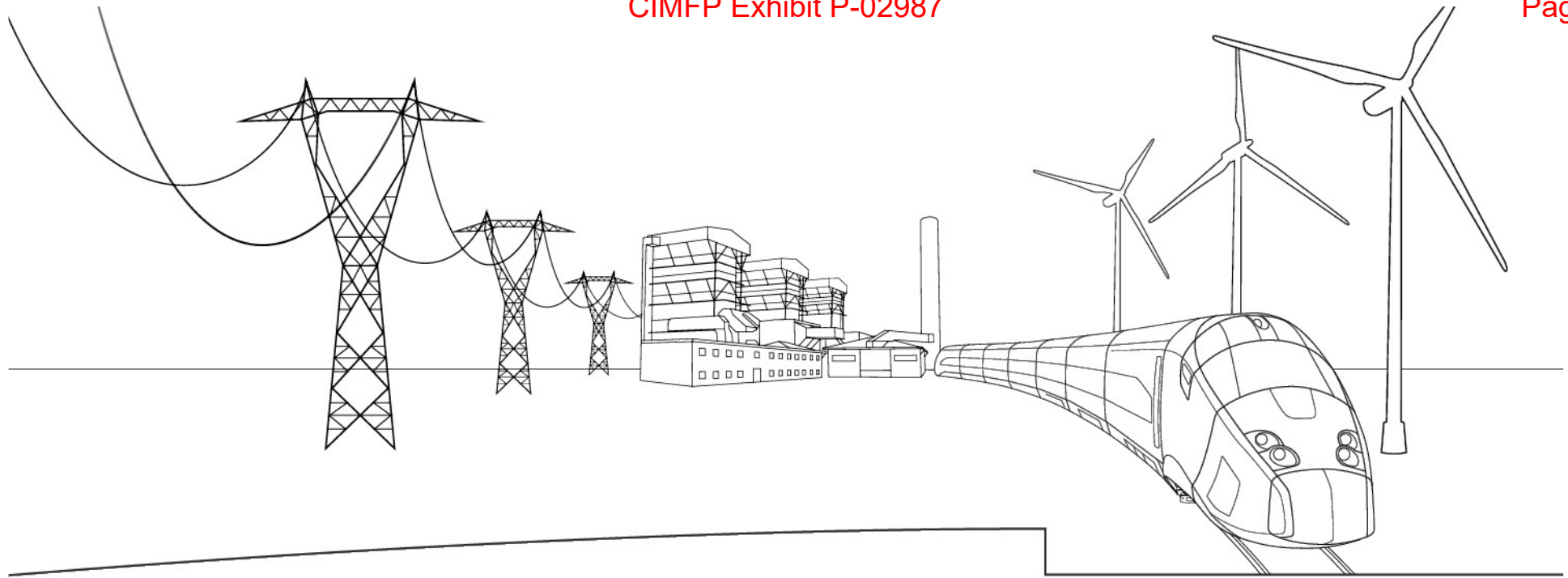


**From:** [ronpower@lowerchurchillproject.ca](mailto:ronpower@lowerchurchillproject.ca)  
**To:** [ronpower@lowerchurchillproject.ca](mailto:ronpower@lowerchurchillproject.ca)  
**Subject:** Alstom - Presentation - Execution Plan  
**Date:** Saturday, February 15, 2014 11:18:09 AM  
**Attachments:** [.png](#)  
[Nalcor HVDC Project Execution Rev2.pdf](#)

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Nalcor HVDC Project Execution Rev2.pdf



# NALCOR HVDC PROJECT EXECUTION PLAN

21 November 2013

**ALSTOM**  
*Shaping the future*

## Team presenting the Project Execution Plan:

Name	First Name	NALCOR Project
JAZE	Denis	Project Director
MARIAGE	Marc	Project Engineering Manager
PEYRATOUT	Antoine	
GENNAOUI	Samy	
RUIZ	Olivier	Managing Director Alstom Canada
PICOT	Gilles	Operations Director Alstom Canada
MARTIN	Thierry	Region Operations Director
FLITCROFT	John	

# Agenda

## ALSTOM Project Management (PMH, PMP, EMH)

Time Schedule and Milestones

Project Organization

Roles and Responsibilities Key functions

Engineering / LCP Data

Document Management system

Sub-contractors selection and Management

CW Strategy, Manpower scheduled installation

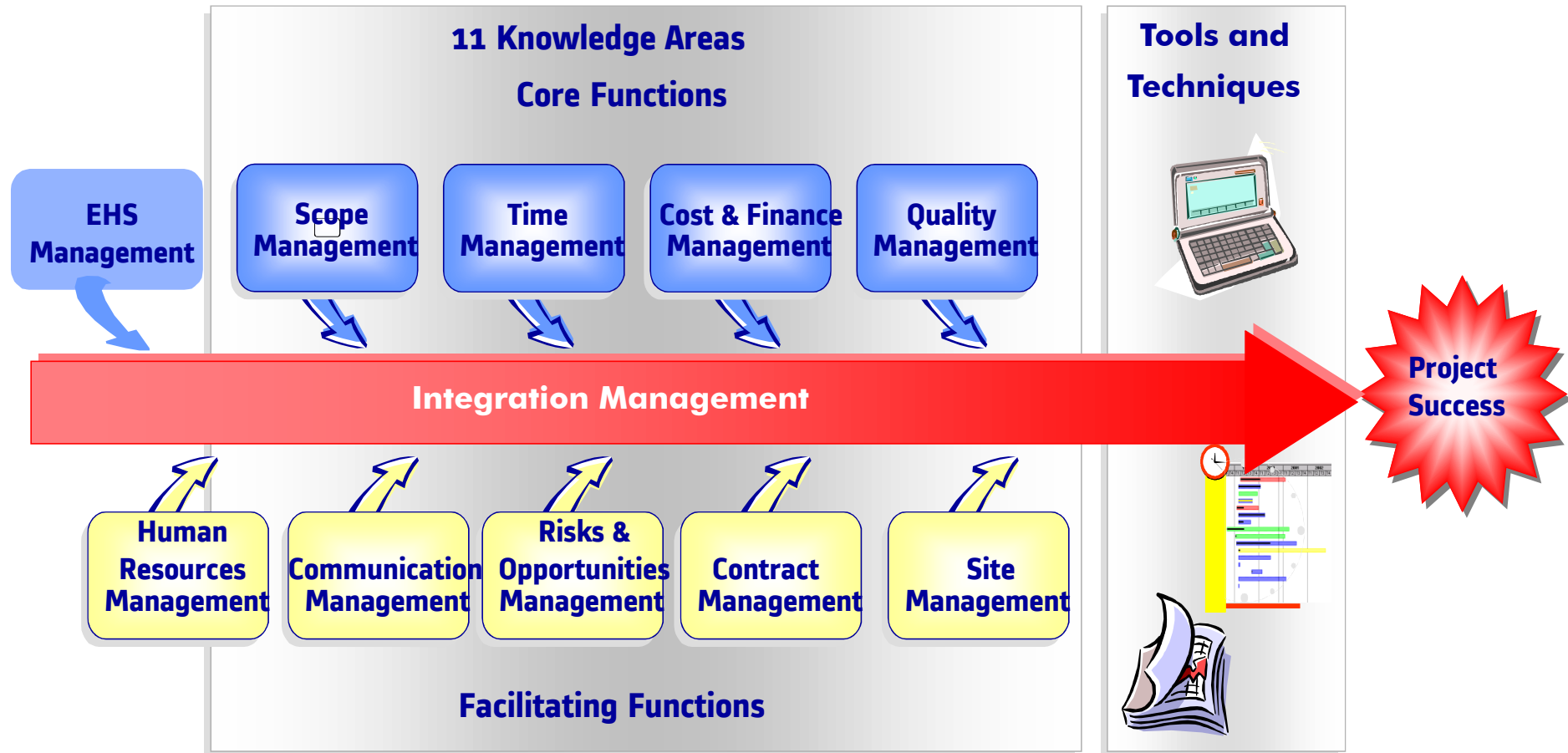
Site specifics

# Project Management Handbook (PMH)

- Alstom's project execution process is defined in Project Management Handbook (PMH) **based on PMI**
- The PMH supports our ambition to be World Class in Project Management
- Key success factors to deliver our commitment toward our customers:
  - Quality
  - Integration of the customer
  - Common objective
  - Transparency
  - Anticipation
  - Reactivity
  - Pro-activity
  - Prompt Decision making



# ALSTOM GRID PMH is based on PMI (PM Institute)



# ALSTOM GRID PMH content

PMH Area	M&G	Templates
<b>0 General</b>	✓	✓
<b>1 Integration</b>	✓	✓
<b>2 scope</b>	✓	✓
<b>3 Time</b>	✓	✓
<b>4 Costs &amp; Finance</b>	✓	✓
<b>5 EHS</b>	✓	✓
<b>5 Quality</b>	✓	✓
<b>6 Human Resources</b>	✓	✓
<b>7 Communication</b>	✓	✓
<b>8 Risks</b>	✓	✓
<b>9 Contract</b>	✓	✓
<b>10 Site</b>	✓	✓
<b>total</b>	<b>46</b>	<b>80</b>

## PMH is complemented by

- Finance instructions at corporate level
- EHS instructions at corporate level
- tools & QMS instructions at Unit level
- tools at corporate level
- tools at corporate level

Sourcing instructions at corporate level

# PMH architecture & elaboration principles

- Directly Operational (more templates than guidelines)
- Consistent across the various & numerous PM activities
- Based on Return on Experience
- Integrate people around “one GRID” practices



LCP – P 7

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# Integration - Transfer Tender to Project

- During the final award process, the tender team **transfers the project** to the execution team



- A formal **transfer meeting** is organised and launch the transfer period, the following items are addressed:
  - **Presentation of the project**
  - **Summary of the main requirements of the project**
  - **Works Programs**
  - **Scope of Works**
  - **Clarifications , Terms and Conditions in Contract**
  - **Actions to be taken in priority**
- **Bid Manager/Engineering** Team will be **assigned** to Project execution team for a period of time

# Project Execution / Project Management Plan (PMP)

A complex Project requires coordinating numerous people from various trades, who:

- works in **different locations**,
- have often **different cultures**.

→ need to have a **common understanding** of the expectations.

The PMP (validated during kick-off meeting ):

- facilitates the work of all, **eases** the coordination and **minimize errors**.
- **structures** the relationships and work processes between actors.



## Key objectives of the project team:

- On time, in full, delivery of the project
- Highest quality of equipment & project management
- Ensuring Client satisfaction throughout the project's life cycle.

# Document Control

---

**Project Document list:** the Alstom Grid typical documents list gathering all technical documents will be validated during kick-off meeting.

**Approval Process = 15 business days max** (to be improved for successful completion of the Project).

**Numbering System:** to be applied to all deliverables that will be issued to the client. The deliverables are all the technical documents of the project.

**Document Management System:** description will be submitted

**Templates:** List of templates to be used by all at the project start including Frame, Title block, Fonts, Etc...



# Quality

- Project quality Plan (enclosed with the offer): This document covers **all aspects** of the quality management system.
- Inspection and Test Plan (ITP): Cover the quality during **manufacturing** and **delivery**.
- Site quality plan: Covers the quality management for the **constructions works** and **commissioning**.
- Non Conformities: when identified, a **Non Conformity Report (NCR)** is issued, **registered** in a Project database and **regularly reviewed** with the Project Manager to ensure a **proper handling, root causes identified**, analyzed and **corrective actions** performed to clear them and **avoid** repetition.
- Customer satisfaction through :
  - ✓ **Contract Execution Rating** based on customer survey along project life
  - ✓ Customer complaint management system to:
    - **Report** to the **top management**;
    - **Solve and close** as soon as possible the reasons at the origin of the complaint;
    - **Implement the corrective actions** necessary to avoid repetition.

# Environment, Health & Safety (EHS)

The Project EHS Plan is specific and address the different Project phases, notably the **construction** phase. It must be developed in compliance with the **laws, NALCOR requirement, Alstom Grid policies & operating instructions.**



The safety of the installation is engaged during design phase:

- Safety of the design (Single Line Diagram)
- Safety of the installation during operation, maintenance and transient phase, accessibility, emergency exits and routes , etc... (layouts)
- Environmental aspects (containment, etc...)

# Project Management: **One team**

Together, we will create One project team with clear, transparent and immediate communication for the successful completion of the Project through:

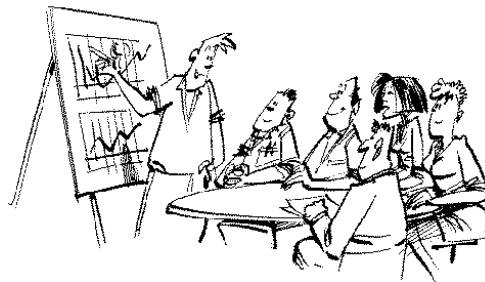
- **Regular Project meetings and coordination:** Kick-off meeting, Project Progress, technical coordination with design / gate reviews, project reviews, site meetings & progress;
- **Correspondence:** format, numbering, correspondence management system (filing, distribution, action follow-up and tracking);
- **Regular reporting:** monthly progress report, site progress report format, content, numbering, cut-off date etc...
- **Change management:** initiate a review of the required change with the concerned people or partner, and advise the Client of any implication or impact (performance, delivery, cost...).

# Project Monitoring

- Project reviews: **Regular** project reviews are conducted throughout the implementation of the project with reports (key data, decisions, actions, etc...)
- Work Breakdown structure (WBS): The scope of the project is **fully defined** in a WBS and **itemized in work packages**. It is the **basis of the time schedule**.
- Cost & Cash control: Regular internal reviews, review of the project invoice & payments with NALCOR during monthly reviews
- Project schedule: **integrated schedule from design to Acceptance**.
- Time control: Project schedule is validated during the kick-off meeting with Client. Then the baseline is initiated and followed on regular basis.
- Critical path: Ensure that **mitigation actions** are **identified** and **followed-up** to **reduce the risks of delay** of the Project.

# Project Monitoring

- Milestones follow-up: tracking of the milestones to ensure **respect of the schedule**.
- Progress measurement: define how and with which frequency is measured the **progress of the major activities**.
- Risk Control: Risks sessions schedule, risks analysis, risk mitigation plan, including common review with customer in an proactive mode of mitigation plan





# Engineering

**The project engineering manager develops the design strategy for the whole project.**

Working principles mainly consists of:

- Getting and validating the various technical inputs and requirements,
- Co-ordinating all the internal and external technical interfaces,
- Producing calculations notes, drawings, specifications and bill of materials,
- Getting NALCOR approval of major data and drawings,
- Issuing documents certified for procurement, manufacture and construction,
- Producing erection instructions and validating tests procedures,
- Issuing the "As-Built" documents.

*The pillars for the coordination are the followings:*

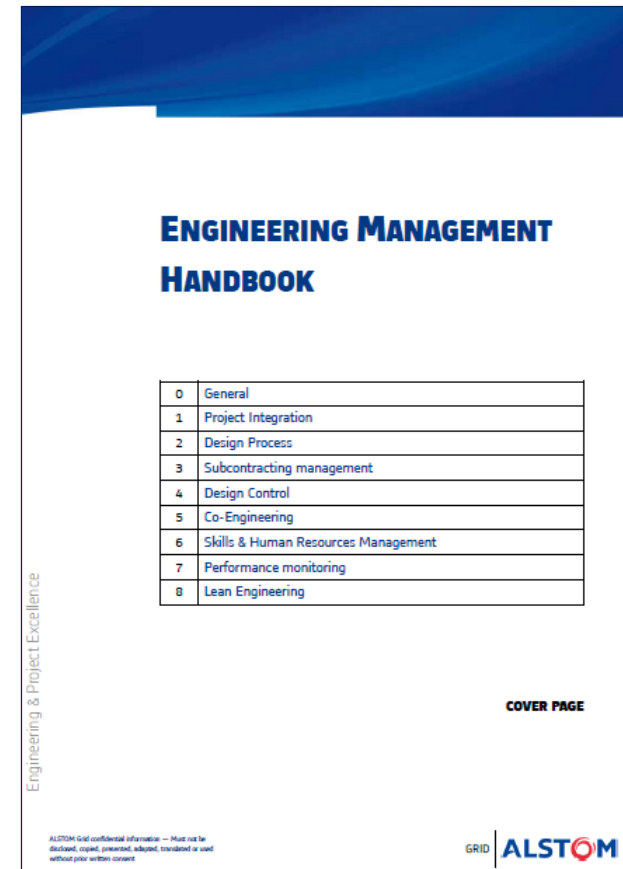
- *Interface Sheets management*
- *Kick-off meetings with the Suppliers (and documents exchange)*
- *Technical coordination meetings & E-Obeya working mode*
- *Design and gate reviews*

# Engineering

- In-house Engineering : Electromechanical design activities will be performed in-house, while non critical design will be subcontracted under Alstom supervision
- Design Reviews / Gate reviews: carried out **on a regular basis** throughout the design phase as per the plan. The Design Review Plan is developed before and validated during kick-off meeting.
- O&M Manuals and As-built management:  
Standard documents delivered **in accordance with Project requirements**
- CAD and Engineering Tools: Alstom Grid software and tools to be used
- Engineering Deliverables:  
The list of deliverable include ALL technical documents to be issued and to be followed-up in term of progress monitoring during the project life up to as built status.

# Engineering Management Handbook (EMH)

- The « Engineering Management Handbook » : It is an Alstom Grid corpus of **processes & practices** to support engineering process from tendering to commissioning.
- It is a complement of the PMH targeted towards **contributors of engineering process**.
- Applicable worldwide on Grid Projects .

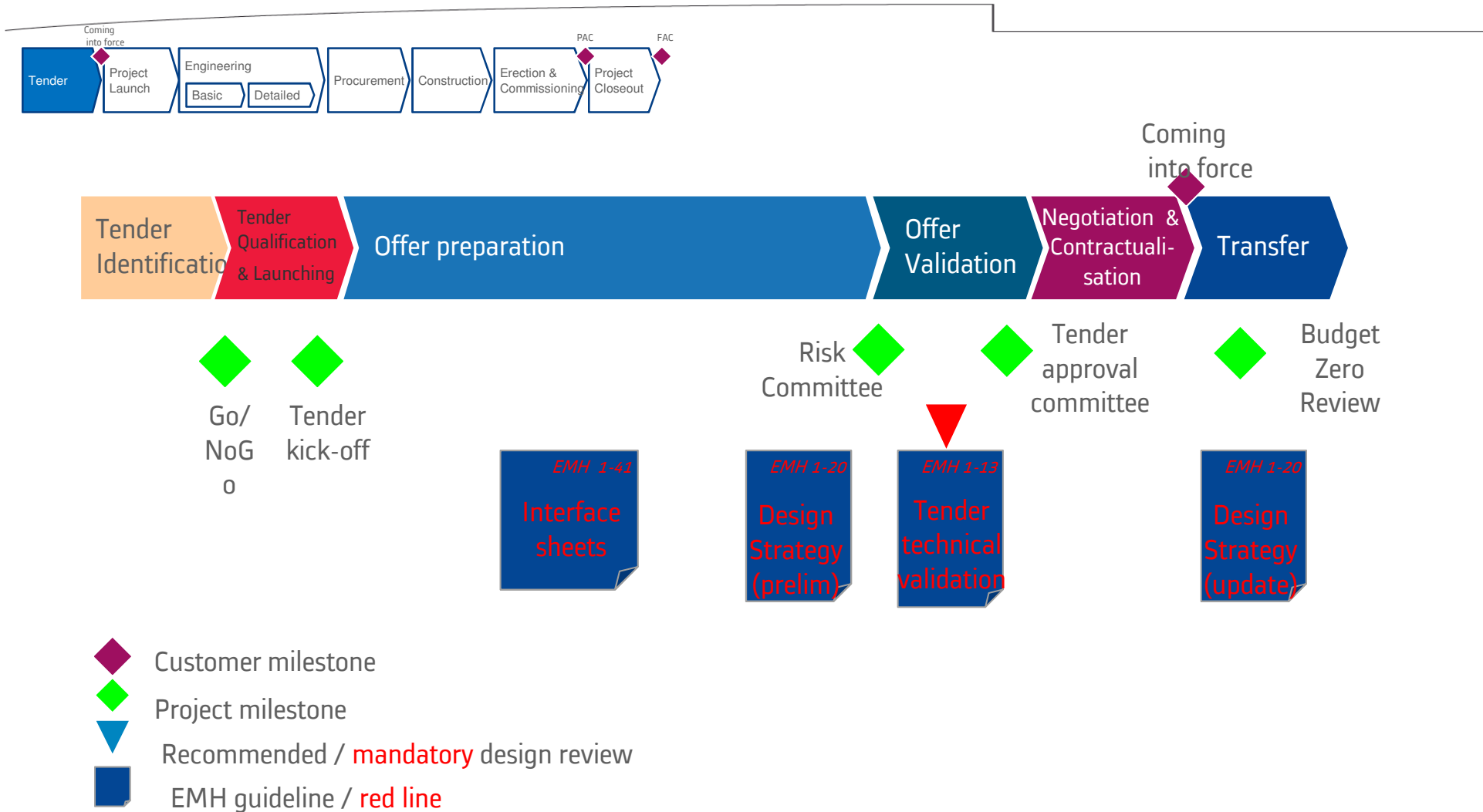


# EMH Domains Overview

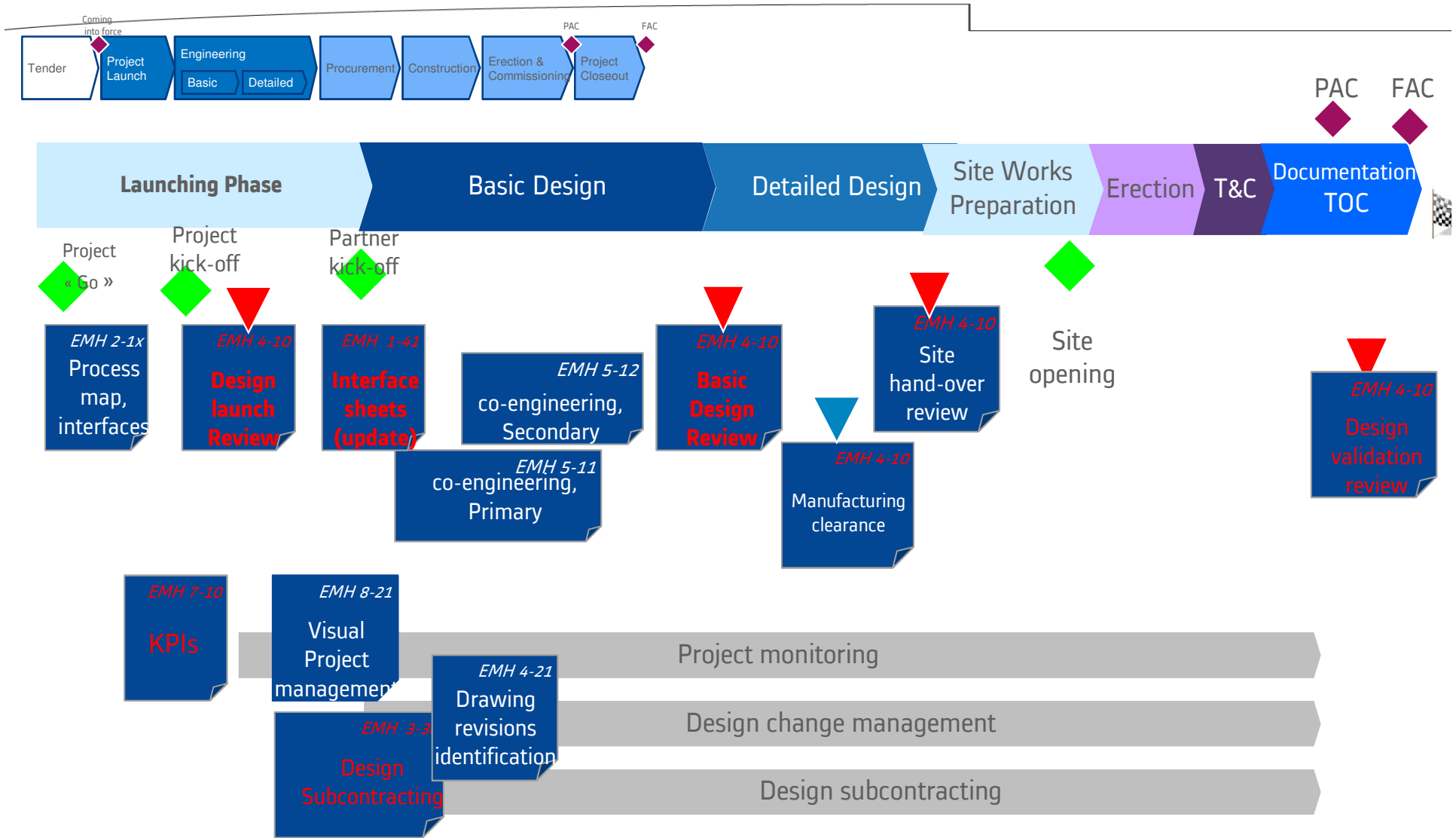
EMH is divided in chapters with manual & guide , templates including mandatory requirements and recommendations

Chapter & purpose	M&G	Templates	Chapter & purpose	M&G	Templates
<b>0 - Introduction</b> Introduce EMH framework & content, common language & terminology, and define applicability	Y	N	<b>4 - Design control</b> Set-up proper control mechanism for design works, through reviews and efficient tracking of modifications	Y	N
<b>1 - Project integration</b> Ensure reliable Tender process up to a smooth Project Transfer, foster anticipation of execution risks & opportunities, and the management of the integrated project environment	Y	Y	<b>5 - Co-engineering</b> Operational guidelines & toolkits on conducting collaborative design work with other PL and units	Y	Y
<b>2 - Design process</b> Structure and plan engineering activities on projects based on phased process approach, with effective management of design interfaces between main areas and stakeholders	Y	Y	<b>6 - Skills &amp; Human resources management</b> Continuously assess & develop skills for current and target market environment, define standard framework for engineering positions & career path	Y	Y
<b>3 - Subcontracting management</b> Manage subcontracting of design works in a secure way, to balance workload and focus on core value-adding activities & expertise	Y	Y	<b>7 - Performance monitoring</b> Monitor execution performance in proactive view, and enable process improvement	Y	Y
			<b>8 - Lean Engineering</b> Understand, learn and initiate implementation of Lean Engineering practices and principles.	Y	

# EMH guidelines overview - Tendering stage



# EMH guidelines overview - Project Execution stage



Monthly Business Review - 21/11/2013 – P 21

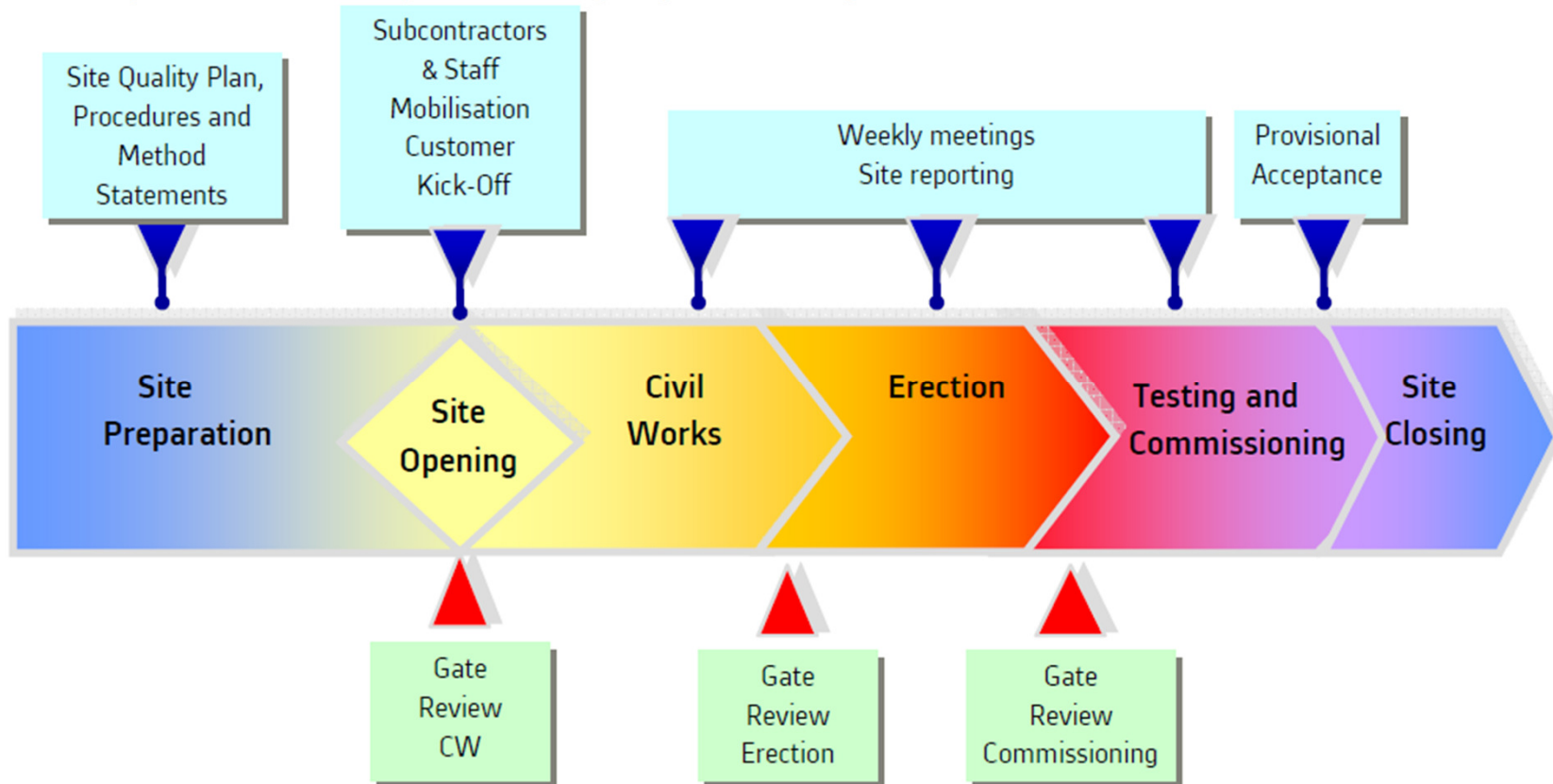
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# Sourcing, Procurement, Logistic

- Supplier selection: Supplier list defined in the Procurement plan. As per Alstom Grid rules and project requirement.
- Purchasing: a Purchasing plan is issued from the Project time schedule.
- Procurement & Expediting: covers the activities between PO issuance up to the delivery of the material. It should include follow-up of the suppliers schedules, calendar visits, etc..
- Inspection and quality surveillance:  
Describe how inspection and quality surveillance of suppliers is performed.
- Logistic Management:  
Define the various operations and services for the transport and intermediate storage of Equipment from suppliers premises to construction site. Ensure coordination at project level.

# Site management

The process is defined by the following steps and management reviews:





## Site activities / Construction

- Site organization : Defined during project execution and before delivery.
- Facilities: Define the site facilities, equipment, tools that are to be scheduled for the site works.
- Site management: Defined by the Site Manager and Project Director.
- Site schedule: in the integrated time schedule.
- Site progress meetings and measurement will be defined with the client and reports will be issued.
- EHS and quality: will be managed by dedicated persons under the responsibility of the site manager.
- Testing and commissioning: a plan will be issued by the commissioning manager and validated with the Client.
- Non conformities / clearance: recorded in a local database.
- Facilities dismantling and cleaning

# Agenda

ALSTOM Project Management (PMH, PMP, EMH)

Time Schedule and Milestones

Project Organization

Roles and Responsibilities Key functions

Engineering / LCP Data

Document Management system

Sub-contractors selection and Management

CW Strategy, Manpower scheduled installation

Site specifics

# Time-schedule

The Time-schedule is linked to the WBS (Work Breakdown Structure) and the DOW (Division of Work) agreed in the Contract and covers the overall project scope.

The Time-schedule identifies, organizes, defines, and assigns the works and activities to be completed during project execution.

The Time-schedule is an integration of Schedules received and agreed with the different suppliers (internal and external) and complies with the Contract requirements:

In practice, the Time-schedule will allow:

- ✓ Monitoring and controlling of the time commitments
- ✓ Driving “On Time Deliveries for Engineering, Procurement and Construction”
- ✓ Following-up project progress and critical path
- ✓ Provide scenarios to Project Management, to make easier decisions in case of time slippage, changes, etc...

## Time-schedule

---

- Contract award date: 27 Jan 2014.
- Mechanical Completion: 24 Jan 2017
- Start of Dynamic Commissioning: 01Feb 2017 – 01May 2017
- Start of Trial Operations start/end : 01May 2017– 01Aug 2017

# Time-schedule

---

- Procurement & Manufacturing:
  - Muskrat Falls:
    - AC equipment: Feb 2015 / March 2016
    - HVDC: June 2014 / May 2016
    - Converter transformers: July 2014 / March 2016
  - Soldiers Ponds:
    - AC equipment: Feb 2015 / March 2016
    - HVDC: June 2014 / May 2016
    - Converter transformers: July 2014 / Dec 2015

# Time-schedule

---

- Major FAT scheduled:
  - Converter transformers:
    - Muskrat Falls: Dec 2015
    - Soldiers Ponds: Oct 2015
  - Control system:
    - Muskrat Falls: end April 2016
    - Soldiers Ponds: end April 2016
  - Valves system:
    - Muskrat Falls: Dec 2015
    - Soldiers Ponds: Dec 2015

# Time-schedule

---

- Civil works:
  - Muskrat Falls: April 2015 / Jan 2016
  - Soldiers Pond: March 2015 / Feb 2016
  - Forteau Point: May 2015 / July 2015
  - Shoal Cove: Aug 2015 / Nov 2015
  
- Site Erection:
  - Muskrat Falls: Apr 2015/ Jan 2017
  - Soldiers Pond: Mar 2015/ Jan 2017
  - Forteau Point: Apr 2015/ Aug 2016
  - Shoal Cove: Aug 2015/ Nov 2016

# Time-schedule

---

- Transportation surveys completed by NALCOR and ALSTOM.
- Deliveries main equipment Soldiers Pond:
  - Transformers (200T) from Bay Bulls : 21 Dec 2015 (3 months)  
2 shipments
  - Remaining Equipment by containers from Halifax or Montreal
- Deliveries main equipment Muskrat Fall:
  - Transformers (200T): from Cartwright : 21 Mar 2016 (3 months)  
2 shipments
  - Remaining Equipment by containers from Halifax or Montreal



# Time-schedule

Critical Path:	Mitigations Actions:	Who?
Networks data from Client	format and data list to be confirmed at early stage	NALCOR
Sites ready for mobilization	Client works to be anticipated	NALCOR
Sourcing filters equipment	Accelerate studies and validation process	NALCOR and Alstom
Shipment of Filters Equipment	Anticipate / optimize transport durations	Alstom
Control system HVDC	Similar to other projects, points lists by Nalcor	NALCOR and Alstom
Converter Transformer	Transport survey, initial done	Alstom

# Agenda

ALSTOM Project Management (PMH, EMH, PMP)

Time Schedule and Milestones

Project Organization

Roles and Responsibilities Key functions

Engineering / LCP Data

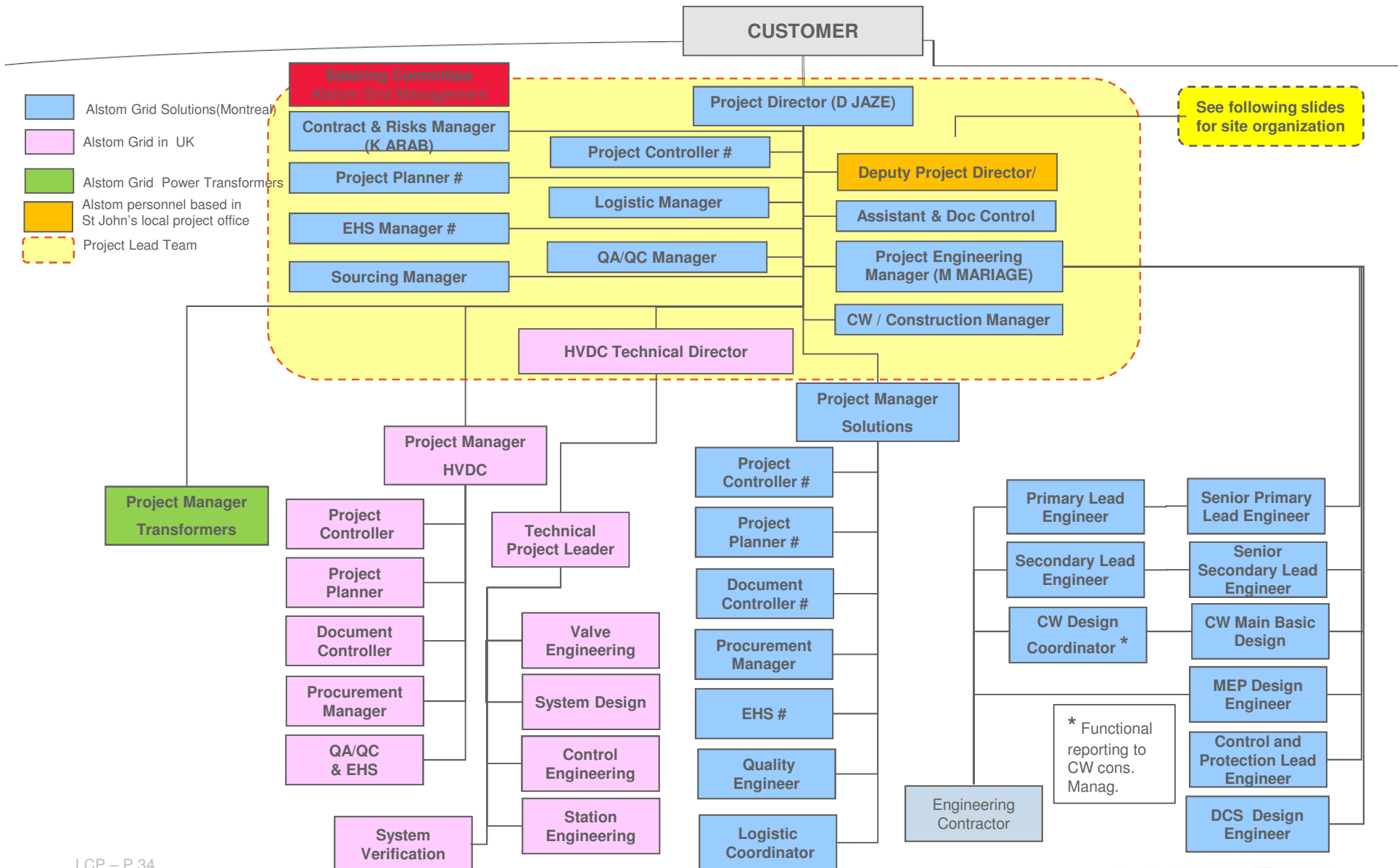
Document Management system

Sub-contractors selection and Management

CW Strategy, Manpower scheduled CW, installation

Site specifics

# Nalcor - Lower Churchill Project – Converter Stations and Transition Compounds Organization Chart



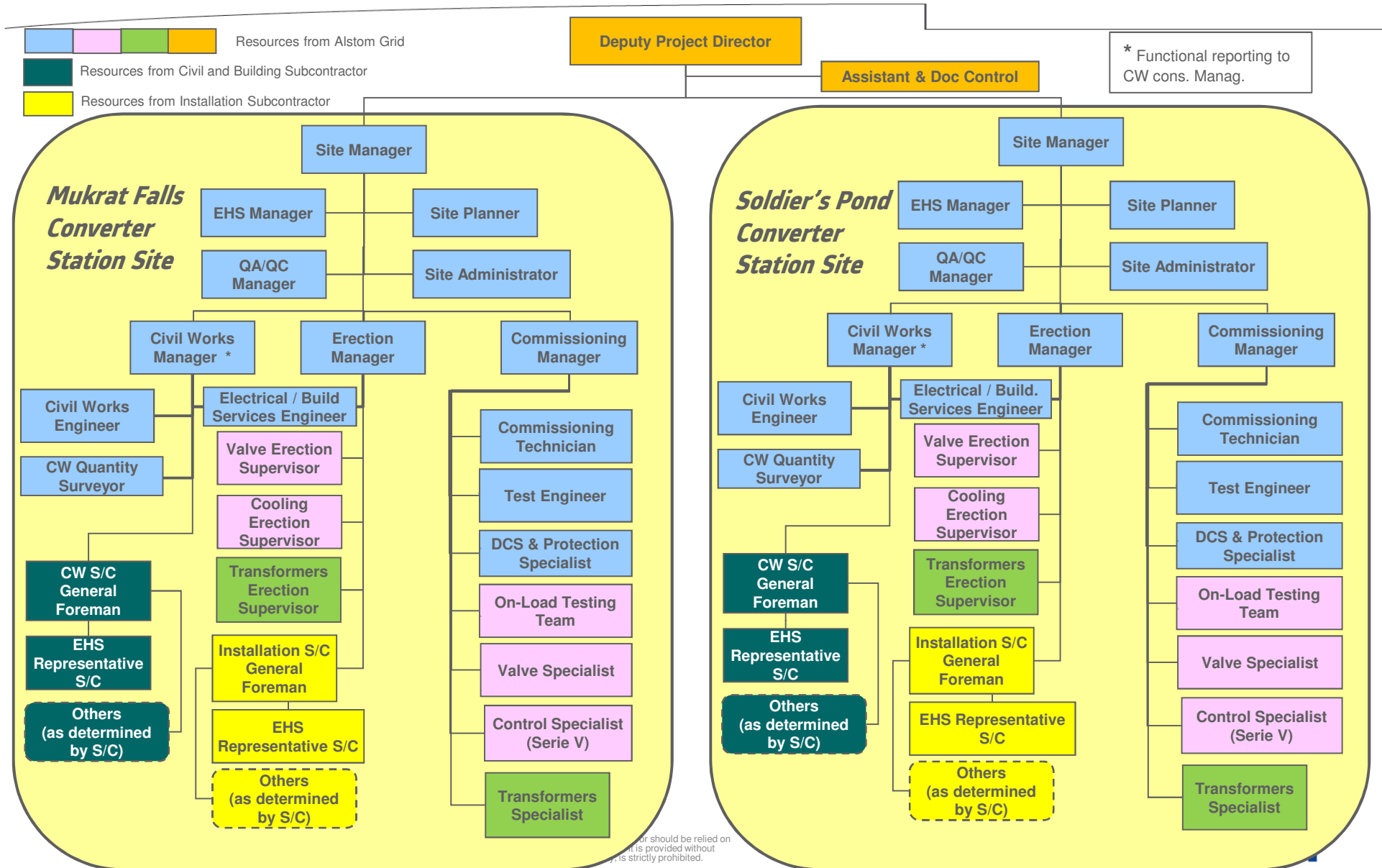
LCP – P 34

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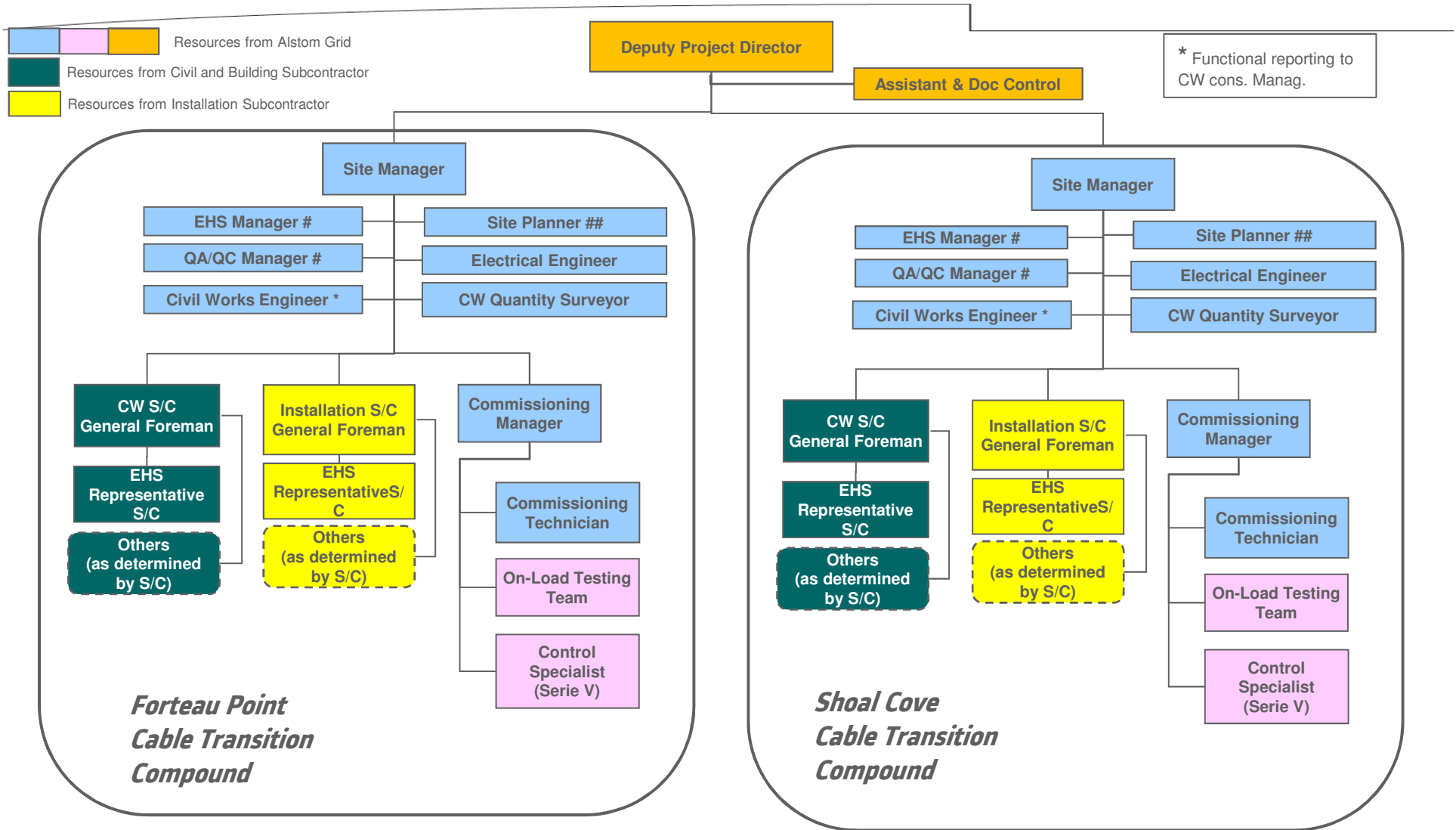
# Nalcor - Lower Churchill Project – Site Organization chart

## Converter Stations



# Lower Churchill Project – Sites Organization chart

## Cable Transition Compounds



# Agenda

ALSTOM Project Management (PMH, EMH, PMP)

Time Schedule and Milestones

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Site specifics

# Organization – Job Descriptions

## PROJECT DIRECTOR

- Primary interface to Customer for all official communication
- Overall responsibility to deliver the project according to contractual conditions and objectives set by Alstom Grid ( HVDC VP operations)
- Owns the project governance and strategy to be followed by the project team
- Leads the Project team and ensure the project coordination
- Empowered to make decisions for the benefit of the project
- Manages the Risks and Opportunities assessment, proposes and follows action plans
- Organizes and manages the Project Master Time Schedule
- Implements and follows transverse actions for the benefit of the Project
- Reports on monthly basis the consolidated project situation the progress to the HVDC operation VP and is helped by Steering Committee to take strategic decisions.
- Run full consolidated Projects Reviews on a quarterly basis with the different participating Units and the HVDC Operation VP as per Grid Governance

# Organization – Job Descriptions

---

## DEPUTY PROJECT DIRECTOR

- Acts as day to day contact point with Customer in coordination with the Project Director
- Interface for the documents submission to the customer
- Coordinates the Sites team
- Implement and follow the project governance and strategy defined by the Project Director
- Responsible for the project cash collection
- Participates to / Leads when necessary the project reviews and risks and opportunities reviews of site activities ( in delegation and full coordination with the Project Director)
- Performs when required site visits and audits.
- Organizes and manages the project reporting to the customer in coordination with the Project Director
- Responsible for monitoring the progress of sites activities
- Monitors the customer milestones and follow-up action plans in association with concerned units in case of deviation or risk of deviation.



# Organization – Job Descriptions

---

## PROJECT ENGINEERING MANAGER

- Responsible for the technical coordination of substation engineering package inclusive of HVDC, primary design, secondary design, DCS, Civil Works
- Optimized interfaces and solutions with Equipment suppliers with respect to technical, schedule and economic aspects
- Manage of input data collection for Substation engineering scope ,
- Definition of Substation Engineering Design Reviews and manage technical risk assessment as per processes
- Manage engineering deliverables according to project time schedule and follow-up Customers comments reply
- Review the consolidated engineering workload plan
- Participates to Interface Meetings with other Team Members
- Acts as the “Technical Contact point” to Power Grid on engineering technical issues

# Organization – Job Descriptions

---

## HVDC Technical Director

- Validation of Engineering reports and converter equipment document package prior submission to the client
- Monitoring of the overall system performance basis with respects to losses, RAM, audible noise, MW and MVAR capacity
- Optimization of the overall HVDC part of the project
- Management of Gate Review
- Development of commissioning switching programs and coordination of training
- Attendance to Risk Sessions

# Organization – Job Descriptions

---

## CONTRACT MANAGER & RISKS MANAGER

- Ensures that Contract Management guidance are fully applied by all project members
- Assists project members in contract management issues in reference to Grid contract management role PMH 6-10-V1E
- Organizes and reports the Risks and Opportunities reviews at Project Level
- Generates terms and conditions applicable to CW and Installation sub-contracts
- Supports the Project Team during negotiations of main sub-contracts

# Organization – Job Descriptions

---

## LEAD PLANNER

- Consolidates progress information from Project Members to develop and follow-up the Master Time Schedule
- Identifies clearly the customer milestones and the critical path
- Implements and controls activity's progress measurement
- Identifies deviations and proposes alternatives solutions to reduce the critical path and increase the project float
- Consolidates overall workload and follow-up resources needs and allocations
- Provides input to the lead Project Controller for sales and invoicing forecast

# Organization – Job Descriptions

---

## EHS MANAGER

- Defines applicable EHS policy and monitors its implementation for site activities and concerned suppliers/subcontractors
- Ensure deployment of Zero Deviation Policy and Alstom Safety Directives in the project organization
- Performs ad-hoc surveys to ensure the correct application of the policy at site
- Identifies deviations and proposes alternatives solutions for the benefit of the project
- Supervises the EHS performance of sub-contractors at Site

# Organization – Job Descriptions

## CIVIL WORKS / CONSTRUCTION MANAGER

- Responsible to deliver the CW part according to contractual conditions and objectives set by the Project Director .
- Implement and follow the project governance and strategy defined for CW activities
- Participate to selection of the CW subcontractors, and manages the CW subcontractors
- Prepare Inputs to Risks and Opportunities sessions specific to CW package, proposes and follows action plans
- Monitor and Reports the progress to the Project Director, manages the Time Schedule for the CW part
- Attends Site Progress Meetings
- Ensures coordination between CW and electromechanical activities
- Reviews design modifications during construction stage with regards to their impact (schedule, ...)
- Organizes and manages the program for CW activities, including staffing.
- Responsible for implementation and follow-up of the Quality and EHS policies in relation to Civil Works activities
- Owns the site guidelines to be followed by the team and subcontractors

# Agenda

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# Design Organization

- The Engineering activities will be divided into 4 majors work packages with the following responsibilities :

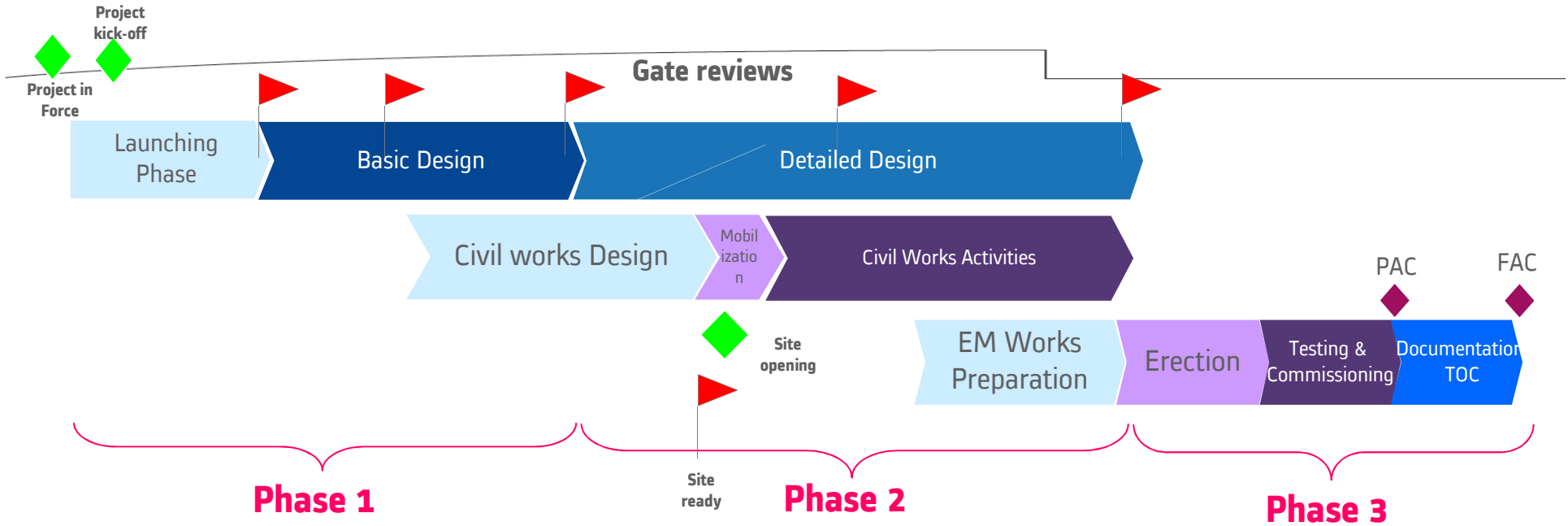
- **1** – Design package (WP)1: Global design coordination & optimization, HVDC design integration (Stage 1), 
- **2** – Design package (WP) 2: HVDC equipment (Power converter, Transformer converter and Control for converter, cooling system, AC & DC filters....) 
- **3** – Design package (WP)3: Switchyard engineering ( AC/DC Switchyard , CW & Building services design, DC integration (stage 2), coordination with package 4 
- **4** – Design package (WP)4: Design for AC equipment, Switchyard Control & protection. 

- 3 major design phases will be considered for the project execution:

- Phase1: Basic design stage: General Layout & SLD, Building architecture & CWGD  
- C&P principles and DCS architecture, DC/AC equipment sizing, interfaces sheets  
...
- Phase 2: Detailed design stage: detailed equipment specification, manufacturing drawings, construction drawings, erection drawings
- Phase 3: support to erection and commissioning and final documentation / O&M Manuals



# Design Organization



## Work Packages localizations:

### HVDC DC Yard & Valves



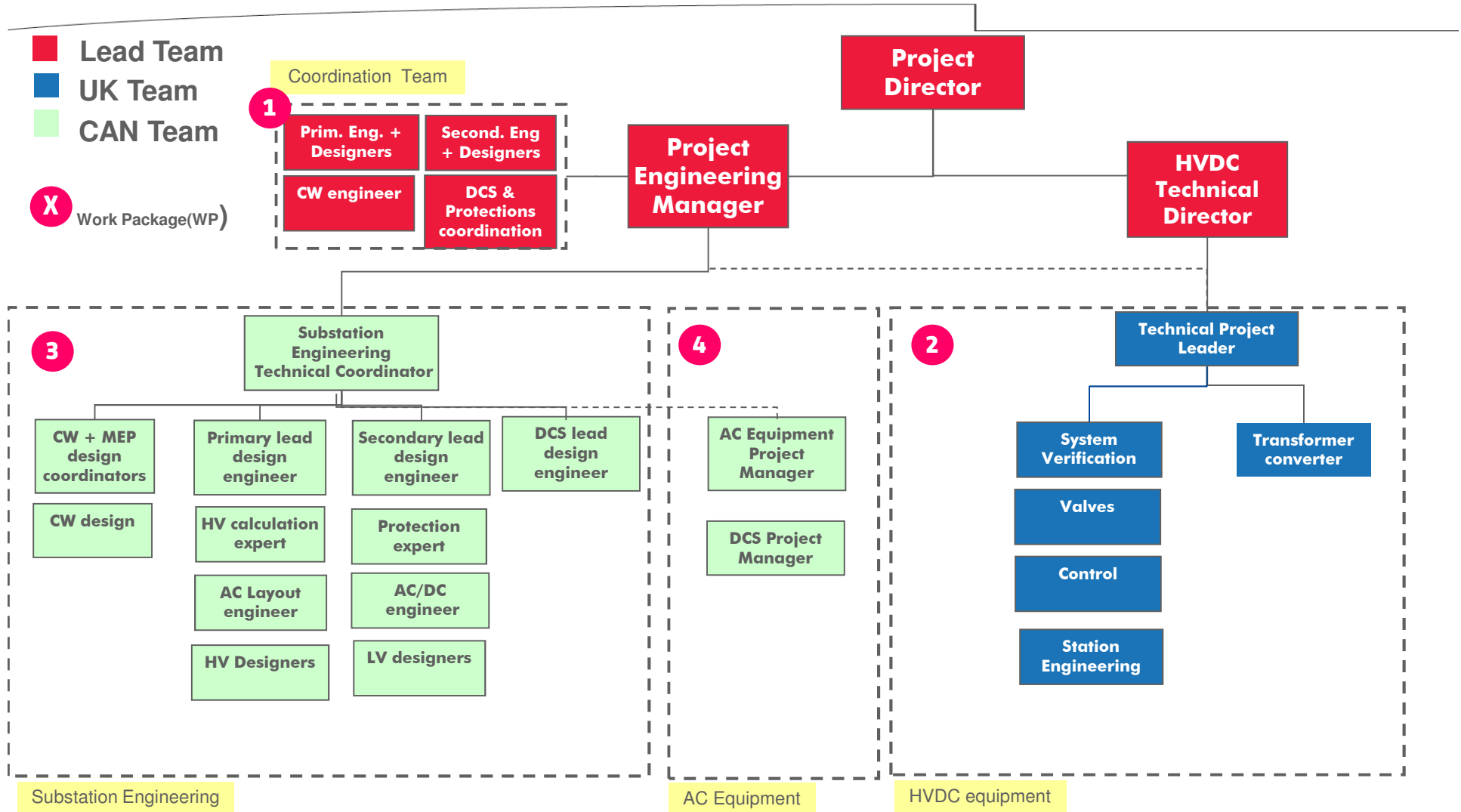
### HVDC / AC Yard



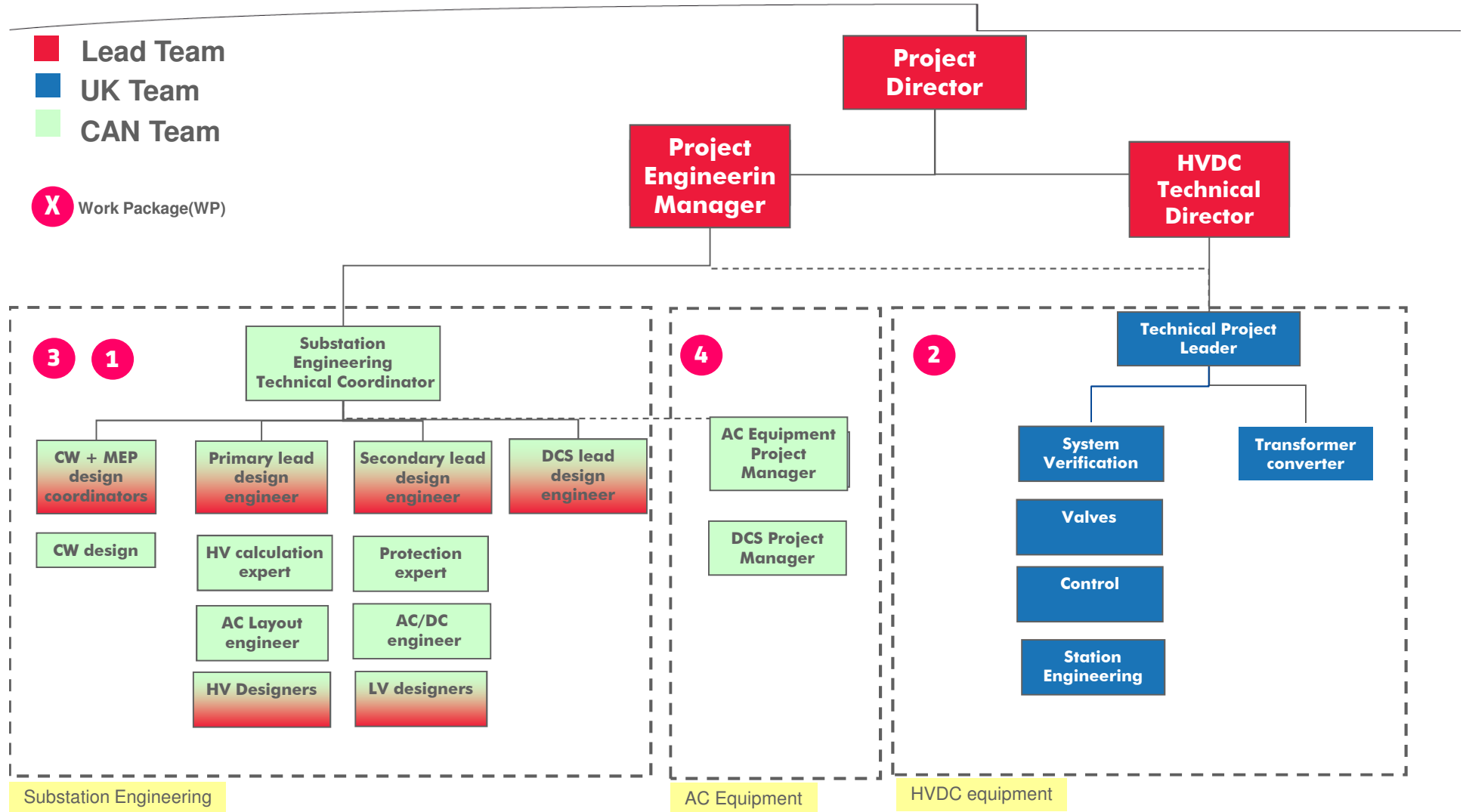
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# Design Organization Phase 1



# Design Organization Phase 2 and 3



# Summary of Data input requirement from Nalcor

Data inputs required for HVDC – Data to be considered as priority due to potential impact on the sizing of the HVDC equipment and layout.

- DC OHL parameters confirmed characteristics: → required at M0
- DC cable parameters and connection details: → required at M0
- Networks data → required at M0
  - Synchronous compensator details
  - Generator details
  - All valid AC circuit configurations including any future potential modifications to the AC system
- Surge Arrester data
  - At adjacent AC substation
  - At the dc cable termination and dc line termination (if applicable)
- Electrode Line parameters
- Parallel AC line details including loading, voltage rating
- Harmonic Impedance search area
- Study cases → required at M0
- Background harmonics measurements → required at M0

# Interfaces

Main Interfaces points between Nalcor and Contractor identified in the SOW specification in chapter 4:

The below points will be the object of dedicated interface documents with deadlines .

- Communication interfaces :
  - ODF and telecom , ADSS equipment
  - MoS for OF and DOFC installation.
  - list of signals, AC/DC power supplies.
- Transition compound interfaces:
  - Rack +field junction boxes to be provided for DTS monitoring system and cable sealing end pressure monitoring data.
  - list of signals, AC/DC power supplies.
- AC auxiliary power supplies interfaces:
  - 25kv line supplies, protection system
- CW interfaces: subgrade level, cable trenches, access roads

# Interfaces

- AC switchyard:
  - Bus work interfaces (Final gantry locations, strengths )
  - Grounding grid
  - C & P
- HVDC Transmission and Electrodes lines:
  - Final gantry locations, strengths
  - C & P
- HVDC Submarine/Land cable:
  - Surge arresters and CSE foundations.
  - Interfaces with monitoring system.

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# Document Management System

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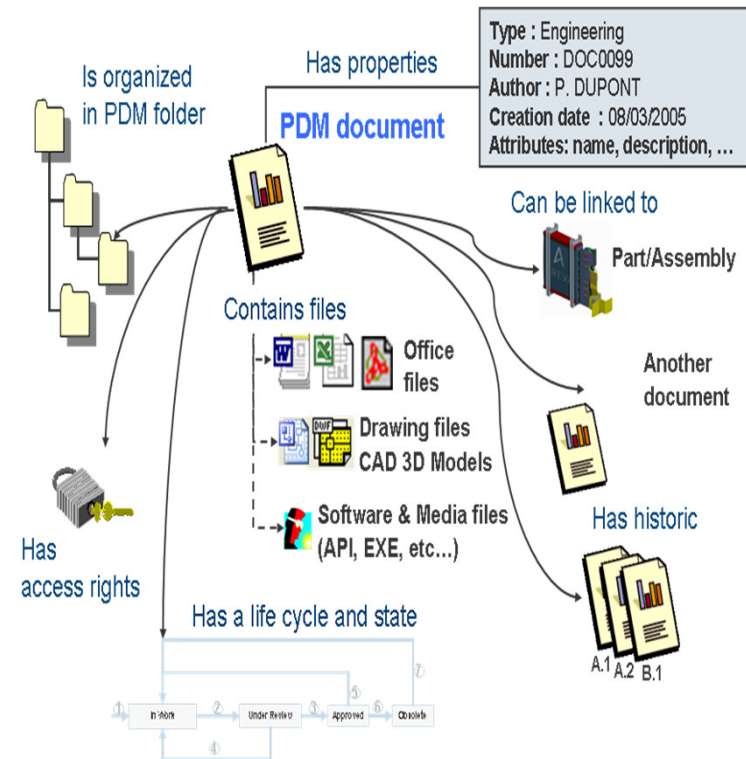
- Documents exchanged with NALCOR:  
ACONEX is the interface system proposed by NALCOR.
- Alstom internal management of documents:  
We will use as a Document Management System our standard tool PDM for the initiation and validation process of each technical document.  
We will manage in PDM all technical documents from the different suppliers internal and external.
- The Document Controller will be in charge of this task.



# ALSTOM Document Management system / PDM



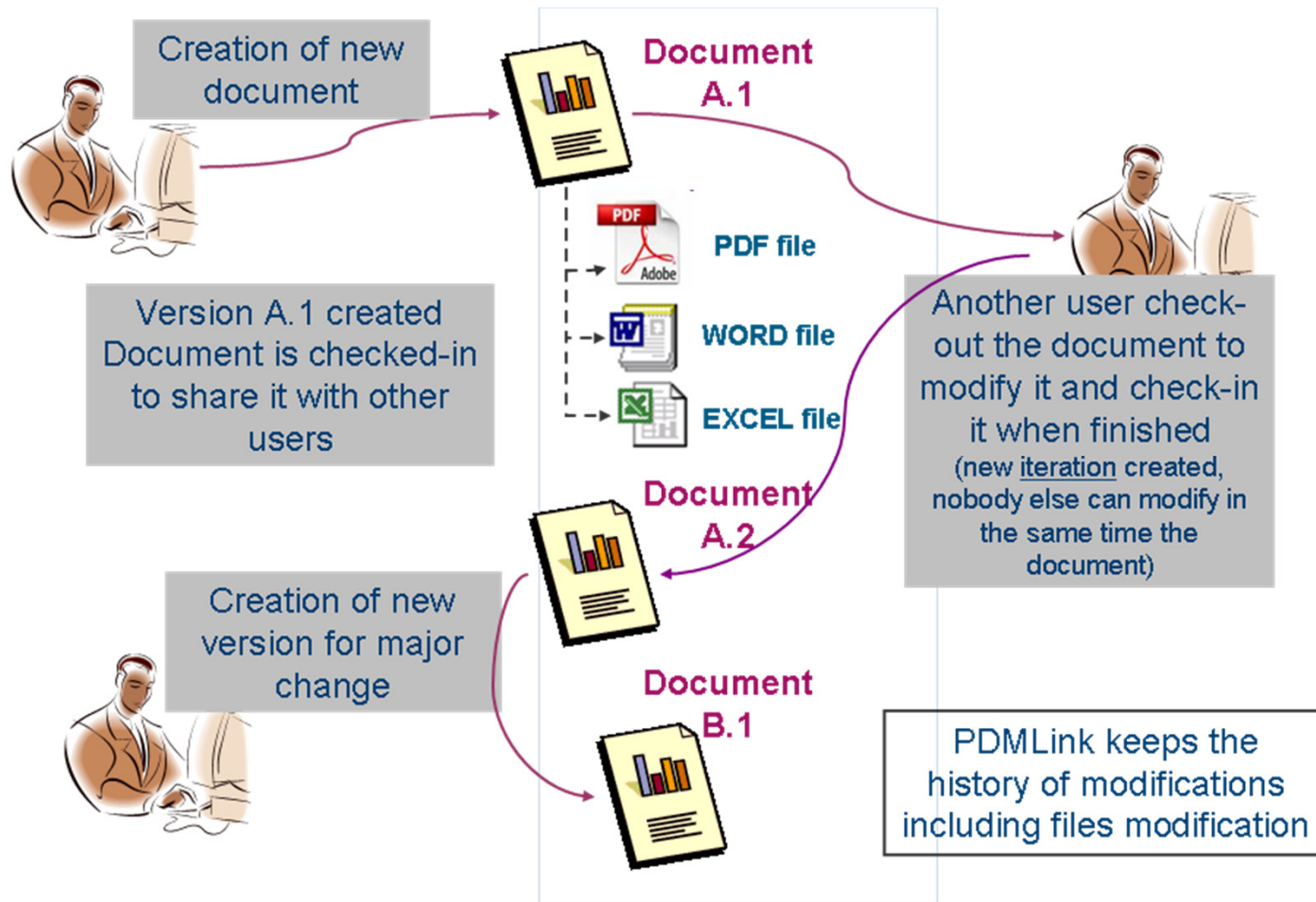
- Technical solution : Windchill PDMLINK (from PTC)
  - full WEB application
  - A secured architecture :
    - Meta data database and application server are central
    - One file server per Unit = Replica
- Four types of document managed
  - **Engineering Document** : Equipment Drawings, Cable Routing Diagram
  - **Input/Output Document** : Customer Comment Letter
  - **Transmittal Document** : DTF (Document Transmittal Form)
  - **Miscellaneous Document** : Informal Calculation Note...



## A Tool Strengthening collaboration between Project teams

# ALSTOM Document Management system / PDM

## PDM / a tool to improve document tracking



# Agenda

ALSTOM Project Management (PMH, EMH, PMP)

Time Schedule and Milestones

Project Organization

Roles and Responsibilities Key functions

Engineering / LCP Data

Document Management system

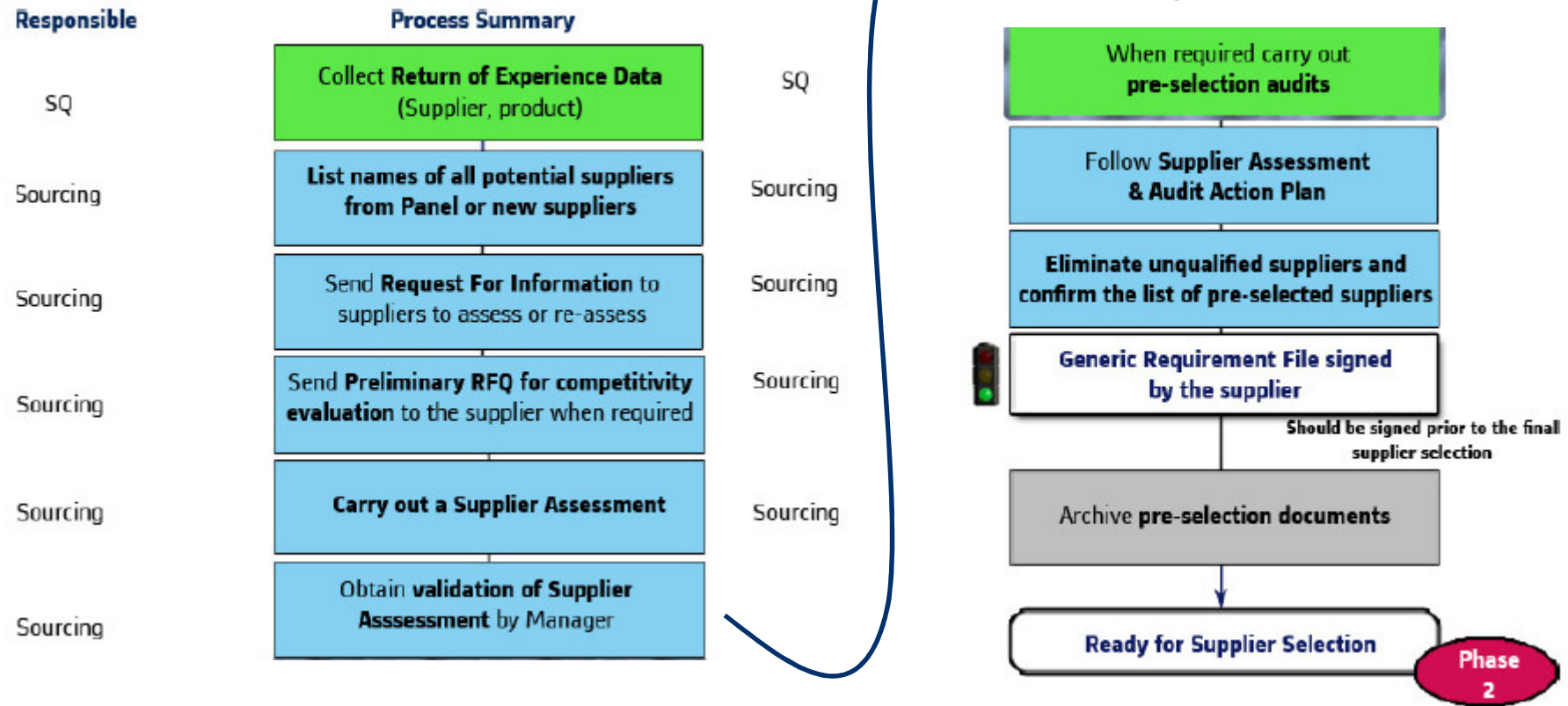
Sub-contractors selection and Management

CW Strategy, Manpower scheduled installation

Site specifics

# Sub-Contractor Selection

**1** Pre-select Suppliers for Potential Business



# Agenda – Process used to select and contract major packages

## Auditing new subcontractor: example CRT



### Classification audit

Supplier name	RCT
Production site audited (name)	LEVIS
Audit date	14-06-2013

### Overall result (filled-in automatically)

Number of audited questions :	92	=> Completion index :	67%
		(nbr audited questions / total nbr questions)	
Nbr of 'Not Acceptable' tags :	0		
Average result :	75%		
Class mark :	A		
Status :	Approved		
Nbr of CAR :	0		

### Results per section

Section	Total number of questions	Nbr of audited questions	Average result	Nbr of 'Not acceptable' tags	Nbr of CAR
Management & Organisation	16	15	76%	0	0
Environment, Health & Safety	20	19	71%	0	0
Tender and Project management	29	27	76%	0	0
Design	9	0	Not audited	0	0
Sourcing & procurement	12	0	Not audited	0	0
Supply chain	9	8	78%	0	0
Manufacturing	22	6	77%	0	0
Non conformity management	9	9	74%	0	0
After sales & Services	4	0	Not audited	0	0
Human resources management	8	8	79%	0	0

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# Civil Works Execution Strategy

At tender stage we have completed the following:

- CW Design of the different sites, Bill of quantities, detailed design for the foundations and buildings, etc...
- RFP sent to our approved design sub-contractors to secure workforce and schedule.
- RFP sent to the local approved contractors and discussions with focus on
  - Secure planning taking into consideration the winter periods and delivery of the Equipment
  - Secure the resources dedicated to the project and their viability
  - Conformity with Union / Labor Agreements and other local regulations
  - Commitment to deliver the works on time and in conformity with specifications
  - Secure our supervision / management team in charge with CW follow-up

# Civil Works Execution Strategy

We have already considered the following Project Execution strategy:

- Civil works & construction optimizations have reduced the works to be performed in the converter stations and transition compounds.
- Breakdown of the CW into sub-packages (foundations, structures, pre-engineered buildings and pre-fabricated buildings, buildings services, HVAC)
- Sub-packages completed at different period of time: resources availability.
- As a consequence, the needed workforce at peak is 70 trade persons per converter site.
- Access to small contractors companies: proximity, flexibility, reactivity. Increase of local content.
- Alstom sites organization adapted to manage these sub-packages with reinforced monitoring of the progress.
- Transition compound construction cabins mobilization anticipated
- MF: using Nalcor supplier's concrete (confirmed unit price) to optimize our offer but concerns about the priority of delivery due to the dam construction.



# Installation Workforce

			2016													2017								
LOW CHURCHILL PROJECT - MUSKRAT FALLS			TOTAL	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
AG	IN	Erection Manager	11		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0									
AG	IN	Specialized supervisors (Valves, control, Xfos, etc)	40				4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0								
AG	IN	Electrical eng (can be merged with with BS eng)	7					0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8								
S/C	IN	S/C Manager	10			1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0									
S/C	IN	EHS	10			1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0									
S/C	IN	Super-intendant/general foreman	24			2.0	2.0	3.0	3.0	3.0	3.0	3.0	2.0	2.0	1.0									
S/C	IN	Quality	10			1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0									
S/C	IN	Store keeper	10			1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0									
S/C	IN	Foreman	31			1.2	2.5	4.0	4.7	4.8	4.5	4.0	2.9	1.5	0.6									
S/C	IN	Worker	187			7.2	15.5	27.7	30.7	29.3	26.2	22.7	14.9	8.8	4.3									
S/C	IN	Apprentice	67			3.3	8.1	11.3	11.4	10.2	9.1	7.3	4.3	1.2	0.7									
<b>Total AG + erection contractor</b>					<b>1</b>	<b>19</b>	<b>37</b>	<b>56</b>	<b>60</b>	<b>57</b>	<b>53</b>	<b>47</b>	<b>34</b>	<b>23</b>	<b>16</b>	<b>5</b>								

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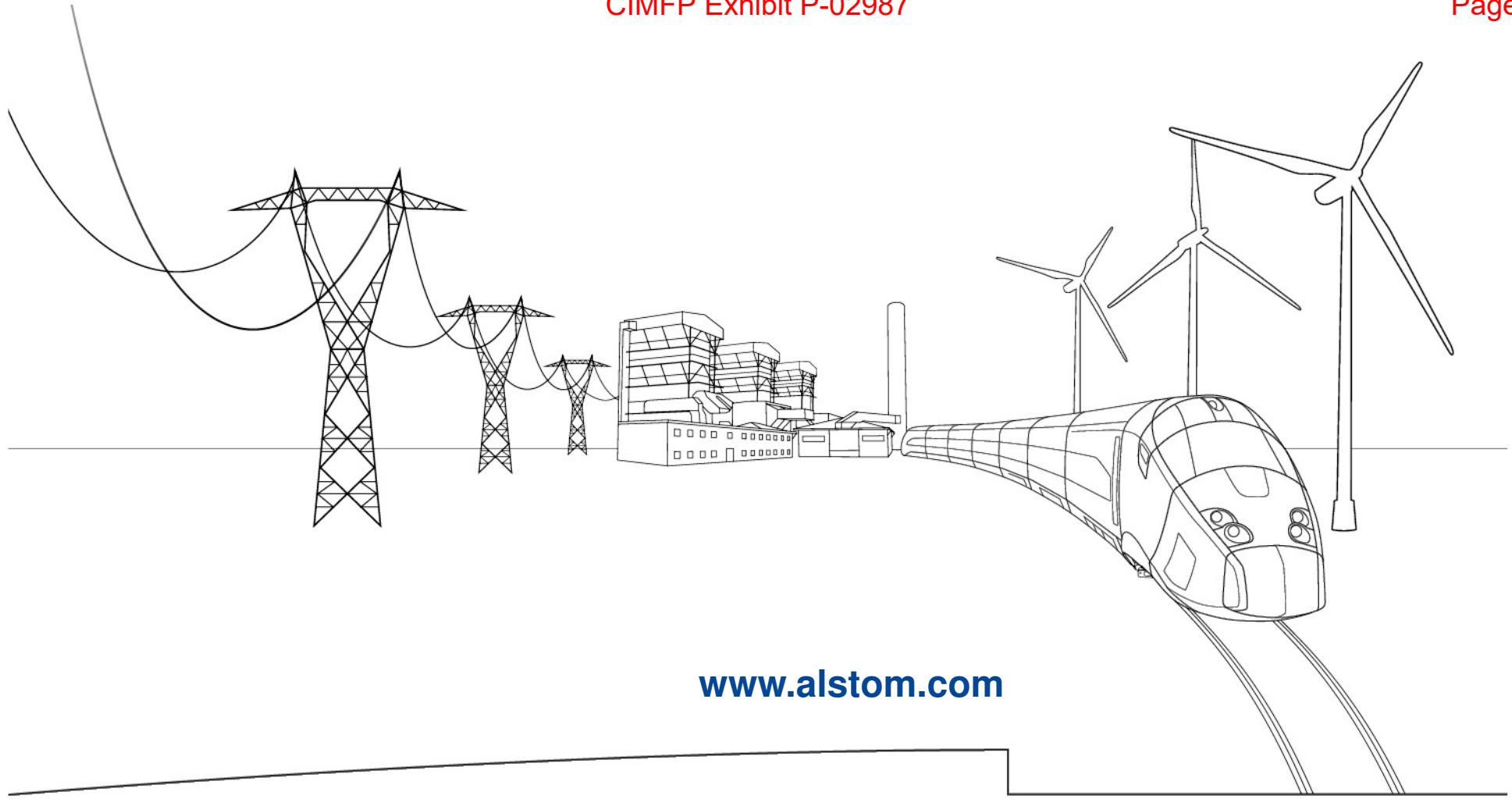
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# Sites

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- Site security:  
MF: LCP scope.  
SP and TC: Temporary fencing with safety guard provided.  
Emergency vehicle for first aid: at all sites except MF



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