

TPI

# Lower Churchill Project

## Project Controls

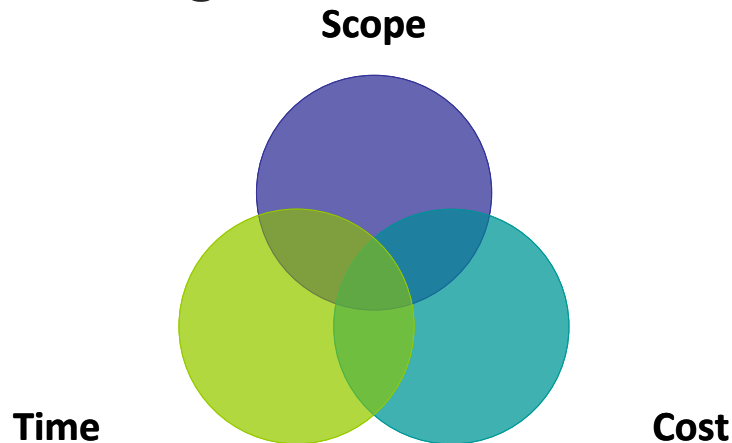
### May 2018

Boundless Energy



# Introduction

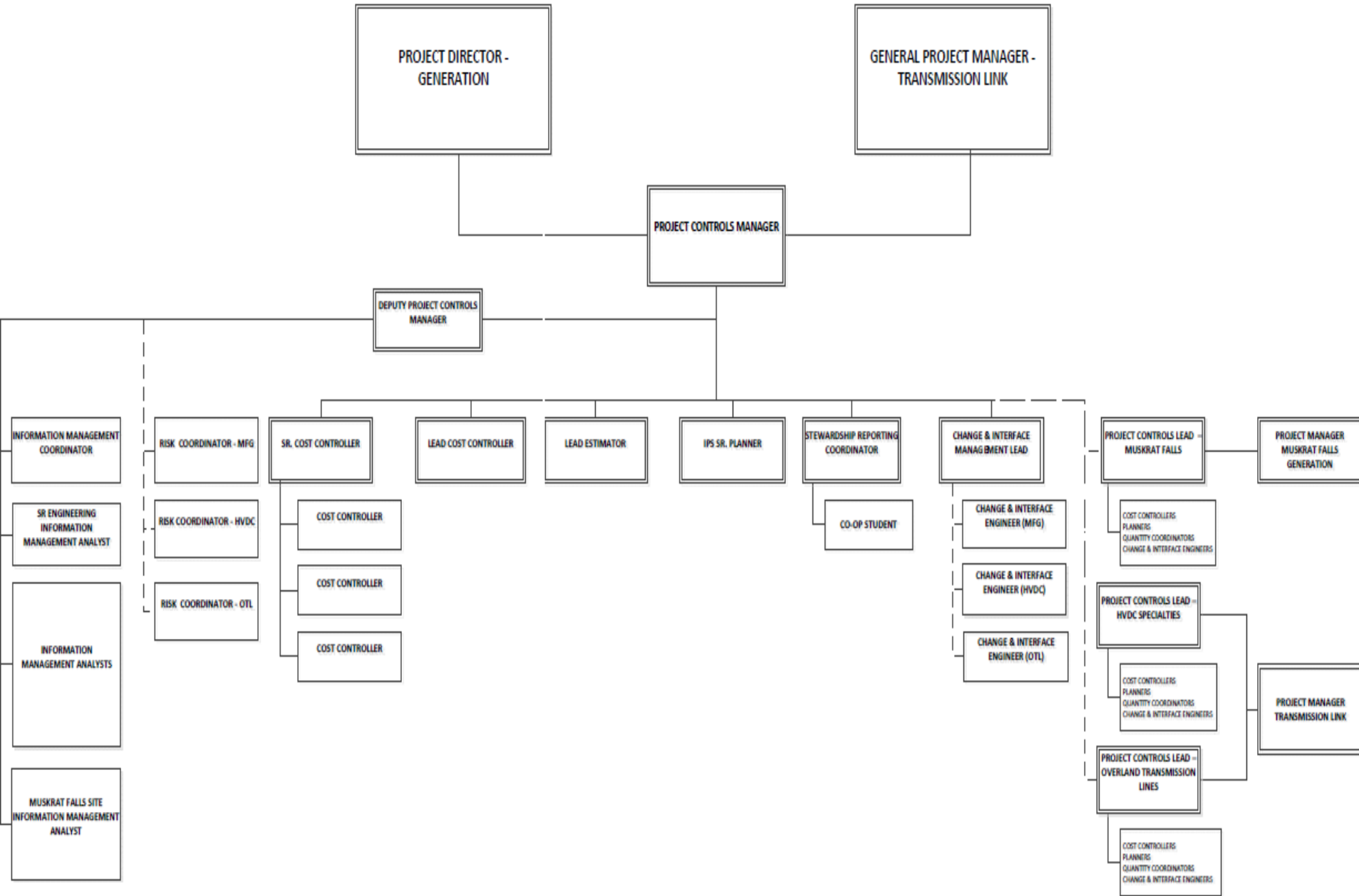
- ❑ Project controls are the data gathering, management and analytical processes used to predict, understand and constructively influence the time and cost outcomes of a project or program; through the communication of information in formats that assist effective management and decision making.



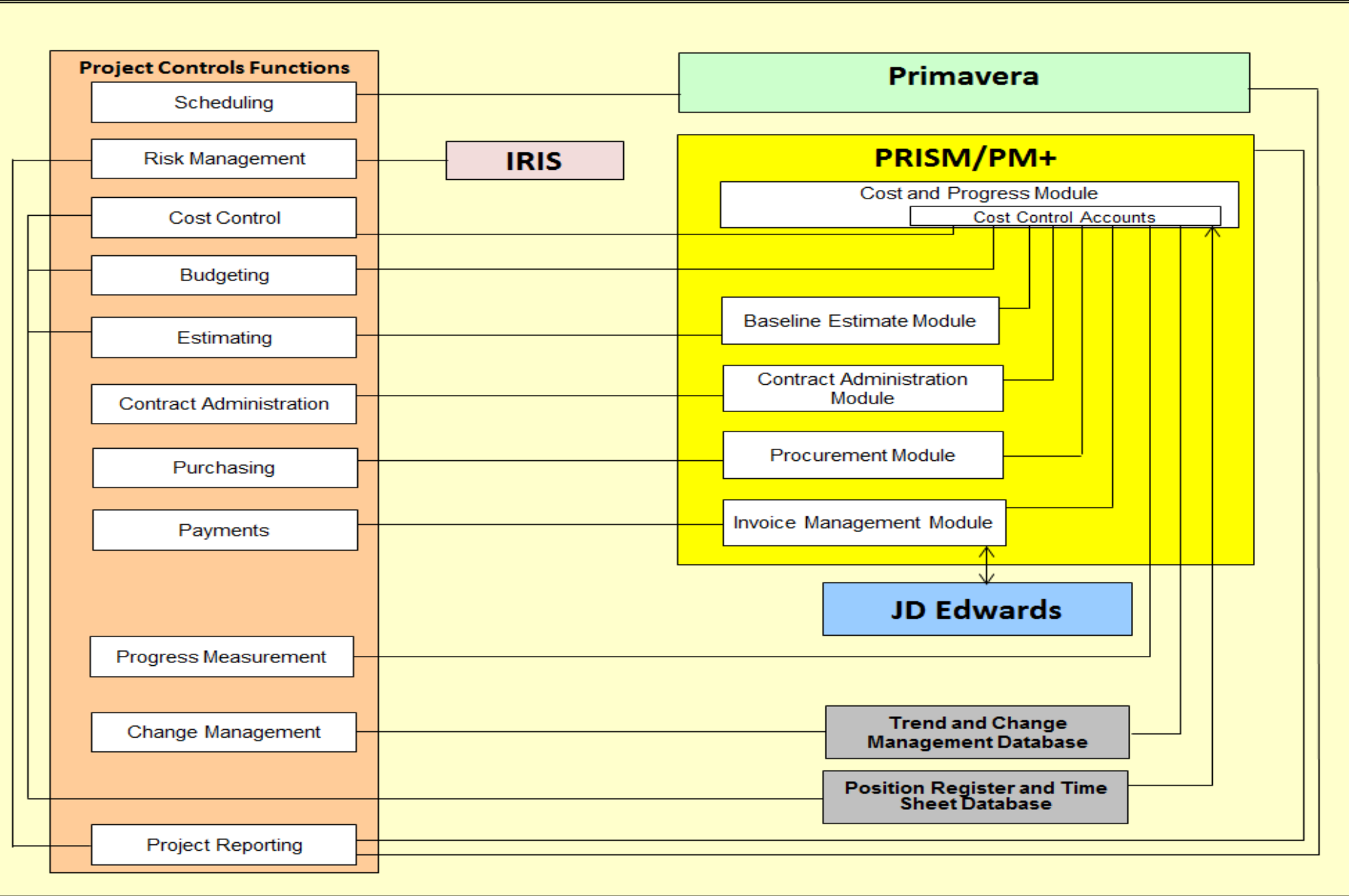
# Functional Applications



# LCP Project Controls Organization



# Project Controls Tools

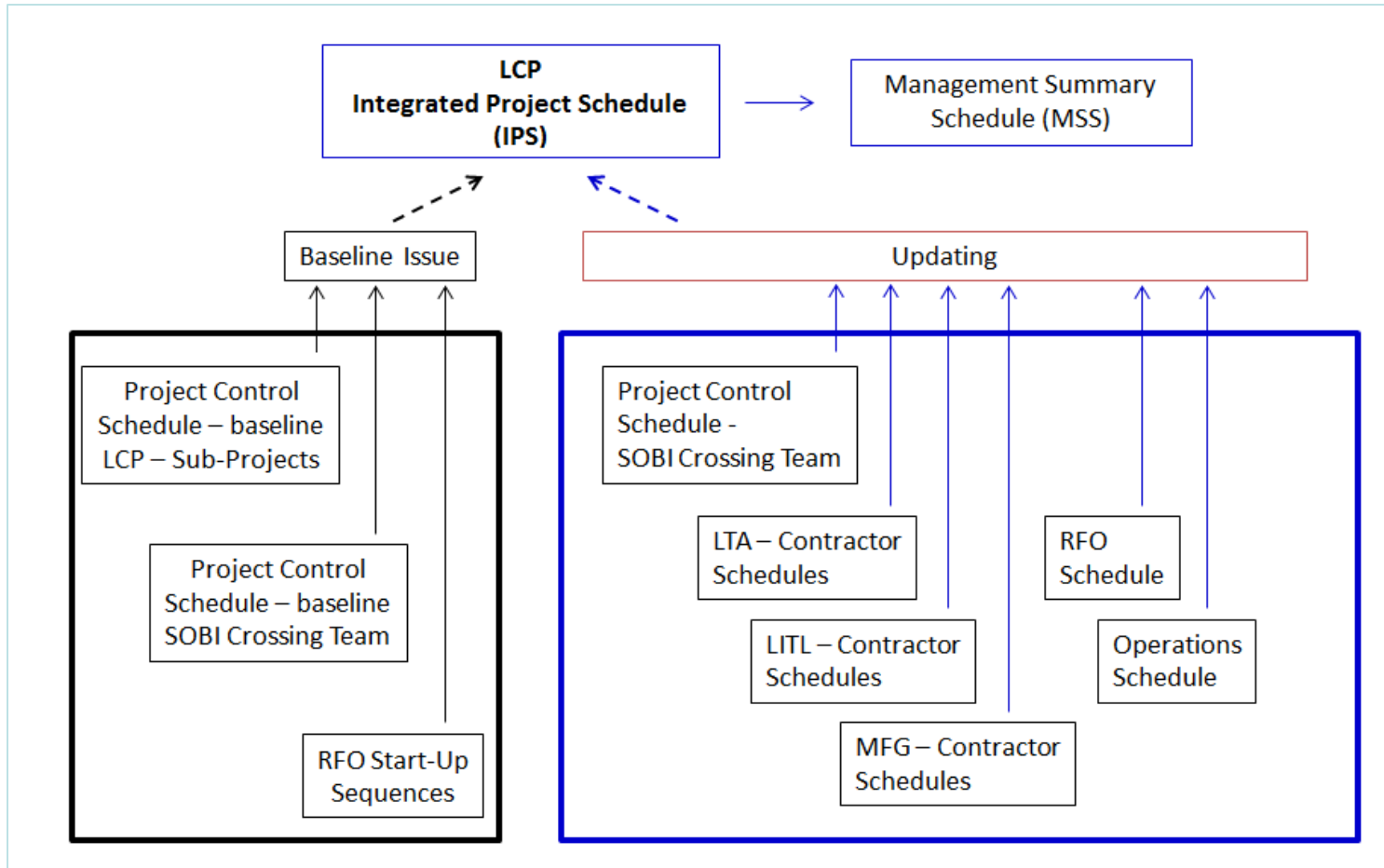


# Planning & Scheduling

- ❑ A plan and schedule are tools that facilitate measuring, analyzing and controlling the sequence and progression of work to accomplish an intended functionality with the most efficient use of resources.
- ❑ LCP maintains an Integrated Project Schedule (IPS) for all components by Work Breakdown Structure (WBS)
- ❑ The IPS is a Critical Path Method network derived from the various project participant schedules sources tied together with the Ready for Operation start-up sequences.

# Planning & Scheduling

## LCP Integrated Project Schedule



# Estimate and Cost Baseline

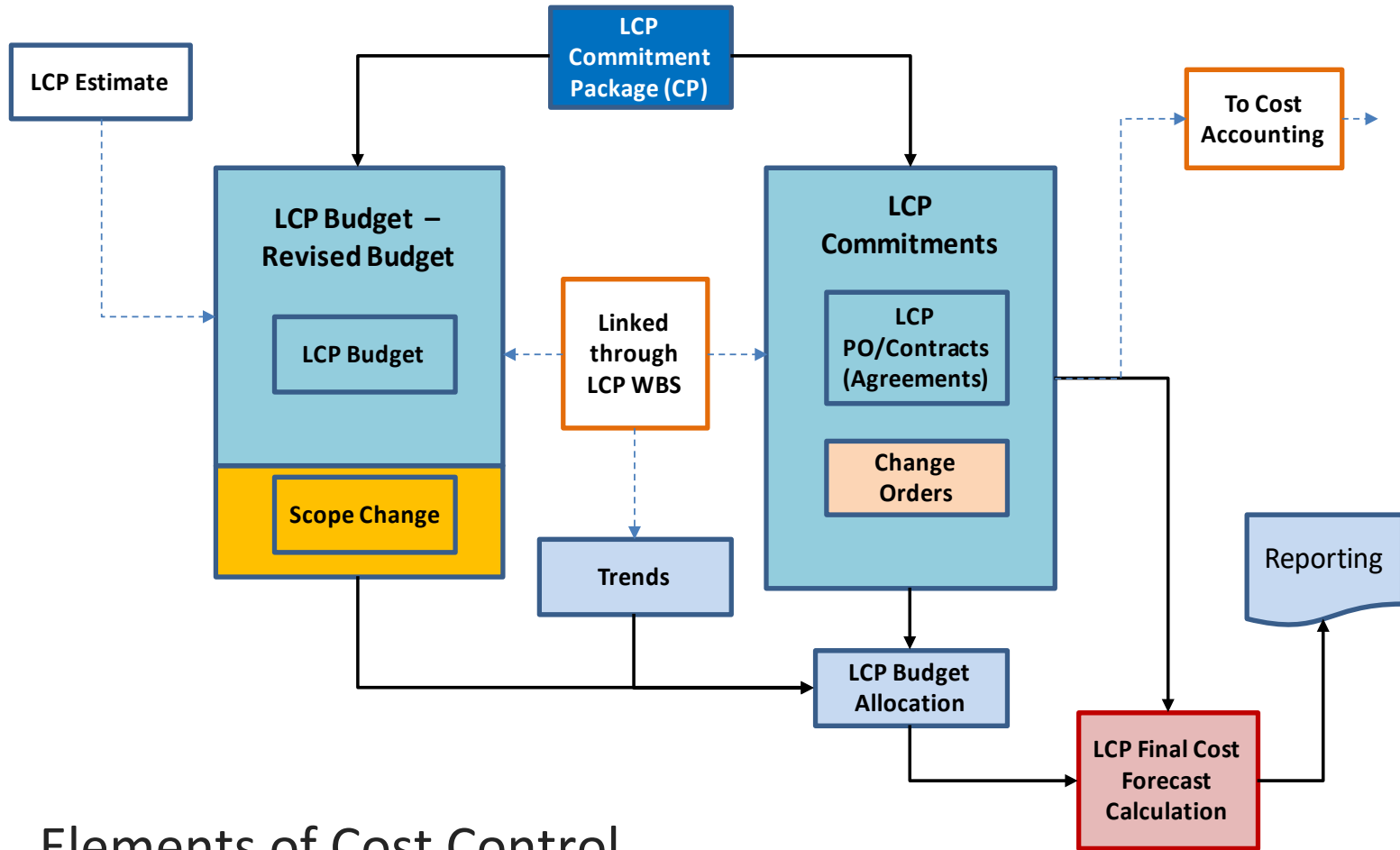
- ❑ A cost estimate is a forecast of costs for a given set of conditions, which include scope of work, schedule and execution plans.
- ❑ Estimates are classified in terms of quality, or known accuracy, which improves as the Project or work program proceeds.
- ❑ Cost estimates for all Gateway Phases of the Project are prepared consistent with the Work Breakdown Structure and translated into the respective Cost Control Accounts (CCAs) to facilitate development of an accurate Control Budget.



# Cost Control

- ❑ The mandate of the Cost Control team is to provide the LCP Project Management Delivery Team with timely updated information on the LCP project cost status for analysis and control to deliver the LCP Project within budget. Major activities performed as part of this mandate include:
  - ❑ Budgeting;
  - ❑ Reporting commitments and actual status;
  - ❑ Trending, Cash Flow and Forecasting final cost;
  - ❑ Explanation of variances; and
  - ❑ Identification of potential issues for initiation of corrective actions

# Cost Control



Elements of Cost Control

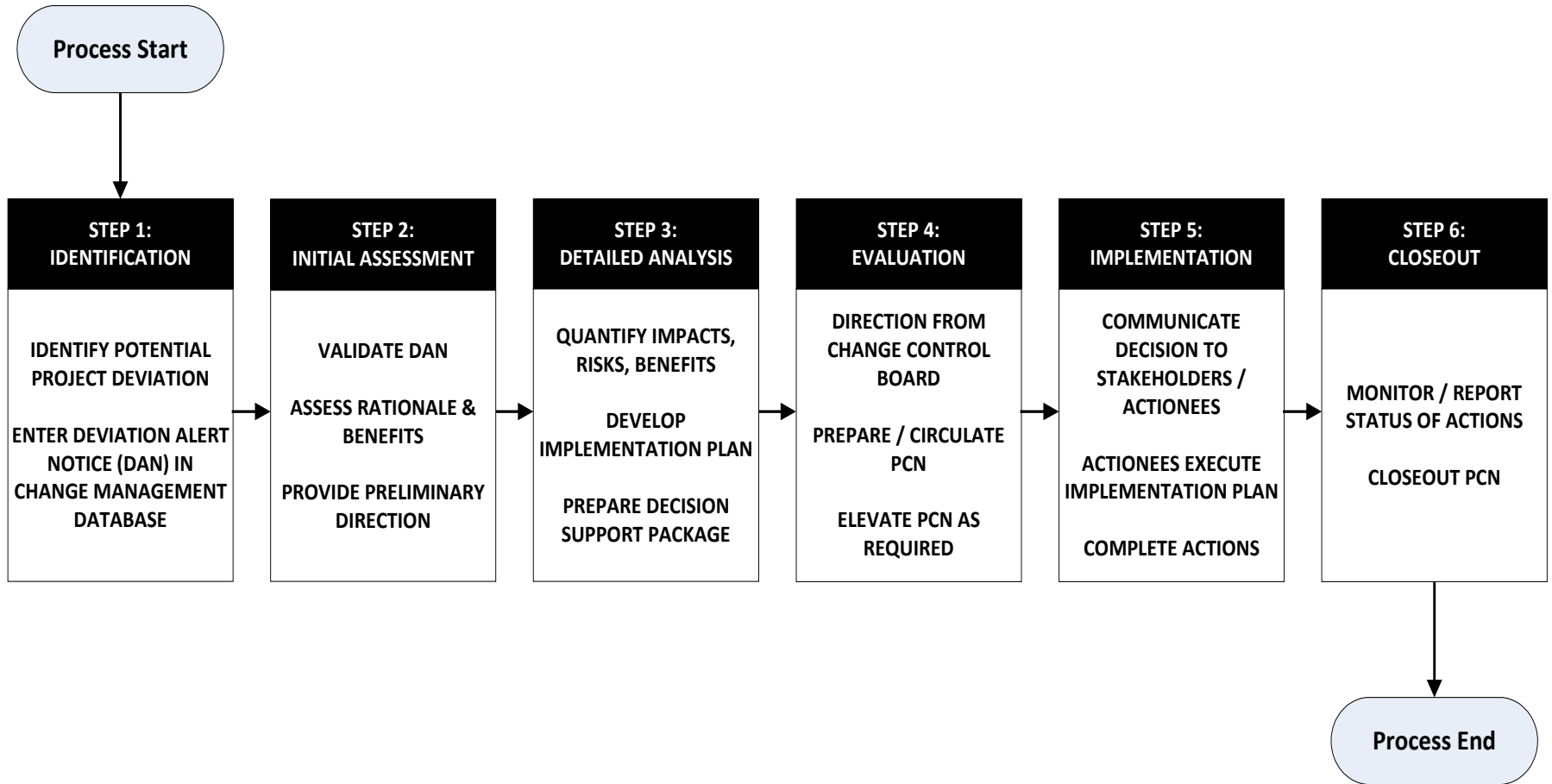
# Progress & Performance Measurement

- ❑ Progress and performance reporting is required to provide Project Management with information to judge whether:
  - ❑ The schedule milestones are likely to be met
  - ❑ Additional actions are necessary to document the value of work performed
  - ❑ Potential problem areas or delays need to be highlighted
- ❑ Progress is represented by the physical completion of work (Earned Value method), whether that work is physical construction work, engineering design, component fabrication, field studies or any other work associated with the project
- ❑ Actual and forecast progress are measured against the baseline plan.

# Change Management

- ❑ LCP's Change Management Process outlines managing potential changes, modifications, alterations from established Project guidelines, plans, or intentions with particular emphasis on the accepted Project Baseline – scope, budget, schedule, delivery approach, etc. Key steps include:
  - ❑ recognize deviations
  - ❑ evaluation of change
  - ❑ implementation of change
  
- ❑ All changes are reviewed by LCP's Change Control Board

# Change Management



# Interface Management - Technical

- ❑ Technical Interface Management creates a collaborative environment in order to reduce risks, errors and re-work
  
- ❑ Technical interfaces on the LCP fall into specific categories of: Requests for Information (RFIs), Technical Queries (TQs) as well as both Internal and External Technical Interfaces
  
- ❑ Process in place for management of technical interfaces including identification, evaluation, approval, documentation, monitoring and closeout

# Risk Management

- ❑ Project risk management addresses the uncertain events or conditions that, if they occur, it will have negative (threat) or positive (opportunity) effects in the LCP Project objectives: cost, schedule, quality, safety, environment and reputation
- ❑ Risk management seeks to protect the LCP Project in fulfilling its objectives by developing mitigation strategies and related actions plans.
- ❑ Risk management is grouped by LCP Component for Tactical Risks (internal issues), and Strategic Risks (related to external issues) for overall project and/or component specific.
- ❑ Risks and opportunities are frequently reviewed in risk sessions where probability, impacts, and mitigations actions are updated.

# Risk Management

## Risk Management Process Cycle





# Information Management

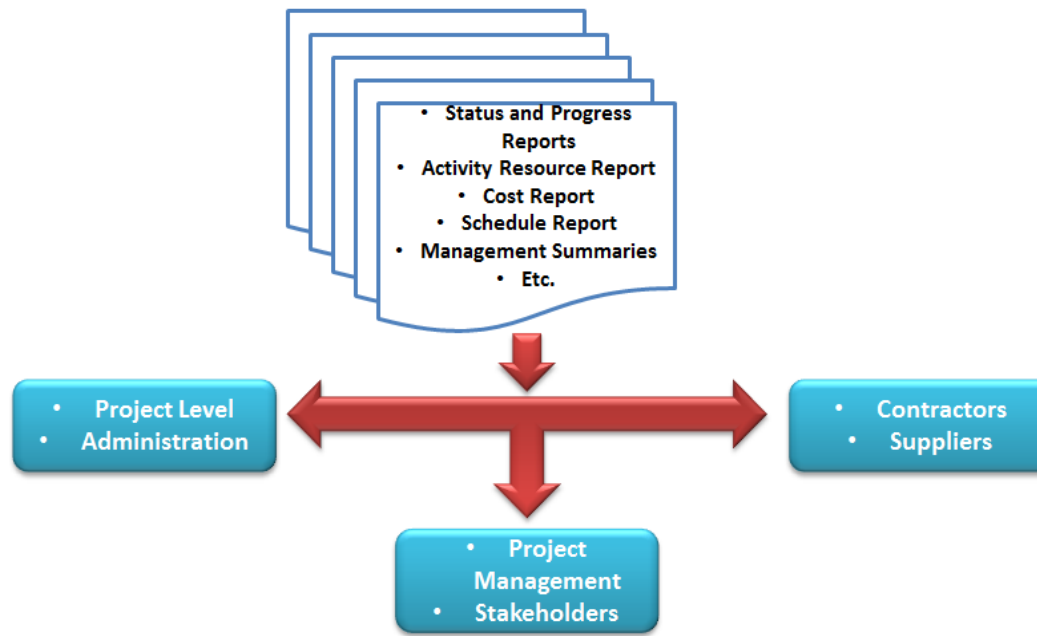
- ❑ Information Management (IM) is an encompassing term that includes the people, processes, and tools within an organization that are required to manage information throughout its life cycle; from its creation to its ultimate disposition.
- ❑ IM ensures that only the properly authorized LCP documents are distributed to the LCP Project Delivery Team and Internal or External stakeholders for use. IM keeps track of all documentation, systems and procedures, use of correct and most current documentation, and implements a system of records and regulations whereby control is maintained over the origination, reproduction, transmission, receipt and disposition of LCP classified documents.

# Information Management



# Reporting

- ❑ The mandate of the LCP reporting processes/procedures is to provide accurate project information to all stakeholders (both internal and external).
- ❑ Reports are provided at all levels of the project, depending on the specific stakeholders



# LCP Reporting Matrix (Key Reports)

Report (Output)	Purpose and brief description
Cash Flow Forecast (to end of Project)	*Provided to Emera, Province and Federal Gov't to facilitate funding to the Project.
Incurred Cost Report	*Facilitate preparation of accrual file
EPCM and Owners Accrual	*Facilitate accrual process with JD Edwards and assist in reconciliation of the three systems - Prism, PM+ and JD Edwards
Project Controls Monthly Summary	*To provide monthly project controls overview (includes cost, schedule and risk), and facilitate meeting to discuss
Monthly Cost Overview Data-Compilation of Separate files from Project Controls Monthly Summary, including Cost Reports, Curves, Contingency Drawdown, Narrative & Highlights	*To provide monthly project cost overview once approval provided, for integration into Monthly Reporting Deliverables for the current period
Cost Flow	*To facilitate financial reporting requirements
Construction (Lenders) Reports	<ul style="list-style-type: none"> <li>* Completion of two separate reports (Muskrat/LTA, and LIL) based on requirements of Financing Agreements</li> <li>* Report outlines project budget, provides cost analysis of current and to date planned/incurred cost, cost to complete and forecast cost, overview of construction progress and milestone dates, status of material project documents (contracts), and any material disputes</li> <li>*Facilitate funding request</li> </ul>
LCP Executive Summary (Dashboard) Report	*High level summary of the monthly report outlining Cost, Progress & Schedule Performance, Health & Safety, Environment, and construction highlights for the period
Additional Material Documents and Monthly Progress Reports as outlined on the Material Project Document Monthly Report Status	* Requirement within the Financing Agreements to provide 1.) copies of all Additional Material Documents listed in the agreement as they become executed; and 2.) copies of the Contractor's Monthly Progress Report for each Material Document
Material Project Document Monthly Report Status	*To provide an overview of the availability and distribution of Contractor Monthly Reports for the Material Project Documents as outlined within the Financing Agreements
Material Contracts Monthly Cost Summary	*To provide a monthly project cost overview for the list of Material Contracts
Integrated Project Schedule (IPS)	* To provide summary and detail by scope and activity level of current LCP Integrated Project Schedule with any adjustments to timeline during the period
LCP Corporate Plan Performance Report	* To provide LCP project status for update against corporate initiatives
LCP Monthly Progress Report	<ul style="list-style-type: none"> <li>* Keep LCP Project Management Team and key stakeholders informed on a monthly basis of project activities, status of completion, milestones achieved and progress against LCP baselines (cost &amp; schedule)</li> <li>* Includes planned, incurred and forecast values and action taken or planned as required to maintain the project objectives</li> <li>* The report contains all essential information and updates for all assets and components, along with all other functional areas including, Health &amp; Safety, Environment, Quality, Project Controls, Labour Relations, Supply Chain Management, and Human Resources</li> </ul>
LCP Board Presentations	*To provide the LCP Board of Directors overview of current status of the Project; consistent with reporting to all stakeholders (Nalcor CEO, Independent Engineer, Government of NL Oversight Committee, and Government of Canada)

# Reference Documents

LCP-PT-MD-0000-PM-PL-0001-01	Project Execution Plan (Scope and Approach)
LCP-PT-MD-0000-FI-PL-0001-01	Project Finance and Accounting Management Plan
LCP-PT-MD-0000-PC-LS-0001-01	Project Work Breakdown Structure and Code of Accounts
LCP-PT-ED-0000-EN-RP-0001-01	Lower Churchill Project – Basis of Design
LCP-PT-MD-0000-FI-PR-0001-01	Capital Expenditure Authorization Procedure
LCP-PT-MD-0000-PM-LS-0001-01	Project Dictionary
LCP-PT-MD-0000-PC-SH-0001-01	Integrated Project Schedule
LCP-PT-MD-0000-RI-PL-0001-01	Risk Management Plan
LCP-PT-MD-0000-PM-PR-0001-01	Lower Churchill Project Gateway Process
LCP-PT-MD-0000-PM-PR-0005-01	Project Change Management Procedure
LCP-PT-MD-0000-CS-PR-0001-01	Site Query Procedure
MSD-PJ-005	LCP Progress and Performance Measurement Guideline
34R-05	Basis of Estimate (AACE)
31R-03	Reviewing, Documenting the Estimate (AACE)
60R-10	Developing the Project Control Plan (AACE)

Sharing our ideas in an open and supportive manner to achieve excellence.

# Teamwork

# Open Communication

Fostering an environment where information moves freely in a timely manner.

# Honesty and Trust

Being sincere in everything we say and do.

Relentless commitment to protecting ourselves, our colleagues, and our community.

# Safety

# Respect and Dignity

Appreciating the individuality of others by our words and actions.

# Leadership

Empowering individuals to help, guide and inspire others.

Holding ourselves responsible for our actions and performance.

# Accountability