Presentation Outline

• Introduction
• Project Navigator Objectives
• Project Navigator Structure
• Project Navigator Components
• Planning with the Project Navigator
• Milestone Reviews
• Project Navigator Improvement
• Conclusion
Introduction

What is the Project Navigator?

- A proprietary Knowledge Base that includes:
  - Terminology with common, qualitative definitions
  - A complete catalog of FEP, Proposal and EPC Project processes
  - Performance Requirements with RACI assigned responsibilities
  - Checklists
  - Forms and Reports
  - Handbooks and Manuals
  - Training Programs

- Gated system that includes defined “Milestone Reviews” which must be cleared for the project to progress.

- A tool for mapping out FEP, Proposal and EPC Project steps.

- A collaboration tool to align deliverables from work processes among project stakeholders (owner, engineer, OEMs, contractors)

- Incorporates best practices and learning experiences from CII, AACE and PMI.
Introduction

Key principles

• A paradigm shift
  • FROM: avoiding mistakes learned on past projects (e.g. Lessons Learned) or
    utilizing a patchwork of industry best practices
  • TO: planning to perform all work timely, completely and correctly at the
    beginning of the project to meet the requirements of the end of the project.

• Requires executive management active participation.
• It is the “glue” that holds all the project deliverables together
• It is NOT a Project Controls tool.
• It is “What We Do”
Introduction

Why Use the Project Navigator?

• Consistent delivery of quality projects with more **predictable** outcomes:
  • Based on logical project execution sequence
  • Verify project information quality at key “milestones” or gates
  • Provide mechanism to incorporate Best Practices
  • Create additional management of risk mechanism

• Provide effective communication tool
  • Provide auditable “status” of project
  • Allow senior management a “window” into project execution
  • Common language to project status

• Create a competitive edge
  • It also is a good selling tool
Introduction

Why use the Project Navigator?

- Supports Commercial Compliance
- Communicates Expectations
- Focuses on Results
- Improved Communications
- Enhanced Risk Management
- Improved Productivity
- Continuous Improvement
- Integrated Work Processes
- Improved Productivity
Project Navigator Structure
Hierarchal Structure – Project Execution

- Project Navigator Policy
- Phase Designations
- Milestone Designations
- Sub Phase Designations
- Key Activities
- Milestone Requirements
- Project Execution Process Map
- Process Flow Diagrams
- Project Execution Handbook
- Forms and Reports
- Perf Req and Checklists
- Procurement Manual
- Subcontract Administration Manual
- QC/ Inspection and Testing Program
- Inspection and Testing Program
- Field Purchasing Manual
- 3D AutoCad Standards
- Material Control Program
- Tool Tracking System
Project Navigator Structure
Hierarchal Structure – Project Execution

Control Level: the common enterprise level at which all projects look the same (i.e. Stages; Milestones, Objectives). This is the level at which the project deliverables are assessed.

Milestone Requirements
- Project Execution Process Map
- Process Flow Diagrams
- Project Execution Handbook
- Forms and Reports
- Perf Req and Checklists
- Procurement Manual
- Subcontract Administration Manual
- QC/ Inspection and Testing Program
- Inspection and Testing Program
- Field Purchasing Manual
- 3D AutoCad Standards
- Material Control Program
- Tool Tracking System

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Project Navigator Structure
Hierarchal Structure – Project Execution

Execution Level: the level at which the work processes are utilized to produce the client and internal deliverables

- Project Navigator Policy
- Phase Designations
- Milestone Designations
- Sub Phase Designations
- Project Execution Process Map
- Process Flow Diagrams
- **Project Execution Handbook**
- Forms and Reports
- Perf Req and Checklists
- Procurement Manual
- Subcontract Administration Manual
- QC/ Inspection and Testing Program
- Inspection and Testing Program
- Field Purchasing Manual
- 3D AutoCad Standards
- Material Control Program
- Tool Tracking System
Project Navigator Structure
Hierarchal Structure – Project Execution

- Project Navigator Policy
- Phase Designations
- Milestone Designations
- Sub Phase Designations
- Key Activities
- Milestone Requirements
- Project Execution Process Map
- Company policies, procedures, technical instructions, software, etc.
- Perf Req and Checklists
- Procurement Manual
- Subcontract Administration Manual
- QC/ Inspection and Testing Program
- Inspection and Testing Program
- Field Purchasing Manual
- 3D AutoCad Standards
- Material Control Program
- Tool Tracking System
Project Navigator Structure
Hierarchal Structure – Project Management

Project Navigator Policy
Phase Designations
Milestone Designations
Sub Phase Designations
Key Activities
Milestone Requirements

Project Management Process Map
Process Flow Diagrams
Project Management Handbook
Forms and Reports
Perf Req and Checklists

Project Navigator Manual
Risk Management Program
Quantity Management Program
Estimating Manual
Cost Control Manual
Scheduling Manual
Corporate HSE Program
Corporate QA Program

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Project Navigator Structure

Phase Structure

- FRONT END PLANNING
- ENGINEERING
- PROCUREMENT
- FABRICATION AND CONSTRUCTION
- COMMISSIONING

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Proposal and Kick Off Phase. This is a “sliding” phase to reflect various entry points into the project life cycle based on different types of contracts (e.g. EPC, CM, C, etc.). This phase begins with a “Go / No Go” decision to tender and ends with the project Kick Off.
Front End Planning Phase – this is an Owner owned phase. The consultant provides technical and project management to the owner during this phase. The owner’s business case results in an engineered solution with a set of commercial and technical documents that another qualified EPC contractor can detail design, procure equipment, construct and start up.
Project Navigator Structure

Phase Structure

Engineering, Procurement, Construction Phases – Phases in which detailed design is completed; equipment and fabricated materials are procured; the facility is constructed, commissioned and started up.
Project Navigator Structure
Key Activity Structure

**PROJECT MANAGEMENT**

- PM00 Proposal Mgt & Admin
- PM01 FEP Management
- PM02 Project Execution Mgt
- PM03 Contract Management
- PM04 Risk Management
- PM05 Quantity Management
- PM06 Cost Management
- PM07 Planning and Scheduling
- PM08 Change Management
- PM09 HSE Mangement
- PM10 Quality Management
- PM11 Information Management

**PROJECT EXECUTION**

- PE01 FEP Execution
- PE02 HSE in Design
- PE03 System Engineering
- PE04 Layout, 3D Model, Disc Des
- PE05 Procurement
- PE06 Subcontracting
- PE07 Construction
- PE08 Commissioning

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Project Navigator Structure
Key Activity Structure

**PROJECT MANAGEMENT**

- PM00 Proposal Mgt & Admin
- PM04 Risk Management
- PM05 Quantity Management
- PM06 Cost Management
- PM07 Planning and Scheduling
- PM08 Change Management
- PM09 HSE Management
- PM10 Quality Management
- PM11 Information Management

**PROJECT EXECUTION**

- PE01 FEP Execution
- PE02 HSE in Design
- PE03 System Engineering
- PE04 Layout, 3D Model, Disc Des
- PE05 Procurement
- PE06 Subcontracting
- PE07 Construction
- PE08 Commissioning

Functional areas representing the scope of work deliverables to the owner
Project Navigator Structure

Key Activity Structure

**PROJECT MANAGEMENT**

- PM00 Proposal Mgt & Admin
- PM01 FEP Management
- PM02 Project Execution Mgt
- PM03 Contract Management
- PM04 Risk Management
- PM05 Quantity Management
- PM06 Cost Management
- PM07 Planning and Scheduling
- PM08 Change Management
- PM09 HSE Management
- PM10 Quality Management
- PM11 Information Management

**PROJECT EXECUTION**

- PE04 Layout, 3D Model, Disc Des
- PE05 Procurement
- PE06 Subcontracting
- PE07 Construction
- PE08 Commissioning

Functional areas required to manage the project and fulfill the contractual obligations
Phases are subdivided into Stages. Milestones are achieved at completion of Stage Requirements.
### Project Navigator Structure

**Stage Gate Requirements / Milestone Objectives**

<table>
<thead>
<tr>
<th>Critical PO's Awarded; Basic Engineering Completed</th>
<th>Layout &amp; Main Structure Frozen</th>
<th>Global Design Complete</th>
<th>Detailed Engineering Complete; Major Subcontracts Awarded</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Key Objectives</strong></td>
<td><strong>Key Objectives</strong></td>
<td><strong>Key Objectives</strong></td>
<td><strong>Key Objectives</strong></td>
</tr>
<tr>
<td>Work Scope</td>
<td>Work Scope</td>
<td>Work Scope</td>
<td>Work Scope</td>
</tr>
<tr>
<td>Design Basis Complete</td>
<td>P&amp;IDs for Critical Lines</td>
<td>P&amp;IDs – all lines sized</td>
<td>Procurement Cooperative</td>
</tr>
<tr>
<td>Piping Materials Spec’d</td>
<td>OEM 1st Information Included in Engineering</td>
<td>Frozen Supplier Interface for OEM and BOP Equipment Included</td>
<td>Automation Spec finalized</td>
</tr>
<tr>
<td>Major Equipment Located</td>
<td>Building Structure Member Sizes Frozen</td>
<td>Main Building Final</td>
<td>Completion Plan Final</td>
</tr>
<tr>
<td>Main Building Interdiscipline Checked</td>
<td>FAT for OEM Equipment</td>
<td>Secondary Steel Frozen</td>
<td>System Boundaries Final</td>
</tr>
<tr>
<td>OEM 1st Information</td>
<td>Project Management</td>
<td>All Instruments Tagged</td>
<td>Commissioning Procedures</td>
</tr>
<tr>
<td>Commissioning Plan Established</td>
<td>2nd Priority Equipment Purchase</td>
<td>Equipment Room Layouts Frozen</td>
<td>Interdiscipline Checked</td>
</tr>
<tr>
<td>Mech Compl for OEM Equipment Defined</td>
<td>Orders Placed</td>
<td>FAT for OEM Equipment</td>
<td>Commissioning Procedures based on Fab &amp; Comm Info for OEM &amp; BOP Equipment</td>
</tr>
<tr>
<td>FAT Procedures/Criteria for OEM Equipment Agreed</td>
<td></td>
<td>System Boundaries Draft</td>
<td>Project Management</td>
</tr>
<tr>
<td>Project Management</td>
<td></td>
<td>Commissioning Procedures Issued</td>
<td>GC Mobilized</td>
</tr>
<tr>
<td>Client/Partner Contracts in Place</td>
<td></td>
<td>Award General Contract</td>
<td>Temporary Facilities Complete</td>
</tr>
<tr>
<td>Quantity Estimate Verified</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Procedures In Place</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Key Objectives

#### Work Scope
- Design Basis Complete
- Piping Materials Spec'd
- Major Equipment Located
- Main Building Interdiscipline Checked
- OEM 1st Information
- Commissioning Plan Established
- Mech Compl for OEM Equipment Defined
- FAT Procedures/Criteria for OEM Equipment Agreed

#### Project Management
- Client/Partner Contracts in Place
- Quantity Estimate Verified
- Procedures In Place

### Key Objectives

#### Work Scope
- P&IDs for Critical Lines
- OEM 1st Information Included in Engineering
- Building Structure Member Sizes Frozen
- FAT for OEM Equipment
- 2nd Priority Equipment Purchase Orders Placed

#### Project Management
- Award General Contract

### Work Scope

#### P&IDs – all lines sized
- Frozen Supplier Interface for OEM and BOP Equipment Included
- Main Building Final Secondary Steel Frozen
- All Instruments Tagged
- Equipment Room Layouts Frozen
- FAT for OEM Equipment
- System Boundaries Draft
- Commissioning Procedures Issued

#### Project Management
- Commissioning Procedures based on Fab & Comm Info for OEM & BOP Equipment
- GC Mobilized
- Temporary Facilities Complete

---

**Milestones formally designate the end of a Stage**
## Project Navigator Structure
### Stage Gate Requirements / Milestone Objectives

<table>
<thead>
<tr>
<th>Key Objectives</th>
<th>Work Scope</th>
<th>P&amp;IDs – all instrument logic shown; control &amp; alarm setting included</th>
<th>OEM &amp; BOP Fab Information Included</th>
<th>Automation Spec finalized</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clean Title</td>
<td>Clean Title</td>
<td>Clean Title</td>
<td>Clean Title</td>
<td>Clean Title</td>
</tr>
</tbody>
</table>

---

### Critical PO’s Awarded; Basic Engineering Completed

<table>
<thead>
<tr>
<th>Key Objectives</th>
<th>Work Scope</th>
<th>P&amp;IDs for Critical Lines</th>
<th>OEM 1st Information Included</th>
<th>Design Basis Complete</th>
</tr>
</thead>
<tbody>
<tr>
<td>Client/Partner Contracts in Place</td>
<td>Clean Title</td>
<td>Clean Title</td>
<td>Clean Title</td>
<td>Clean Title</td>
</tr>
</tbody>
</table>

---

### Layout & Building Structure Frozen

<table>
<thead>
<tr>
<th>Key Objectives</th>
<th>Work Scope</th>
<th>FAT for OEM Equipment</th>
<th>Project Management Defined</th>
<th>Project Management Orders Placed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Charts/Drawings</td>
<td>Clean Title</td>
<td>Clean Title</td>
<td>Clean Title</td>
<td>Clean Title</td>
</tr>
</tbody>
</table>

---

### Global Design Complete

<table>
<thead>
<tr>
<th>Key Objectives</th>
<th>Work Scope</th>
<th>All Instruments Tagged</th>
<th>Equipment Room Layouts Frozen</th>
<th>Post Design Final</th>
</tr>
</thead>
<tbody>
<tr>
<td>Charts/Drawings</td>
<td>Clean Title</td>
<td>Clean Title</td>
<td>Clean Title</td>
<td>Clean Title</td>
</tr>
</tbody>
</table>

---

### Detailed Engineering Complete; Major Subcontracts Awarded

<table>
<thead>
<tr>
<th>Key Objectives</th>
<th>Work Scope</th>
<th>FAT for OEM Equipment</th>
<th>Project Management Defined</th>
<th>Project Management Orders Placed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Charts/Drawings</td>
<td>Clean Title</td>
<td>Clean Title</td>
<td>Clean Title</td>
<td>Clean Title</td>
</tr>
</tbody>
</table>

---

### Key Objectives

- **Work Scope**
- **P&IDs for Critical Lines**
- **FAT for OEM Equipment**
- **Project Management**

---

### High level actions that need to be completed to pass the Stage Gate / Milestone Review. Deliverables from processes are assessed to determine whether these objectives have been met.
The Execution Level for each Phase has both a Project Execution and Project Management process map.

The fundamental component of the Execution Level is the “process”. Processes are strategically placed between Milestones based on Best Practices and successful completed projects.
Project Navigator Structure
Process Map showing Engineering Processes
Project Navigator Structure
Process Map showing Engineering Processes

WBS Processes are shown in “Green”
Project Navigator Structure

Process Map showing Engineering Processes

Non WBS Processes are shown in “Blue”
Project Navigator Structure

Project Execution DRIVES Project Management

Project Navigator

Project Management

Processes for managing work based on company best practices

Project Management processes are aligned to support Project Execution Milestones

Accountability and hands-on management

Project Execution

Processes for executing work based on company and industry best practices

Process Diagrams depicting internal and external dependencies

Common language for describing quality of information of deliverables

Project Management processes are aligned to support Project Execution Milestones

Accountability and hands-on management

Processes for executing work based on company and industry best practices

Process Diagrams depicting internal and external dependencies

Common language for describing quality of information of deliverables
### Performance Requirements (RACI)

<table>
<thead>
<tr>
<th>Key Activities</th>
<th>Milestone</th>
<th>Performance Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PM00 Proposal Mgt &amp; Admin</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>PM</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>PROJECT MANAGEMENT</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>KEY ACTIVITY</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Process or Handbook</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>PM05 QUANTITY MANAGEMENT</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>PM05.1 Quantity Management</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>PM05.2 WSS Development</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>PM05.3 Quantity Budget Development</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>PM05.4 Quantity Changes</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Buildings &amp; Architectural</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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## Project Navigator Components

### Key Activities

<table>
<thead>
<tr>
<th>Activity</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Process or Handbook Subsection</td>
<td>Performance Requirement</td>
</tr>
</tbody>
</table>

### Stage Gate Review Checklists

- **Detailed Design Complete; Major Subs Awarded**

### Milestone Requirements

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quantity budgets for all commodities finalized based on IT: engineering information</td>
<td>PROJ MGR</td>
</tr>
<tr>
<td>Quantity reporting to client in accordance with client agreement</td>
<td>PROJ MGR</td>
</tr>
</tbody>
</table>

### Quantity Management

All Quantity Management changes to date reflected in the Project Execution Plan?

Quantity management personnel mobilized to project in accordance with PEP92.04?

Quantity tracking personnel for each discipline mobilized and trained in data collection processes and procedures?

Quantity tracking personnel trained; responsibilities communicated?

Quantity tracking personnel trained; responsibilities communicated verified?

### Quantity Budget Development

- Quantity Take offs performed from each Issued For Concept drawing releases; quantities compared to Quantity Budget?
- Quantity Management System updated to reflect each Issued For Construction drawing releases?
- Has Scheduler been forwarded Current Budget quantities based on IF C Drawing releases?
- Quantity budgets finalized based on IF C engineer ing information?

**Reference Engineering documents/submittals register**

### Quantity Changes

- All approved Change Orders which affect quantities are reflected in the Current Budget?
- Have quantity change calc sheets been prepared for all proposed changes?

**Reference Change Order Status Report (PM08-01)**

**Reference Engineering documents/submittals register**

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### Milestone Objectives

- **Safety**
  - Identification of hazards and accidents, PREPARED: evacuation
  - Identification of hazards and accidents, COMPLETED: evacuation
  - Identification of hazards and accidents, FULLY COMPLETED: evacuation

- **Health & Safety**
  - Prevention of injuries and accidents, PREPARED: evacuation
  - Prevention of injuries and accidents, COMPLETED: evacuation
  - Prevention of injuries and accidents, FULLY COMPLETED: evacuation

- **Environment**
  - Environmental risk study & accidents; PREPARED: evacuation
  - Environmental risk study & accidents; COMPLETED: evacuation
  - Environmental risk study & accidents; FULLY COMPLETED: evacuation

- **Project Management**
  - As built information included for 1st Priority Equipment
  - As built information included for 2nd Priority Equipment
  - As built information included for 3rd Priority Equipment

- **Procurement**
  - Supplier Information included for 1st Priority Equipment
  - Supplier Information included for 2nd Priority Equipment
  - Supplier Information included for 3rd Priority Equipment

- **Construction**
  - Construction information included for 1st Priority Equipment
  - Construction information included for 2nd Priority Equipment
  - Construction information included for 3rd Priority Equipment

- **Commissioning**
  - Commissioning information included for 1st Priority Equipment
  - Commissioning information included for 2nd Priority Equipment
  - Commissioning information included for 3rd Priority Equipment

- **Documentation**
  - Project documentation included for 1st Priority Equipment
  - Project documentation included for 2nd Priority Equipment
  - Project documentation included for 3rd Priority Equipment
Project Navigator Components

Stage Gate / Milestone Reviews

Project Navigator

MILESTONE REVIEW STATUS

EPC4

Milestone: Project Objectives not met. The project has not met the requirements to pass the Milestone Review. Plan implemented to complete the Milestone Objectives. Follow up review required.

Corrective Actions Required. The project has met the requirements to pass the Milestone Review. Plan implemented to complete required corrective actions.

Punch List Items Open. The project has met the requirements to pass the Milestone Review. Plan implemented to close out open punch list items.

Client:

Result of Milestone Gate Review:

Date(s) of Review:
Project Navigator Components

- **Training Modules**
- **Training Videos**

**Quantity Management**
Project Management Handbook – PM05
Training Module
Planning with the Project Navigator

- Standard Work Breakdown Structure (WBS) and Project Execution processes use same taxonomy for L1, L2 and L3.
- As the project WBS is developed, each process (L3) and account (L4) has a default Milestone successor.
- WBS information can be imported into P6 for CPM scheduling
- Upon completion of the estimate, man hours and quantities can be imported into P6.
- Activity durations and logic are completed to maintain the desired Stage durations / Milestone dates.
- Detailed Engineering, Procurement, Construction and Commissioning registers are developed using the process outputs “cloned” to match the project WBS.
Milestone Reviews

- Milestone Reviews are formal review processes coinciding with the end of each project milestone.
- Purpose is to qualitatively assess project performance against best practices.
- Milestone Reviews are designated by operations management as Major or Minor reviews. This is determined by risk factors.
- Team members are assigned responsibility for maintaining Key Activity Milestone Checklists.
- Checklists are compiled; discrepancies identified on the Milestone Review Punch list.
- External audit team reviews findings; conducts site walks, interviews team members in order to complete the review.
- Result is qualitative and appears on several management reports.
- Results published to executive management.
PN Improvement Process

Project Navigator

Industry R&D (CII, AACEI, etc.)

Approved Improvements

Revisions to Project Navigator components

Improved Project Navigator

Project 1
Project 2
Project 3

Experience

Redlined Process Diagrams, Activity Descriptions, Checklists

Proposed Improvements by project teams

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If you don’t know where you are going, you might wind up someplace else.... Yogi Berra