Quality Assurance
Yokogawa Solution

Yokogawa Electric International Pte Ltd
KHLEE

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What is Quality objective

- The general quality objectives of projects or tasks are to meet the stakeholder requirements and to ensure on-time delivery of the system.
- Each team member, guided by the manager, is responsible for realizing the quality objectives.

- **How to ensure quality is in place?**
  - Plan Quality (e.g. Standardization and Scheduled QA/QC)
  - Perform Quality Assurance (Acceptance of Work)
  - Perform Quality Control (Correctness of Work)
    - Cross Checking between engineers, leads or system specialist.
    - Internal Test
    - MAT, FAT and SAT

Quality Management System (QMS)

- QMS, in general, apply in every aspect of the project engineering such as scope definition, approach, guideline, plan and execution, monitoring and control of the scope, validation and delivery.

- The requirements of the QMS include:
  - **Project Management**
  - **Documentation**
  - **Engineering & Design**
  - **Procurement and Supply of Materials & Equipment**
  - **Validation & Testing**

- Work is completed to engineering approach shall executed according to documented project's **Project Execution Plan** (PEP) and **Project Quality Plan (PQP).**

Project Management Quality

- Scope breakdown structure
- Schedule allocation
- Resource assignment
- Costing & budgetary
- Risk assessment
- Integration Interface
- Coordination & Communication
- Lesson Learnt

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Documentation

- Standardization of document format
- Fonts, layout, paragraphs, header, footer and sizing
- Color code
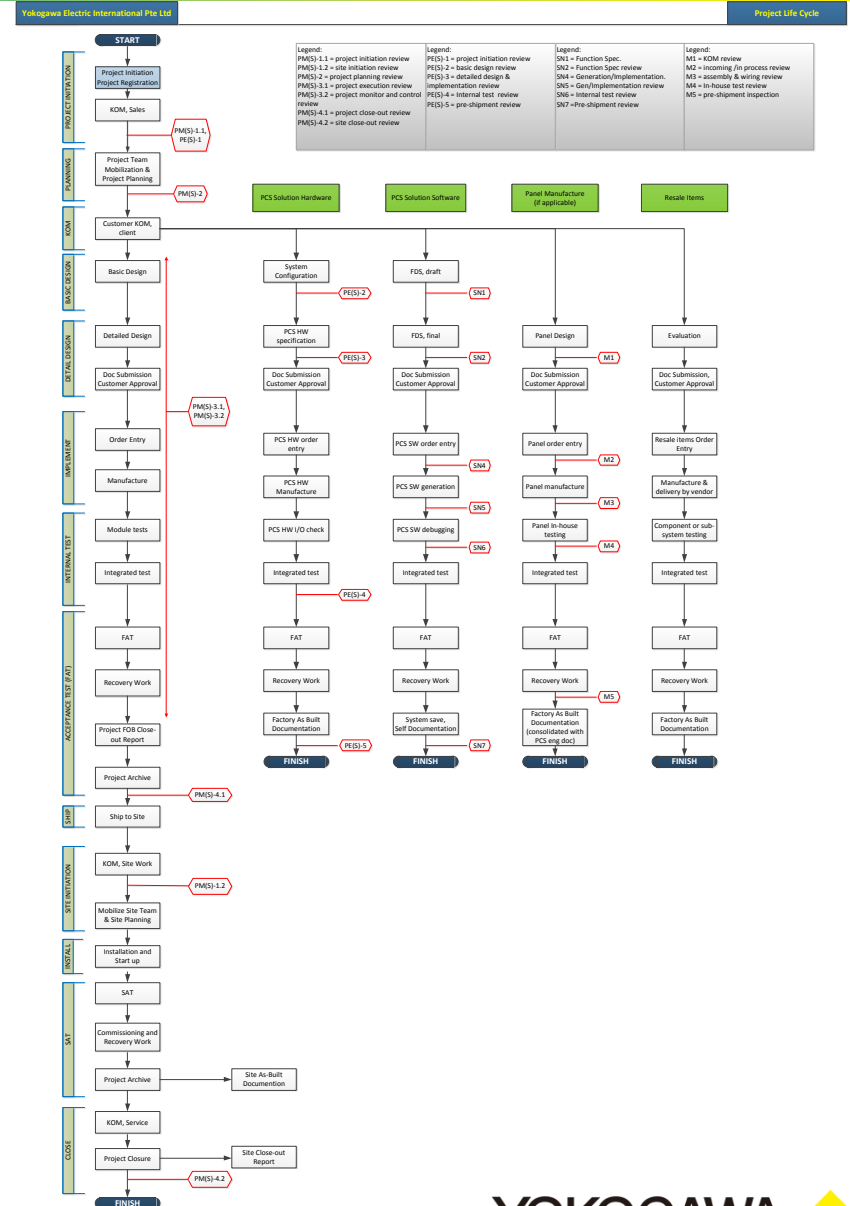- Change management (revision up and acknowledgement)

Engineering & Design

- Feasibility Studies
- Conceptual design
- Proof of Concept
- Internal Test
- Documented approach
- Company Approved design

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Procurement and Supply of Materials & Equipment

- Approved Vendor List
- Verifying new vendor background & financial capability
- Proof of concept with vendor
- Ensure sufficient lead time and delivery
- Compliance with ISO standard

Validation & Testing

- Quality Assurance validation
- Risk analysis
- Issue Tracker
- Quality Control

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Quality Assurance Checklist (PM & PE)

PM Milestone	Document name	Issued by	Endorsed by	Certified by
Project Initiation	PM(S)-1.1 CHECKLIST	Project Manager	N.A.	Review Team
Project Planning	PM(S)-2 CHECKLIST	Project Manager	N.A.	Review Team
Project Execution	PM(S)-3.1 CHECKLIST	Project Manager	N.A.	Review Team
Project Monitor and Control	PM(S)-3.2 CHECKLIST	Project Manager	N.A.	Review Team
Project(FOB) Close out	PM(S)-4.1 CHECKLIST	Project Manager	N.A.	Review Team
Site Initiation	PM(S)-1.2 CHECKLIST	Project Manager	N.A.	Review Team
Site Closeout	PM(S)-4.2 CHECKLIST	Project Manager	N.A.	Review Team

PE Milestone	Document name	Issued by	Endorsed by	Certified by
Project Initiation	PE(S)-1 CHECKLIST	LPE	Project Manager	Review Team
Basic Design Phase	PE(S)-2 CHECKLIST	LPE	Project Manager	Review Team
Detail Design & Implementation Phase	PE(S)-3 CHECKLIST	LPE	Project Manager	Review Team
Pre-FAT Phase	PE(S)-4 CHECKLIST	LPE	Project Manager	Review Team
Pre-Shipment Phase	PE(S)-5 CHECKLIST	LPE	Project Manager	Review Team

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Quality Assurance Checklist (SN)

SN Milestone	Document number	Issued by	Endorsed By	Certified By
SN1 – Functional Spec Planning.	SNW-JC-021	LSE	Project Manager	Review Team
SN2 – Functional Spec Review.	SNW-JC-022	LSE	Project Manager	Review Team
SN4 – Implementation (Generation Planning)	SNW-JC-024	LSE	Project Manager	Review Team
SN5 –Implementation (Generation Review)	SNW-JC-025	LSE	Project Manager	Review Team
SN6 - Internal Test Review.	SNW-JC-026	LSE	Project Manager	Review Team
SN7 - Pre-shipment Review.	SNW-JC-027	LSE	Project Manager	Review Team

The PM(S) milestone check series are structured as indicated here:
The PE(S) milestone check series are structured as indicated here:
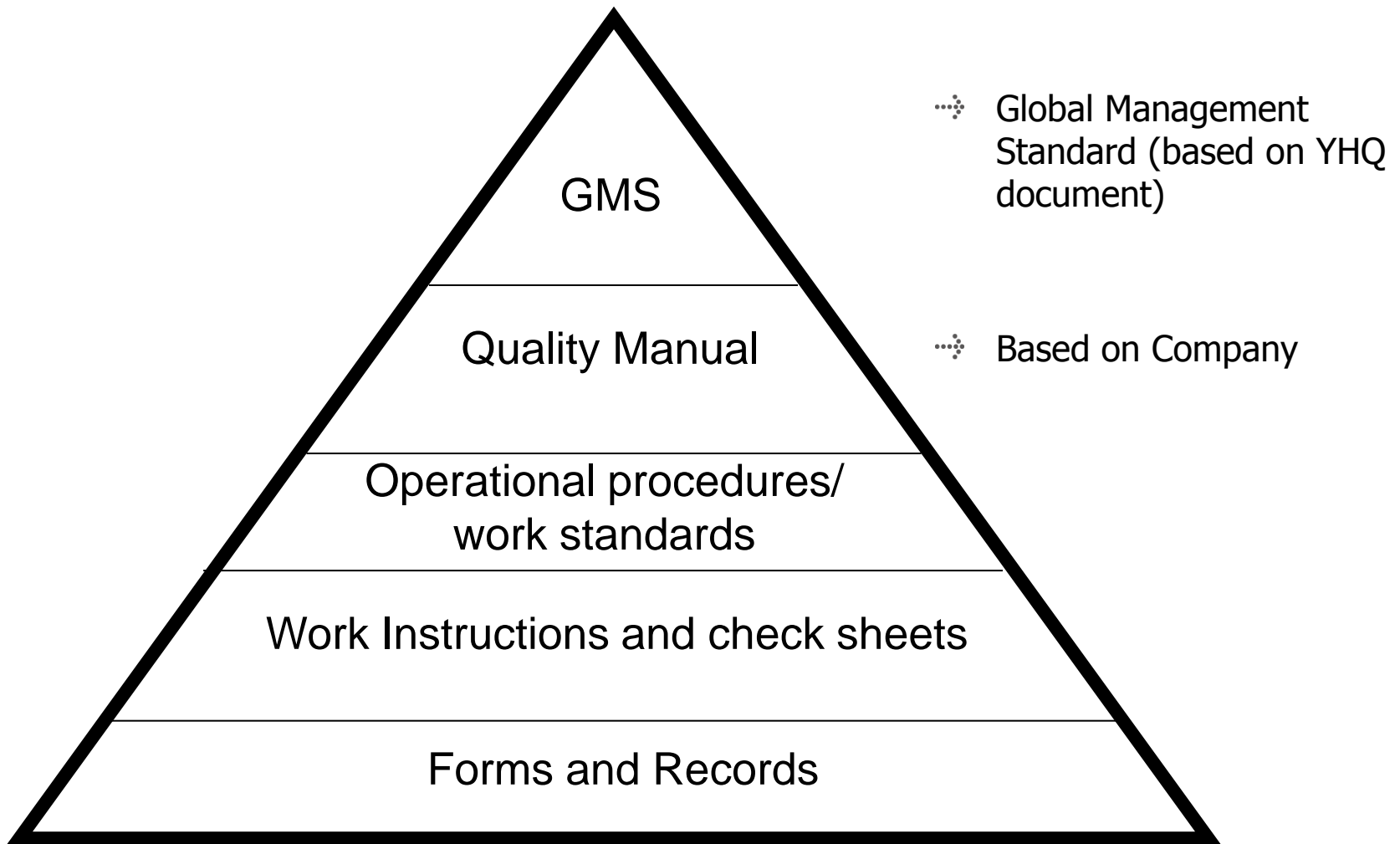The SN milestone check series are structured as indicated here:
Note: SN3 milestone is kept as spare for future usage.

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Standardizing Documentation Structure

By Yokogawa

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Yokogawa Documentation Structure

GMS

Quality Manual

Operational procedures/ work standards

Work Instructions and check sheets

Forms and Records

- Global Management Standard (based on YHQ document)

- Based on Company

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Yokogawa Documentation Structure

- The following are **controlled** documents:
  - Client's Contract Documents
  - Client's Specifications
  - Client's design inputs, including drawings and narratives.
  - PEP
  - PQP
  - Design Documents
  - FAT Procedures
  - Change Control documentation (including Client's change orders)

Standardizing Document Amendment

- Each documentation amendment shall be verify internally by lead / manager prior to approval.

- Whenever a revision up is perform, the amendment shall be tracked.
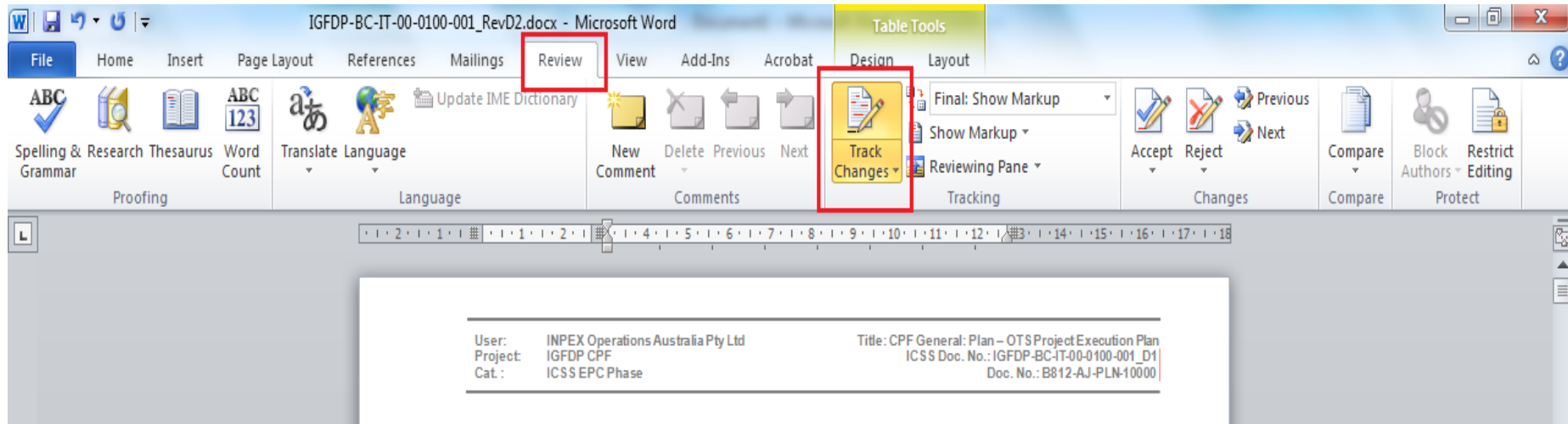
- These changes can be easily acknowledge with acceptance using Ms. Word function.

- Font size, layout, paragraph, header & footer format should also verified during document standardization.

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Project Execution

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Project Execution – Control.

- Management, Integration & FAT
  - Project Management (e.g. external progress report, issue tracker, risk analysis, etc).
  - Equalization Meetings (e.g. Monthly or Bi-weekly)
  - System Integration. (e.g. Comm. with 3rd party)
  - **Quality assurance** verification (e.g. quarterly or milestones)
  - Re-sales Item Buyout (e.g. CISCO switch, HP servers, etc)
  - Sub-vendor (e.g. 3rd party solution under contract) Management.
  - Internal testing, FAT & IFAT.
  - **Quality Control** (e.g. Monthly QA review, Quarterly QA Audit, etc)
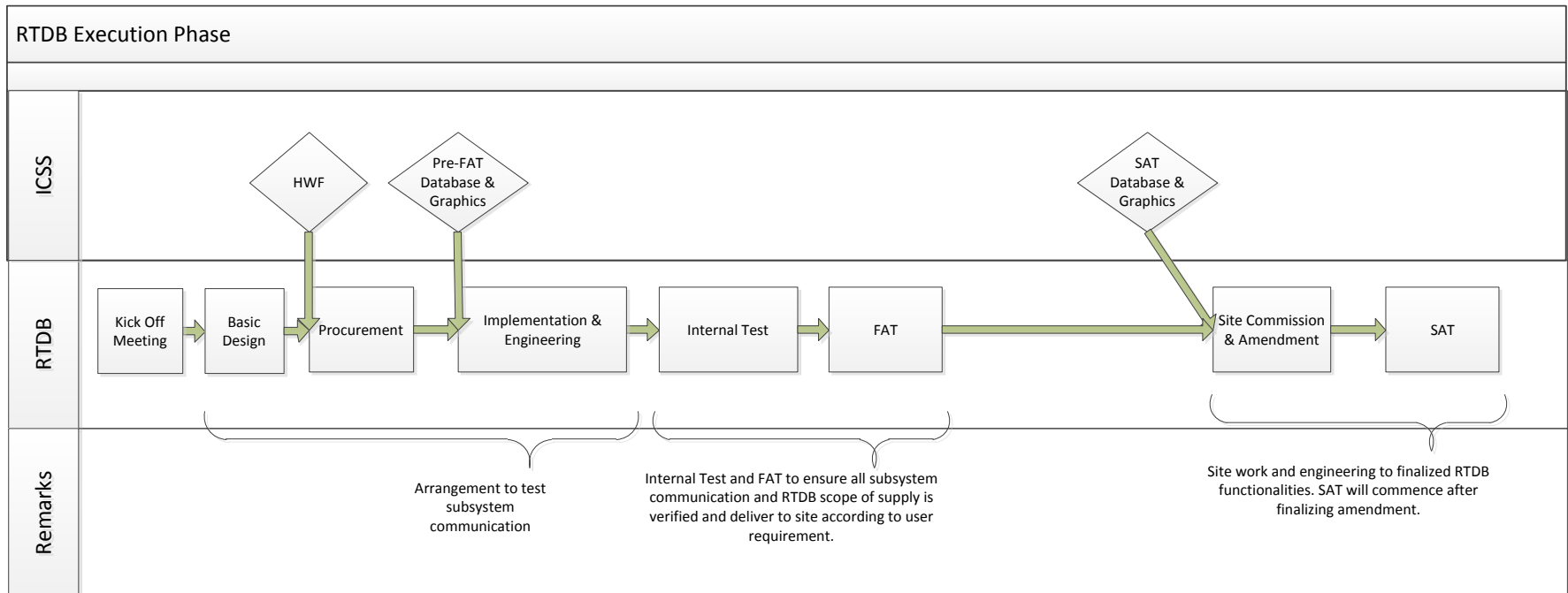 - FOB or SAT.

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Understand Critical Project milestone
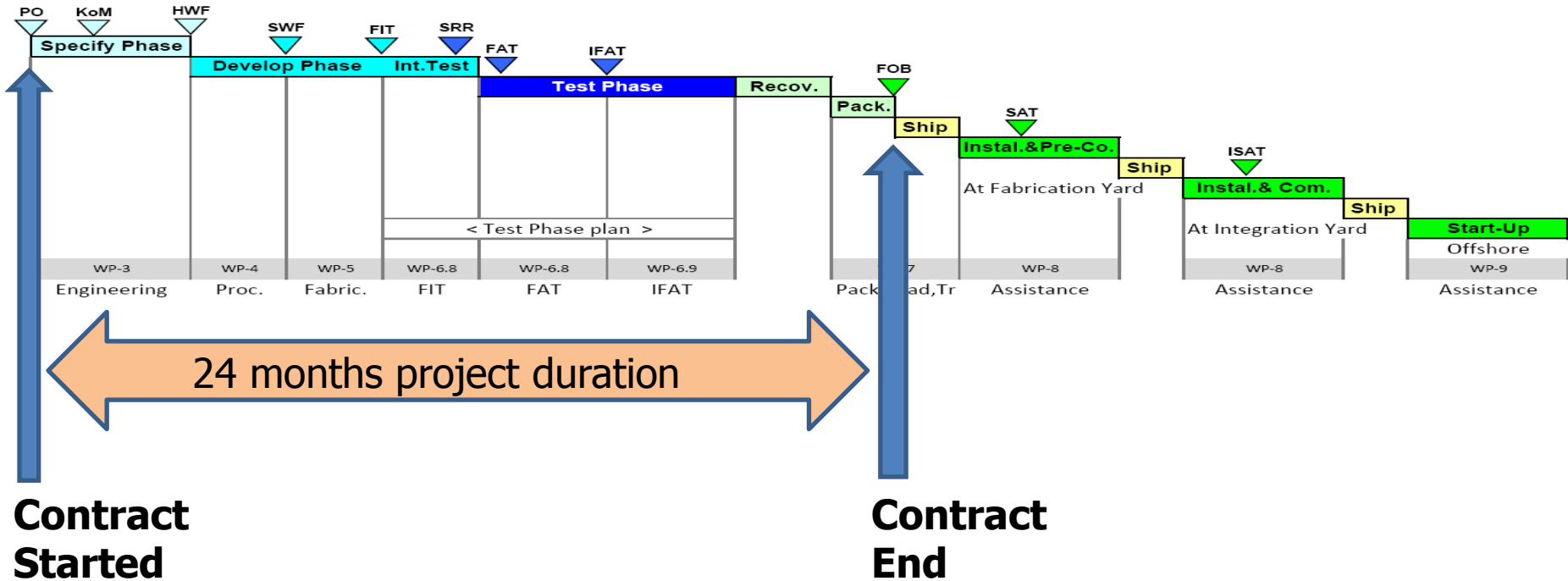
- Sample of Project milestone and delivery are equalize among stakeholders.
- QA is distribute according Project Initiation, Execution, Monitoring & Control, Testing and Delivery phases.

PEP – Execution Dependencies

- Most system is likely to be depending on certain information or DCS to be able to proceed to next level of engineering or testing phase.
- This shall be highlighted within PEP.

RTDB Execution Phase

ICSS		HWF	Pre-FAT Database & Graphics	SAT Database & Graphics
RTDB	Kick Off Meeting	Basic Design	Procurement	Implementation & Engineering · Internal Test · FAT · Site Commission & Amendment · SAT
Remarks		Arrangement to test subsystem communication	Internal Test and FAT to ensure all subsystem communication and RTDB scope of supply is verified and deliver to site according to user requirement.	Site work and engineering to finalized RTDB functionalities. SAT will commence after finalizing amendment.

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Issue Tracker

Keeping track of internal / external discussion points

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Inpex Solution – Issue Tracker Format

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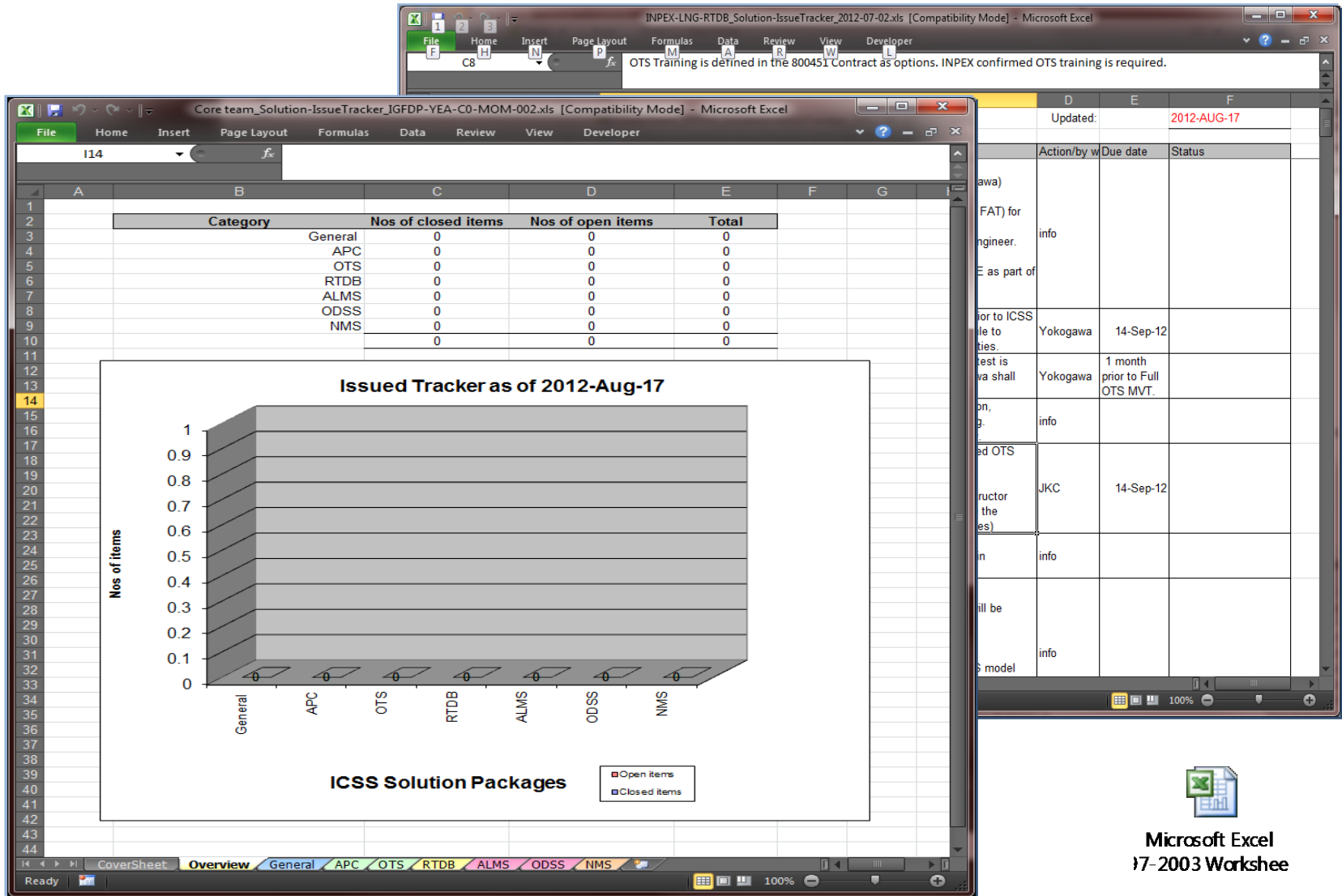
Project Risks

Risks and Technical difficulties

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Solution Risks Identification...

	Low	Medium	High
High	Significant (**3**)	Crucial (**4**)	**Show stopper (5)**
Medium	Moderate (**2**)	Severe (**3**)	Crucial (**4**)
Low	Minor (**1**)	Moderate (**2**)	Significant (**3**)

Probability (vertical axis) vs *Impact* (horizontal axis)

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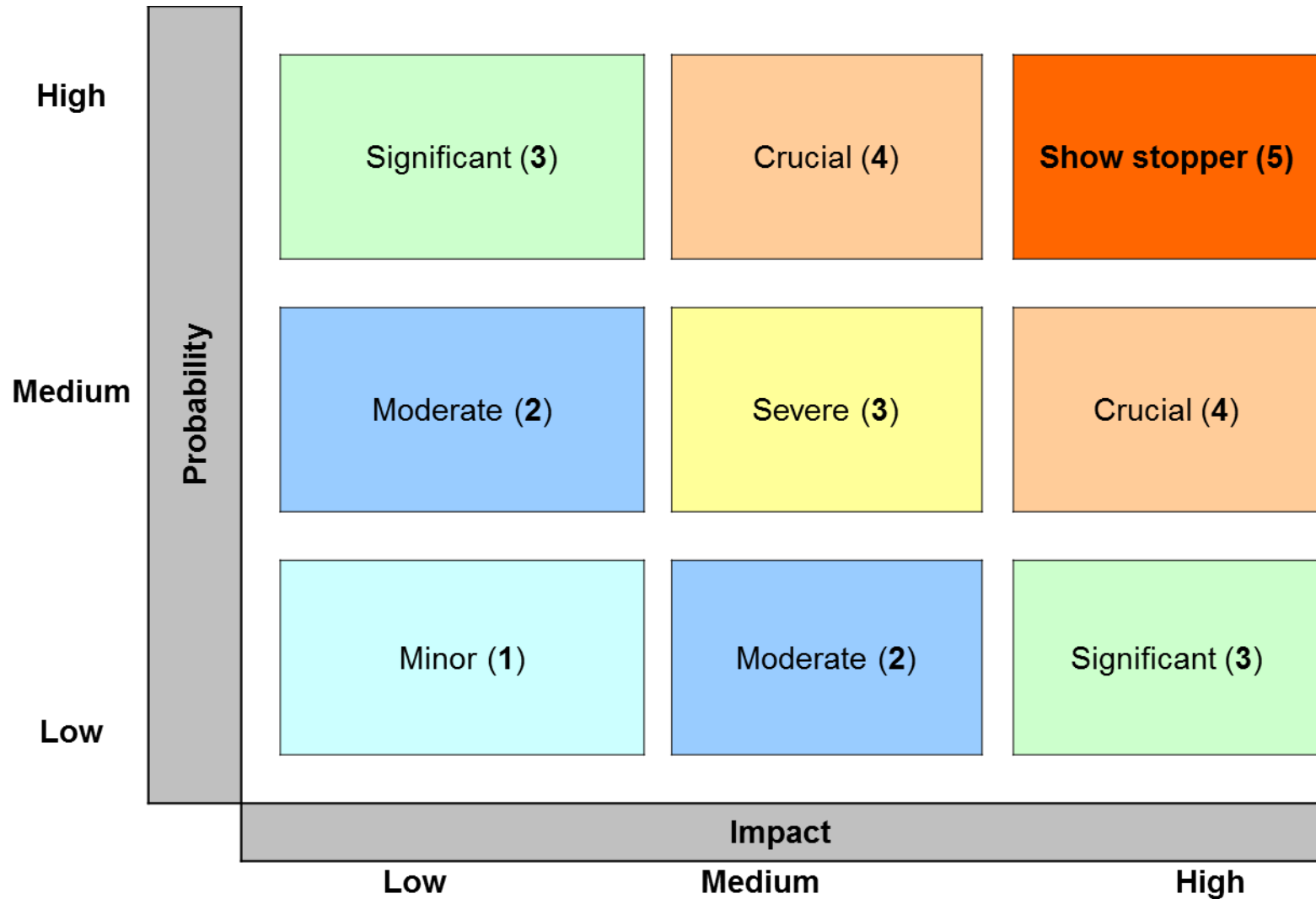
Solution Risks Identification…

Risks Reporting actions:

- **(5) Risk** will be reported to <u>All Parties</u> (included Project Manager, Project Sponsor, Middle & Higher Management)
- **(4) Risk** will be reported to Project Manager, Project Sponsor, Middle Management.
- **(3) Risk** will be reported to Project Manager, Project Sponsor
- **(2) Risk** will be reported to Project Manager
- **(1) Risk** is considered <u>alert</u> but recorded for consideration.

Risks Log sample

Hardware certification

- **(3)** ATEX ZTAC Wireless Portable laptop certification / classification for offshore usage needs to be included.

Solution Resources

- **(4)** Solution team based on MES and APS team (in YEI \ VPSS division). The team contain poll of shared resources handling multiple projects (i.e. Thai Oil, YERP, Shell Arrow, TANECO, etc) at the same time.

- **(1)** Resource for Core Team security team (e.g. DLCSO) and Project Team network engineer not being clearly defined or allocated.

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Solution Risks Log

- **RTDB** (Real Time Database).
  - **(2)** Late DCS database input hence hampered engineering for dynamic graphics & report generation progress. Continuous engineering progress monitoring is required.
  - **(4)** Alarm and Events (OPC AE) information to be transfer onto Perth Data Centre RTDB server from individual area (e.g. LNG, CPF and FPSO) using YMX proprietary software is under YMX development. Data Access (OPC DA) was proven and tested but not with scope as large as INPEX database I/O.

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Thank You for your attention.

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