



Tips to Streamline Your PHA (And Your Investment)

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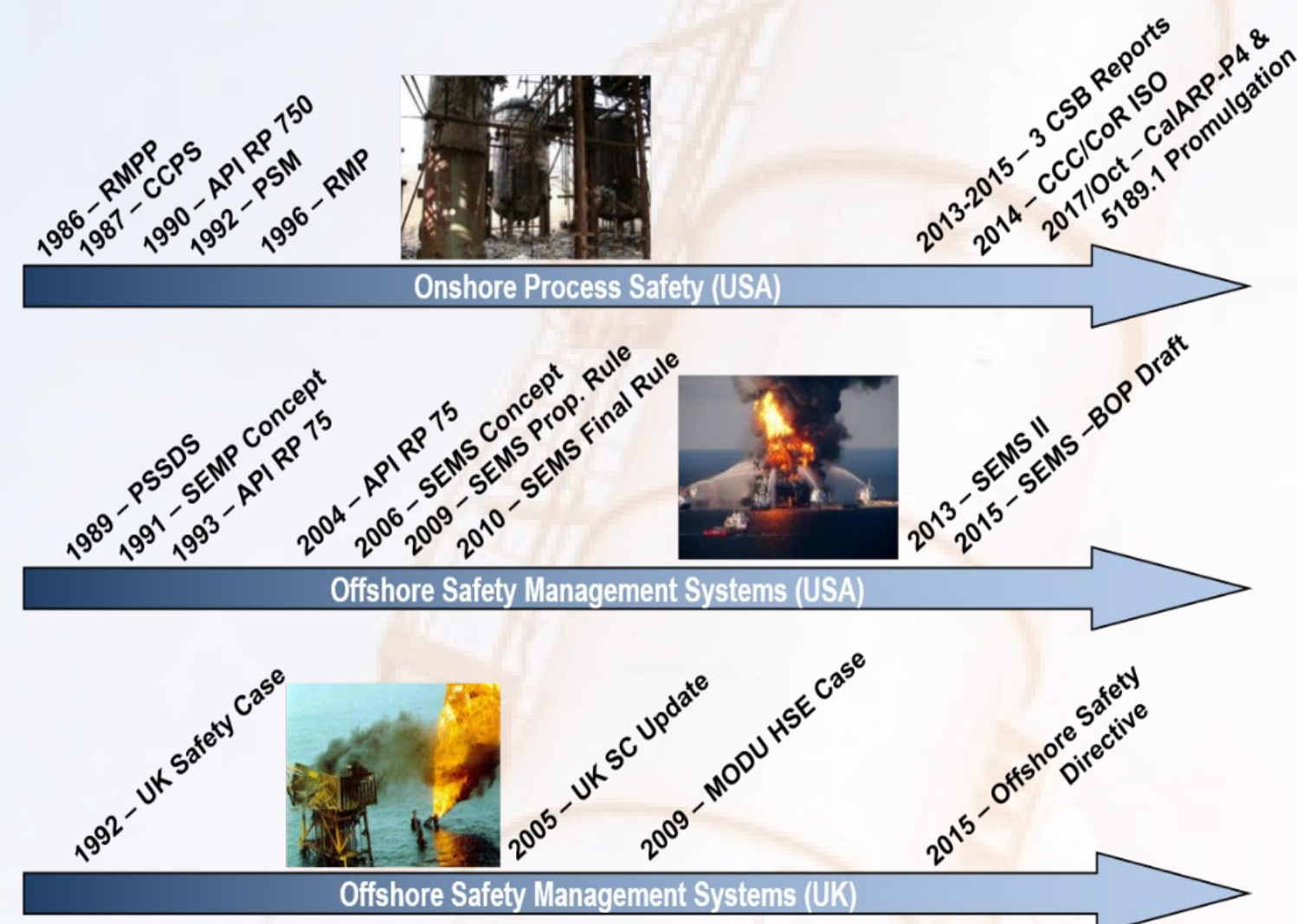
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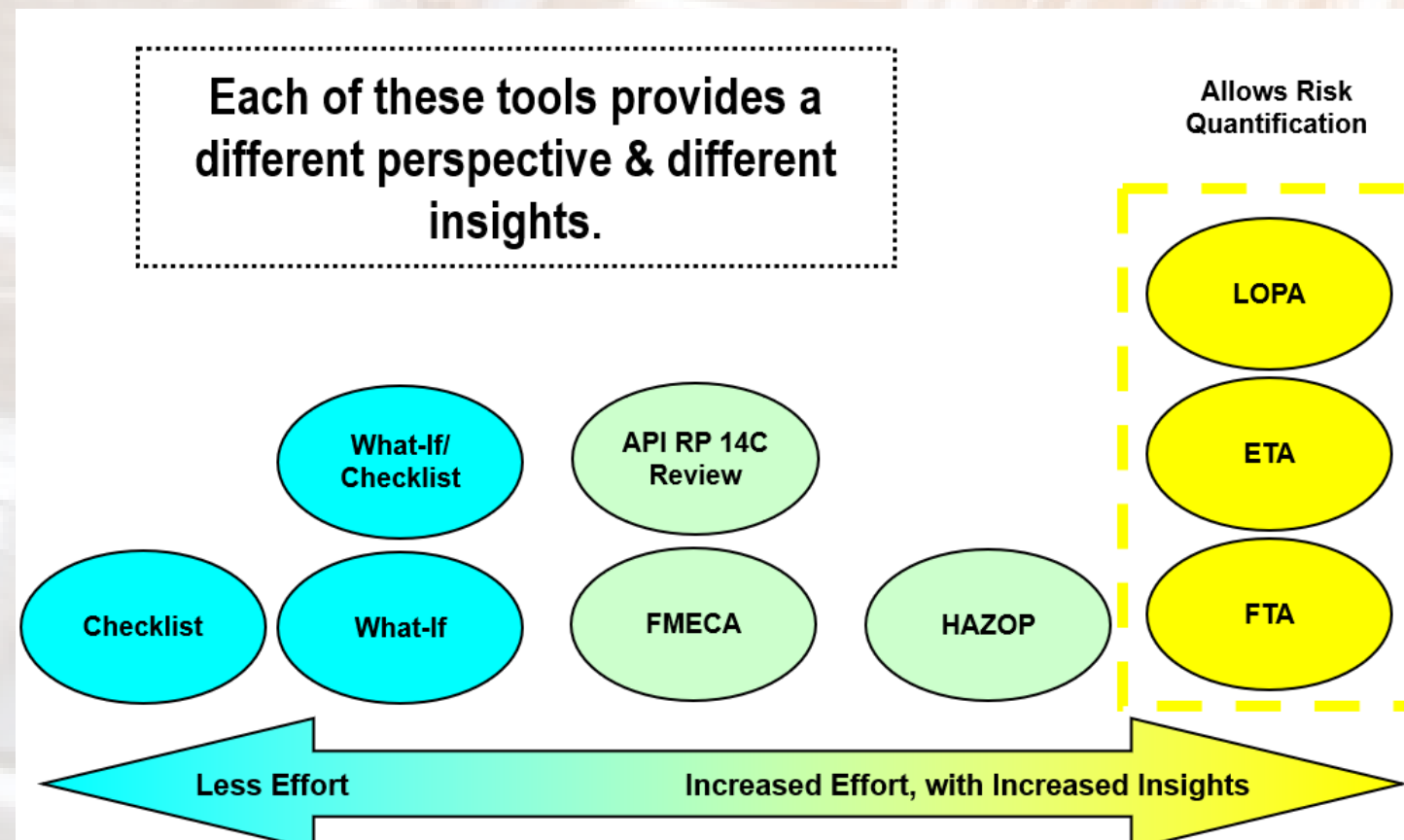
Regulatory & Project Implementation Changes Lead to Need for Streamlining



Regulatory Challenges – PHAs have become **more complex**, and quality must remain the **TOP** priority

Capital Projects are Changing

- **Financial pressures** to accelerate project schedule, avoid unnecessary revalidation, and challenges during start-up
- Use of **Package Vendors** to accelerate project schedule and compartmentalize design work
- **More (and Geographically-Separated) Stakeholders** – Increased spreading of financial project risk over many companies



Understanding your system **complexity** will help determine if the **lower-effort** methodologies (What-if/Checklist) are more **cost effective** for your system.

Planning/Preparation for HAZOP/LOPA

SCHEDULING

- **Early** scheduling of a PHA study will ensure **all** required members are present
 - Facilitator
 - Scribe
 - Operations
 - Process
- Ensure **Instrumentation/Controls and SEMS/Rotating Equipment Specialist** is available during session time
- Ample time for **P&ID walkdown** and **verification of revision** to be used during study

FACILITATOR/SCRIBE

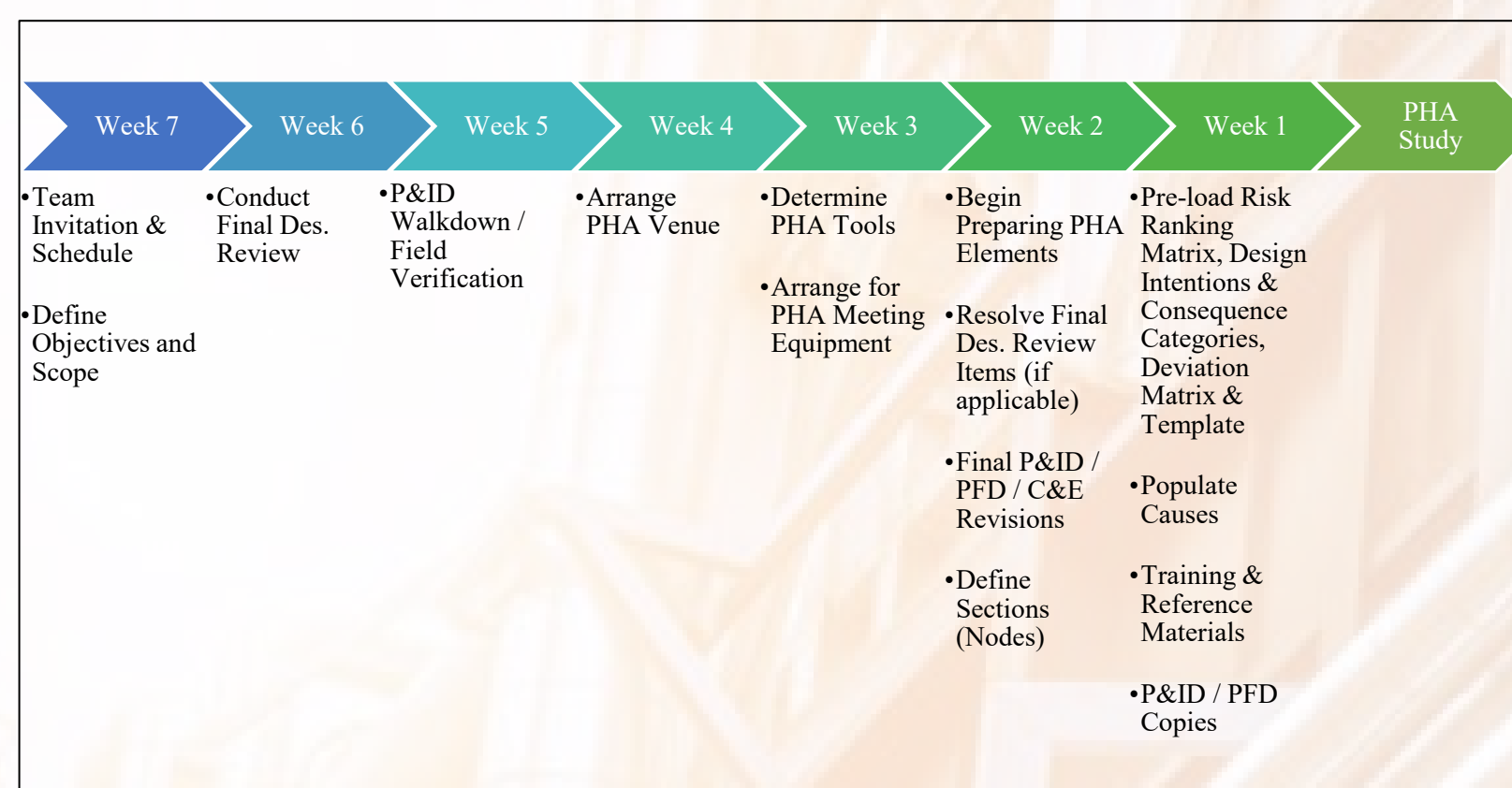
- Must be **qualified, experienced**, and **prepared**
- **Noding P&IDs** and **pre-populating causes** prior to the study date
- Review of Process Safety Information (PSI) received early to identify any **potential deficiencies**
- Determine **PHA methodology** based upon **scope of work** of system/process
- Technical scribe ensures **detailed** documentation of nuanced team discussion
- Allows facilitator to focus on **driving** the team towards **relevant** discussion while **maintaining pace**

REQUEST FOR INFORMATION (RFI)

- Ensure the following PSI is reviewed prior to the study:
 - **Process Flow Diagrams (PFDs)**
 - **Piping and Instrumentation Diagrams (P&IDs)**
 - Cause and Effect Matrices
 - Instrumentation Setpoints
 - Relief Valve Design Basis Documentation
 - Site Layout
 - PSSR/MOC
 - Previous Incidents/Recommendations
- Session time should be spent on **identifying hazards**, not looking up PSI

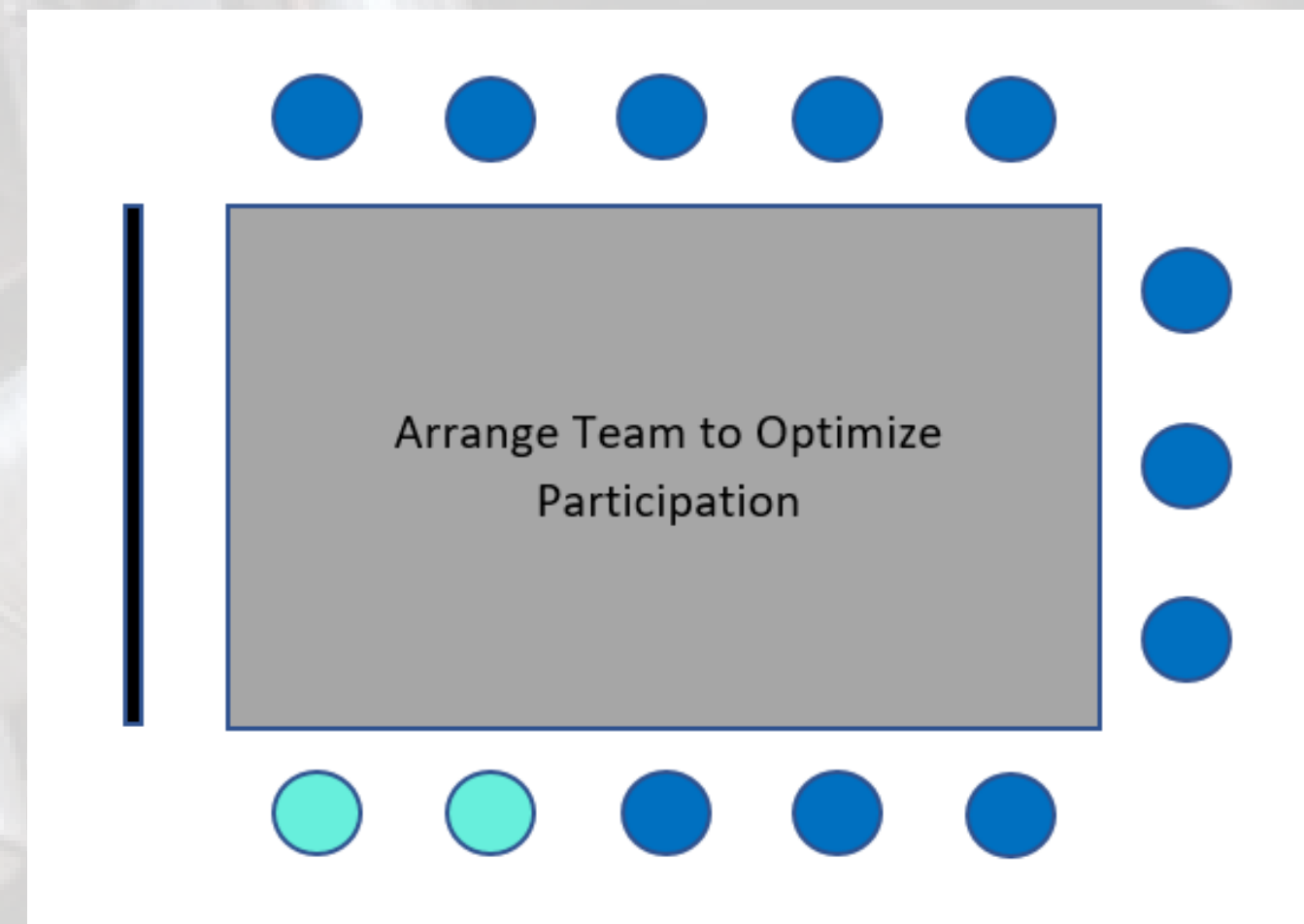
VENUE SELECTION

- **Orientation of the room** selected to perform the PHA directly impacts the effectiveness of the study.
 - Scribe positioned **directly next to** the Facilitator
 - All team members able to see the **entire screen clearly**
 - **Multiple monitors** to capture **both** the discussion on PHA worksheets and display PSI



SPECIALIST SUPPORT

- Provide SEMS/Rotating Equipment with the following to ensure **minimal follow-up time** is required following a study:
 - Process Parameters - Pressure, Temperature, Composition
 - Scenarios involving specialist equipment
 - P&IDs to ensure **accurate depiction/configuration**
- Instrumentation/Controls specialist **review** and **verification of control logic** depicted on the P&IDs



Final Tips

- PHA session time is **NOT** meant for the design changes
- Detailed documentation of scenarios **reduces time** spent during **revalidation** PHAs
- Ensure recommendations are **cost effective** and **open ended**
- Consider **removing** scribe support during **LOPA**
- In the **absence** of PFDs, **DCS screen-printouts** can provide clarity in the process
- During **in-person PHAs**, completion of checklists **remotely** may **significantly** reduce travel costs



Spending **more** time during the preparation phase will **significantly reduce** the session time and follow-up time

Day of PHA Study

PRINTOUTS/HANDOUTS

- Ensure all members have access to the following PSI/PHA documents:
 - Risk-Ranking Matrix
 - P&IDs/PFDs
 - LOPA Data Tables
 - Facility Siting/Human Factors Training

Arrive **EARLY** to ensure **NO** technological deficiencies that prolong session time

PHA TRAINING

- Effective presentation to new members **reduces time spent** throughout the study
 - **Clear and concise**, with an emphasis on consequences **WITHOUT** safeguards
 - Provide sample scenario that is **system-specific**

REMOTE CAPABILITIES

- Remote capabilities can ensure all personnel that need to be brought into the study are **effectively** involved
 - **Extra monitors and cameras** can be used to effectively engage the members in the room with the remote members
 - Microphone and speaker selection can ensure **minimal delays in communication** with online members
 - Ensure adequate connections for **power** and **communications** and sufficient **bandwidth**

