



PETRONAS

EX SCHEME IMPLEMENTATION – PETRONAS EXPERIENCE

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Presentation Outline

- Introduction
- Ex Road Map
- Ex Standards
- Ex Capability Building
- Technical Contributions
- Challenges
- PETRONAS Aspirations

Introduction

- PETRONAS Ex Installations

- Exploration and Production
 - Oil / gas production and onshore receiving terminals
- Gas and Power
 - Liquefied Natural Gas (LNG), gas storage and re-gasification terminal
 - Gas processing and pipeline
 - Utilities and power
- Downstream
 - Oil refineries
 - Oil depots and retail stations
 - Petrochemical plants



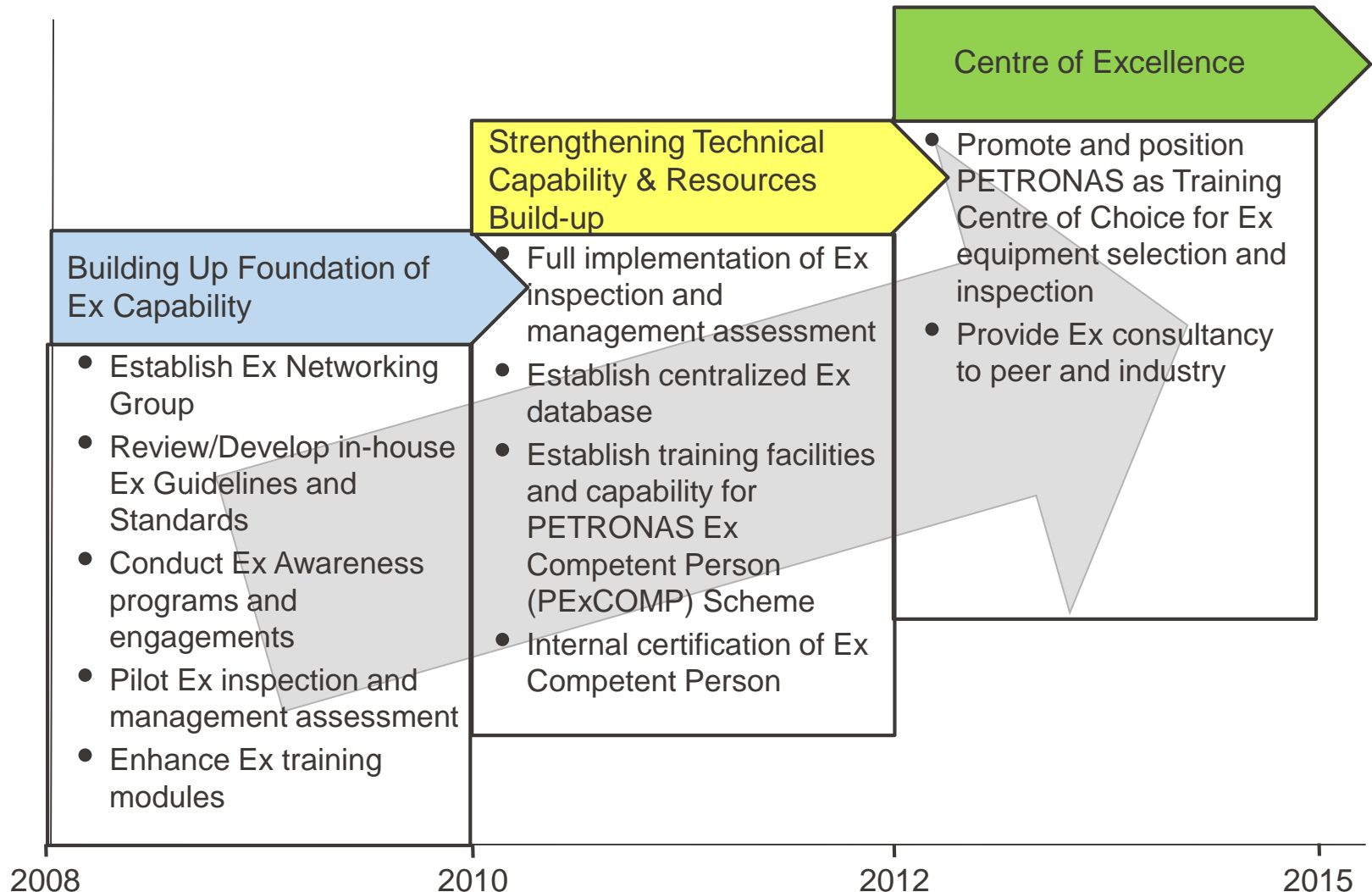
Introduction

- Past Problems Related to Ex Installations

- Lack of guidelines for Ex equipment management.
- Poor tracking system with regard to overhaul and maintenance of Ex equipment e.g. Ex type motors and generators.
- No repair workshop certified by independent body like IECEx scheme was available in Malaysia to service and/or overhaul Ex equipment.
- Rely on external service provider on Ex trainings.

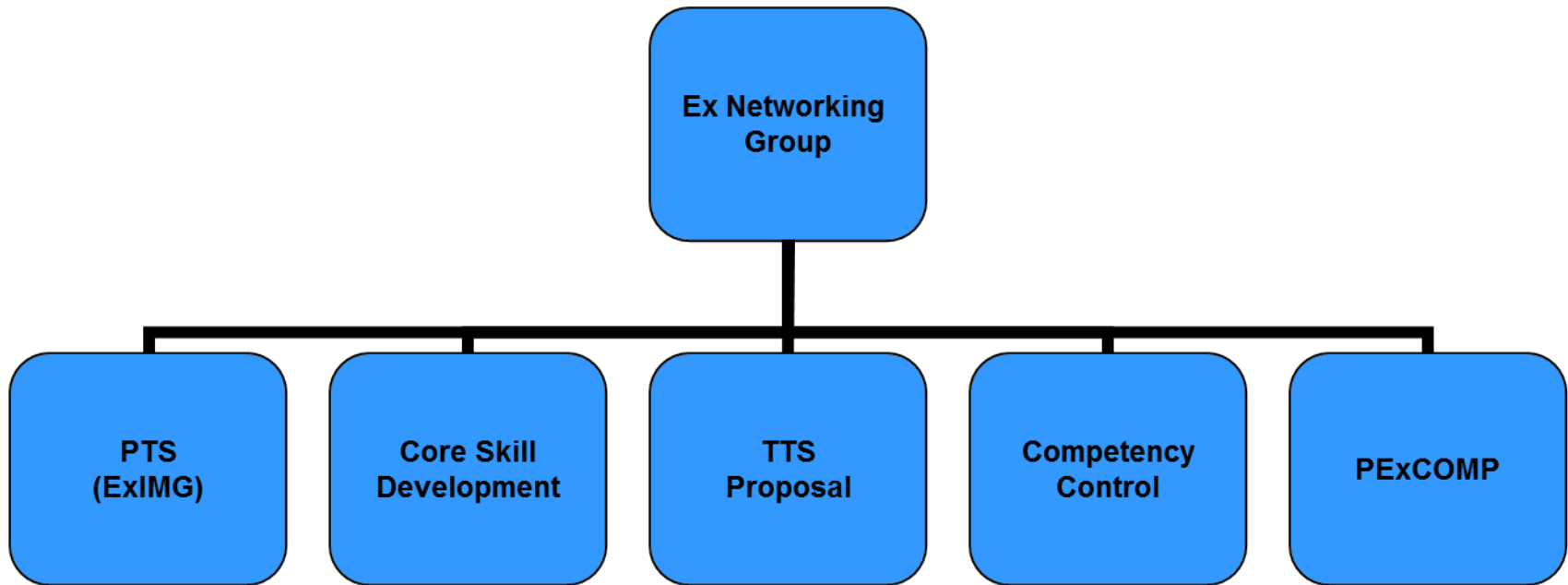
PETRONAS Ex Road Map

- Towards Centre of Excellence



PETRONAS Ex Road Map

- Ex Networking Group



PTS	PETRONAS Technical Standard
ExIMG	Ex Inspection Maintenance Guidelines
PExCOMP	PETRONAS Ex Competency
TTS	Technical Trade Specialist

Resources are senior electrical personnel from PETRONAS Group of Companies

Ex Standards

- International / Malaysian Standards
 - IEC / MS 60079 series
 - IP Part 15 (Hazardous Area Classification)
 - API RP 500 series (Hazardous Area Classification)
- In-house PETRONAS Technical Standards (PTS)
 - Ex Electrical Equipment Inspection & Maintenance Guidelines (Ex IMG)
 - Ex Equipment Repair Guidelines (Ex ERG)
 - Ex Management Assessment Guidelines (Ex MAG)

Ex Capability Building

- Training Programmes

- In-house Ex Training Programmes @ INSTEP
 - Ex Equipment and Installation (for technicians)
 - Ex Equipment Requirement & Design (for electrical executives)
 - IECEx Unit Ex 001 Preparatory Training (Assessment by SIRIM)
- External Ex Courses
 - CompEX (Assets Training & Technical Services Pte Ltd)
 - Repair and Overhaul of Ex Electrical Apparatus (AEMT, UK)
 - Application of Electrical Apparatus in Potentially hazardous Areas (Shell Global Solutions)

Ex Capability Building

- INSTEP Ex Training Facilities (First in Malaysia)



INSTEP is ready to meet demand on Ex training for operation and maintenance engineers and technicians from PETRONAS and Contractors.

Technical Contributions

- Ex Standards

- Active participation in various technical committees on Ex standards at national levels
 - National IECEx Management Committee (ExMC) - Chairman
 - Technical Committee on Equipment for Explosive Atmospheres (TC/EEA) - Chairman and Members
 - Working Groups - Group Leaders and Members
- Represented Malaysia in various meetings of international technical committees (IECEx and TC/31), maintenance teams (MT) and working groups (WG) in International Electrotechnical Commission (IEC)

Technical Contributions

- Industry

- Provided technical guidance or support (like mock-up assessment) to local Ex Service Facilities during application for Ex certification upon request
 - Wehaya
 - Elektroserve
 - PFCE
 - Rotary Technical Service
- Provided Ex training services
 - SIRIM
 - Contractors

Challenges

- Full compliance to Ex related internal standards (PTS)
 - Ex IMG Assessments
 - Integrated Asset Integrity Reviews
 - HSE Assurances
- Inadequate awareness and competency amongst front liners.
- Additional cost and resource requirements for training and maintenance.
- Big monetary investment on Ex competency development and certification
 - User (Ex competency certificate)
 - Service facilities (Ex service facility certificate)

PETRONAS Aspirations

- Adequate pool of IECEx certified Ex competent person
- Industry leader in Ex management, consultancy services and training

The End