PETRONAS Project Management Transformation Initiatives

- **PDE** Project delivery Digital Eco-system
  - Lean improvement of processes & AI ecosystem towards prescriptive project management solutions

- **CBE** Construction-Based Engineering
  - Engineering interface & process improvements towards cost optimisation via AWP and PPM

- **DFG** Disruptive For Growth
  - Engine for step change in project delivery eco-system through R&D of project delivery practices

**PETRONAS**

- **JIP** Joint Industry Programme
  - Collaboration across industry for standardisation of specification

- **SPS** Smart Project Site
  - Adoption of robotics & smart devices to deliver insights & optimisation at project site

- **D1BM** Design One Build Many
  - Maximizing value through design replication and standardisation

- **HSE 6.X**
  - Delivering HSE effectively using technology & digitalisation with greater pace and value creation
Lean improvement of processes & AI ecosystem towards prescriptive project management solutions

Web-based Enterprise P6 with 3rd party access for open collaboration and integrated with PCS

Tracking of construction, pre-commissioning & commissioning completion & handover

Online tools with analytics and AI capability in providing e-DPR, e-CMS, and e-Project Database

Online tools to manage, monitor and perform analysis on Q-Cards submitted by Project Team

Platform for storage of data regarding welding for GPD with required data on real time basis

Digital platform with analytics and AI capability for construction productivity measurement

Process of AWP guides the dissection of project scope to support execution of workface planning.

It starts with the processes upstream of the construction work packages and aligns engineering work packages with procurement packages.

This populates the construction work packages with all the drawing and materials and gets them ready to be carved into Installation Work Packages.

PPM views project as production system. Use of a production system framework allows application of Operations Science as the technical basis to map, model, analyse, optimise, control and improved project production system performance.

Engineering interface & process improvements towards cost optimisation via AWP and PPM
Maximising value through design replication and standardisation

**D1BM** Design One Build Many

**PETRONAS Station Prestige**

**GTR Metering Station**

**Light Weight Structure (LWS)**

**StaND - Utility System & OSBL**

**BIKE Inspection**
Remote controlled inspection robot designed for hard-to-access and confined spaces areas

**Drones + Visualisation Platform**
UAV designed for accessibility of remote and at-height working areas. Data capture for project visualisation & analysis platform

**Smart Helmet**
Wearable Helmet Mounted Computer which enables connectivity and data capture

**Robotics: ANYmal**
Autonomous / Remote controlled walker robot designed for surveillance and data capture

**SPOT & AISC (HSE6.X)**
Wearable GPS positioning for real time location data and PPE compliance AI system

Adoption of robotics & smart devices to deliver insights & optimisation at project site

**HSE 6.X**
Delivering HSE effectively using technology & digitalisation with greater pace and value creation

**IDEAS transformed into CONCEPT**
- Virtual Reality (VR) Training

**TECHNOLOGY enabled PROCESS**
- Drone (AI Based Human Tracking using IR Camera).
- Artificial Intelligence Surveillance Camera (AISC).
- Personnel Tracker using Secure Positioning Online Tracking (SPOT).
- Tag Device Technology and Headgear.
- Wearable Wrist Band to manage fatigue.

**DIGITISED DATA translated into ANALYTICS**
- Paperless Application
- Translate manual process & HSE data into digital with centralised database – e.g., Artificial Intelligent Risk Analytics (AiRA) and MarSIS (Marine Safety Intelligent System)

**INFRASTRUCTURE revolutionised backbone**
- Enhance network infrastructure.
- Upgrade data center (facilities) for better data storage and network services.
- Enhance cloud computing.
- Centralised dashboard.
Standardisation of procurement spec for efficient supply chain

JIP33 specifications build on existing industry standards to provide a full set of requirements with which to purchase equipment & packages.

Over 40 specifications have been published and more are planned or in development.

JIP35 provide "minimum specifications" which may be used by any operator to replace or supplement their own specifications. These "minimum specifications" were developed according to the following rules:

- **Standards**: Based on international or industry standards with (minimum) additional requirements
- **Assessment**: Any additional requirement must be assessed, and the value justified
- **Risk Mitigation**: Less focus on 'technical excellence' and more focus on risk mitigation
- **Safety**: Safety cannot be compromised

Covers 11 subdisciplines with future expansion, each associated with one industry and/or international standard.

JIP35 Offshore Structures

JIP39 Normally Unattended Facilities (NUF)

Positioning NUF as safe, cost-effective, widely accepted design and operation method for O&G facilities

- **HSE**: Risk reduction from elimination of personnel during normal operation
- **CAPEX Reduction**: 20% - 30% potential reduction in facility cost
- **OPEX Reduction**: 20% - 30% potential reduction in operating and logistic expenses
- **Reliability**: Better than of equal to attended facilities
- **GHG Footprint**: Improvement due to transportation, logistics, equipment selection and design reliability
All elements in Project Transformation Initiative are moving at the right direction in delivering Project Digital Twin.