PETRONAS Carigali Information (PCIM) ISO 15926 and Integrated Operation Initiative

POSC CAESAR, 20th – 21st October 2009
Kuala Lumpur, Malaysia
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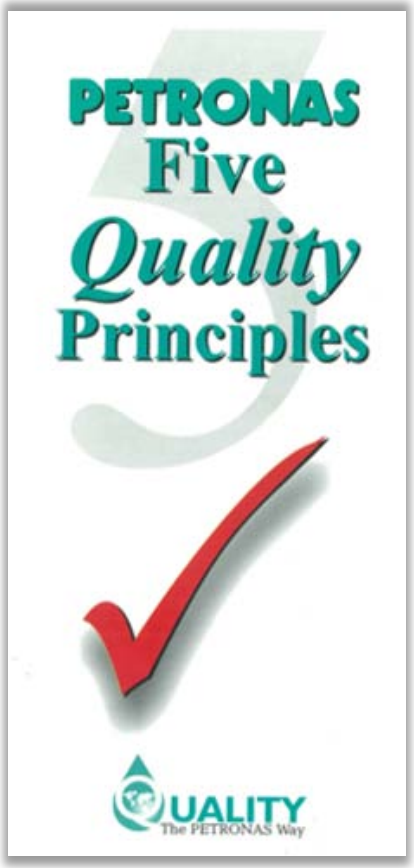
PCIM derived from the PETRONAS Business and Quality Strategy

PETRONAS Carigali Information Management Main Objectives

Reduction of Cost of Poor Information Quality	Risk Mitigation	Business Process Improvement
Engineering Excellence	**PCIM**	Productivity Improvement
Interoperability & Integration	Data Quality	Utilizing Standards

PETRONAS Carigali Information Management Initiative and PETRONAS Five Quality Principles



PETRONAS Carigali Information Management (PCIM)

Business Process Improvement & Information Quality Enforcement Initiative

PETRONAS Carigali Information Management Key Areas

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PCIM Initiative

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Business Process Improvement

- Project Management Processes
- Engineering Processes
- Information Handover Processes

Designation

- Plant Object Designation
- Document Designation

Classification

- Plant Object Classification
- Document Classification

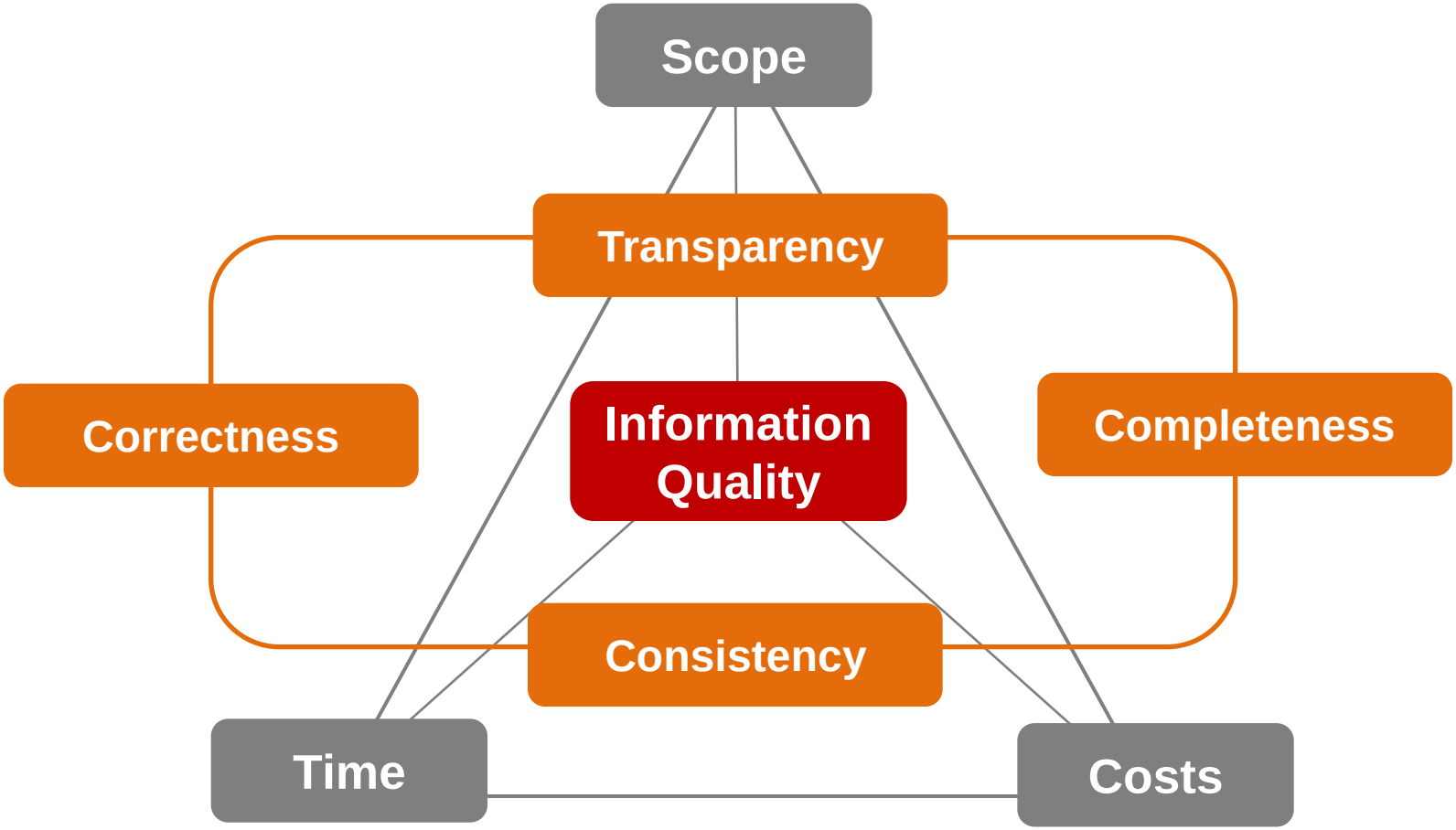
Structures

- Functional Structure
- Product Structure
- Location Structure
- Document Structure

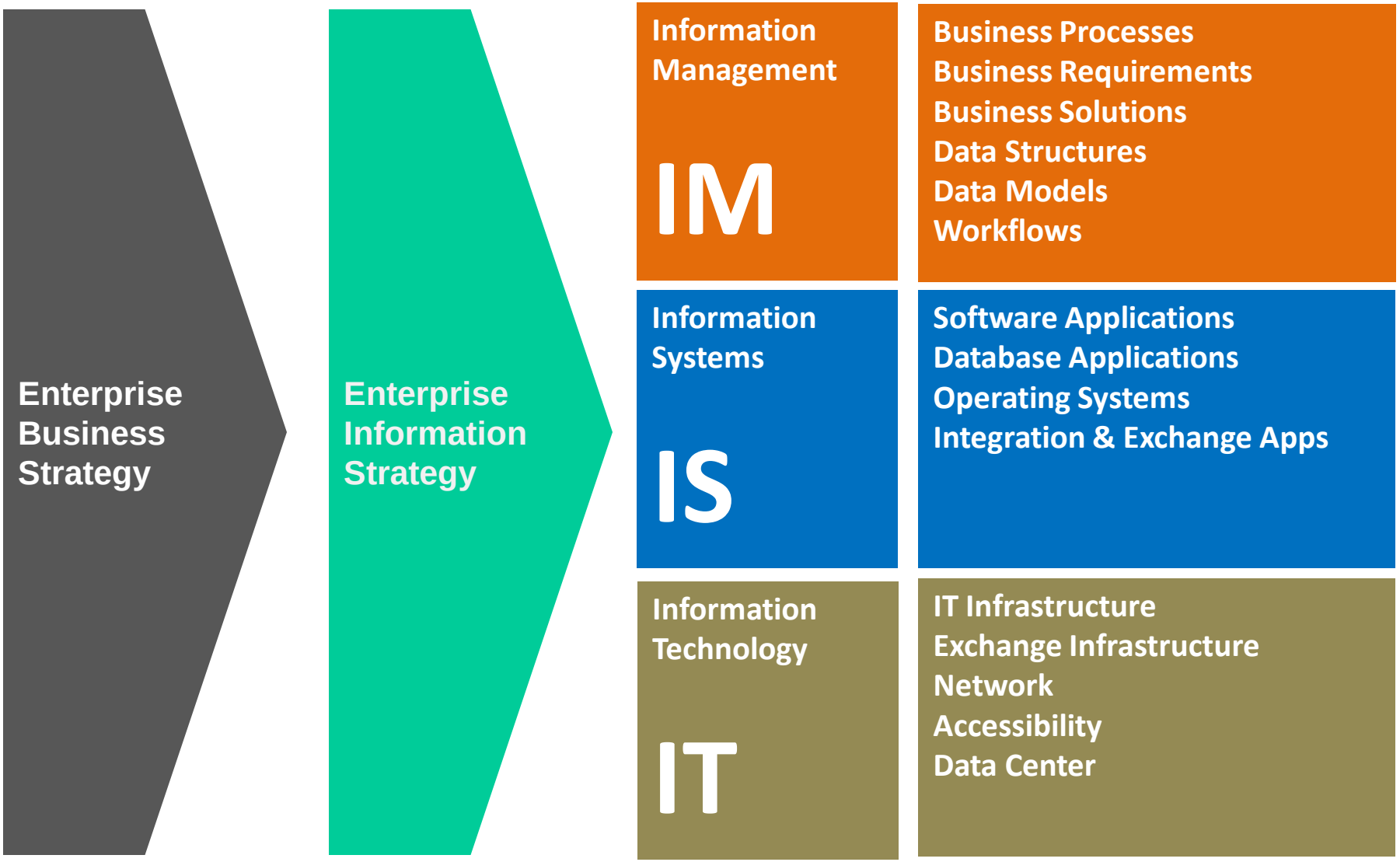
Information Handover Requirements

- Information Quality
- Information Form & Format

PCIM Implementation Objectives
Project Key Success Indicators



Business and Information Strategy dictates IMISIT Strategy



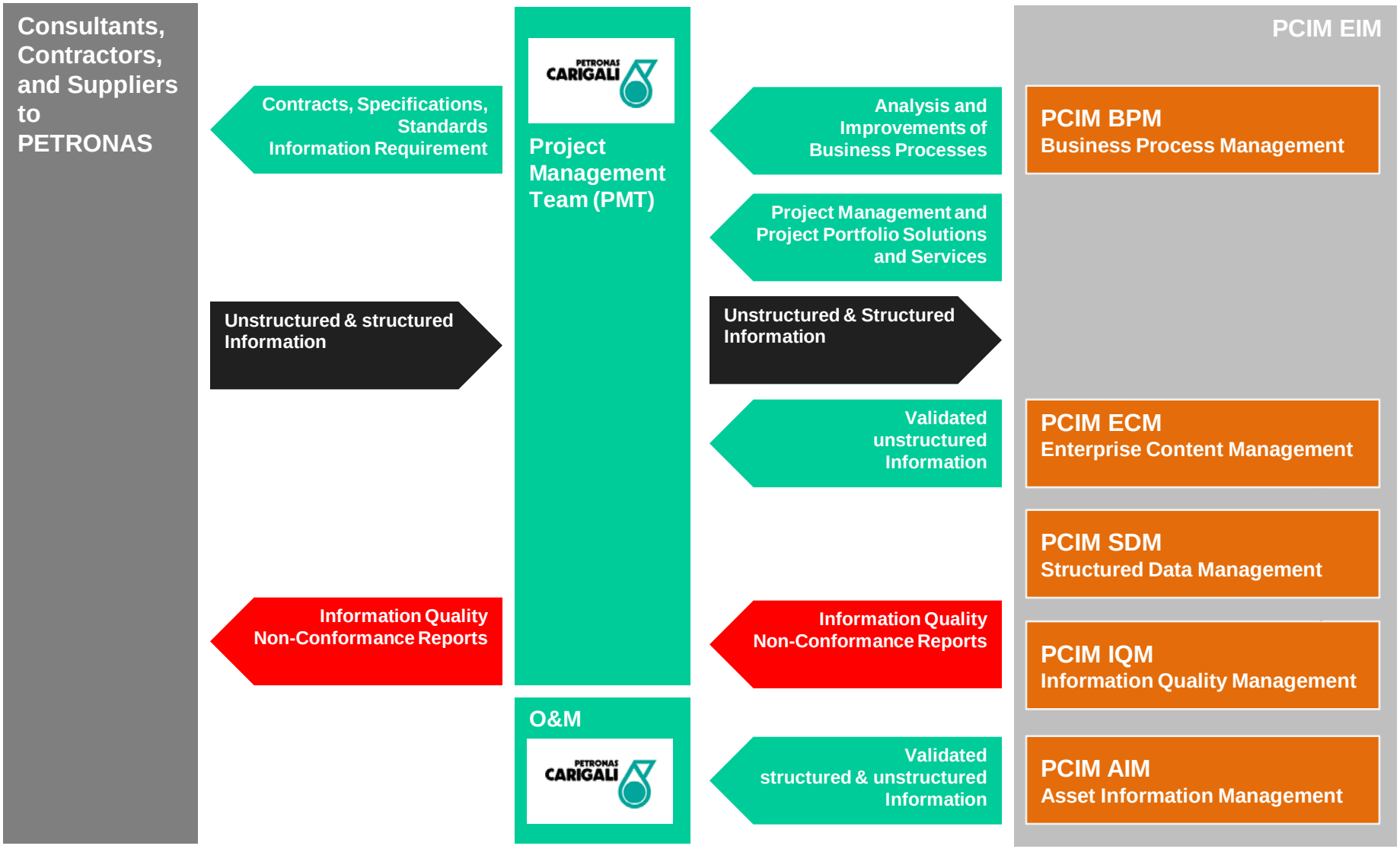
“IMISIT” Approach vs. ITISIM Approach

Past
ITISIM Approach

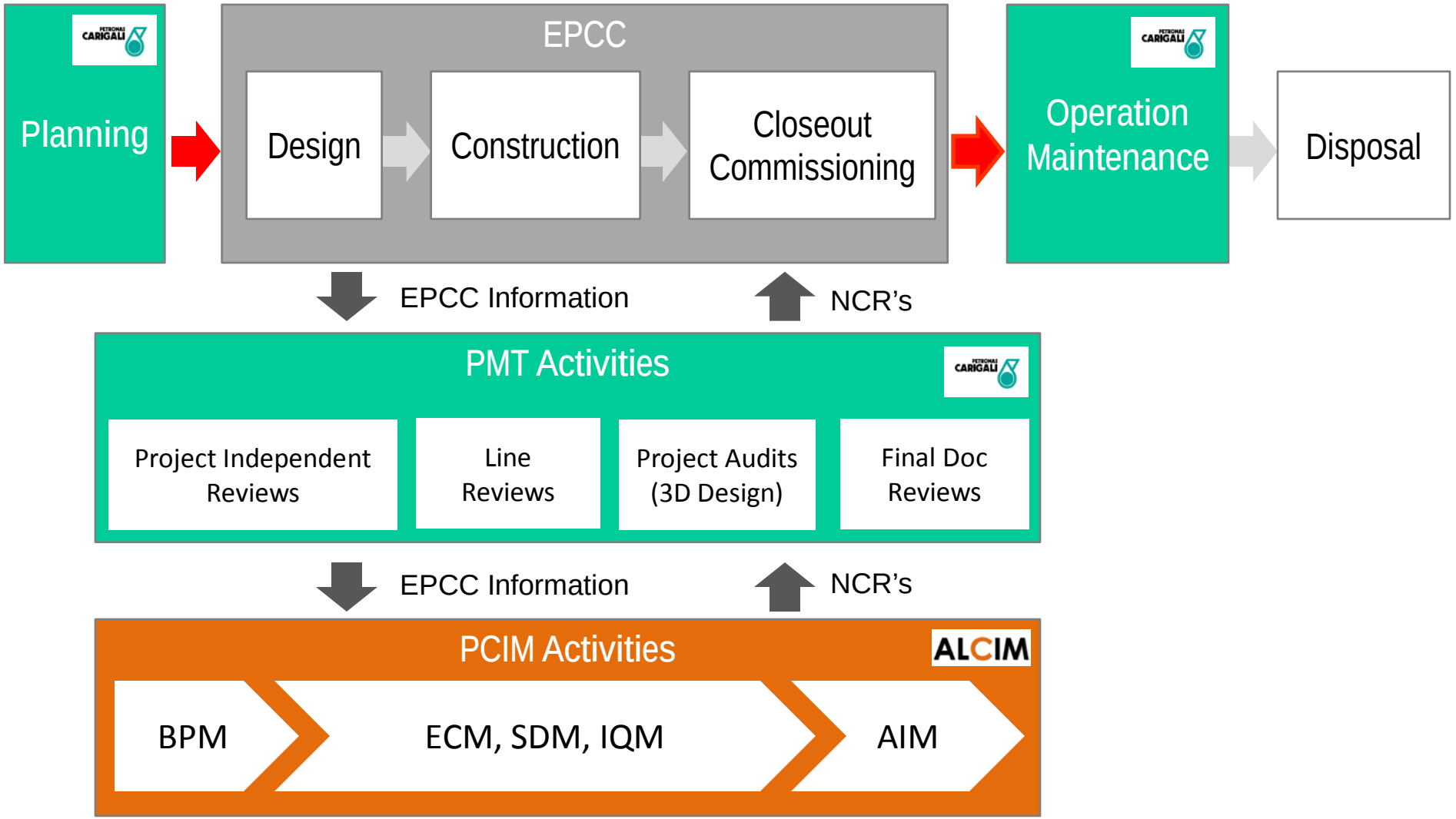
Present
IMISIT Approach

PCIM Initiative

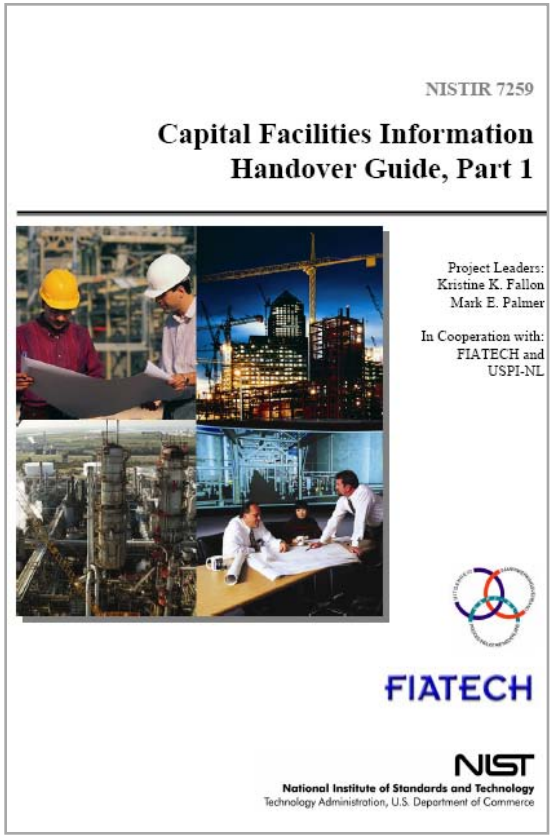
PETRONAS Carigali Information Management
PCIM Scope for Project Execution



PCIM Activities for an EPCC Project



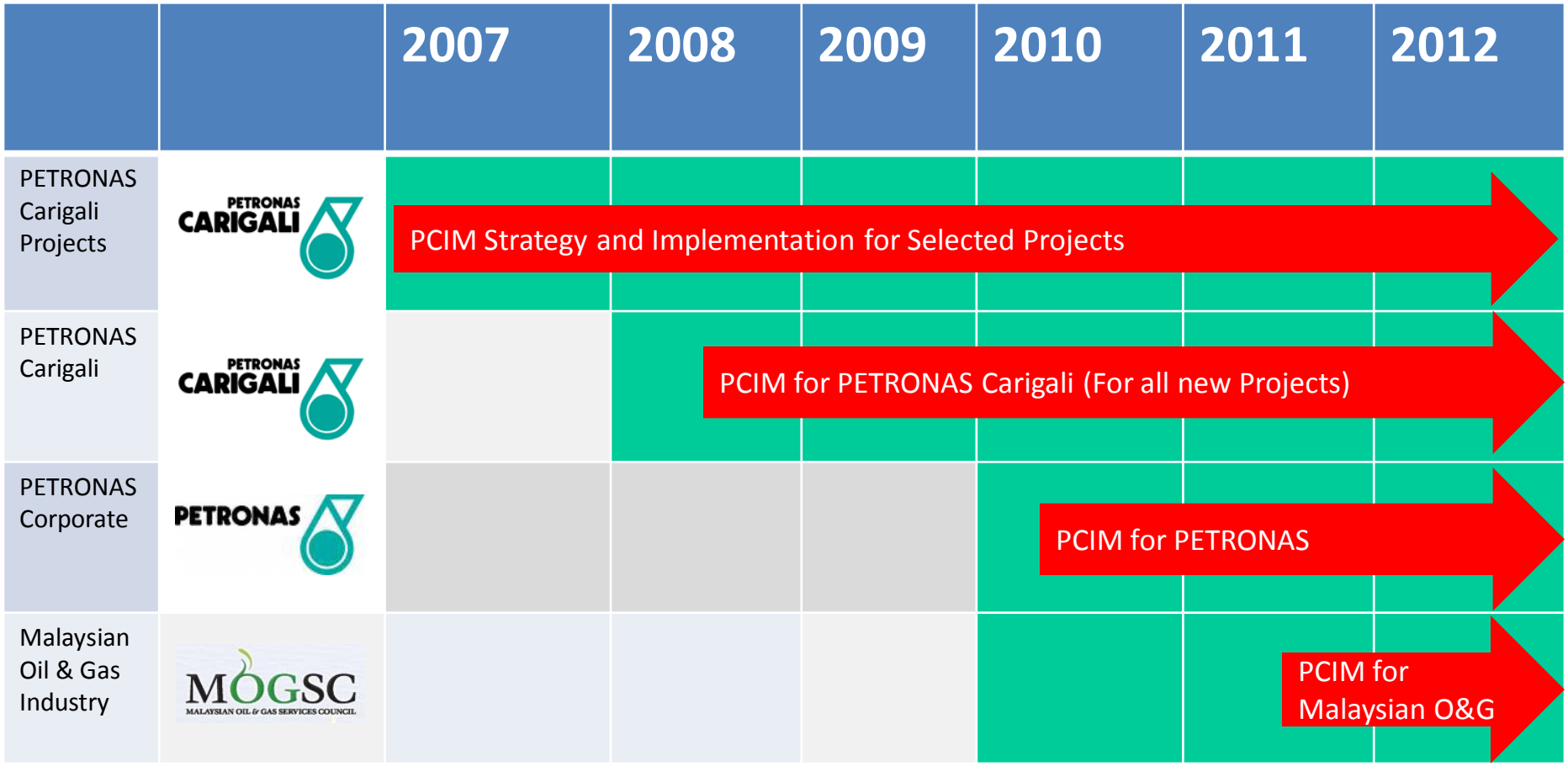
Capital Facilities Information Handover Guide, Part 1



- Identify **work processes** that can streamlined through the use of **structured information handover**
- Identify the **information requirements** of the selected processes
- Assess what is available in **structured data** formats
- Find out who is working on the development of **relevant standards** and the utility and maturity of these standards initiatives
- Define and execute a **plan** for industry-wide standards solutions for **information delivery and handover**

Information Management = Business Process Improvement

Information Management Implementation Roadmap for PETRONAS and Malaysian Oil and Gas Industry



Interoperability vs. Integration

Interoperability:

the ability of two or more systems, components or processes to work together (inter-operate) and **to exchange information** and **to use the information that has been exchanged.**

Integration:

A process to **link** two or more previously separate systems or processes to become part of a larger system or process.

Information Interoperability enables System Integration though
Standardization, Meta Data and Data Structures

Interoperability Standards and Guidelines for Information Management

Data Integration, Sharing, Exchange, Interoperability	Reference Designation System	Document and Record Management
ISO 15926 Part 1, 4	IEC 61346, Part 1	IEC 61355, Part 1
Industrial automation systems and integration -- Integration of life-cycle data for process plants including oil and gas production facilities, Overview and fundamental principles (Part 1), Initial reference data (Part 4)	Industrial systems, installations and equipment and industrial products - Structuring principles and reference designations - Part 1: Basic rules	Classification and designation of documents for plants, system and equipment,
CFIHG, (NISTIR 7259)	ISO/TS 16952-1	IEC 82045, Part 1, 2
Capital Facilities Information Handover Guide	Technical product documentation, Reference designation system, General Rules	Document Management - Principles and methods, Metadata elements and information reference model
		ISO 15489, Part 1, 2
		Information and documentation - Records Management , General Rules and Guidelines

ISO 16952 Part 1 – Reference Designation System
General Application Rules for Designation & Structure

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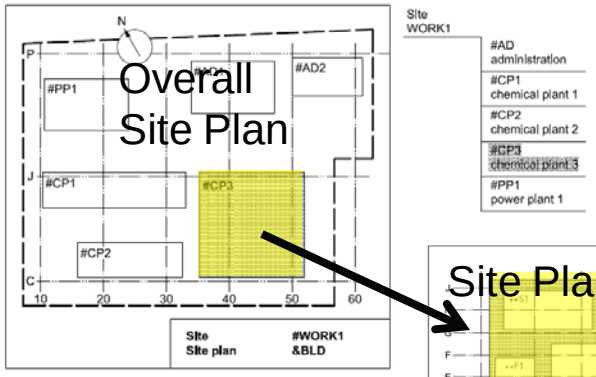
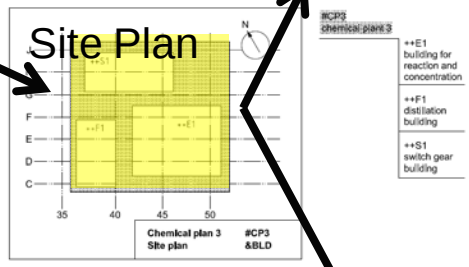
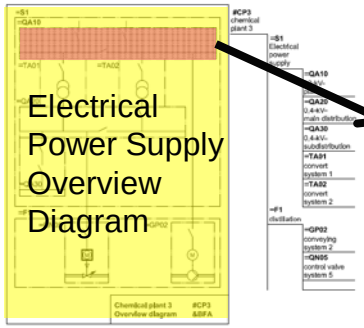
A.3 Application examples

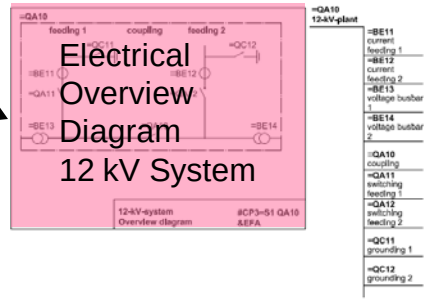
A.3.1 Conjoint designation

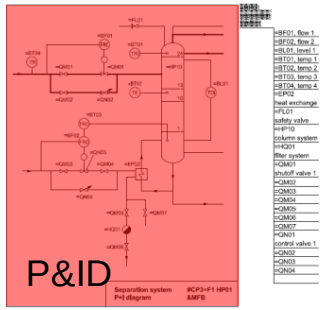
At this highest designation level, the complexes of objects are identified. Figure A.1 shows the overall layout of the plant WORK1. The designations are in accordance with Table A.2.

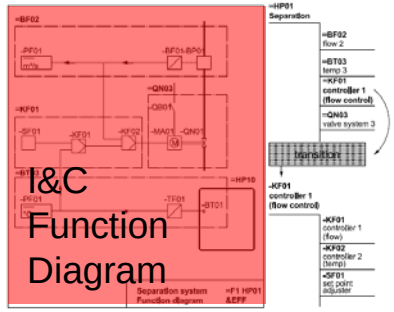


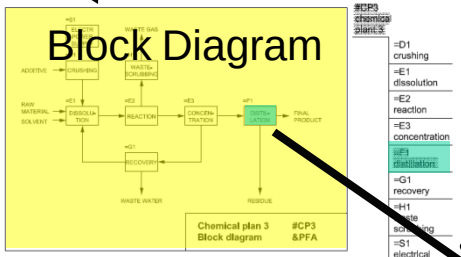


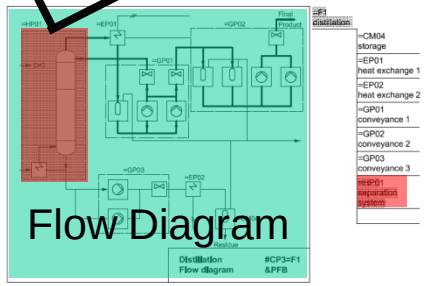












Identifier	Attributes		Allocations/Relations			
	Description	Data	Type	Loc. 1	Loc. 2	Source
=F1	Distillation					
=F1 GP02	Conveyance 2					
=F1 GP02GP01	Pump system					
=F1 GP02GP01-QA01	Circuit breaker	36 A		+S1 UC03	++S1 UZ08	=S1 QA10QA12
=F1 HP01	Separation system					
=F1 HP01BF02	Flow measuring	0...5 m³/s				
=F1 HP01BT03	Temp measuring	0...120 °C				
=F1 HP01BT03-BT01	Temp sensor	0...600 °C	PT100		++F1 UZ01	=F1 HP01HP10
=F1 HP01BT03-TF01	Amplifier	4...20 mA	7ABC12		++F1 UZ02	
=F1 HP01HP10	Distillation column				++F1 UZ01	
=F1 HP01KF01	Control					
=F1 HP01KF01-KF01	Controller					=F1 HP01BT03
=F1 HP01KF01-KF02	Controller					=F1 HP01BF02
=F1 HP01KF01-SF01	Set point adjuster	0...10 %				
=F1 HP01QN03	Control valve system					=F1 HP01KF01
=F1 HP01 QN03-MA01	Actuator	24 VAC				
=F1 HP01QN03-QB01	Load switch	25 A				=S1 QA21
=S1	Electr. power supply					
=S1 QA10	12-kV-system					
=S1 QA10QA11	Feeding 1	540 A				
=S1 QA10QA11-QA01	Circuit breaker	630 A		+S1 UC01	++S1 UZ08	
=S1 QA10QC11-QC01	Grounding switch					

Database (TAG Register)

Figure A.10 — Database analysis in form of a table

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PCSB Integrated Operations Initiative (SMART Field)

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PINTAR : PETRONAS Integrated And Real-time Operations

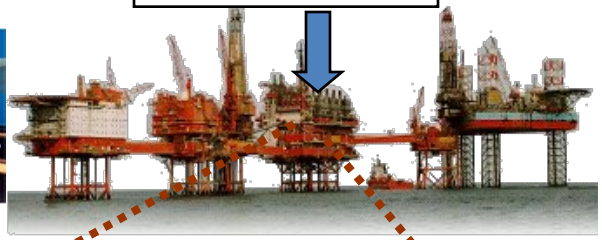
An oil/gas field capable of self-monitoring and control remotely in real-time to facilitate production operations, production planning and reservoir management

Photo: Angsi Platform operated by PCSB

SMART FIELD OPERATIONS – Business Model

Offshore
Control Room

Onshore Control room



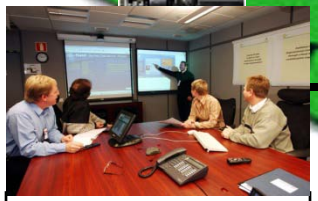
Onshore Control room

Real-time

Real-time

Real-time

Real-time



Remote
collaboration room

External experts

Consultancy
Vendor Supports
Parts Management

PCSB IO (PINTAR) MAPPING (Conceptualised based on POCS CAESAR initiative)

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Platform Domain

Business Management Or Enterprise Domain

Wireless Instrumentation and Data Network

P4 Wireless

P1 CBM-FP

Condition Based Monitoring and Fault Prediction

Mobile Operators, Maintenance Plan & Logistics

P5 Mobile

P2 S/D Mgmt

Alarm Mgmt and S/D Optimization

P0 Information Management

Onshore Control room

IT Infrastructure and Info Mgmt Platform

PCIM

As-build existing and new facilities

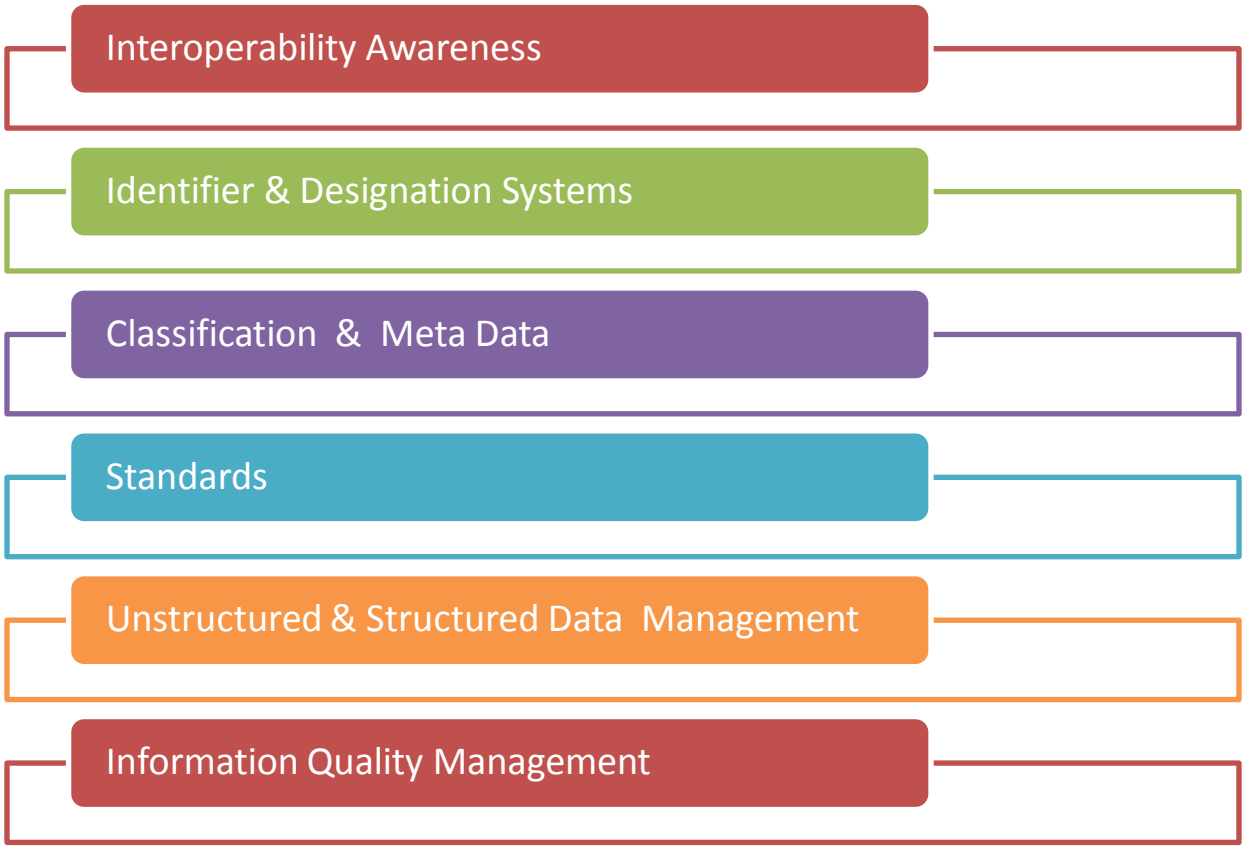
P6 Virtual

P3 Collab

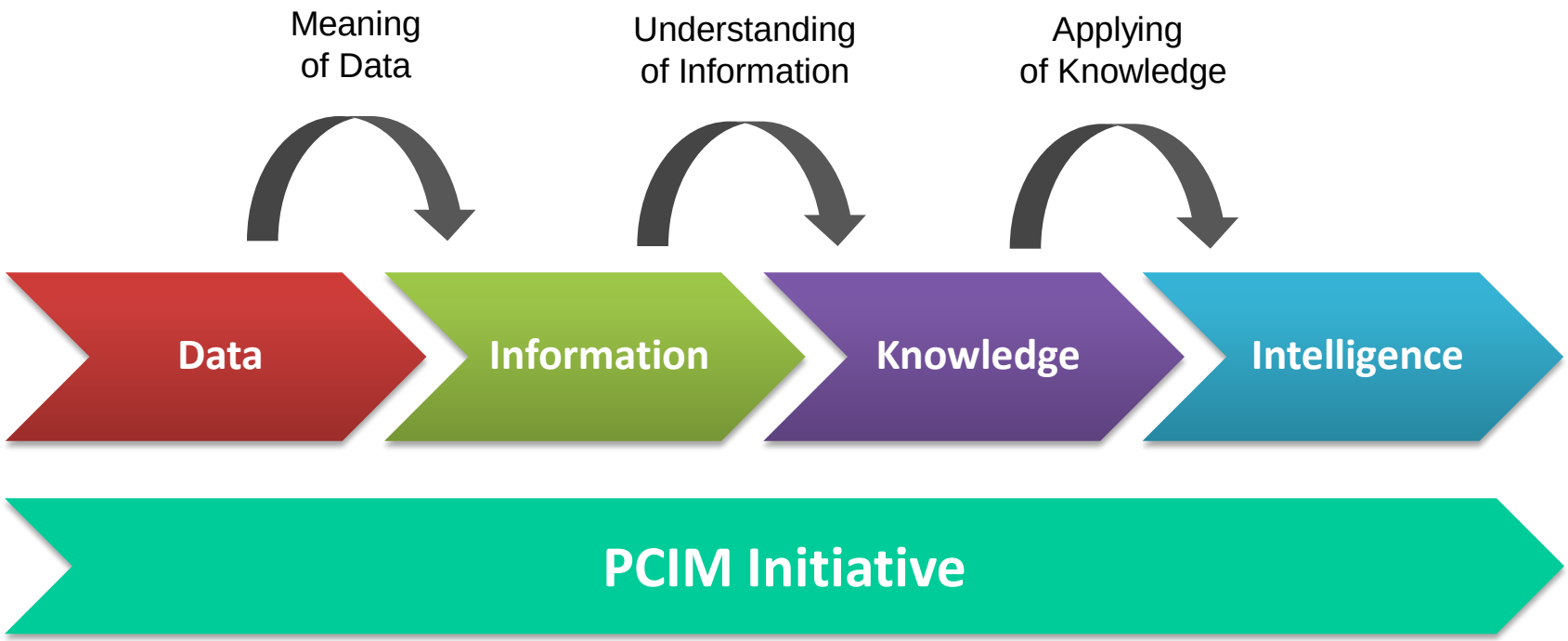
3D & 2D Integration and collaboration

Integrated with other Systems

Summary
Interoperability Challenges



PCIM the Journey from Data to Intelligence



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Information is not knowledge!

Thank you!

POSC Caesar Association

PCIM Implementation
Lesson learnt Key success factors

- Support from Senior Management and Project Management Teams
- Focus on Designation (TAG), Classification and Structures
- Define Standards, Rules and Business Processes
- Establish and implement Information Quality Management

PETRONAS, PETRONAS Carigali
Membership in Associations to promote Information Management

PETRONAS

- acronym for Petroliam Nasional Berhad
- Operating in 33 countries, approx. 33,000 staff
- Fortune Global 500 in 2008: Rank 95

PETRONAS Carigali Sdn Bhd (PCSB)

- One of subsidiaries of PETRONAS (100% owned)
- Oil and gas Exploration & Production

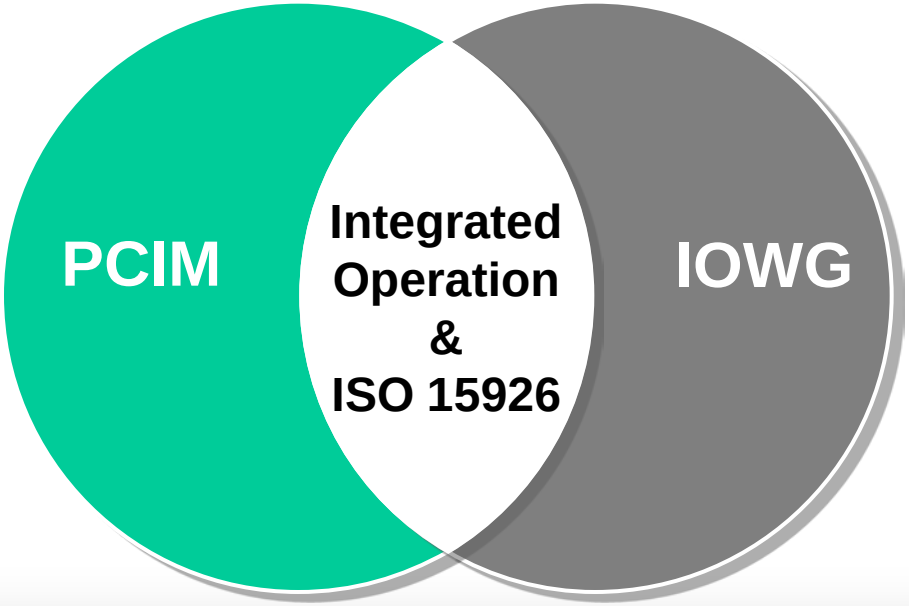
POSC CAESAR Association (PCA)

- Member since 2006
- Co-Chairman, Board of Directors of PCA

FIATECH

- Member since 2008

MOGSC Integrated Operations Working Group promotes PCIM, ISO 15926 and Integrated Operation



The MOGSC Integrated Operations Working Group (IOWG) is actively working with PCSB, MOGEC and OSFAM to promote the following Initiatives

PETRONAS Carigali Information Management (PCIM)

Interoperability based on ISO 15926

and the

Integrated Operations and smart (PINTAR) Field