

KONTEKS KEKINIAN *SAFETY* *ENGINEERING AND* *MANAGEMENT* DALAM PENGELOLAAN INDUSTRI

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Presentation Agenda



Misconception on Safety



Cost of Safety Program in Industry



**Safety on Industry Shifting
Paradigm**



Safety Shifting Approach

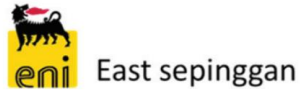


**Decision Making in Safety
Management**





Acknowledgement



PT. Karya Indah Alam Sejahtera



And others...



Misconception on Safety



Safety is a **Consequence**



Safety is **expensive**



Safety is **management's responsibility**



Safety is **Difficult**



Safety is **all about**
procedure and bureaucracy



Safety culture
cannot be built



Safety on Industry Shifting Paradigm

ADVANCING
HUMANITY



Cost of occupational injuries and deaths, 2016



Total cost to society:
\$151.1 billion

\$49.5 billion in wage and productivity losses

\$48.3 billion in administrative expenses

\$33.8 billion in medical expenses

\$12.1 billion in employers' uninsured costs

\$4.7 billion for motor vehicle damage

\$2.7 billion for fire losses





Cost Components of Safety Program in Industry

ADVANCING
HUMANITY



Conceptual Design

- Life Insurance
- Personal protective equipment

Pre FS/FS

- Life Insurance
- Personal protective equipment
- Cost of Assessment

Pre FEED/FEED

- Life Insurance
- Personal protective equipment
- Cost of Assessment
- Cost of safety measures

FID

- Cost of safety measures

Detail Engineering

- Life Insurance
- Personal protective equipment
- Cost of Assessment
- Cost of safety measures

Procurement

- Life Insurance
- Cost for PPE
- Cost of Assessment
- Cost of safety measures

Construction

- Life Insurance
- Cost for PPE
- Cost of safety Assessment
- Cost of safety measures

Inspection

- Life Insurance
- Cost for PPE
- Cost of safety Assessment
- Cost of safety measures

Operation

- Life Insurance
- Cost for PPE
- Cost of safety Assessment
- Cost of safety measures
- Cost of Training
- Health monitoring

Decommissioning

- Life Insurance
- Cost for PPE
- Cost of safety Assessment
- Cost of safety measures



Safety on Industry Shifting Paradigm

ADVANCING
HUMANITY



QCDSM

● QUALITY ● COST ● DELIVERY ● SAFETY ● MORALE

OVERALL
COMPANY GOALS

QUALITY

CONFORM TO SPECS

CONSISTENCY

GRADE

COST

LABOR

EQUIPMENT

MATERIAL

DELIVERY

INVENTORY

LOGISTIC

PROJECT MANAG.

SAFETY

EMPLOYEE

CUSTOMER

PUBLIC

MORALE

COMPANY BRANDING

GENDER EQUALITY

LOCAL CONTENT



Safety on Industry Shifting Paradigm

ADVANCING
HUMANITY



- Cost of accident increases with ignorance on safety
- Cost of safety program increases with excessive attention on safety
- Both cost components creates total cost
- How low can you go?



Safety Shifting Approach

ADVANCING
HUMANITY

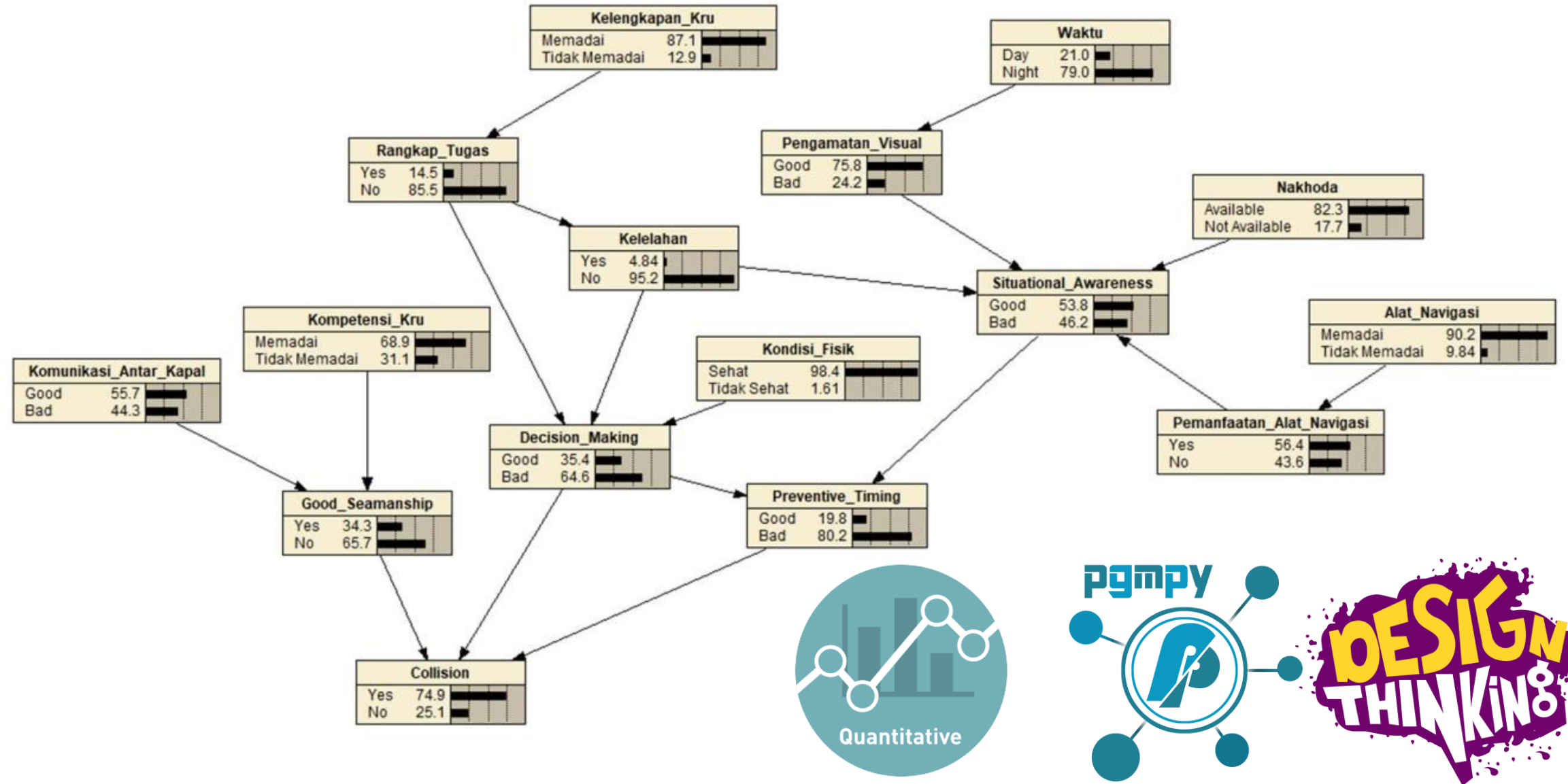


R I S K
Assessment



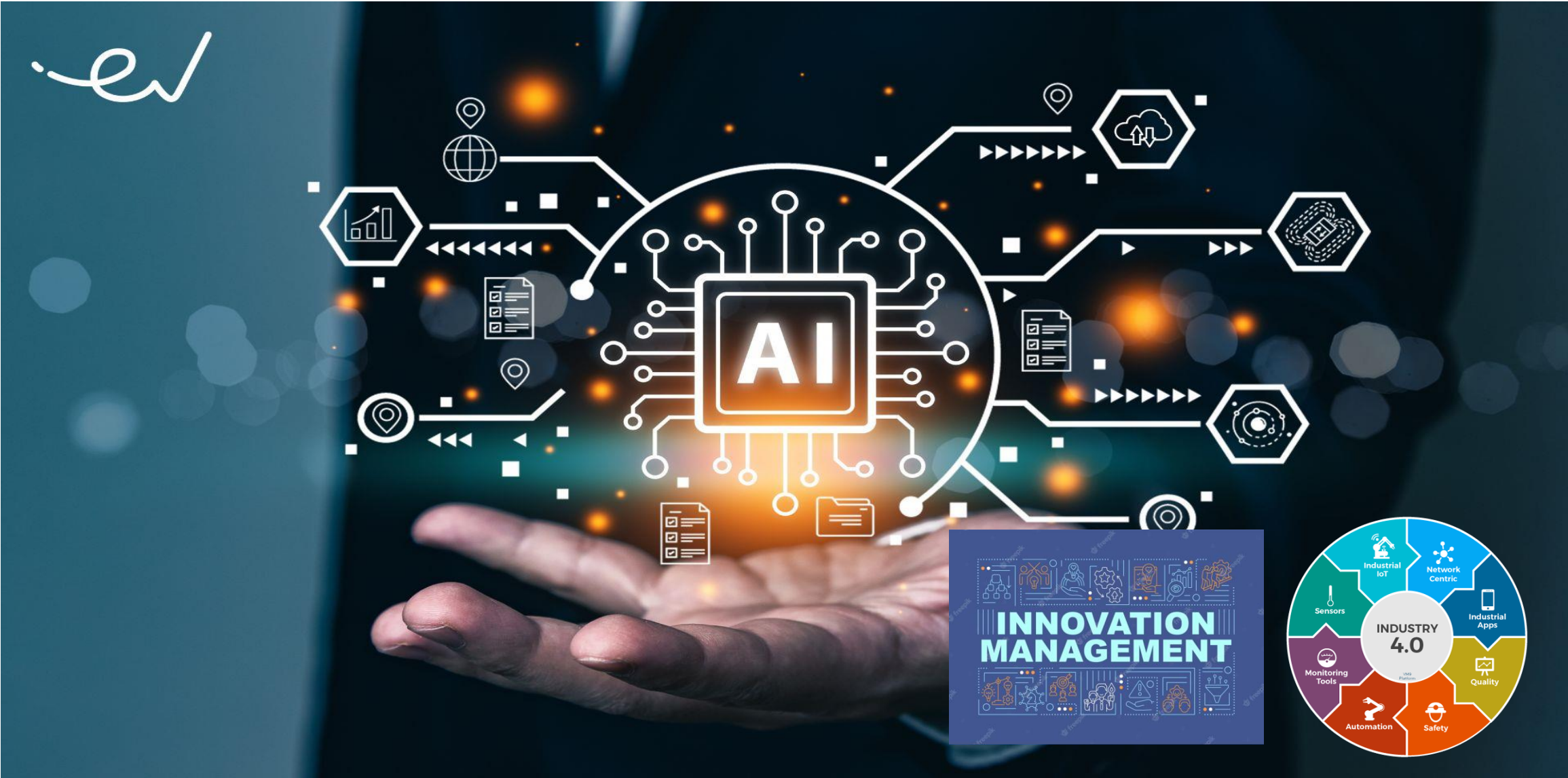


Safety Shifting Approach



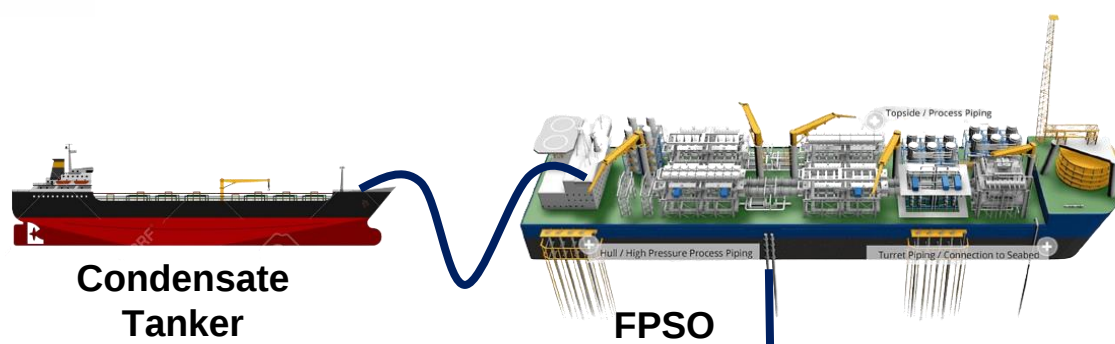


Safety Shifting Approach





Decision Making in Safety Management



- Offloading system
- Storage and buffer tank
- Flexibility in tanker offtake
- Support vessel
- Mooring operation

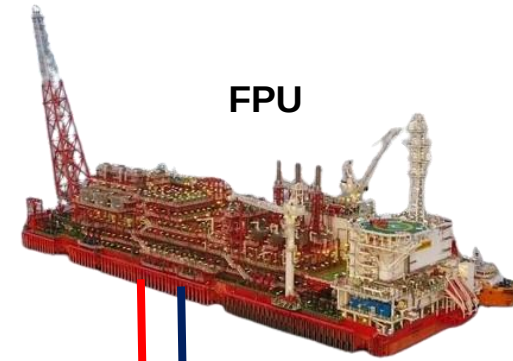
- Maintenance
- CAPEX
- OPEX
- Schedule
- Operability
- Permit
- Safety and Environment
- Risk to public
- Commercial Framework

Gas Pipeline



ORF

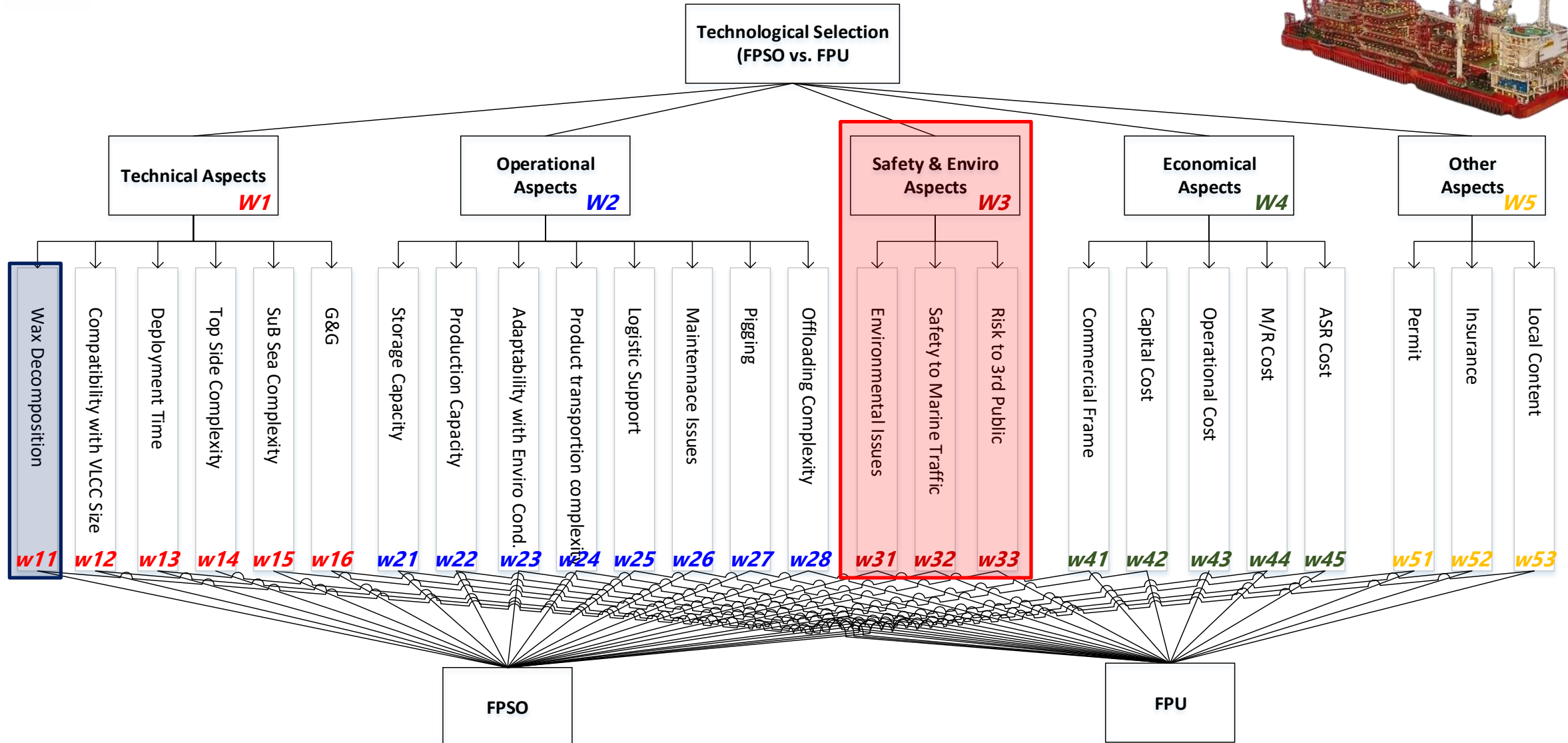
- Top side complexity
- Maintenance
- CAPEX
- OPEX
- Schedule
- Deliverability
- Compatibility with VLCC Size
- Operability
- Track Record
- Local Content
- Safety and Environment
- Water Depth
- Commercial Framework
- Mooring system
- Topside config.



- Wax deposition
- Maintenance
- CAPEX
- OPEX
- Schedule
- Deliverability
- Operability
- Safety and Environment
- Local Content
- Water Depth
- Subsea complexity
- Pigging



Decision Making in Safety Management





Decision Making in Safety Management





Part of Curriculum

Kode MK	Nama Mata Kuliah		SKS
	Bahasa Indonesia	Bahasa Inggris	
IS235101	Metode Kuantitatif	Quantitative Method	2
IS235102	Teknologi Industri 4.0	Technology Industry 4.0	2
IS235103	Manajemen Teknologi dan Inovasi	Technology Management and Innovation	2
IS2355**	Mata Kuliah Pilihan 1	Elective Course 1	3
TOTAL SKS SEMESTER 1			9

Kode MK	Nama Mata Kuliah		SKS
	Bahasa Indonesia	Bahasa Inggris	
IS235205	Design Thinking	Design Thinking	2
IS2355**	Mata Kuliah Pilihan 2	Elective Course 2	3
IS2355**	Mata Kuliah Pilihan 3	Elective Course 3	2
IS2355**	Mata Kuliah Pilihan 4	Elective Course 4	3
TOTAL SKS SEMESTER 2			10

Kode MK	Nama Mata Kuliah		SKS
	Bahasa Indonesia	Bahasa Inggris	
IS235306	Manajemen Proyek Inovasi	Innovation Project Management	2
IS2355**	Mata Kuliah Pilihan 5	Elective Course 5	2
IS2355**	Mata Kuliah Pilihan 6	Elective Course 6	2
IS235307	Proposal Tesis	Thesis Proposal	3
TOTAL SKS SEMESTER 3			9

Kode MK	Nama Mata Kuliah		SKS
	Bahasa Indonesia	Bahasa Inggris	
IS235408	Etika Bisnis dan Keberlanjutan Lingkungan	Business Ethics and Sustainability	2
IS235409	Tesis	Thesis	6
TOTAL SKS SEMESTER 4			8

Kode MK	Nama Mata Kuliah			SKS
	Pilihan	Bahasa Indonesia	Bahasa Inggris	
IS235535	Pilihan 1	Keselamatan dan Kesehatan Kerja	Occupational Health and Safety	3
IS235536	Pilihan 2	Keselamatan Proses	Process Safety	3
IS235537	Pilihan 3	Sistem Manajemen Keselamatan	Management System	2
IS235538	Pilihan 4	Manajemen Risiko dan Keselamatan Fasilitas Industri	Risk and Management in Industrial Facilities	3
IS235539	Pilihan 5	Pengambilan Keputusan pada Manajemen Keselamatan	Decision Making in Safety Management	2
IS235540	Pilihan 6	Budaya Keselamatan	Safety Culture	2
TOTAL				15



THANK YOU

ADVANCING
HUMANITY



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