How DNV GL is supporting the industry to be more cost effiecient

DNVGL-RP-O101: Technical Documentation for Subsea Project – An industry collaboration

GCE Breakfast Seminar
27 September 2016
Petter Myrvang, Bente H Leinum

Content

- **Standardization: Introduction and Background**
- **Presentation of DNVGL-RP-O101 ‘ Technical Documentation for Subsea Projects’ -project delivery**
- **Implementation - how to contribute?**

2013: Subsea Standardization Workgroup

Norsk olje&gass

- This joint industry initiative is sponsored by KonKraft and the Norwegian Oil and Gas Association
- The objective is to reduce costs and delivery times by increasing standardization
- It was intended to be a further step in the 'industrialization of the subsea sector`

Operators

ExxonMobil, ConocoPhillips, bp, Total, Shell, Statoil, Marathon Oil, wintershall (Shaping the future.)

Suppliers

FMC Technologies, AkerSolutions, Cameron, GE

Focus Areas Selected

1. Unified Specifications and QA/QC for subsea forgings
2. Subsea component catalogue with configurable solutions
3. Universal Workover systems
4. Brownfield subsea re-engineering
5. Standardized subsea documentation
6. Compliance with established equipment standards

Highest levels have noted the problem

Minister of Petroleum and Energy, Tord Lien:

- **Too much documentation in the oil- and gas industry**
- **Industry can work smarter**

Typical subsea project:

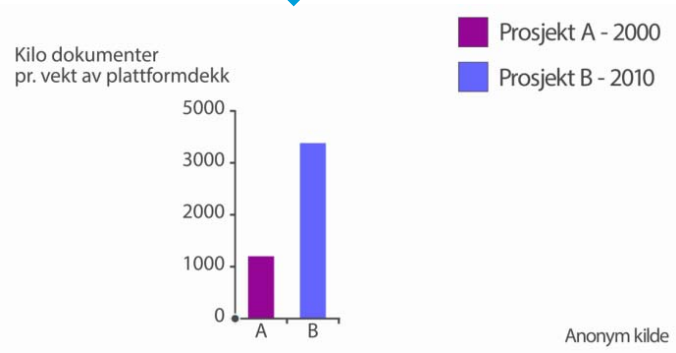
- > 10,000 documents
- > 80,000 doc (big project)
- Lifecycle of 30 years
- Engineering hours have increased with 70%

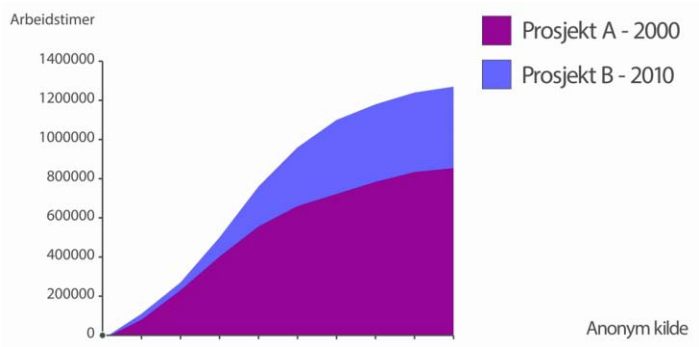
"The preparation and provision of client documentation can be a significant element of overall project cost. The major cost driver is the lack of standardization of the industry approach to documentation. There are multiple ways to document subsea equipment, and different operators and suppliers have over the years developed their own ways of recording, structuring and describing information concerning subsea equipment. Document types and names can have many different meanings, content may vary, uncertain terminology might be used, and client specific formats are the norm. And very often, identification and document locations are poorly defined or unclear to the user."

'Norske Olje og Gass, Report on Norwegian Subsea Standardization 2013'

Petroleum Safety Authority PSA demands action (2015)

Collect real facts from industry





Issue new requirements and standards for industry stakeholders

(JIP Std Subsea Doc)

Status PSA documentation Project (2016)

Growth in offshore documentation addressed:

Factors underlying a sharp rise in documents generated from operations on the Norwegian continental shelf (NCS) are identified in a new report from the Petroleum Safety Authority Norway (PSA) – 08.09.2016

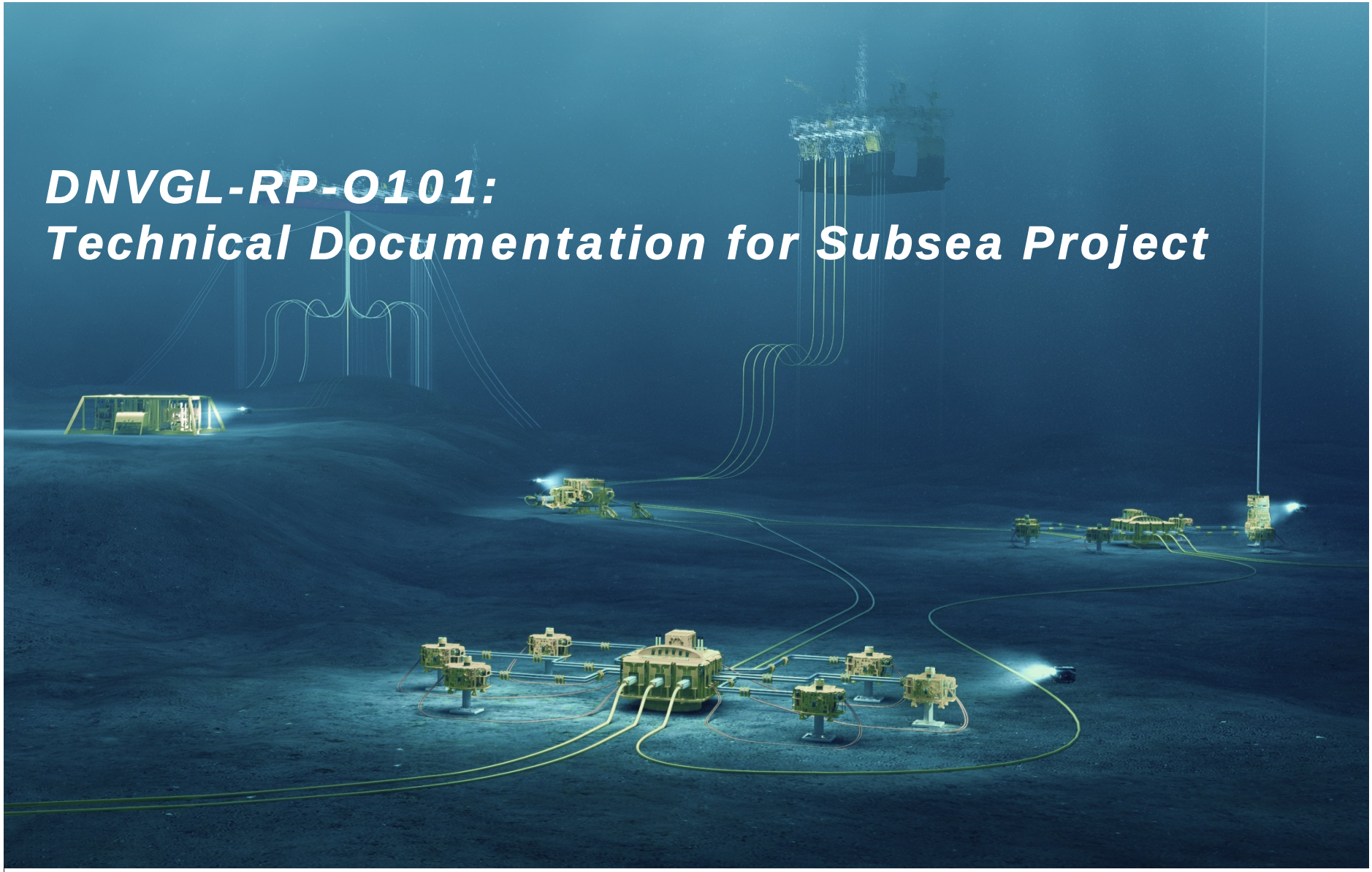
- Ny rapport om årsakene til økt dokumentasjon – Petroleumstilsynet

- Extensive documentation in the petroleum industry could represent a possible safety risk," Bache emphasises. "Key data needed for prudent and efficient operation of the facilities can drown in the flood.
- "At the same time, it's important to have adequate and timely information in areas which are significant for safety."

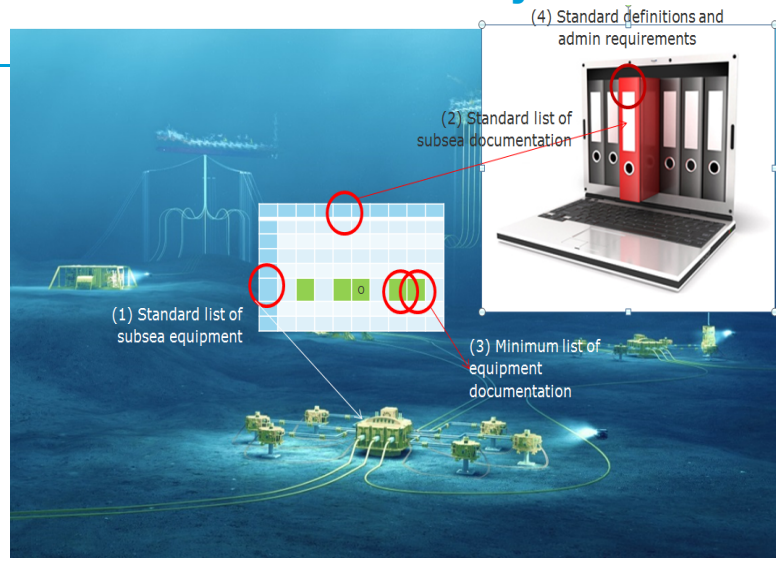
A broader view on standardization

- Streamlining standards
- From corporate to global standards
- Project replications / repeat-execution
- Collaboration
- Governance

DNVGL-RP-O101:
Technical Documentation for Subsea Project



DNVGL-RP-O101 'Technical Documentation for Subsea Projects'



Incentive (Why)

- The aim of this Recommended Practice (RP) is to facilitate the standardization of the technical documentation required for a typical subsea field development project.
- The RP details a set of essential documentation with the aim of reducing the volume and varieties of documentation transferred between the involved parties.

Scope of work (What)

- Establish the requirements for technical documentation;
  - during the Engineering, Procurement and Construction (EPC) phases
  - for start-up and operation of a subsea field
- Establish a mindset to assist the industry in working more cost effectively in terms of document review, handling and management.

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Entry into force	:	Immediate after publication

Value proposition (Impact)

- By providing clear expectations between all parties involved, duplications , misunderstandings and unnecessary work can be avoided. The RP encourages a larger extent of reuse of subsea documentation
- Opportunities for cost savings and increased project value can be achieved by setting the expectations of improved quality and predictability of the subsea documentation.

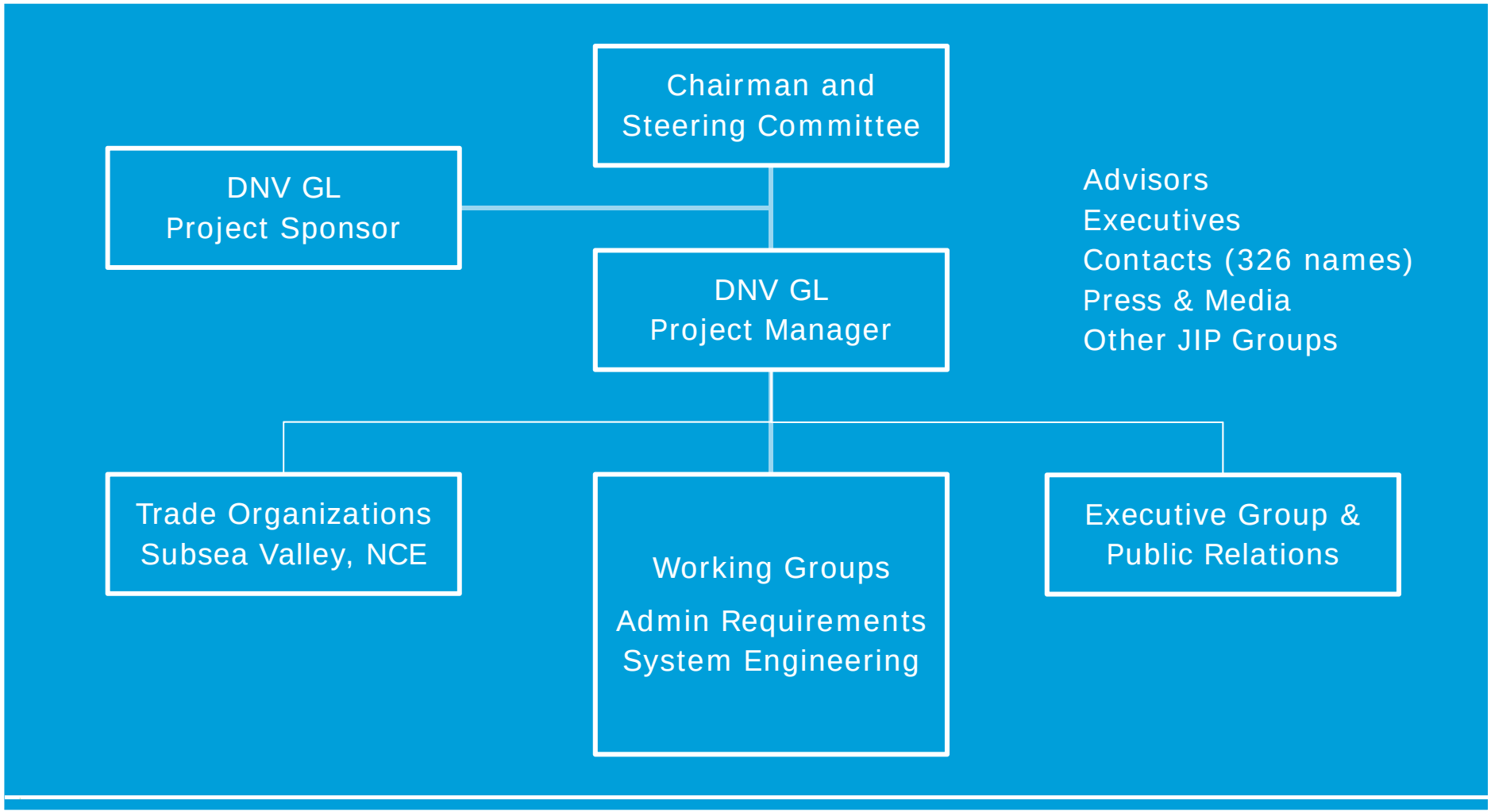
Operators	Contractors	Others
centrica energi, Suncor Energy, Statoil, GDF SUEZ, Lundin Petroleum, Det Norske, DEA	AkerSolutions, FMC, subsea 7, Kongsberg, Oceaneering, OneSubsea	DNV·GL, Norsk olje&gass, subsea valley, Brightport, Petroleumstilsynet, NCE Subsea

JIP Std Subsea Doc participants pr.date

Companies & Organizations	Type	2014	2015	2016
Aker Solutions	EPC			
BrightPort	SUP/IT			
Centrica	OP			
DEA	OP			
Det Norske	OP			
DNV GL	EPC			
ENI	OP			
FMC TI	EPC			
GDF Suez	OP			
Kongsberg	EPC			
Lundin	OP			
GCE Subsea	TRADE ORG			
TOTAL	---	---	---	13

Companies & Organizations	Type	2014	2015	2016
Norsk Olje og Gass	OBS			
Oceaneering	SUP			
OneSubsea	EPCI			
PSA	OBS			
Statoil	OP			
Subsea7	EPCI			
Subsea Valley (SSV	TRADE ORG			
SUNCOR	OP			
TOTAL	20	17	17	13

JIP Organisation



Standardized subsea documentation JIP

Link to JIP project's home page:

- https://www.dnvgl.com/oilgas/joint-industry-projects/subsea/standardised-subsea-documentation-jip.html

Deliverable: DNVGL-RP-O101

DNV·GL

RECOMMENDED PRACTICE

DNVGL-RP-O101 Edition June 2016

Technical documentation for subsea projects

The electronic pdf version of this document found through http://www.dnvgl.com is the officially binding version.
The documents are available free of charge in PDF format.

DNV GL AS

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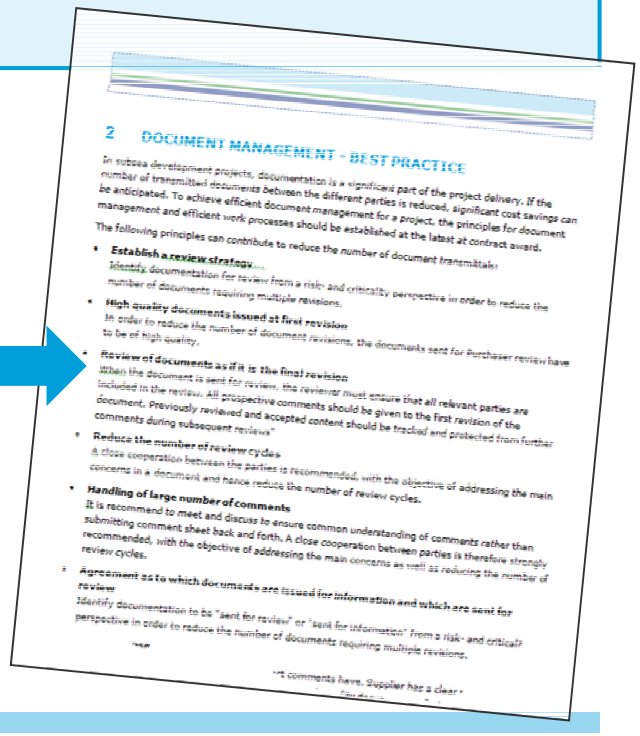
Objective

- Establish a minimum set of required documentation for subsea development projects (from the project phase and during the life cycle phases of a subsea production system) to;
  - allow early understanding of required documentation for all parties
  - reduce variations and versions of the same information

- Establish a **mindset** helping industry to work more cost effective in terms of document review, handling and management.

- Enabling **reuse** of existing documentation

- Reduce the number of transmitted documents in the entire value chain by increasing the numbers of **retained** documents at Contractors



2 DOCUMENT MANAGEMENT - BEST PRACTICE

In subsea development projects, documentation is a significant part of the project delivery. If the number of transmitted documents between the different parties is reduced, significant cost savings can be anticipated. To achieve efficient document management for a project, the principles for document management and efficient work processes should be established at the latest at contract award.

The following principles can contribute to reduce the number of document transmittals:

- **Establish a review strategy**
  Identify documentation for review from a risk- and criticality perspective in order to reduce the number of documents requiring multiple revisions.
- **High quality documents issued at first revision**
  In order to reduce the number of document revisions, the documents sent for Purchaser review have to be of high quality.
- **Review of documents as if it is the final revision**
  When the document is sent for review, the reviewer must ensure that all relevant parties are included in the review. All prospective comments should be given to the first revision of the document. Previously reviewed and accepted content should be tracked and protected from further comments during subsequent reviews"
- **Reduce the number of review cycles**
  A close cooperation between the parties is recommended, with the objective of addressing the main concerns in a document and hence reduce the number of review cycles.
- **Handling of large number of comments**
  It is recommend to meet and discuss to ensure common understanding of comments rather than submitting comment sheet back and forth. A close cooperation between parties is therefore strongly recommended, with the objective of addressing the main concerns as well as reducing the number of review cycles.
- **Agreement as to which documents are issued for information and which are sent for review**
  Identify documentation to be "sent for review" or "sent for information" from a risk- and criticality perspective in order to reduce the number of documents requiring multiple revisions.

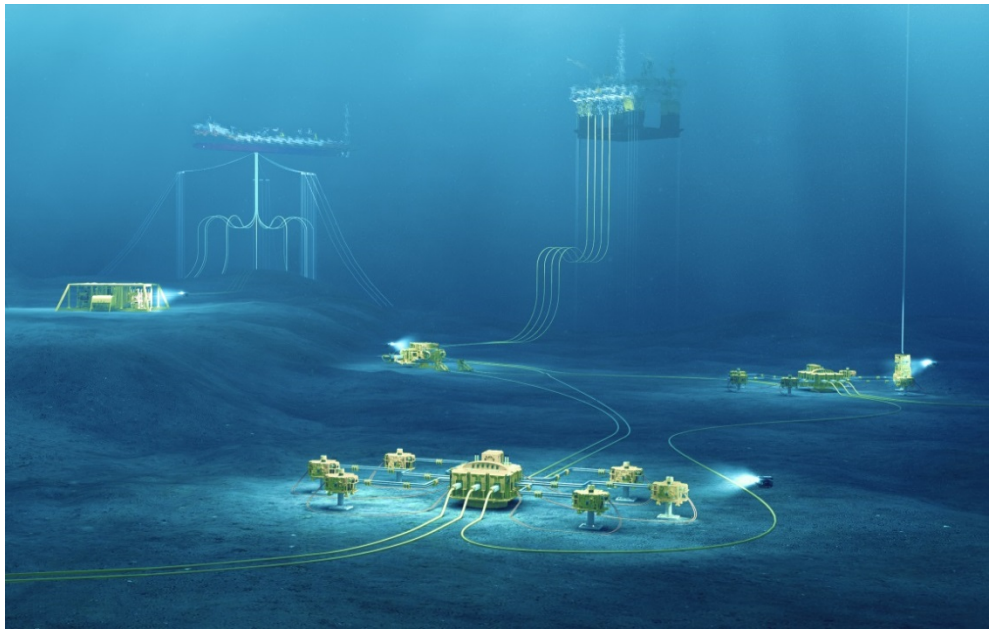
Scope of the RP

The scope includes engineering, procurement, manufacturing, testing and mechanical completion and applies to;

- Permanently installed subsea equipment
- Temporary equipment delivered to Operator (lifting and transportation equipment, intervention equipment and tooling)

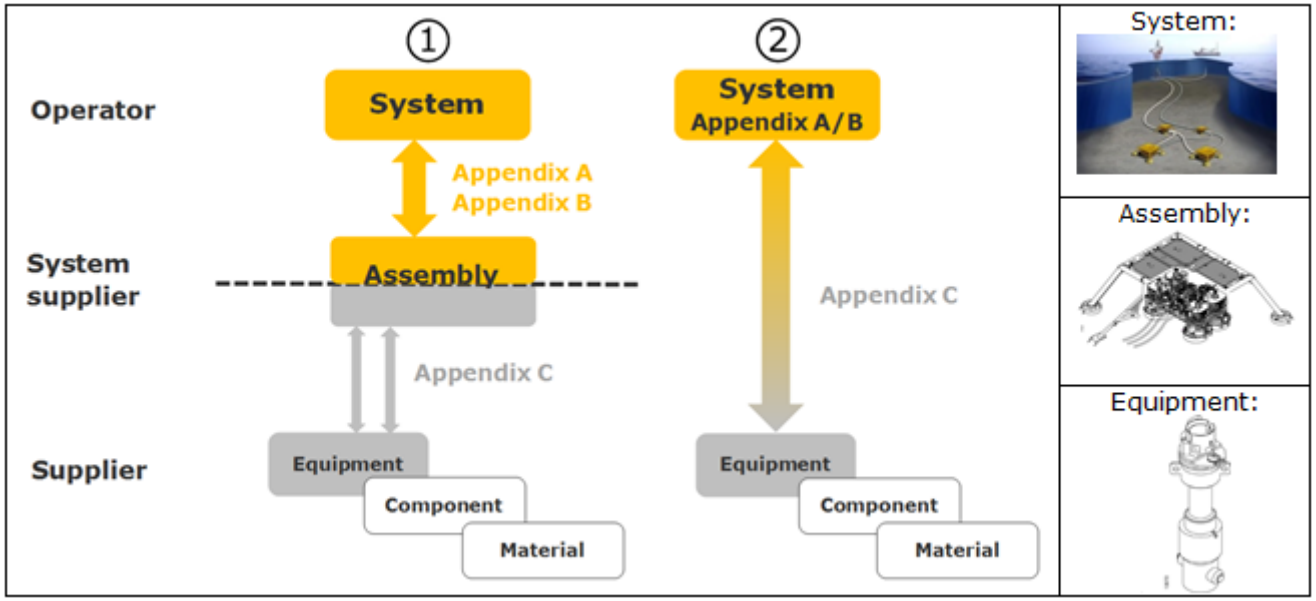
The main assemblies and equipment within the battery limits are:

- Wellhead System
- X-mas tree System
- Manifold and Subsea Structures
- Subsea Control System
- Static and Dynamic Umbilicals
- Flexible Risers and Flowlines
- Rigid Pipelines
- Tie-in System
- Lifting and Transport Equipment
- Intervention and Tooling



(Referring to ISO 13628-1)

Illustration of documentation transmittal between Operators, System suppliers and Suppliers



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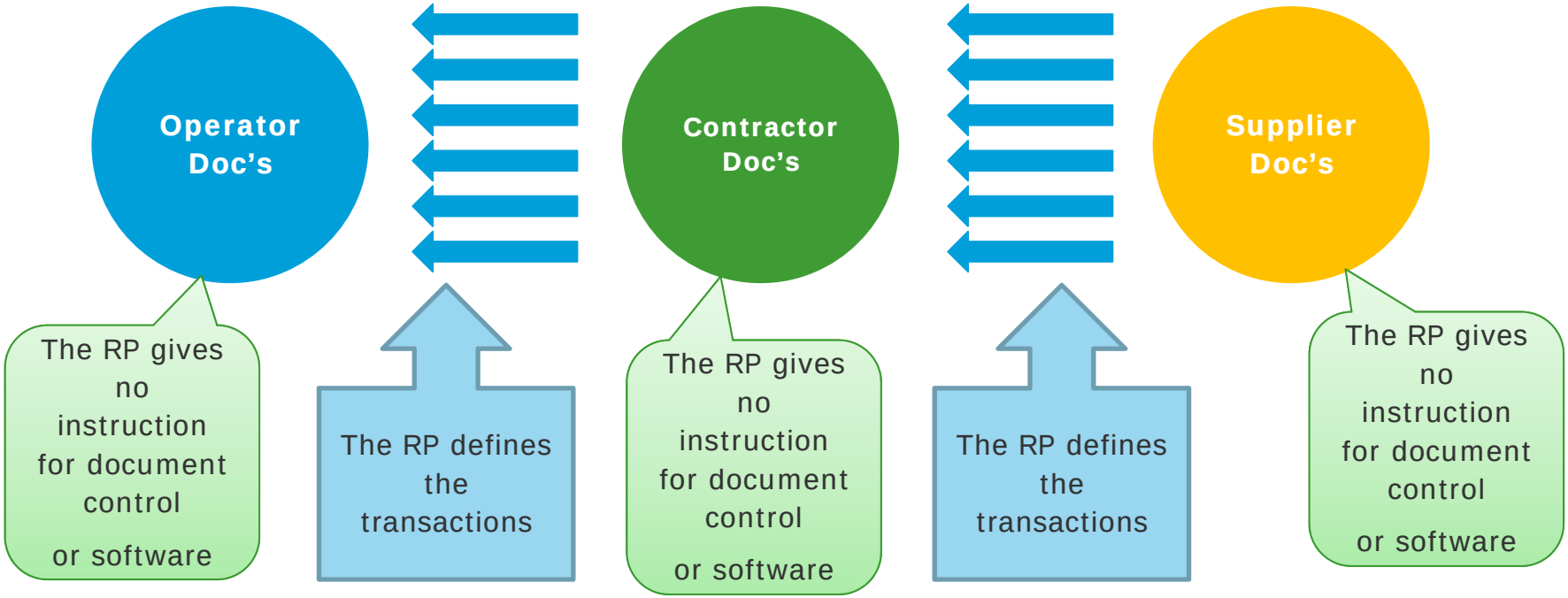
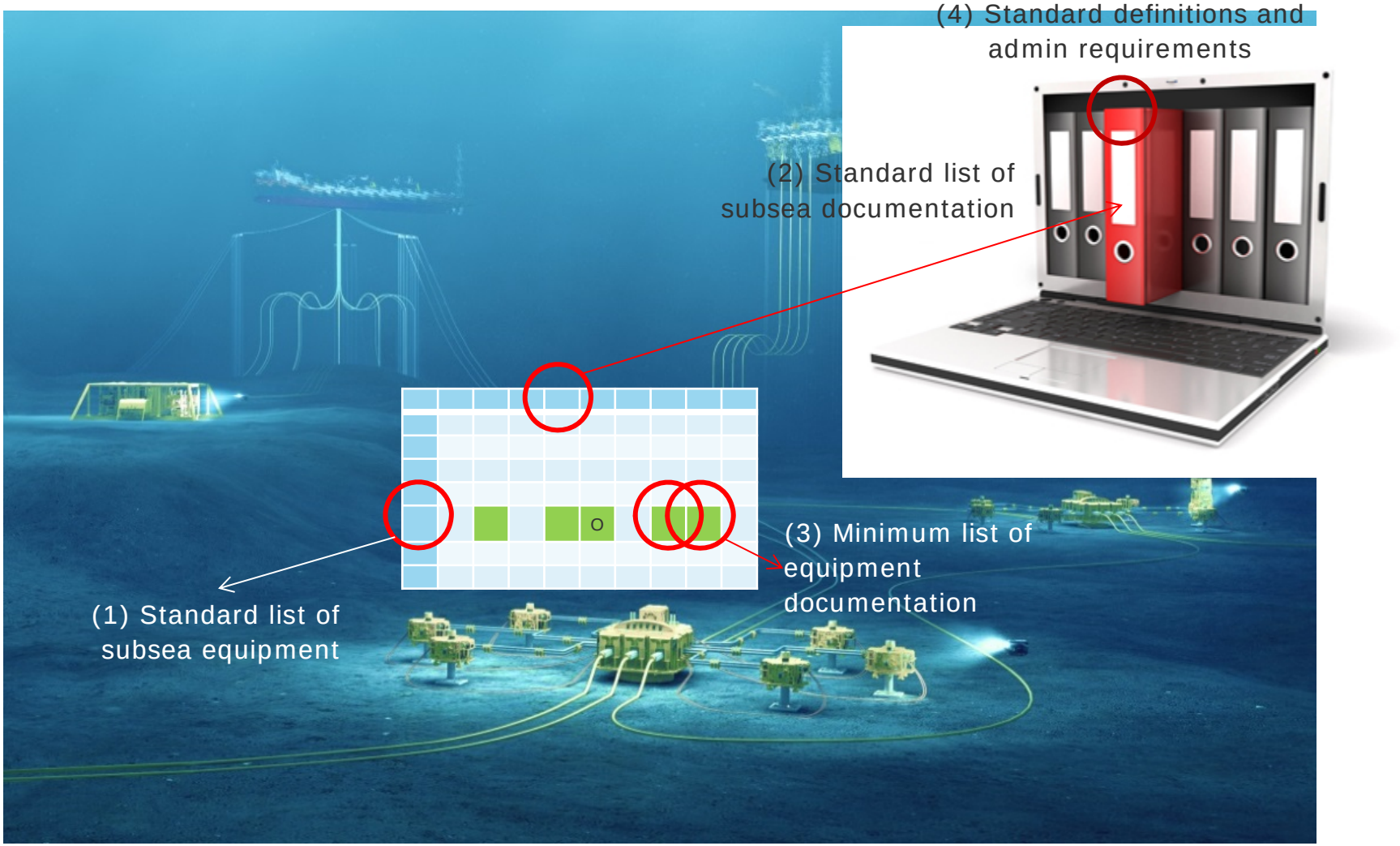
JIP Subsea Documentation



- DNVGL-RP-O101 is independent of company systems and work processes.

The JIP Std Subsea Doc Recommended Practise (RP) will contain



..Resulting in the following table in the RP

Table B-1 Wellhead system (WH)

Sub-system, assemblies and equipment functions	Document types:	NOTES	Design report	Dispatch dossier	FAT procedure	Functional design specification	General arrangement drawing	Manufacturing and quality control Rec.	Operation and maintenance manual	Product data sheet	Scope of supply drawing	Spare parts interchangeability register	Stack-up-drawing
NOTES			N3	N1				N6	N4	N4			
WELLHEAD SYSTEM									O		O	O	O
Conductor housing			X			X	O	R	X		X	X	
Wellhead housing			X			X	O	R	X		X	X	
Casing hanger c/w pup			X			X	O	R	X		X	X	
Pack off/seal assembly			X			X	O	R	X		X	X	
Corrosion caps		N5	X			X	O	R	X		X	X	

NOTES:	
N1	Dispatch dossier for each batch of delivered items
N2	Not used
N3	Wellhead fatigue and deflection analysis shall be covered in design report. Design reports shall be issued to operator or to third party for verification unless otherwise agreed in contract.
N4	Information covered by product data sheet shall be included in OMM. Outline installation procedure shall be included in OMM or issued as a separate document.
N5	Corrosion caps are installed on wellhead when no Xmas tree is installed
N6	Manufacturing and quality control records shall be available during the life of the field and are either retained by supplier or sent to purchaser. See Table B-11 and Table C-3 for details
X	This is documentation that is covered by the documentation for the sub-system (wellhead system)
	Documentation required for the project phase – to be transmitted from system supplier to operator
O	Documentation to be retained at system supplier during project execution
R	Documentation also required for the operational phase -to be transmitted from system supplier to the operator during the project phase

Table A1 to B10 (Operator – Contractor)

Less Doc Types

Agreed List of Systems & Functions

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
1	**Document types -->:** / **Sub-system, assemblies and equipment function:**	NOTES	Commissioning Outline Procedure	Corrosion/Cathodic Protection Design Report	Design Report	Dispatch Dossier	EFAT Procedure	Electrical Schematics	Equipment Installation & Retrieval Procedure	FAT Procedure	Flow Schematic	Foundation design report	Functional Design Specification	General Arrangement Drawing	Hydraulic Schematic	Interface Drawing	Manufacturing and quality control records	Marking Drawing	Operation and Maintenance Manual (OMM)	Preservation and storage instructions	Product Data Sheet	Safety Data Sheet	Scope of Supply Drawing	Spare Parts Interchangeability Register (SPIR)	Transport Analysis Report	Transport and handling instructions
2	NOTES				N5	N4	N3	N15	N16			N12	N1	N9		N8	N10 N13	N17		N6	N2	N7				N6
3	**MANIFOLDS AND STRUCTURES**			O				O																O		
4	**MANIFOLD AND SUBSEA STRUCTURES**	N11	X	X	O		X	X						O	O	O	R	O	O			O	X			
5	STEEL STRUCTURE ASSEMBLY			X	●	●			●				●	●			●	●	●							
6	MECHANICAL EQUIPMENT (HATCHES, DAMPERS ETC AS APPLICABLE)			X		●			●				●	●			●	●	●					X		
7	LARGE BORE PIPING (PRODUCTION AND INJECTION SYSTEMS)		X	X	O	●					X			O			●									
8	SMALL BORE PIPING (HYDRAULIC AND CHEMICAL SYSTEMS)		X	X	O	●					X						●									
9	HYDRAULIC ACCUMULATOR / SEA CHEST		X	X		●							●				●							X		
10	HOT STABS (INCLUDING RECEPTACLE)					●							●	●			●		●					X		
11	GUIDEPOSTS			X		●	X		●				●	O			●		●	●			X	X		●
12	PROTECTION STRUCTURES / FREE STANDING STRUCTURES	N18		X	●	●			●					O			●		●	●			X	X	●	●
13	**VALVES FOR MANIFOLDS**																									
14	SMALL BORE VALVES, ROV OPERATED (HYDRAULIC / CHEMICAL)		X	X		●					X		●	O			R	●	●		O					●
15	BALL AND GATE VALVES, HYDRAULICALLY OPERATED		X	X		●	X				X		●	O	●		R	●	●		O					●
16	BALL AND GATE VALVES, ROV OPERATED		X	X		●					X		●	O			R	●	●		O					●
17	CHOKE VALVE AND ACTUATOR		X	X		●	X				X		●	O	●		R	●	●	●	O					●
18	CHEMICAL INJECTION THROTTLE VALVE, RETRIEVABLE (CITV)		X	X		●	X				X		●	O	●		R	●	●	●	O			X		●
19	**FOUNDATION STRUCTURES**		X	X	O		X	X						O	O	O	R	O	O				X			
20	STEEL STRUCTURE ASSEMBLY			X	●	●			●			●	●	●			●	●	●							
21	SUCTION ANCHORS (If part of Structure)			X	●	●			●			●	●	●			●	●								
22	MUDMAT (If part of Structure)			X	●	●						●	●	●			●		●							
23	PILES (If part of Structure)			X	●	●						●	●	●			●									
24	GROUT STABS (INCLUDING RECEPTACLE)					●							●	●			●	●	●				X			
25	LEVELLING SYSTEM (PIPING, VALVES, SUCTION HATCH, STAB)			X		●			●				●	●			●	●	●							
26	PERMANENT GUIDEBASE (PGB) (If part of structure)			X	●	●			●				●	●			●	●	●	●						●
27	GUIDEPOSTS			X		●	X		●					O			●		●	●			X	X		●
28																										
29	**NOTES**																									
30	N1: The Functional Design Spesification (FDS) shall include design, manufacturing and test requirements for equipment and components. A separate FDS may be prepared to cover design requirements on system level. FDS should include thermal insulation system where applicable.																									
31	N2: Product Data Sheets shall be prepared for valves and instruments. The product data may be included in OMM if agreed beween the parties.																									
32	3: EFAT for Manifold and Structures system includes stack-up and interchangeability testing.																									
33	N4: Dispatch dossier for each batch of delivered items. This is a compilation of existing documentation and normally not a separate document in MDR.Whole title not expressed in this table; Documentation for Dispatch, Receipt, Storage and Preservation (Dispatch Dossier)																									

Less Req. Docs

Agreed minimal (required) list of documentation (by Operators, Contractors and Suppliers)

System Eng | WH System | XT System | **Manifolds and Structures** | Controls System | Umbilicals | Tie-in System | Intervention & Tooling | Lifting & Transport Equipment | Pipelines | Flexible Risers

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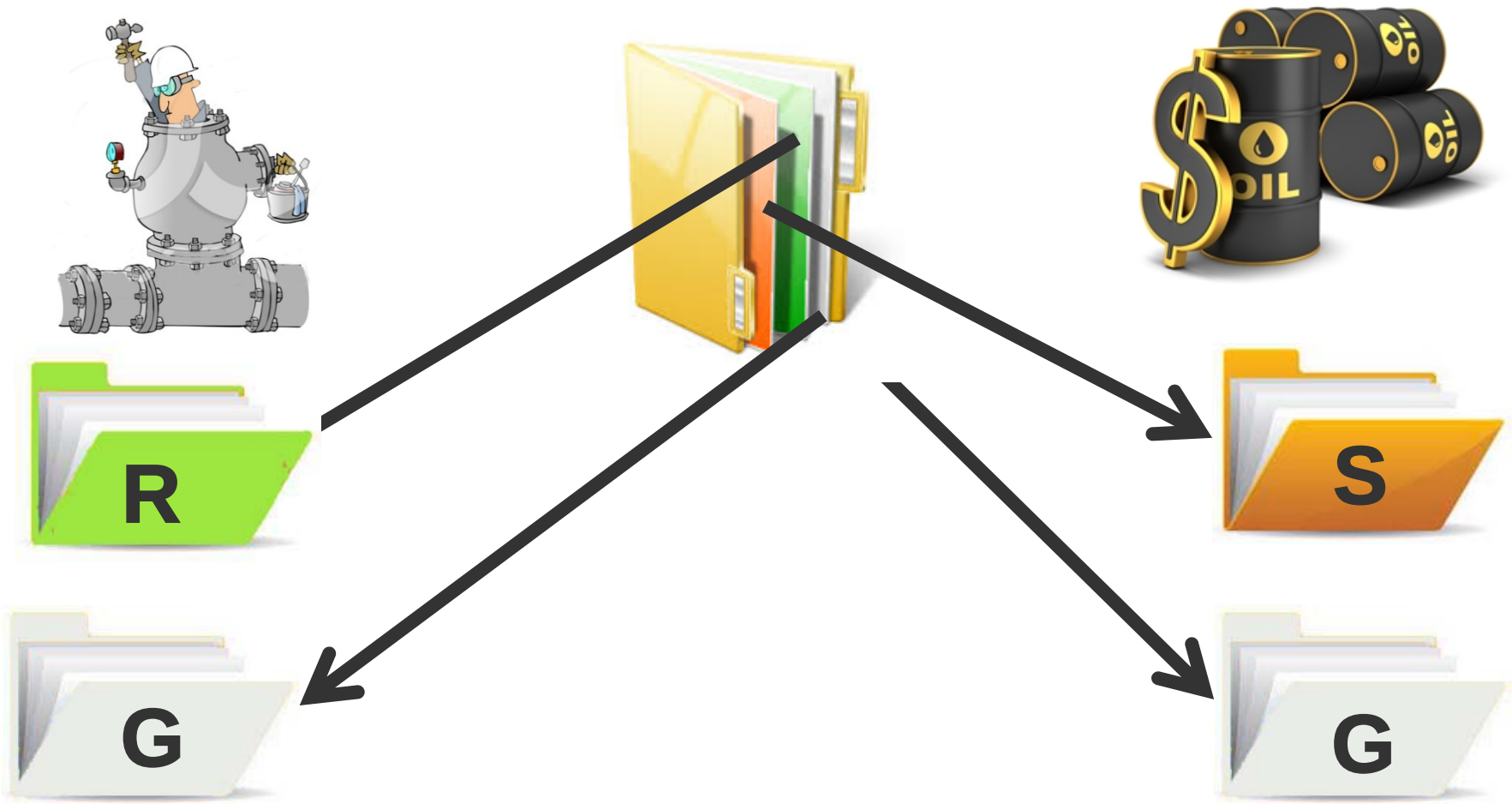
Retained (R), submitted (S) and generic document (G)

System supplier / Supplier

Operator



Example tables for retained, sent and generic documentation

Categories	Equipment, Components and Materials / Document Types:	NOTES	Assembly Drawing	Bill of Material (BOM)	Cable /schedule list	Design Report / Calculations	Design Specification	Electrical Schematics	FMECA Report	General Arrangement Drawing	Hydraulic Schematic	Hyperbaric Test Procedure	Interface Drawing	Manufacturing Drawing	Material Specification	Operation and Maintenance Manual (OMM)	Preservation and storage Instructions	Product Data Sheet	Safety Data Sheet	Software Documentation	Spare parts list	Transport and Handling Instructions	Qualification test procedure	Qualification test records / report	Optional Documents
DOCUMENT REFERENCES:			4	6	7	19	20	28	38	43	49	51	56	59	66	76	86	87	96	105	107	113	88	89	
NOTES:			N10				N8			N16					N20		N19		N13			N19			N29
EQUIPMENT																									
Subsea valves		N10																							
	Small bore valves (up to 2")		R	R		R	G		G	S		G		R		S	S	S					G	G	
	Hydraulic actuators		R	R		R	G		G	S		G		R		S	S	S					G	G	
	Electrical actuator		R	R		R	G	S	G	S		G		R		S	S	S					G	G	
	Large bore valves (2" and above)		R	R		R	G		G	S		G		R		S	S	S				S	G	G	
	Choke valves / Control valves	N12	R	R		R	G		G	S		G	S	R		S	S	S				S	G	G	

LEGENDS:	
G	GENERIC DOCUMENTS - Generic documents for materials, components and equipment. These documents are part of the Supplier's standard documentation for design, manufacturing and testing. To be sent to purchaser for information or review as part of first PO only. Any intellectual property rights to be agreed between the parties. Changes to these documents may result in new part numbers.
R	RETAINED DOCUMENTS - Documents prepared by Supplier and retained by Supplier or at a second or third party as agreed between the contract parties.
S	SENT DOCUMENTS - Documents sent by Supplier to Purchaser for info or review. Some of these documents are part of the sub-system documentation sent to Operator. Sent (S) documents include generic (standard) and product specific documents. Generic documents should be identified by the Supplier.

What O101 say and not say……

DNV GL RP O101 does not say anything of:

1. Document content (would like to detail out standard ToCs)
2. Quality of the document
3. Acceptance criterion to functionality for the products
4. Fit for purpose of the component or equipment (in a larger system)
5. Meeting quality objectives for the product or measure the quality towards a design basis

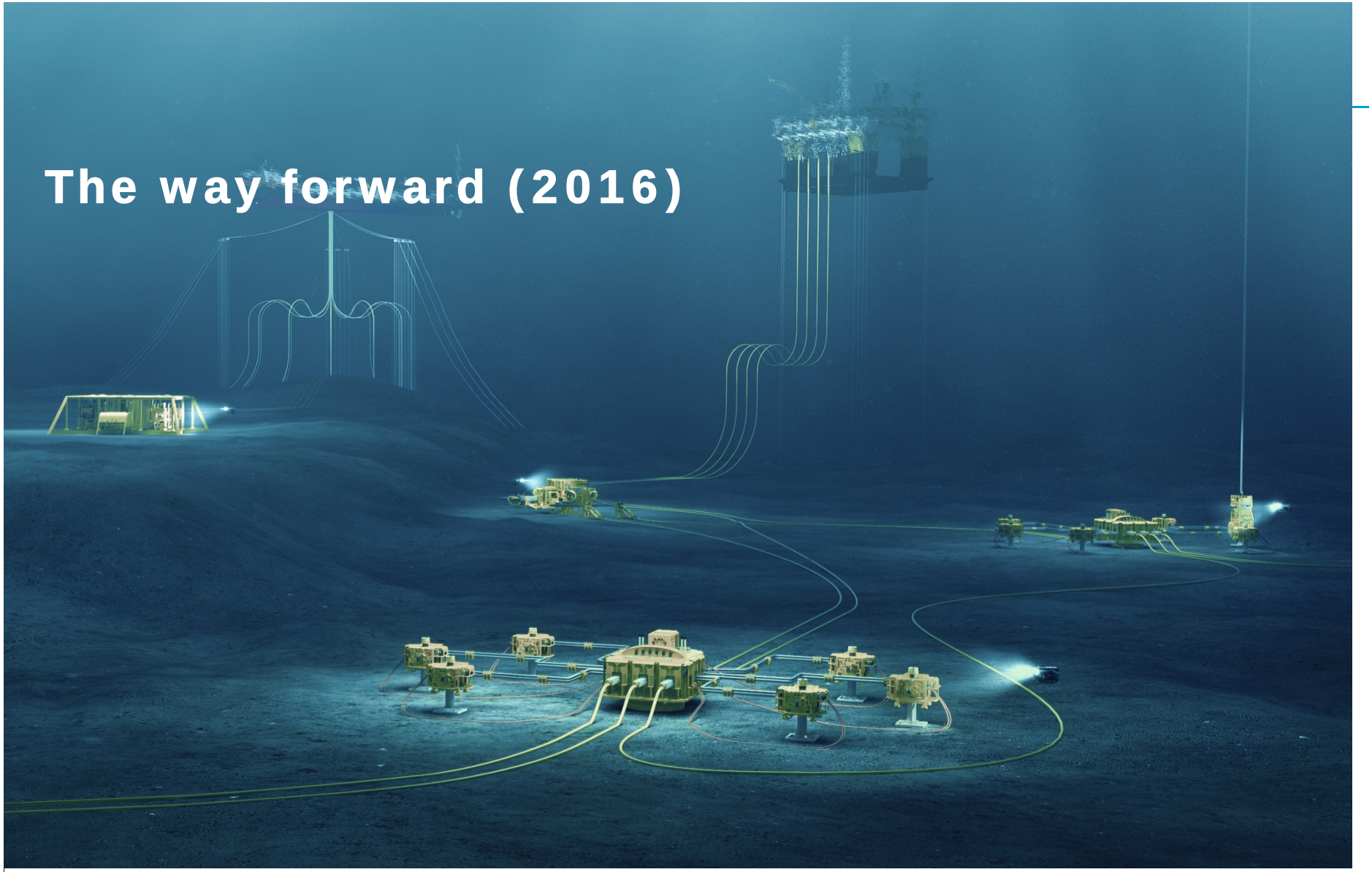
- However, Appendix D describes the listed documents with a description of **what** the content is expected to be and the **purpose** of the documents.

Benefits

- Establish a minimum set of required documentation for subsea development projects will;
  - allow early understanding of required documentation for all parties
  - reduce variations, versions and duplication of the same information
  - increase the use of unified definitions
  - reduce inconsistency
  - increase predictability
  - Increase the use of generic/standard documents
  - increase quality
  - Reduce the number of engineering hours

  - less exchange of information
  - less administration
  - less documents
  - reduce the costs

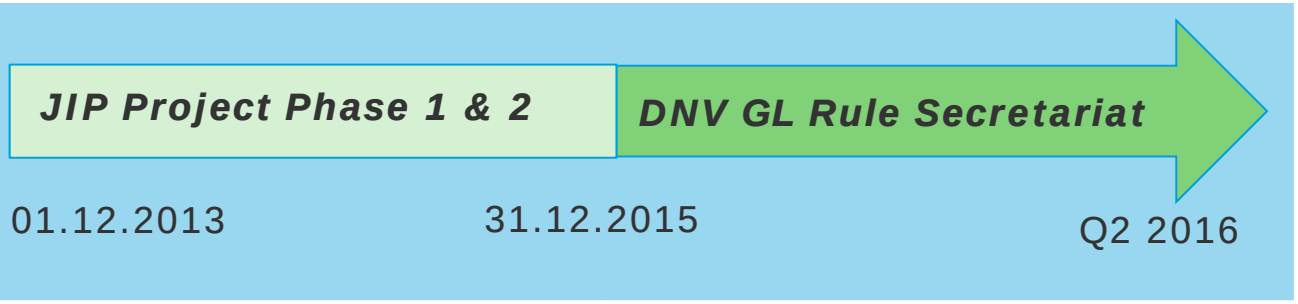
The way forward (2016)



Timeline: Delivery of Project Report and DNV GL RP

Companies & Organizations	Type	2014	2015
Aker Solutions	EPC		
Brightport	SUP/IT		
Centrica	OP		
DEA	OP		
Det Norske	OP		
DNV GL	EPC		
ENI	OP		
FMC TI	EPC		
GE	EPC		
GDF Suez	OP		
Kongsberg	EPC		
Lundin	OP		
NCE Subsea	TRADE ORG		
TOTAL			

Companies & Organizations	Type	2014	2015
Norsk Olje og Gass	OBS		
Oceaneering	SUP		
OneSubsea	EPCI		
PSA	OBS		
Statoil	OP		
Subsea7	EPCI		
Subsea Valley (SSV)	TRADE ORG		
SUNCOR	OP		
TOTAL	21	18	17



Delivery	**Project Specific RP (Previous RP-0071)**	**Public DNVGL- RP-O101**
Schedule	31.12.2015	**June 2016**
Covering	Phase 1+2	Phase 1+2

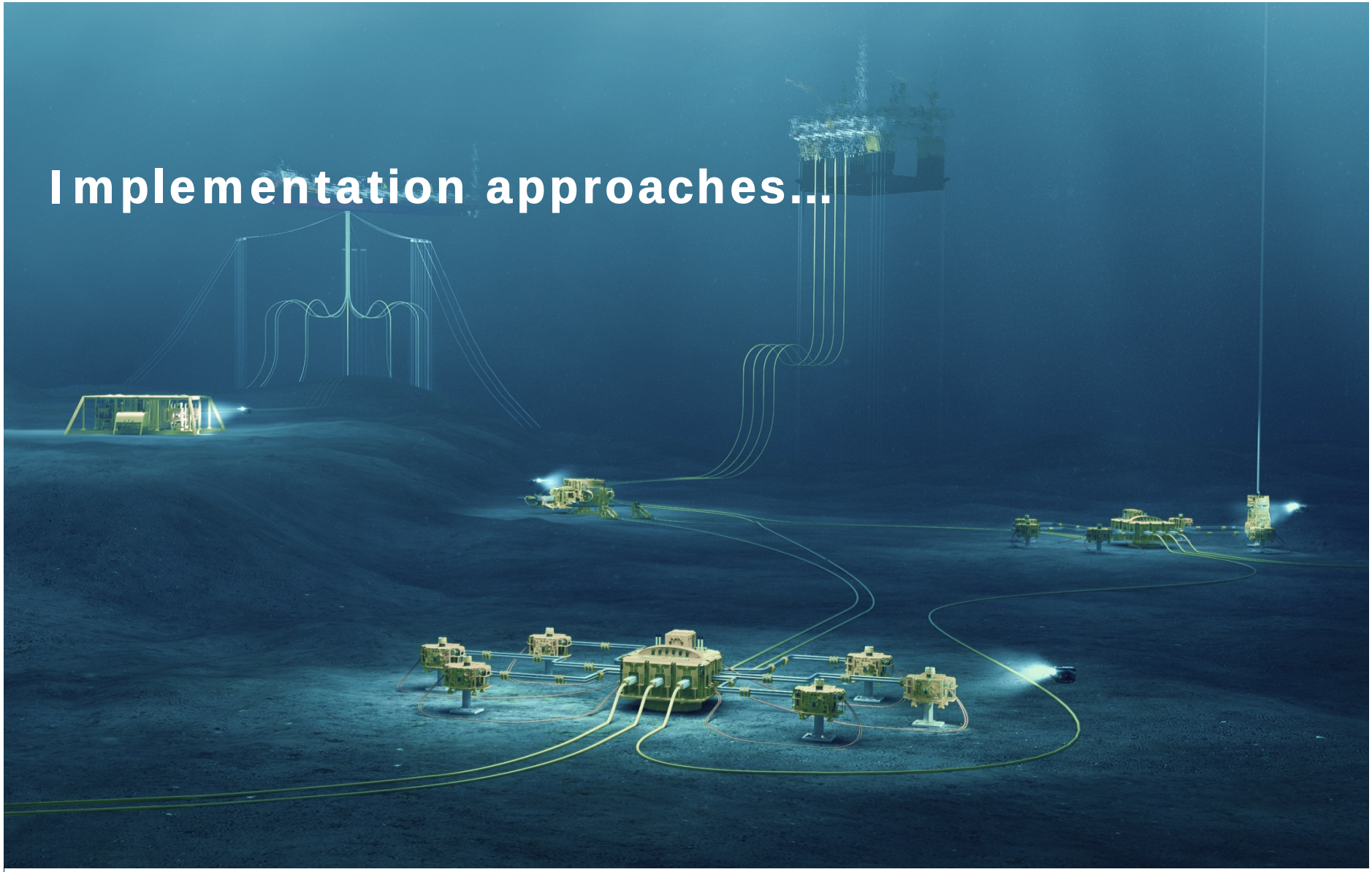
2016 SoW - 'Expert Group'

DEA Norge AS
Det Norske Oljeselskap ASA
FMC Technologies
Statoil Petroleum AS
Subsea 7 Norge
Subsea Valley
Aker Solutions
Lundin
GCE Subsea (former NCE)
One Subsea
Norsk Olje & Gass v. D.Llewelyn
DNV GL
PSA

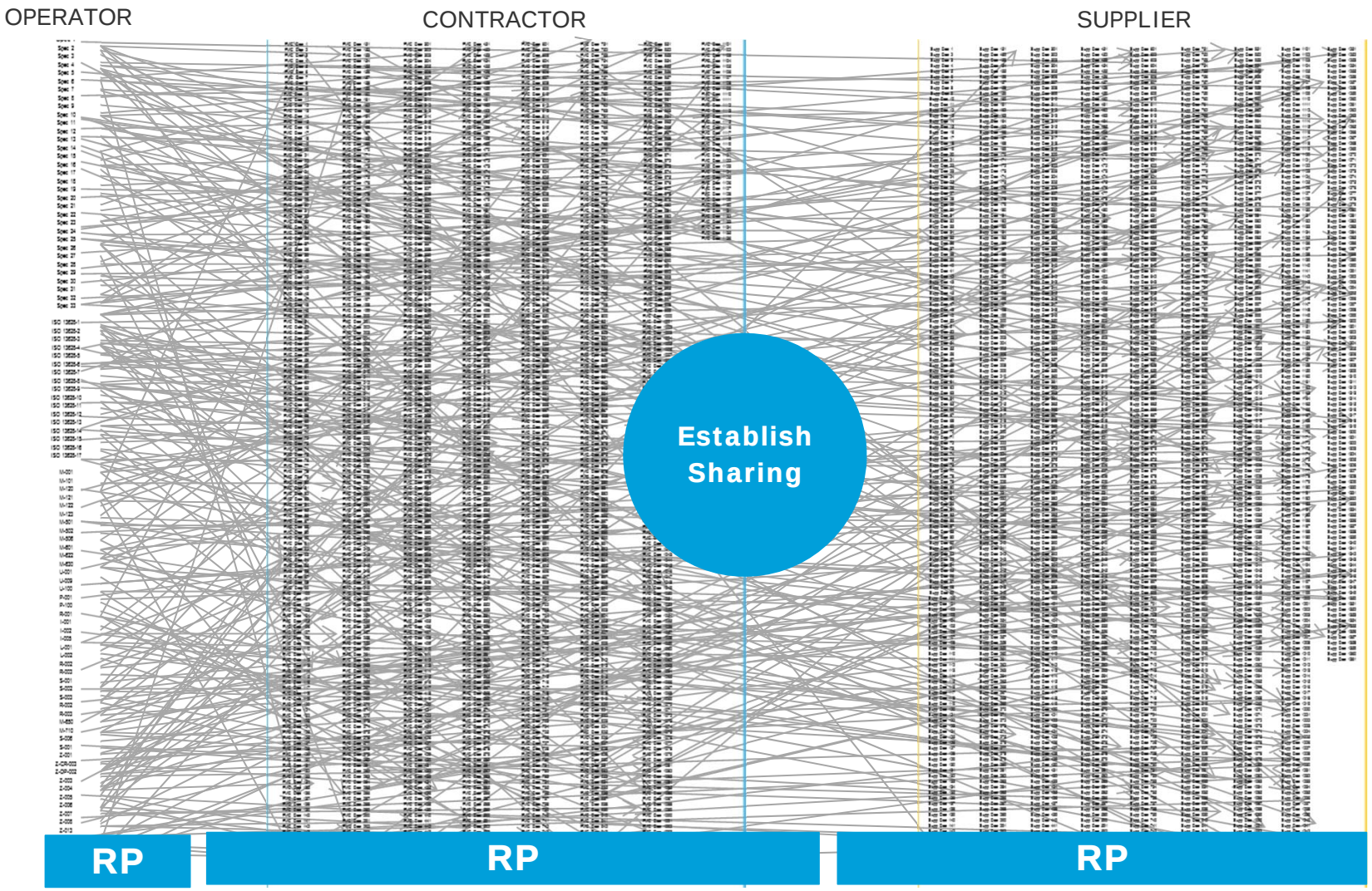
- Give the participants of the JIP the possibility of having an impact on the final DNVGL-RP-O101
- Facilitate a joint effort in order to market and implement the launched RP in the industry
- Discuss and evaluate feedback and experience gained by the companies during 2016 and expose further improvements/updates of the RP

WS1 – External Hearing
WS2 – Release and Marketing
WS3 – Feedback

Implementation approaches…

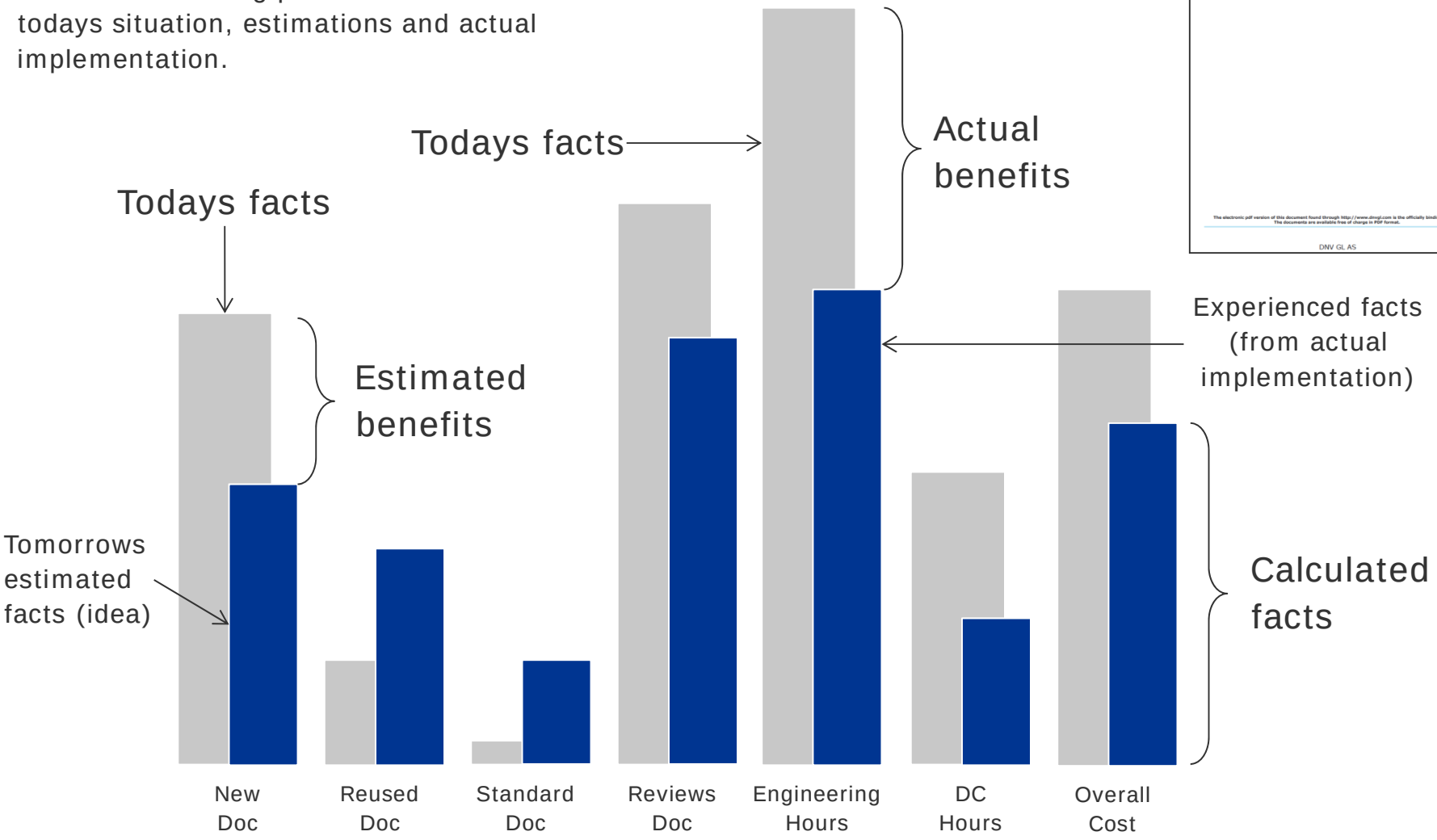


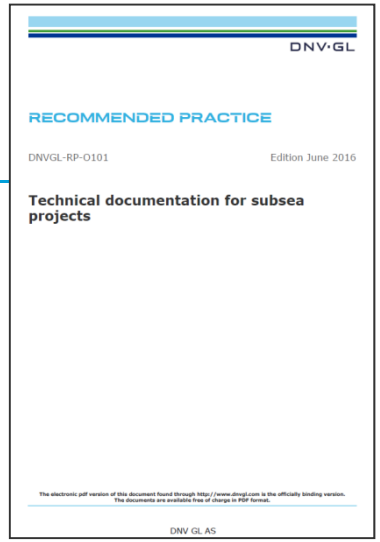
Into the heart of implementation – need for collaboration



No implementation – no benefits

Part of the learning process is to collect facts from todays situation, estimations and actual implementation.




DNV·GL

RECOMMENDED PRACTICE

DNVGL-RP-O101 Edition June 2016

Technical documentation for subsea projects

The electronic pdf version of this document found through http://www.dnvgl.com is the officially binding version. The documents are available free of charge in PDF format.

DNV GL AS

Statoil – Technical Requirement

RP Input

Governing document Classification: **Open**

LCI Requirements

Operation and maintenance (OM)
Technical and professional requirement, TR2381, Final Ver. 5, valid from 2015-05-13

Owner: Leader, TEX LCI

Validity area: Available for implementation/Available for implementation/On- and offshore

Governing document template, Ver.: 7.5
Release: October 2014

Statoil

Operation and maintenance (OM)
Technical and professional requirement, TR2381, **valid from 2015-05-13**

Electrical Part 1 of 2:

	Ref.	Handover format	Milestone	Battery	Bus duct	Electric Motor - High voltage	Electric Motor – Low voltage	Electrical cathodic protection	Electrical heater control (ER tag)	Electrical process heaters	Electrical space heater	Flood lights	Frequency converter, (ER tag)	Generator	Harmonic filter, resistor, reactor and capacitors
Certificate of conformance	5.40	PDF	LCI 2			X		X	X	X			X	X	X
Circuit/Wiring diagram	5.43	PDF	LCI 2	X		X	X	X	X	X			X	X	X
Data sheet - Product	5.57	PDF	LCI 2	X	X	X	X		X	X			X	X	X
Detail drawing with parts list	5.76	PDF	LCI 1			X		X	X	X			X	X	X
Documentation for dispatch, receipt, storage and preservation	5.79	PDF	LCI 1	X		X			X	X			X	X	X
Explosion protection certificates	5.100	PDF	LCI 2			[23] X	[23] X	[23] X	[23] X	[23] X	[23] X	[23] X			[23] X
General Arrangement Drawing	5.121	PDF	LCI 2	[26] X	X	X	X	X	X	X			X	X	X
Installation, Operation and Maintenance manual (IOM manual)	5.147	PDF	LCI 1	X	X	X		X	X	X			X	X	X
Manufacturing Record Book (MRB)	5.167	PDF	LCI 2			[24] X		[24] X	[24] X				[24] X	[24] X	[24] X
Single line diagram (Supplier)	5.215	PDF	LCI 2												
Spare Parts Interchangeability Register (SPIR)	5.222	XLS (TR1005)	LCI 1			X	X	X	X	X		X	X	X	X

Views and trends from one of the JIP Members (Operator)

- Tested the applicability of RP O101, resulted in 86% matching for the selected project
- Potential to reduce the amount of reviews for Operator with 42% and for Contractor with 49%
- Interest in reusing documentation between projects
- Interest in copying documentation within projects
- Less transactions
- Improving DC/DM working procedures, emphasize on collaboration

Supplier	Total Docs in MDR	Total Docs in	Total Docs in this XL	Found in RP	Not found in RP	Optional Docs (or Topside)	G1/R	G2/S	Not found in	/RP Match%	Average reviews	Average personnel	Estimated Time pr review	Total hrs	Potential saving (hrs)
		130	130	122	8	1	93	0	0	93,85%	1,05	6,23	1,5	1 275,6	912,5
	117	60	59	38	21	0	16	10	0	64,41%	1,85	4,71	1,5	771,1	209,1
	279	279	279	234	45	1	25	11	0	83,87%	1,09	3,45	1,25	1 311,5	117,5
	90	116	116	112	4	1	4	16	9	96,55%	1,09	2	1,5	379,3	13,1
	45	44	44	35	9	0	8	18	7	79,55%	1,14	4,18	0,5	104,8	19,1
	79	103	102	96	6	0	35	28	0	94,12%	1,09	7,03	1	781,6	268,2
	83	77	77	68	9	0	63	4	0	88,31%	1,17	8,01	1	721,6	590,4
	12	4	4	3	1	0	2	1	0	75,00%	1	9	1,5	54,0	27,0
	16	15	15	8	7	0	6	2	0	53,33%	1	8,07	1,5	181,6	72,6
	30	9	9	6	3	0	4	0	0	66,67%	1,22	8	1,5	131,8	58,6
	21	18	18	10	8	0	6	3	0	55,56%	1,11	8	1,5	239,8	79,9
		9	9	6	3	0	5	1	0	66,67%	1,33	8	1,5	143,6	79,8
	101	92	92	88	4	0	43	36	9	95,65%	1,28	8	0,75	706,6	330,2
	73	60	60	51	9	0	36	7	0	85,00%	1,48	8	0,75	532,8	319,7
		9	9	6	3	0	0	4	0	66,67%	1	8	0,75	54,0	0,0
Summary	946	1025	1023	883	140	3	346	141	25	86%	1,19	6,71	18	7 389,7	3097,8

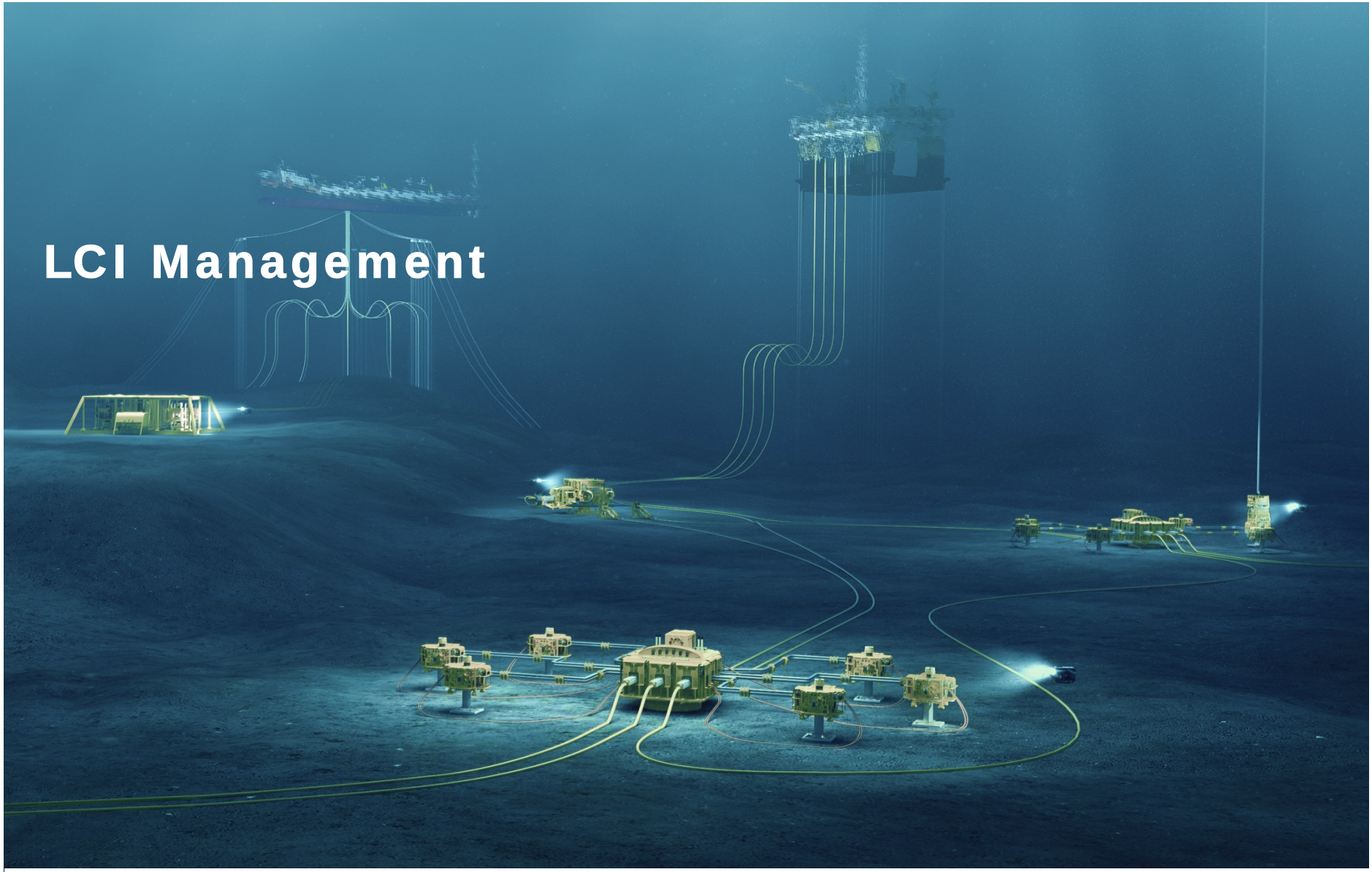
86 % **42 %**

Views and trends from one of the JIP Members (Contractor)

- **Deliver less documents** to Clients
- Are able to **reuse documentation** from previous projects, as concluded from our Client 1 projects (A, B, D, and E) study. Findings described that it is possible to reduce the amount of documentation on future similar projects by 75-80% by reusing existing documentation. Contractor will then only deliver about 20-25% of project documents (calculation is not shown).
- **Reduce the amount of reviews** of document types
  - Client 1 – average 64,5% of documents are issued for review
  - Client 3 – 60% of documents issued for review
  - Client 2 – only 47% of documents issued for review
- With less reviewed documents, the more valuable the review process will be

Client	Project	# of Docs	# Reviews	Review %
1	A	2560	1597	62%
1	B	199	154	77%
1	D	345	198	57%
1	E	655	404	62%
2	C	2946	1374	47%
3	F	761	455	60%
Average		**1250**	**697**	**56%**

LCI Management



Implementing the RP: Potential cost savings to be found across processes and in the entire value chain.

PSA: Z-001/Z-018 – audit basis will be unchanged

Regulatory context
- Authorities
- HSE
- See-to duty

Project execution & Ops
- Procurement
- Engineering
- Document control
- Verification philosophy
- *Operations*
- *Modifications*

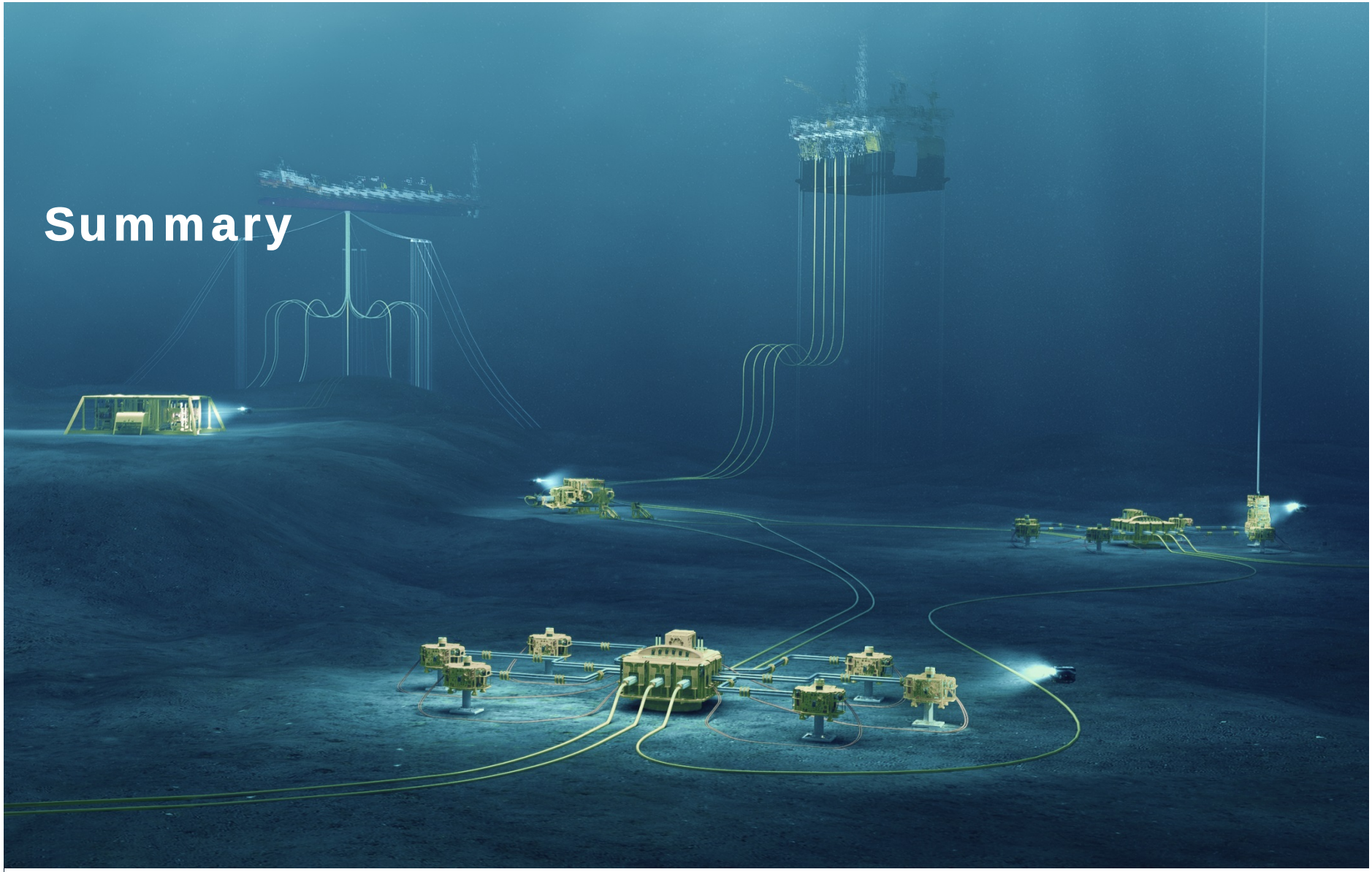
RP-O101

Contractor colla-boration
- LCI requirements
- Technical specifications
- Document production
- Delivery method

LCI processes
- LCI strategy
- Project LCI plans
- LCI requirements
- LCI/DM systems
- LCI management

- **Engineering: Reduce number of hours** in review cycles for contractor & operator
  - **Increase number of retained (R) documents** at supplier
  - Use of generic (G) documents
- **Reduced number of document transactions** between the parties
- **Predictability** from purchasing to delivery
  - Clear document responsibility and identification (System/Assembly-Title-Content)
  - Predictable requirements = Predictable delivery
- **Document production efficiency gains**
  - **Re-use documentation** across projects (and contractors) and through the supply chain = Generic documents (G)
  - Clear ownership

Summary



Summary for standardization

- Company standards (procedures) have a positive effect on businesses because they help ***improve internal processes***
- When it comes to relationships between suppliers and customers, industry-wide standards are the main instruments used to ***lower transaction costs***
- Standardisation creates ***predictability*** throughout the supply chain
- Standardisation enables ***flexibility*** to custom making
- The cost battle cannot be won by initiatives enforced to one party only! ***The entire supply chain has to contribute*** (Operators, System suppliers, Suppliers)

Building trust in the value chain

Welcome to join the JIP Subsea Doc. Implementation 2016

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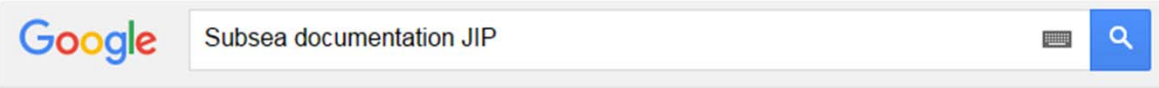
For more information: Standardised subsea documentation JIP - DNV GL



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