



OFFSHORE NORGE

INTEGRATED LIFE-CYCLE ASSET PLANNING (ILAP)

SOLUTION FOR EXCHANGE AND ANALYSIS OF PLANNING DATA

16.04.2024 – OFFSHORE NORGE ASSET & LICENSE MANAGEMENT SEMINAR

ILAP BRIEF OVERVIEW

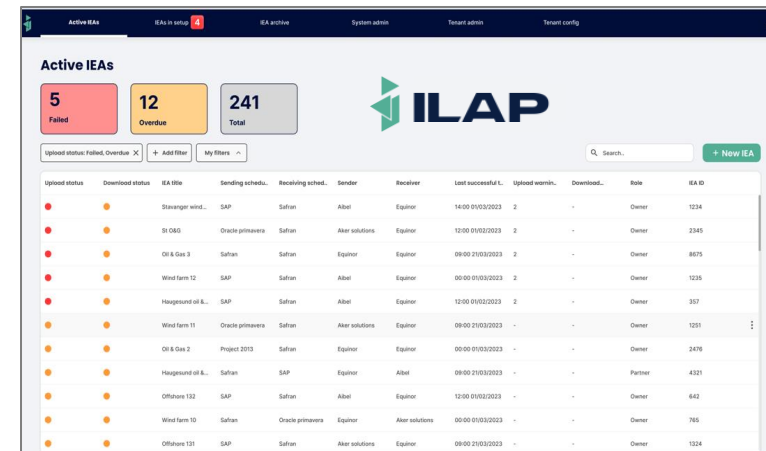
ILAP:

- Integrated Lifecycle Asset Planning
- ISO standard
- Software suite for exchanging schedule data between different scheduling tools
- Offshore Norge

Exchange of interoperable schedule data across different scheduling tools and parties



The ILAP solution is a cross industry solution for exchange of schedule data across parties independent of scheduling tool

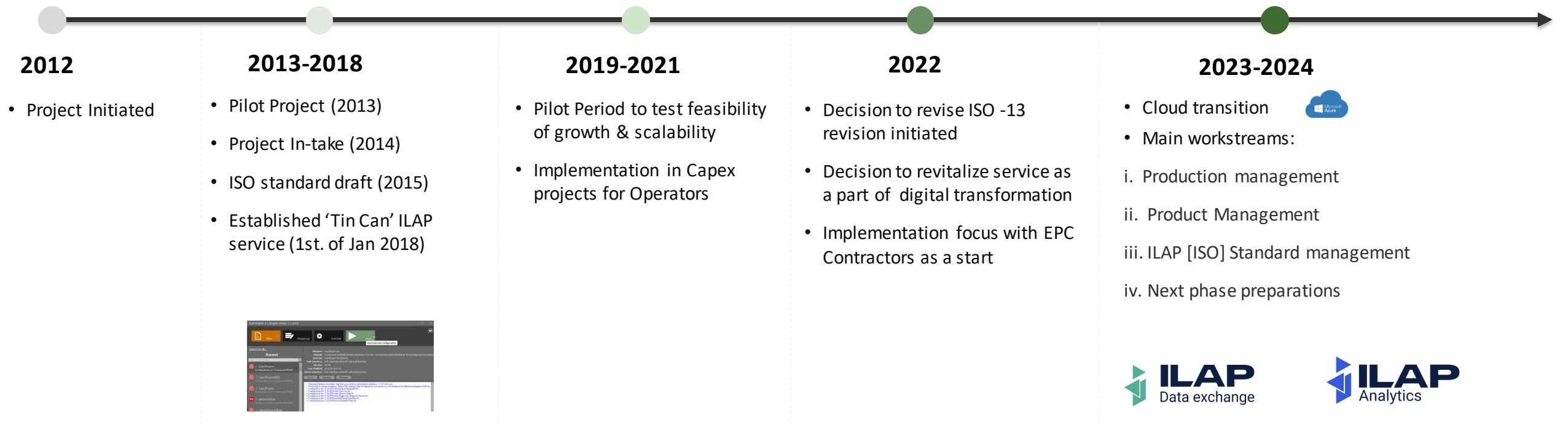


Upload status	Download status	EA Site	Sending sched.	Receiving sched.	Sender	Receiver	Last successful L.	Upload works	Download	Role	EA ID
Failed	Overdue	Stavanger wind...	SAP	Safra	Abel	Equinor	14:00 01/03/2023	2	-	Owner	1234
Failed	Overdue	St O&G	Oracle Primavera	Safra	Aker solutions	Equinor	12:00 01/03/2023	2	-	Owner	3345
Failed	Overdue	Oil & Gas 3	Safra	Safra	Equinor	Equinor	09:00 21/03/2023	2	-	Owner	8875
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Failed	Overdue	Wind farm 10	Safra	Oracle Primavera	Equinor	Aker solutions	00:00 01/03/2023	-	-	Owner	765
Failed	Overdue	Offshore 121	SAP	Safra	Aker solutions	Equinor	09:00 21/03/2023	-	-	Owner	1224

The solution increase safety on our facilities, reduce cost and enables radical changes in the way we work.

ILAP HISTORY & STATUS OVERVIEW

+10 YEARS OF INDUSTRY COLLABORATION & CONTINUOUS IMPROVEMENTS



ILAP IS THE TOOLS AND METHODS FOR THE EFFICIENT TRANSFER OF STANDARDIZED SCHEDULING DATA FOR INTEGRATED PLANNING

 **ILAP** is threefold:

3. Industry Service Ecosystem

A future state ambition

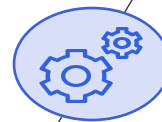
2. Software

Revised cloud solution, currently piloting

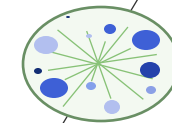
1. ISO Standard



By ensuring data interoperability,



And providing a tool for data collaboration,



ILAP enables a digital transformation.

MONTHLY REPORTING EXAMPLE NJORD PROJECT 2018

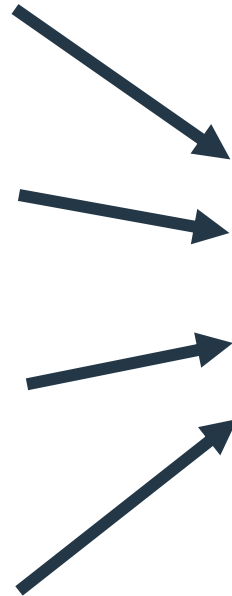
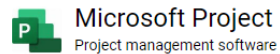
> 600 PAGES | 15 – 20 000 ACTIVITIES | 20 + FILES

KVERNER		Njord A Platform Upgrade EPC					Statoil											
		Level 4 Detailed Network Schedule (DNS)-Total					Excluded 100% activities											
Main Category	Description	Baseline Early Start	Baseline Early Finish	Early Start	Early Finish	Current Planned Progress	Actual %	Baseline QTY (CSH)	Current QTY (RSH)	Expended Comm. QTY Package	2017		2018		2019		2020	
											Aug	Dec	Apr	Aug	Dec	Apr	Aug	Dec
A	Milestones	01.Jun.2018	30.Sep.2018	01.Jun.2018	30.Sep.2018	0,0	0,0	0,0	0,0	0,0								
AB	Internal Milestone	01.Jun.2018	30.Sep.2018	01.Jun.2018	30.Sep.2018	0,0	0,0	0,0	0,0	0,0								
ABIM51C1	Construction scope related to demolition of vent lines in columns, existing area C10, C30, C30 & C40 to be completed.	01.Jun.2018	31.May.2018	01.Jun.2018	31.May.2018													
ABIM51C2	Construction scope related to Riser Guide supports completed.	01.Jul.2018	30.Jun.2018	01.Jul.2018	30.Jun.2018													
ABIM52C1A	Construction scope related to structural reinforcement below main deck, existing area C10, C30, C30 & C40 and tubular chords to be completed.	01.Aug.2018	31.Jul.2018	01.Aug.2018	31.Jul.2018													
ABIM50C1	Construction scope related to columns and partitions to be complete installed.	15.Aug.2018	14.Aug.2018	15.Aug.2018	14.Aug.2018													
ABIM53C1	All surface treatment under main deck to be completed.	01.Sep.2018	31.Aug.2018	01.Sep.2018	31.Aug.2018													
ABIM51C1	Construction scope to be completed prior to Heavy lift of upper Deck	03.Sep.2018	31.Aug.2018	03.Sep.2018	31.Aug.2018													
ABIM52C1B	Construction scope related to structural reinforcement above main deck, existing area C10, C30, C30 & C40 and tubular chords to be completed.	01.Sep.2018	31.Aug.2018	01.Oct.2018	30.Sep.2018													
ABIM50C2	Construction scope related to piping and structural in area between E130,500-32,000 to be complete installed.	01.Oct.2018	30.Sep.2018	01.Oct.2018	30.Sep.2018													
F	MC-Mechanical Completion	15.Aug.2018	20.Sep.2019	17.Apr.2018	15.Oct.2019	22,2	0,0	0,9										
FZ	Multidiscipline / general	15.Aug.2018	20.Sep.2019	17.Apr.2018	15.Oct.2019	22,2	0,0	0,9										
FZ18403C02	MC-Complete - Switchboard EH-84-0010. Comm. Pack 8403-C02	15.Aug.2018	28.Aug.2018	17.Apr.2018	23.Apr.2018	100,0		0,1										
FZ18203C08	MC-Complete - Switchboard EH-82-0010. Comm. Pack 8203-C08	01.Oct.2018	19.Oct.2018	17.Apr.2018	23.Apr.2018	100,0		0,1										
FZ17602C06	MC-Complete - Remove MOB boat No 2 - Comm. Pack 7602-C06			17.Oct.2018	30.Oct.2018													
FZ18204C17	MC-Complete - Modification of normal lightning in MIO. Comm. Pack 8404-C17	03.Dec.2018	21.Dec.2018	03.Dec.2018	21.Dec.2018			0,1										
FZ18404C19	MC-Complete - Modification of Emergency lightning in MIO. Comm. Pack 8404-C19	03.Dec.2018	21.Dec.2018	03.Dec.2018	21.Dec.2018			0,1										
FZ15501C03	MC-Complete - Remove/Install piping Comm. Pack 5501-C03			04.Dec.2018	17.Dec.2018													
FZ17001C22	MC-Complete - Fin Area C8104 Hydraulic Street Unit Main Gensets. Comm. Pack 7001-C22	01.Mar.2019	21.Mar.2019	01.Mar.2019	21.Mar.2019			0,1										
FZ15701C01	MC-Complete - Tie-In to closed drain flash drain. Comm. Pack 5701-C01	01.Mar.2019	21.Mar.2019	01.Mar.2019	21.Mar.2019			0,1										
FZ18801C02	MC-Complete - Existing system Comm. Pack 8801-C02			02.May.2019	15.May.2019													
FZ14202C02	MC-Complete - Dechlorination (codrum) (single) Package. Comm. Pack 4202-C02	01.Oct.2018	19.Oct.2018	13.May.2019	05.Jun.2019			0,1										
FZ15601C05	MC-Complete - Hazardous open drain from Chemical spill. Comm. Pack 5601-C05	20.May.2019	12.Jun.2019	23.May.2019	17.Jun.2019													
FZ17001C16	MC-Complete - Fin Area C8105: SCD5 Pump Unit. Comm. Pack 7001-C16	03.Jun.2019	24.Jun.2019	03.Jun.2019	24.Jun.2019			0,1										
FZ10404C04	MC-Complete - Monthly And Lifting hgs Area C00. Comm. Pack 0404-C04			07.Aug.2019	20.Aug.2019													
FZ14302C03	MC-Complete - Remove / Reinstall Relief Headers. Comm. Pack 4302-C03	20.Aug.2019	02.Sep.2019	20.Aug.2019	02.Sep.2019			0,1										

Name	Status	Date modified	Type	Size
1.1.3 PS Detail Eng PerDisciplin_BL	🔗	02.05.2018 11:55	Adobe Acrobat Document	30 KB
BAR-EPC_Detail Method and Work Descr	🔗	02.05.2018 11:47	Adobe Acrobat Document	331 KB
BAR-EPC_Detailed Network Schedule	✅	02.05.2018 11:48	Adobe Acrobat Document	7 829 KB
Hist-EPC-M-Total BL Constr_Disc	✅	02.05.2018 11:48	Adobe Acrobat Document	214 KB
Hist-EPC-M-Total BL Eng_Disc	🔗	02.05.2018 11:48	Adobe Acrobat Document	356 KB
Hist-EPC-M-Total BL Main Cat	🔗	02.05.2018 11:48	Adobe Acrobat Document	229 KB
Hist-EPC-M-Total BL Product	🔗	02.05.2018 11:48	Adobe Acrobat Document	278 KB
Hist-EPC-M-Total BL WBS	🔗	02.05.2018 11:48	Adobe Acrobat Document	355 KB
Hist-EPC-M-Total BL	🔗	02.05.2018 11:48	Adobe Acrobat Document	44 KB
Hist-EPC-M-WD activites-BL	🔗	02.05.2018 11:48	Adobe Acrobat Document	46 KB
PS M Constr. Baseline EPC Installation	🔗	02.05.2018 11:48	Adobe Acrobat Document	28 KB
PS M Constr. Baseline EPC Prefabrication	🔗	02.05.2018 11:48	Adobe Acrobat Document	27 KB
PS M Constr. Baseline EPC Pre-Installation	✅	02.05.2018 11:47	Adobe Acrobat Document	37 KB
PS-Baseline-Metode og Fab-eng-Discipline(W) EPC	🔗	02.05.2018 11:55	Adobe Acrobat Document	36 KB
PS-EPC-M-Bauge total WBS BL	🔗	02.05.2018 11:48	Adobe Acrobat Document	34 KB
PS-EPC-M-Fenja total WBS BL	🔗	02.05.2018 11:48	Adobe Acrobat Document	30 KB
PS-EPC-M-Future HUB total WBS BL	🔗	02.05.2018 11:47	Adobe Acrobat Document	28 KB
PS-EPC-M-NJA total WBS BL	🔗	02.05.2018 11:48	Adobe Acrobat Document	50 KB
PS-EPC-M-Total BL Main Cat -Discipline	🔗	02.05.2018 11:48	Adobe Acrobat Document	88 KB
PS-EPC-M-Total BL	🔗	02.05.2018 11:48	Adobe Acrobat Document	26 KB
PS-EPC-M-Total Client-WBS Komp_form_BL	🔗	02.05.2018 11:48	Adobe Acrobat Document	116 KB
PS-EPC-M-Total Product BL	🔗	02.05.2018 11:48	Adobe Acrobat Document	76 KB
PS-EPC-M-Total WBS - Product BL	🔗	02.05.2018 11:48	Adobe Acrobat Document	91 KB
PS-EPC-M-Total WBS BL	🔗	02.05.2018 11:48	Adobe Acrobat Document	28 KB

PROBLEM & CURRENT CHALLENGES - ALIGNING SCHEDULES

Example: Melkøya Electrification

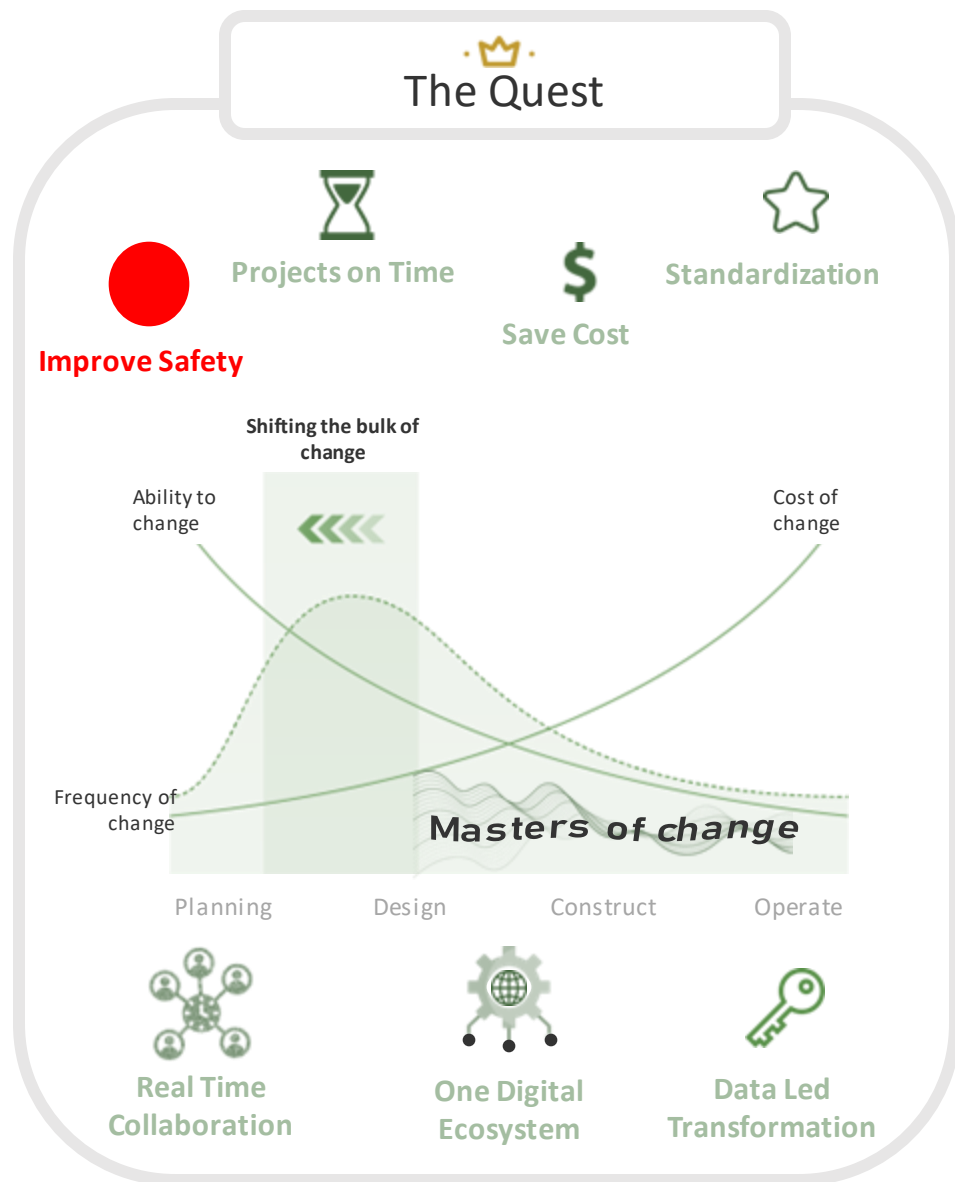


Project Master Schedule



- × Manual punching
- × Resource demanding and time consuming
- × Limited insight, overview and availability
- × Time delay
- × High cost
- × Quality risk – potential errors
- × Safety risk – schedules not coordinated

ILAP VALUE PROPOSITION



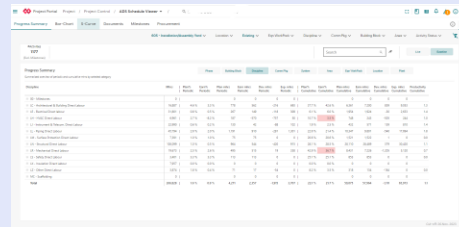
STATUS ON REVITALIZED ILAP CLOUD SERVICES

DIGITAL ISO STANDARD | STANDARDIZED DATA TRANSFER & TRANSLATION | ANALYTICS

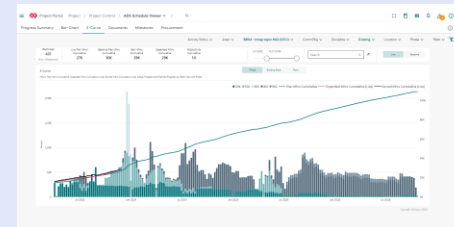


- Storage and timephasing of scheduling data → Ready for analysis
- Enable reporting metrics and KPI's for analyzing schedule quality and status
- Report differences between versions of same schedule
- Connect to data lakes or data contextualization tools (PowerBI or CDF*)

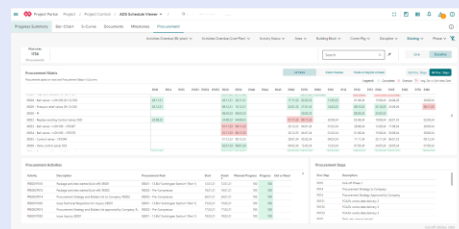
Examples of schedule data analysis from Equinor's ADS**:



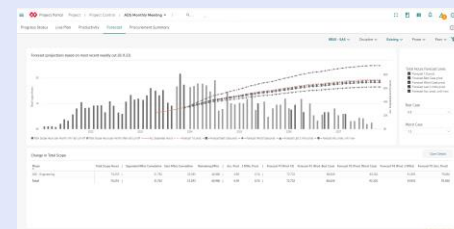
Progress summary



S-Curve



Procurement matrix



Manhour forecast

*CDF= [Cognite Data Fusion](#)

**ADS = Automatic Data sharing solution (ADS), a solution that transfers project control data from contractors to Equinor, we thank Equinor ADS product owner Jens Hauge for sharing examples

- aibel**
- ✓ Onshore Brownfield scope Melkøya
 - ✓ Snøhvit
 - ✓ Irpa
 - ✓ Oseberg Gas Project (OGP)
 - Verdande (ongoing)
 - More Brownfield projects TBD

- AkerSolutions**
- ✓ Årsgard B LPP
 - ✓ TWEL Topside
 - ✓ Halten Øst Topside
 - ✓ Smørbukk Nord Topside
 - ✓ Berling Topside Feed
 - ✓ Njord Electrification
 - Mongstad WWTP (ongoing)
 - More Brownfield projects TBD
 - Yggdrasil
 - Hugin A, Hugin B, PWP & Fenris Projects

Other Contractors TBD

HARVESTING VALUE FROM THE ILAP INVESTMENTS

SIMPLIFIED CALCULATIONS USING DATA FROM ACCENTURE'S ILAP ASSESSMENT

Based on a conservative scenario with adaption in 9 projects the **payback period for ILAP's 2024 budget is less than a quarter**

1



Financial savings




Value Drivers

- \$ Capital project cost savings
- \$ Reduced operational & maintenance cost
- \$ Optimized working capital (inventory, CAPEX, receivables)

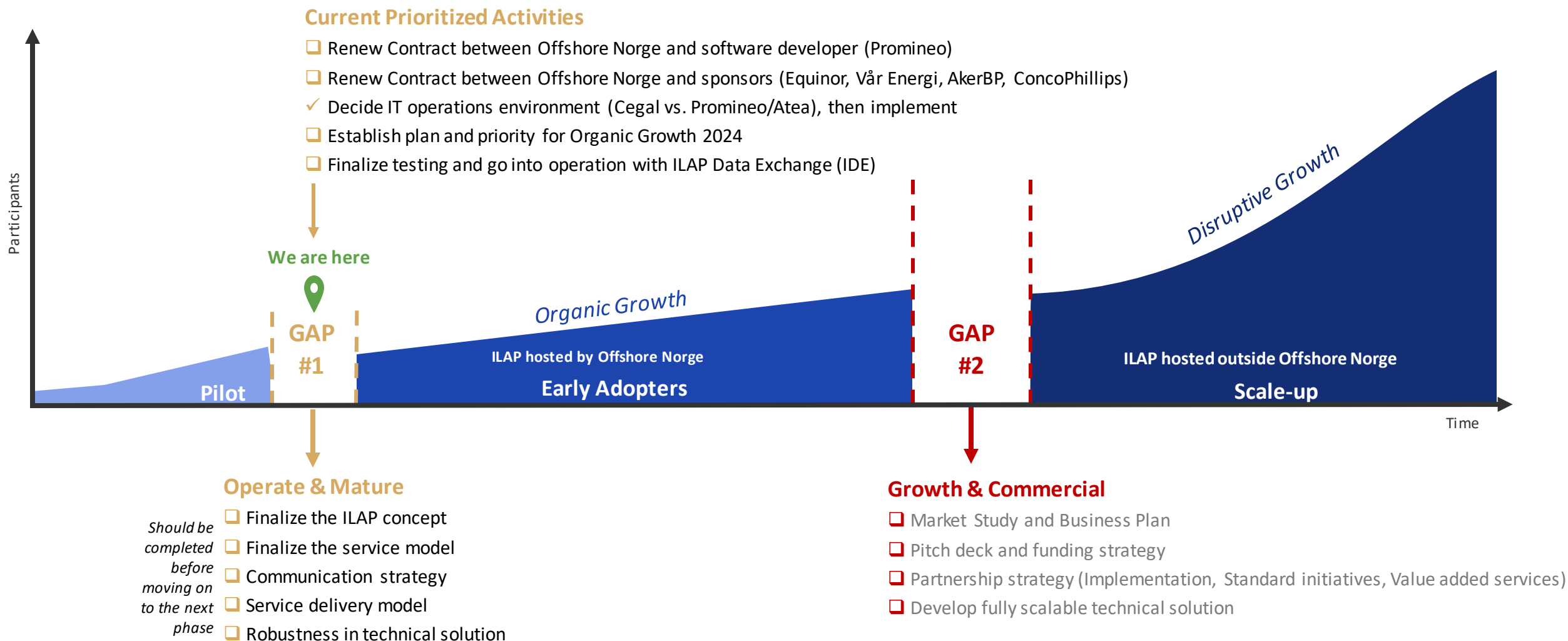
2



Other benefits

-  Reduce environmental pollution (NetZero)
-  Increased safety
-  Improved project risks control

ILAP AMBITION 2024– BUILDING BRIDGES TO CLOSE GAPS WHILE REALIZING VALUE AT EVERY STAGE





OFFSHORE NORGE

Før var vi kun olje og gass