Powered down Electrical Drillpipe deployment on NCS

Thor Løvoll, Chief D&W Vår Energi

w/ support from
- Reelwell – Steven Scott
- Haliburton - Ahmed Kord
- WellID - Lars Øy

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Agenda

1. Strategy and ambitions
2. Collaboration
3. The technology
4. WDP implementation project, Associated technologies and Use cases
5. Business case
6. Future potential
7. QA

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Consistent strategy for growth and value creation

Pure play oil and gas company on the NCS

Reliable and secure supplier of energy to Europe

Safe and responsible

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Strategy and Ambitions – Technology deployment creation value

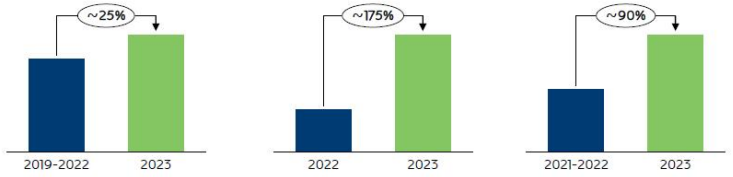
Creating value

Consistent strategy	"One Team" entrepreneurial culture	Deep and unique NCS expertise	Leading exploration track record	Value driven technology implementation	Leveraging strong partnerships

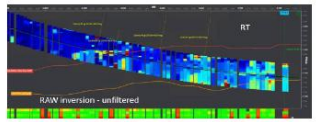
Efficient well deliveries

- Secured high-performing rigs
- Unlocking reserves with multilateral wells
- Data and technology driven
- Strong capabilities

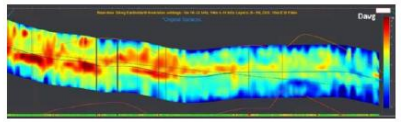
Improved drilling efficiencies[1]



Enhanced visualisation driving performance



Imaging without wired-pipe



Real-time data on Goliat infill drilling using wired-pipe

1. Operated production wells

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DW Technology plan – creating Value

MLT is utilized to increase completion lengths, support smart well designs, reduce well cost and increase production

Wired pipe is applied to Improve reservoir characterization, optimize well placement and extend drilling window in depleted reservoirs, pushing for next generation power down systems to replace EWL requirements

MPD/ CML is applied to extend drilling window in depleted reservoirs, pushing for next generation MPD from floaters

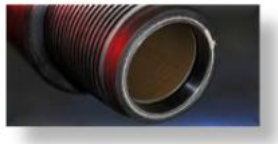
…le water separation can be achieved …gh smart well design and new MLT …ologies, improving economics on Balder …inghorne with Facility water production …city constraint

…kit can be developed and optimized to …e development capex, increase schedule …lity and cut cost for marginal fields

…nous drilling and digital solutions is …d to reduce NPT, increase drilling …ency and well planning

1 MLT

2 Wired pipe



3 MPD/ CML

4 Downhole water separation

5 SPS toolkit

6 Autonomous drilling/ digital

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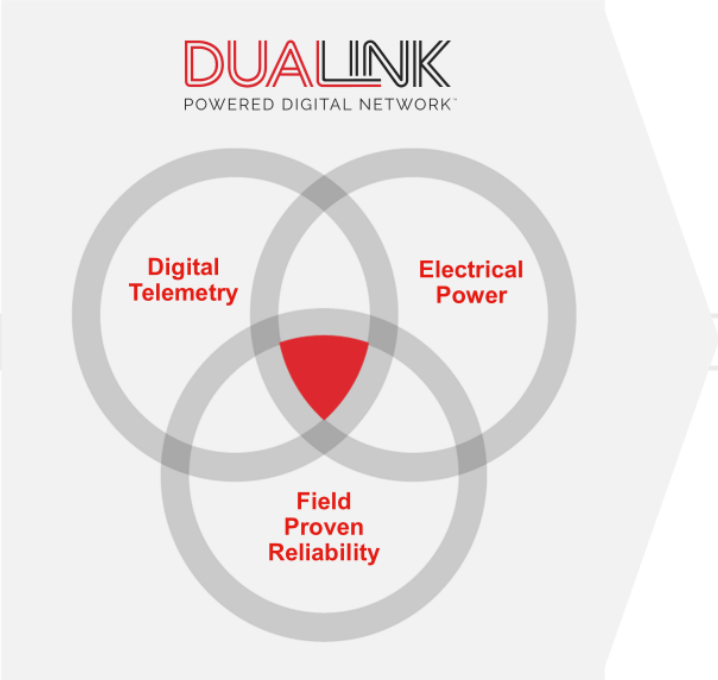
Collaboration

- Multiyear contract awarded by Vår Energi to Reelwell in Jan-25 for Dualink powered digital drill pipe technology
- First deployment on NCS
- Reflect Vår Energi commitment to technology
- May represent a step change in drilling and well operations

The technology- wired drillpipe from Reelwell

Reelwell has solved challenge through design and industry partnering

The disruptive solution: A reliable powered digital network via the drill pipe



High bandwidth bi-directional telemetry of >56k bits/sec downhole

providing needed significant step change from current speeds of 1-20 bits/sec, enabling necessary use of data, further digitisation and automisation

Constant electrical power supply of >500W downhole

providing needed significant step change from current limited life of supply, removing batteries in tools, while enabling introduction of new technology

Reliable solution meeting on- and offshore drilling requirements

providing demanded reliability levels for market adoption of wired pipe with a second-generation design meeting the E&P industry requirements

Open access network solution breaking down industry barriers

enabling anyone to bolt onto the network, integrating drilling systems, hardware and software providers, dismantling todays siloed service offerings

The technology - overview

The technology - benefits

DUALINK

Differentiated Features

Robust & Simple Design

- Handle as standard pipe
- Steel material integrity
- No moving parts in pipe
- Field replaceable connectors
- Redundancy in braided conduit: telemetry & power

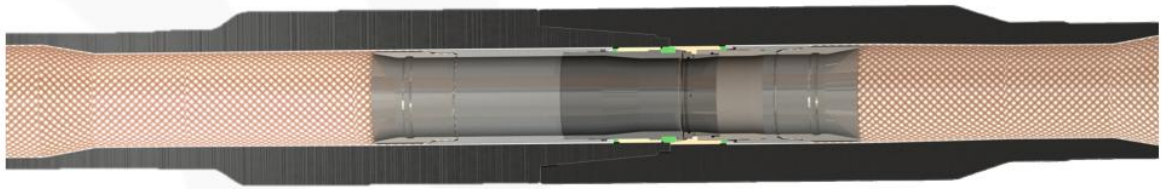
Direct Galvanic Connection

- Power from surface, distributed to string & BHA
- No signal boosting repeaters
- No lithium batteries in string
- Reduces complexity & costs of string, subs w/ batteries, length of BHA and no. of personnel required to handle

Agile & Disruptive

- Open access network
- Train existing rig personnel
- Remote support 24/7
- Offshore & Land markets

- Applications outside of drilling: P&A, completions, ...



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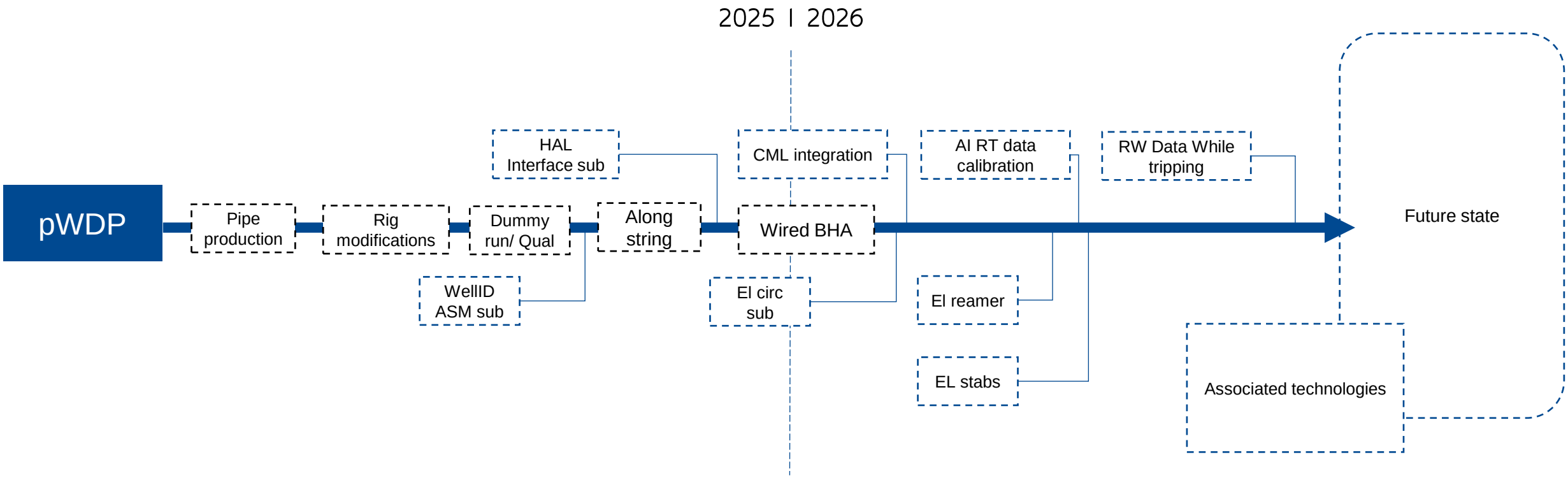
Powered down electrical drill-pipe technology implementation

Associated technologies and use cases



Associated technologies from Halliburton

Enabling Real-Time Drilling Intelligence

Capability	Powered Drill Pipe	Mud Pulse Telemetry
Telemetry Speed	Up to 56,000 bits per second (56 kbps) (real-time broadband data)	Up to 15 bits per second (very low bandwidth)
Data Density	Memory-quality data in real time	Highly filtered, limited-resolution data
Drilling Dynamics Monitoring	High-frequency vibration, shock, stick-slip data	Downsampled or delayed
High-Res Dynamic Surveys (GuideStar)	Real-time, high-res dynamic surveys	Post-run analysis only
Wellbore Quality Control (Logix Auto-Steer)	Real-time tortuosity tracking & auto-corrections	Limited ability to detect borehole tortuosity early
Borehole Imaging	Continuous, high-res image data in real time	Limited bandwidth in realtime.
		Post-job download only
Formation Pressure Data (GeoTap)	Real-time, high-frequency pressure points	Limited resolution and slower interpretation
Downlinking Capability	Downhole instructions sent in <2 second	Typically 2–3 minutes for a full downlink cycle
Decision Making Speed	Near-instantaneous adjustments based on live conditions	Delayed response due to data latency
Powered Pipe Feature	Reduce lithium battery capacity in drillstring	Battery dependant
	Extended drilling operational hours	Limited operational hours
	Powered activation downhole tools	Mechanical / Hydraulic activation downhole tools
Performance Enabler	No data density limitation	Limited with data density
	Higher ROP compared with MPT by +35%	

HALLIBURTON

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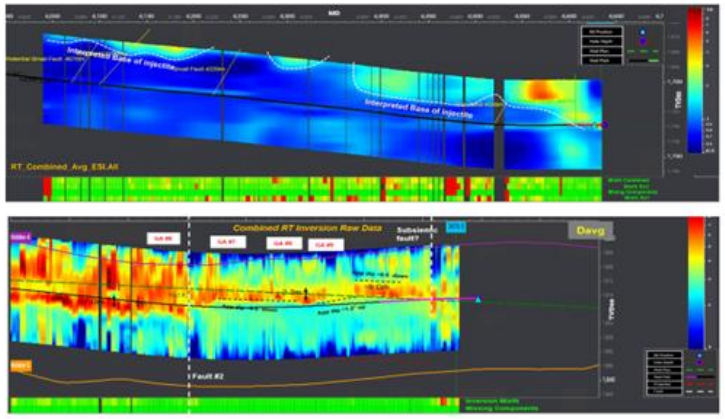
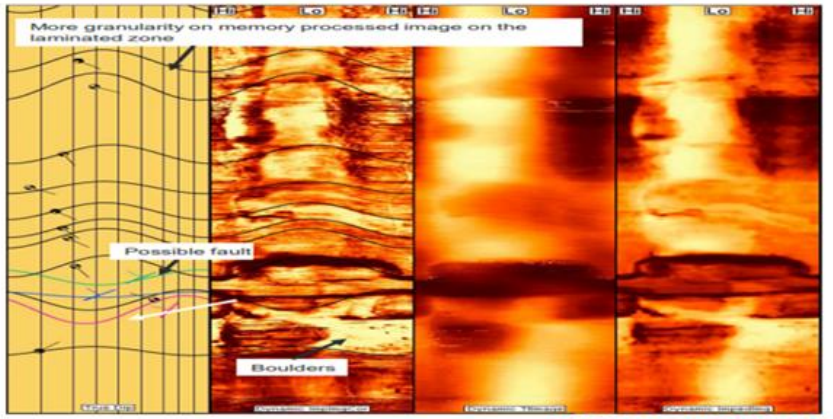
Associated technologies – Realtime high quality data

Data Density Comparison – MEM vs RT

- Wired Pipe delivers memory-like EarthStar data with minimal gaps, no missing components, and low inversion misfit — enabling accurate resolution of complex thin-layer geology, even at high ROPs.
- In contrast, Mud Pulse telemetry suffers from data gaps (especially at high ROP or in noisy conditions), leading to missing EarthStar components, high inversion misfit, and increased uncertainty in geological interpretation (evident in red QC indicators).



- PixStar impedance images offer high-resolution insights, with memory-processed logs (e.g., second track from the left) showing enhanced granularity in laminated zones.
- Even in real-time using Wired Drill Pipe (e.g., track on the right), most geological features remain clearly visible thanks to the high-quality 64-bin image resolution, enabling reliable formation evaluation while drilling.



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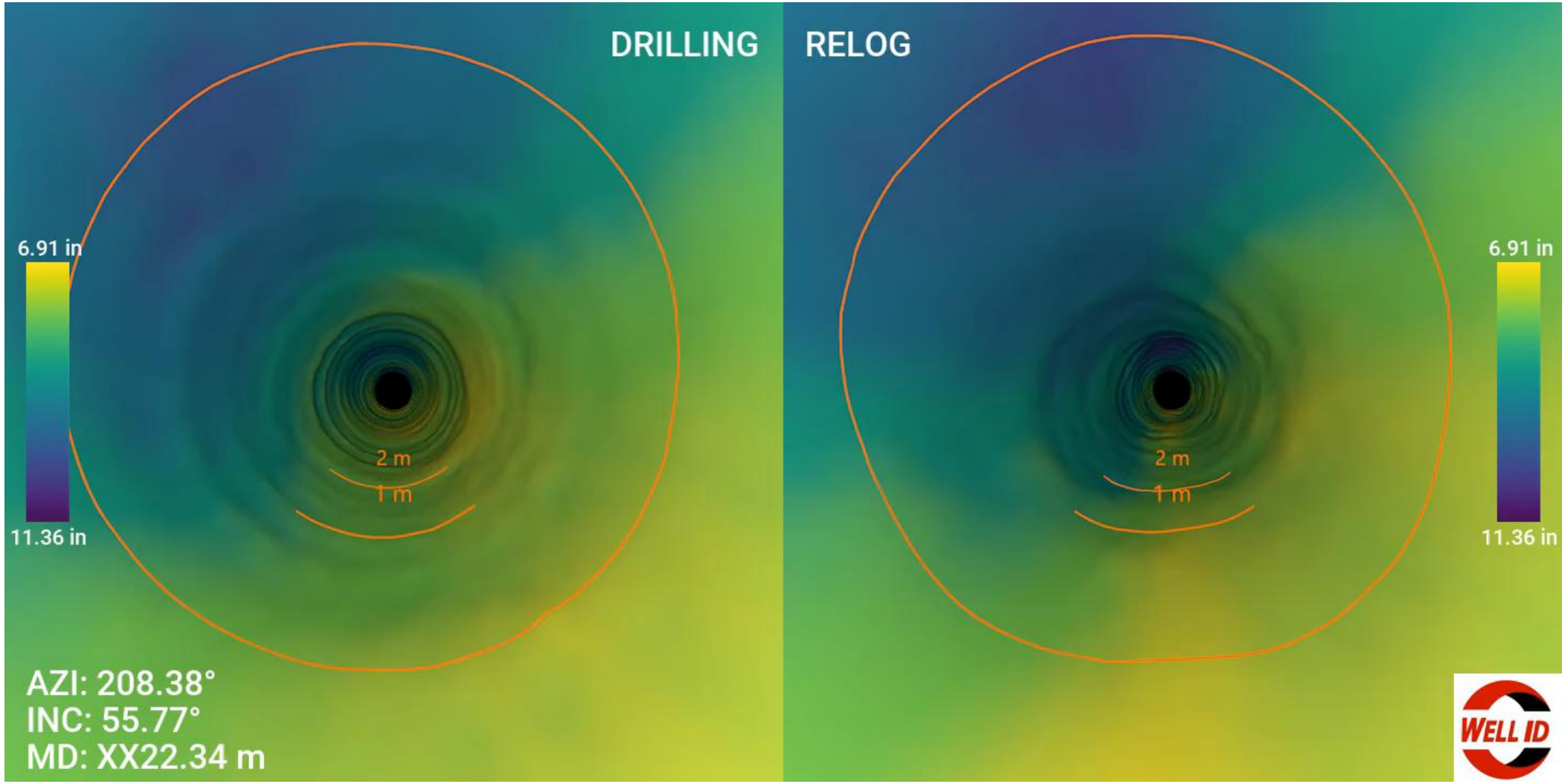
Associated technologies - imaging of boreholes

Associated technologies - 4D images – borehole time effects



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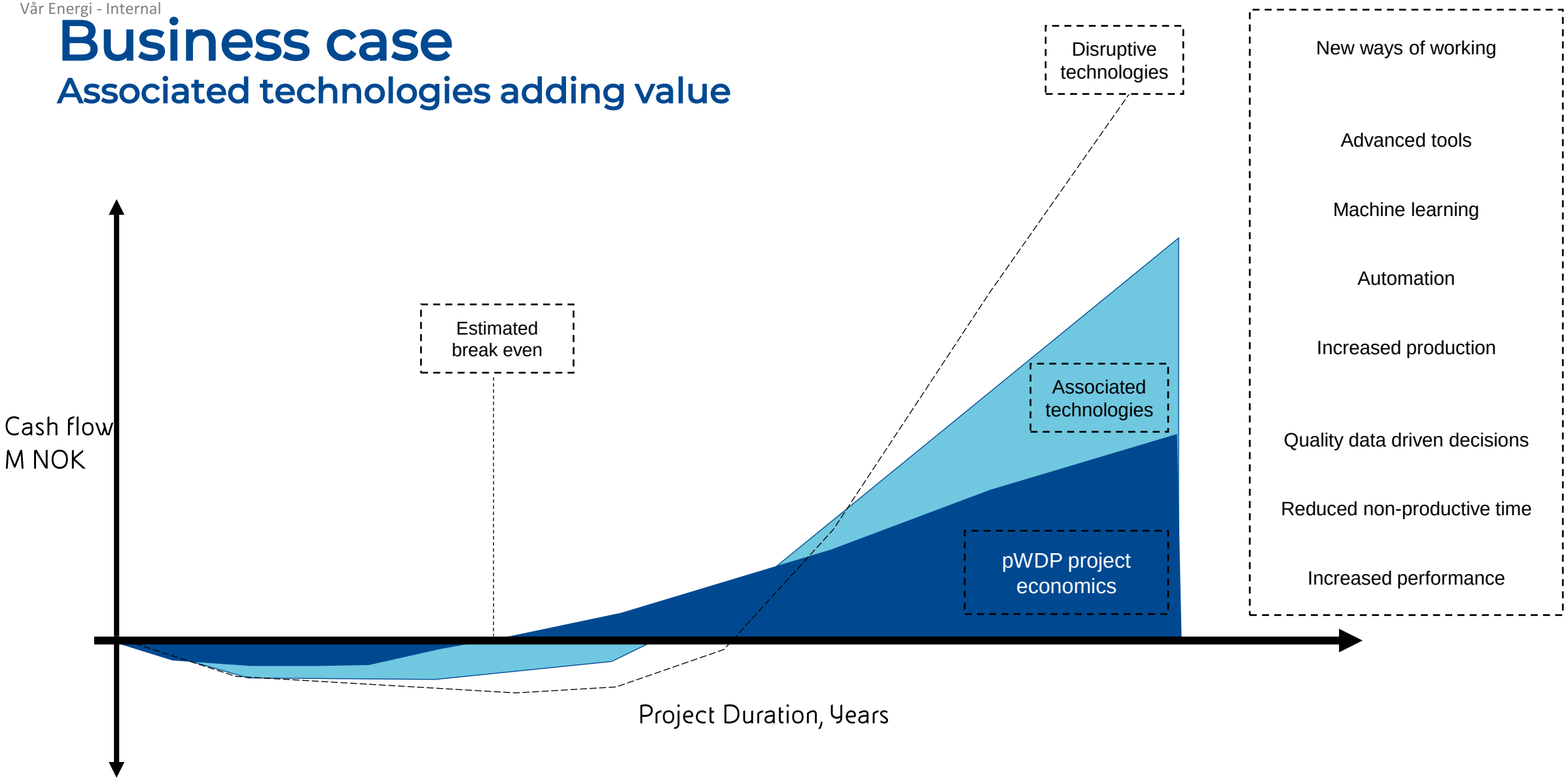
Business case

Associated technologies adding value



Future potential – potential game changer

- Omit EWL
- No batteries
- Compact BHA's
- Direct automation
- New drilling technique
- MPD/ CML integration
- Reduced emissions through improved performance

- Early kick detection
- Whipstock placement Liner hgr/ packer setting
- Cement optimization
- Perforating
- Cutting, pulling, fishing
- Subsea Landing Strings
- Completion running

 AI generated picture

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