

Collaboration in a Digital Environment to Increase Competitiveness



1 July 2018



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Venue: Clarion Hotel Energy Stavanger

Date: Thursday June 7th 2018

Program:

08:30 - 09:00: *Coffee and registration*

09:00 - 09:10: Welcome, Elisabeth M. Støle, NORCE

09:10 - 09:20: Introduction, Erlend H. Vefring, IRIS

09:20 - 09:40: Competitiveness – Changing tide on the NCS, Roger Pedersen, KonKraft

09:40 - 10:00: Digital Subsurface, Tina Todnem, [Equinor ASA](#)

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11:40 - 12:20: *Lunch*

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12:40 - 13:00: Drilling Data Hub, Eric Cayeux, IRIS

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OG21



Norway's technology strategy for the petroleum sector (OG21) was established in 2001 to identify technology priorities for efficient and environmentally responsible petroleum activities on the Norwegian continental shelf.

- We still need new technology to maintain our competitive edge.
- The opportunities related to new technology are larger than ever.
- Still one may ask: Are we too slow and conservative when it comes to take advantage of technology opportunities?

Drilling & Wells Digital Vision

From

To

Well Planning

Plan a well in three months

- Significant time spent collecting data
- Limited reuse of well plans
- Disconnected project plan, engineering and operations

Plan a well in a day

- All planning data structured and available (Reservoir model, Engineering, Support tools)
- Integrated workflow to build a digital twin blueprint
- Front end loading
- Prioritize standardized well design, equipment and tools

Drilling Operations

Semi-automated drilling

- Mixture of manual and automated controls

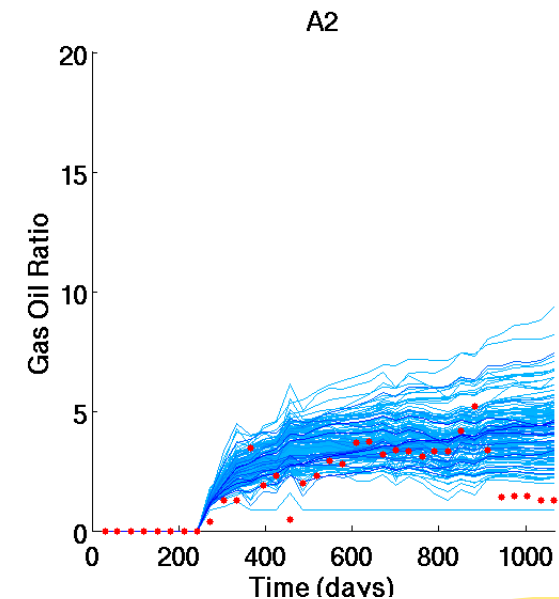
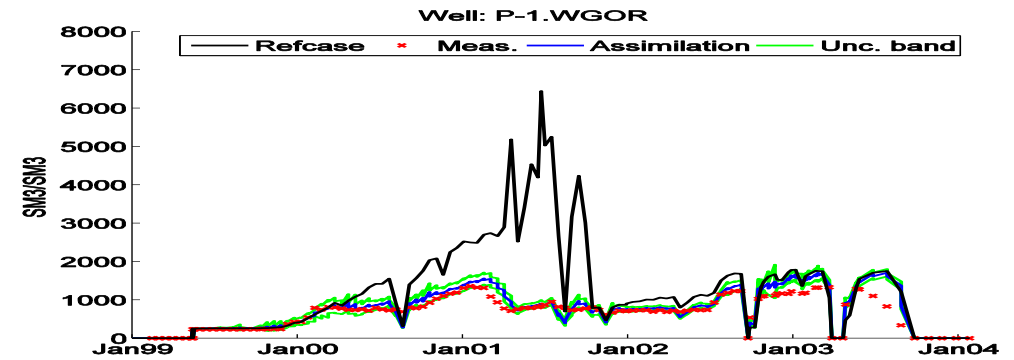
Autonomous drilling rig

- Sensors and algorithms to update the Digital Twin
- Machine learning to model ahead of bit and provide optimum performance
- More insight / Less uncertainty

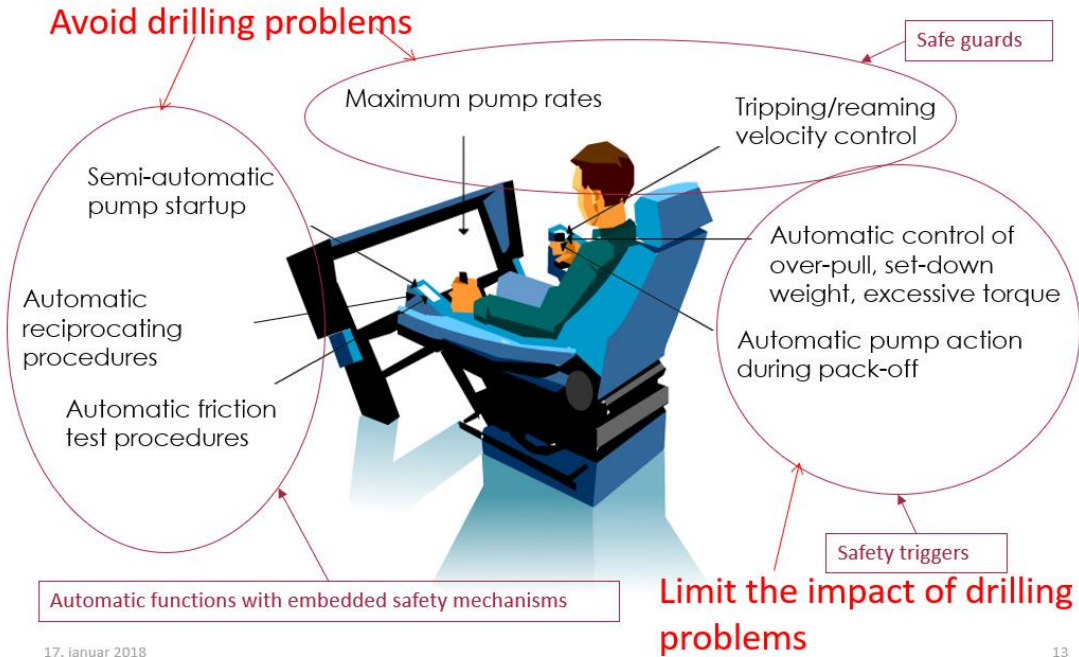


Reservoir data assimilation

- Assisted history matching with ensemble based methods
- “Integrated Workflow and Realistic Geology” (2012-2015)
- “4D Seismic HM”, (2015-2018)
- Consultancy on field studies



Drilling Automation / Digital Drilling



Drilltronics at Songa Enabler



Geosteering for IOR



› Background

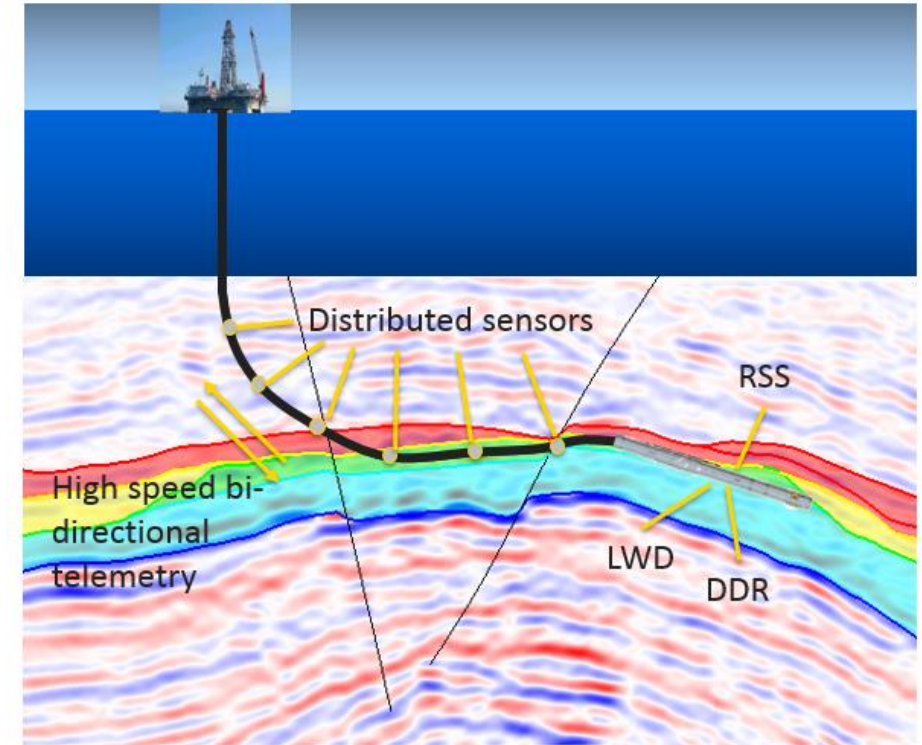
- Geosteering decisions need to balance production potential vs drilling and completion risks
- Uncertainties should be taken into account in a consistent manner
- Improvements in downhole logging capabilities (Deep EM, high speed telemetry) and processing capabilities

› Objective

- Develop improved methodology for geosteering by continuously updating the earth model based on LWD measurements including Deep EM

› Status

- JIP with support from RCN recently started.
- Partners: IRIS, UiB, UiS, UT Austin, Equinor, ENI, AkerBP, Baker Hughes
- Prototype of Decision Support System demonstrated feb. 2018



Demonstration of Automated Drilling Process Control – DEMO 2000 project

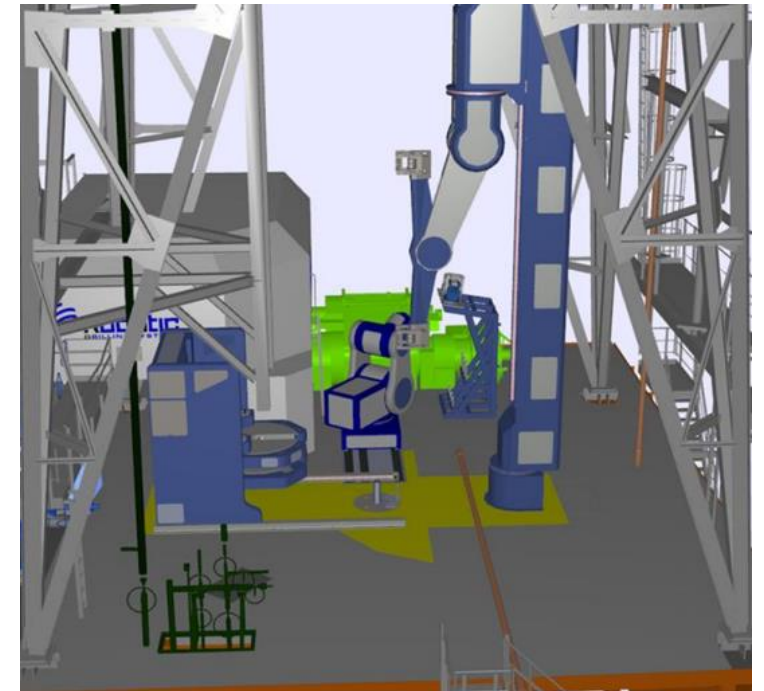


Objective:

- Automatic management of drilling process to keep high performance with acceptable risk levels.

Method:

- Fully robotized drilling rig
- New generation DCS with open interface
- Improved suite of rig sensors
- Model-based drilling process automation



Drilling Data Hub Demonstrations – DEMO 2000



Objective:

- Demonstrate multi-vendor integration between data providers and data consumers using full version of Drilling Data Hub using OpenLab Drilling

Why:

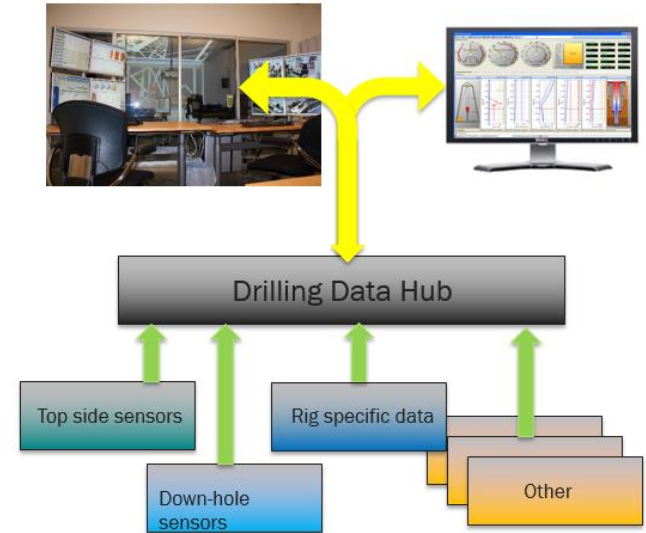
- Need for easy and reliable access to real-time data for processing by more or less complex applications

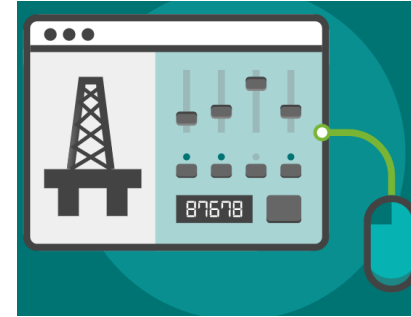
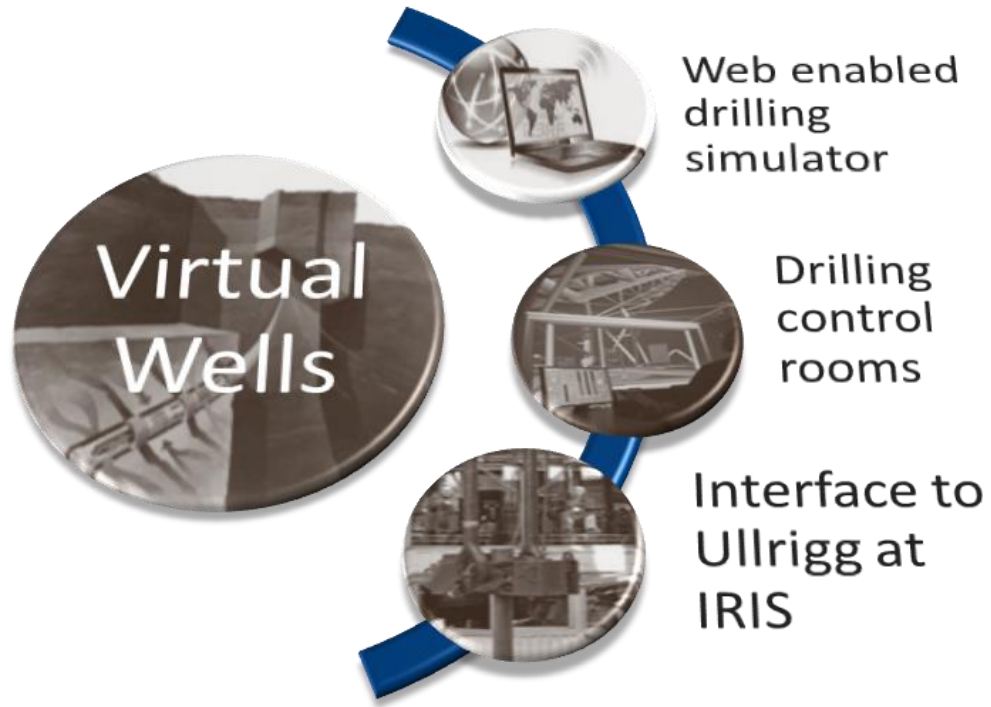
What:

- Real-time data acquisition and aggregation based on semantical descriptions

Status:

- Demonstrations and workshop on use cases held
- Dialogue with SPE DSATS, OGDQ, Energistics and NOG
- Project support from Research Council of Norway, AkerBP, ENI, Equinor, Total, Halliburton, Odfjell and Sekal.





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