

# Doing more with drilling data

Early warning real-time systems and appropriate visualization of well data helps to reduce drilling risks and NPTs

October 24, 2012  
Kuala Lumpur

# Main topics

- Efficient use of real time data
  - How: Capture, streaming, processing, visualisation
- Ways to utilize drilling data
  - How: Visualisation, data integration, real-time processing
- Early warnigs
  - How: Process of realtime data to detect early signs of hole problems
- Managing the risk of data overload.
  - How: Real-time dt processing, visualisation, easy to use
- Visualization is the key for utilization of drilling data
  - How: enabling cross-disciplinary work, co-visualisation interactive decision making
- Real-time data influence on success of operation
  - How: Turning data into usable information for decision makers in order to reduce risks nd NPTs.

# Use of real time data - Early Warnings

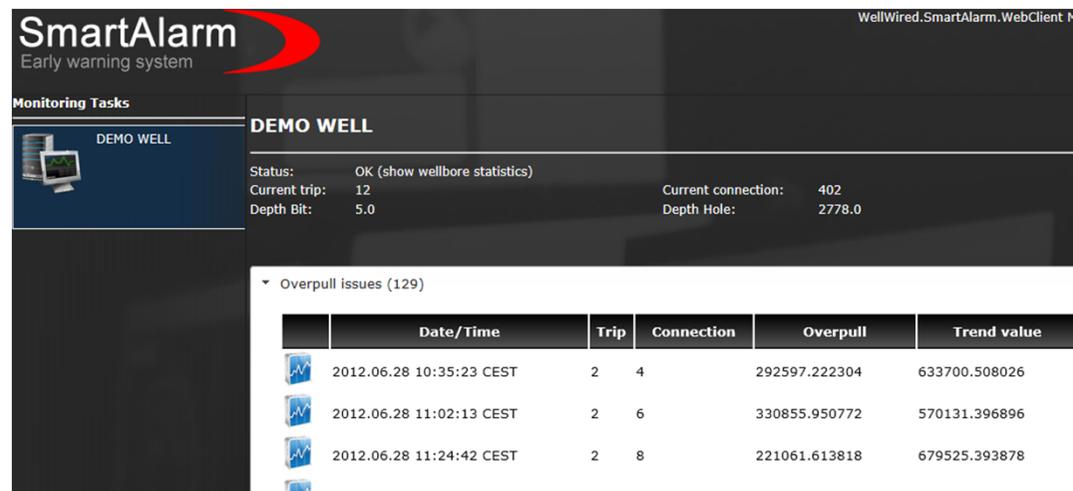
## WellWired.SmartAlarm

- Processing of real-time data can help the personnel in timely identification of possible hole problems in order to react, avoid escalation and cure them.
- Early identification of borehole problems can contribute to reduce NPTs.



# Hole problems Symptoms

- In many cases no sufficient information is available to model in real-time the whole wellbore construction process, however we can indirectly detect some downhole events by monitoring their “symptoms” analyzing real-time data.

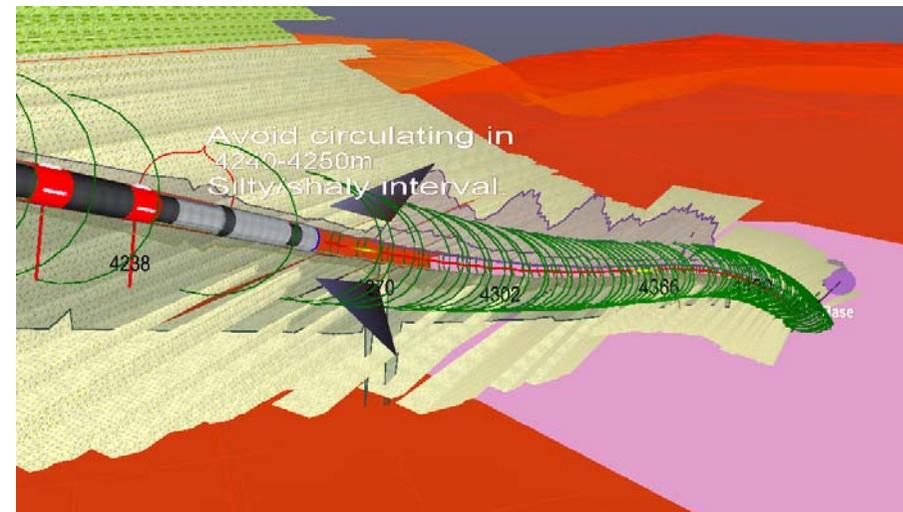
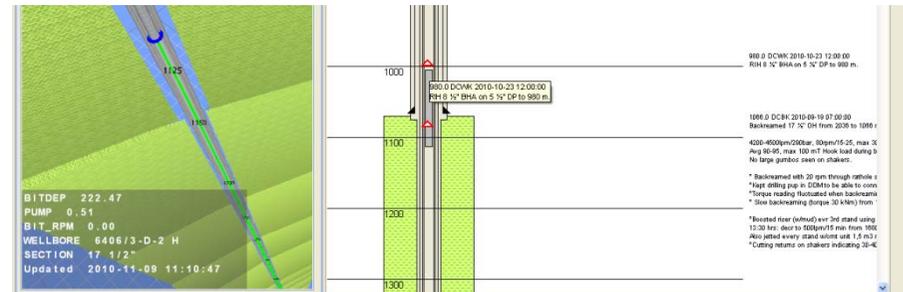


The screenshot displays the SmartAlarm web interface. At the top left, the logo reads "SmartAlarm Early warning system". The top right corner shows the URL "WellWired.SmartAlarm.WebClient Mo". The main content area is titled "DEMO WELL" and includes a "Monitoring Tasks" sidebar on the left. The central panel shows the well's status as "OK (show wellbore statistics)" and provides key metrics: "Current trip: 12", "Depth Bit: 5.0", "Current connection: 402", and "Depth Hole: 2778.0". Below this, a section titled "Overpull issues (129)" contains a table with the following data:

	Date/Time	Trip	Connection	Overpull	Trend value
	2012.06.28 10:35:23 CEST	2	4	292597.222304	633700.508026
	2012.06.28 11:02:13 CEST	2	6	330855.950772	570131.396896
	2012.06.28 11:24:42 CEST	2	8	221061.613818	679525.393878
	2012.06.28 11:50:40 CEST	2	10	200010.054167	500000.000000

# Data visualization and integration

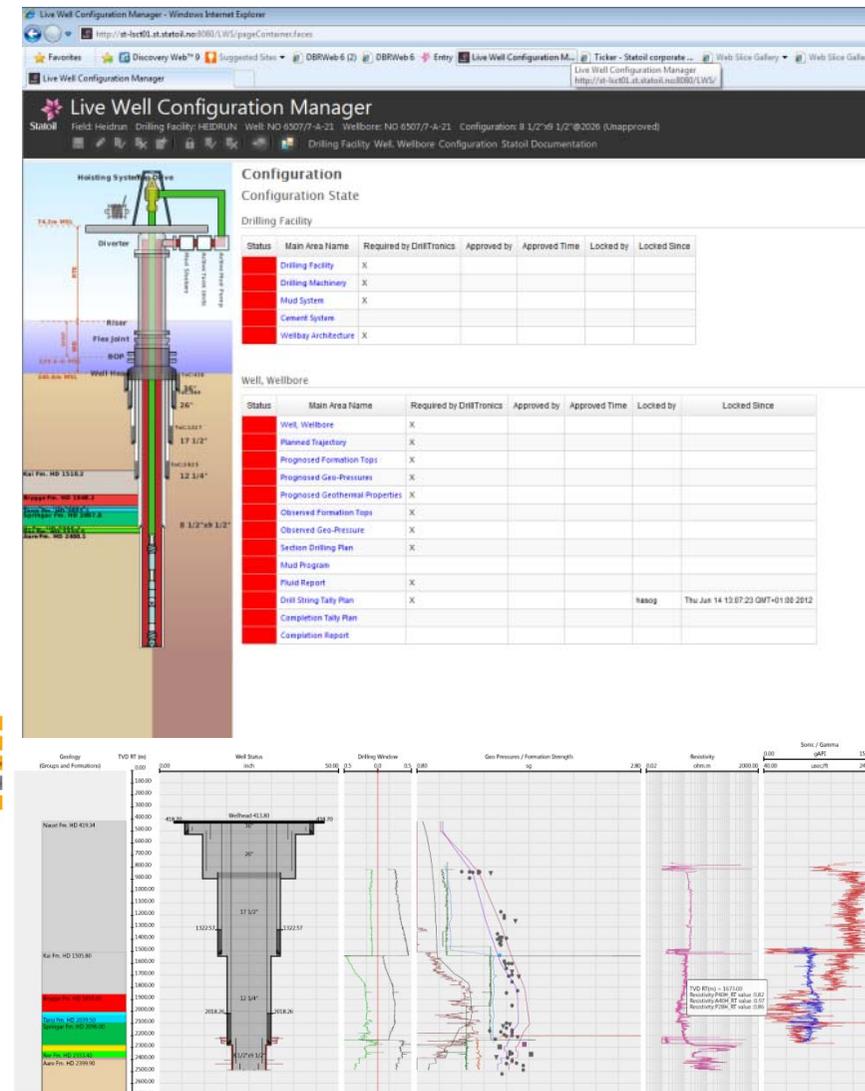
- Integrated view of multiple datasources
  - Planned data
  - Reported data
  - Interpreted measurements
  - Real time measurements
- integrated co-visualisation during drilling / operations for a cross-disciplinary team of engineers and experts



# web applications - delivering integrated data

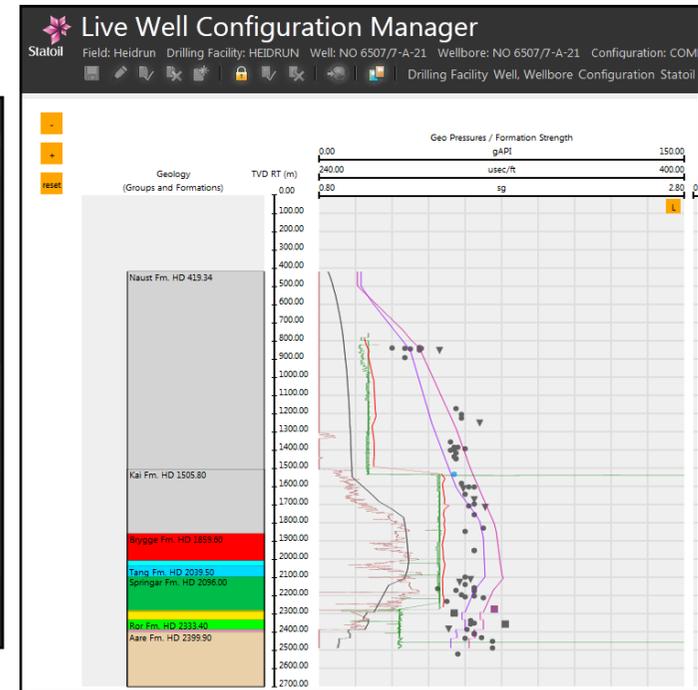
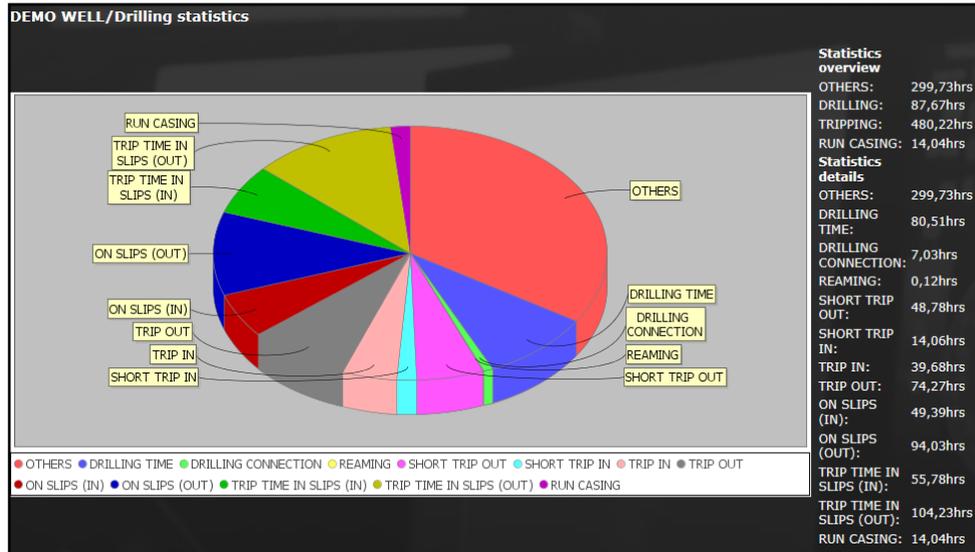
## Live Well Configuration Manager

- Automated dataflow from planning to operational systems
- Dynamic updates based on revised plans
- Reduced staffing for data-entry
- Increased data quality for operative crew
- Increased collaboration between onshore and offshore personnel



# Key data can be reported in real-time

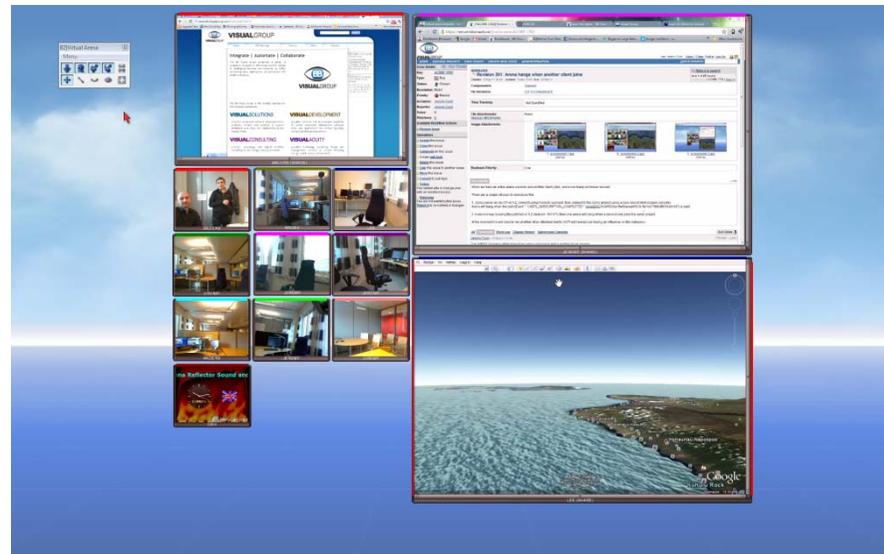
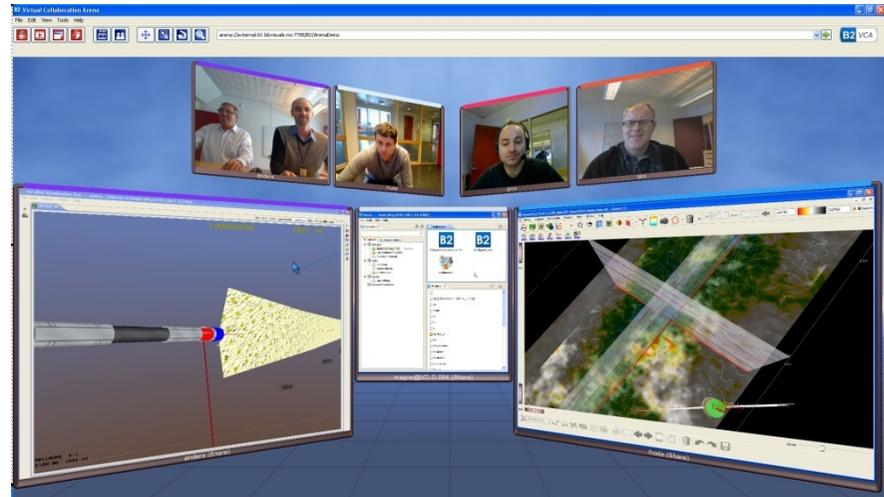
- Real-time data to become usable information should be processed and presented visually in order to be immediately evaluated for operative decision.



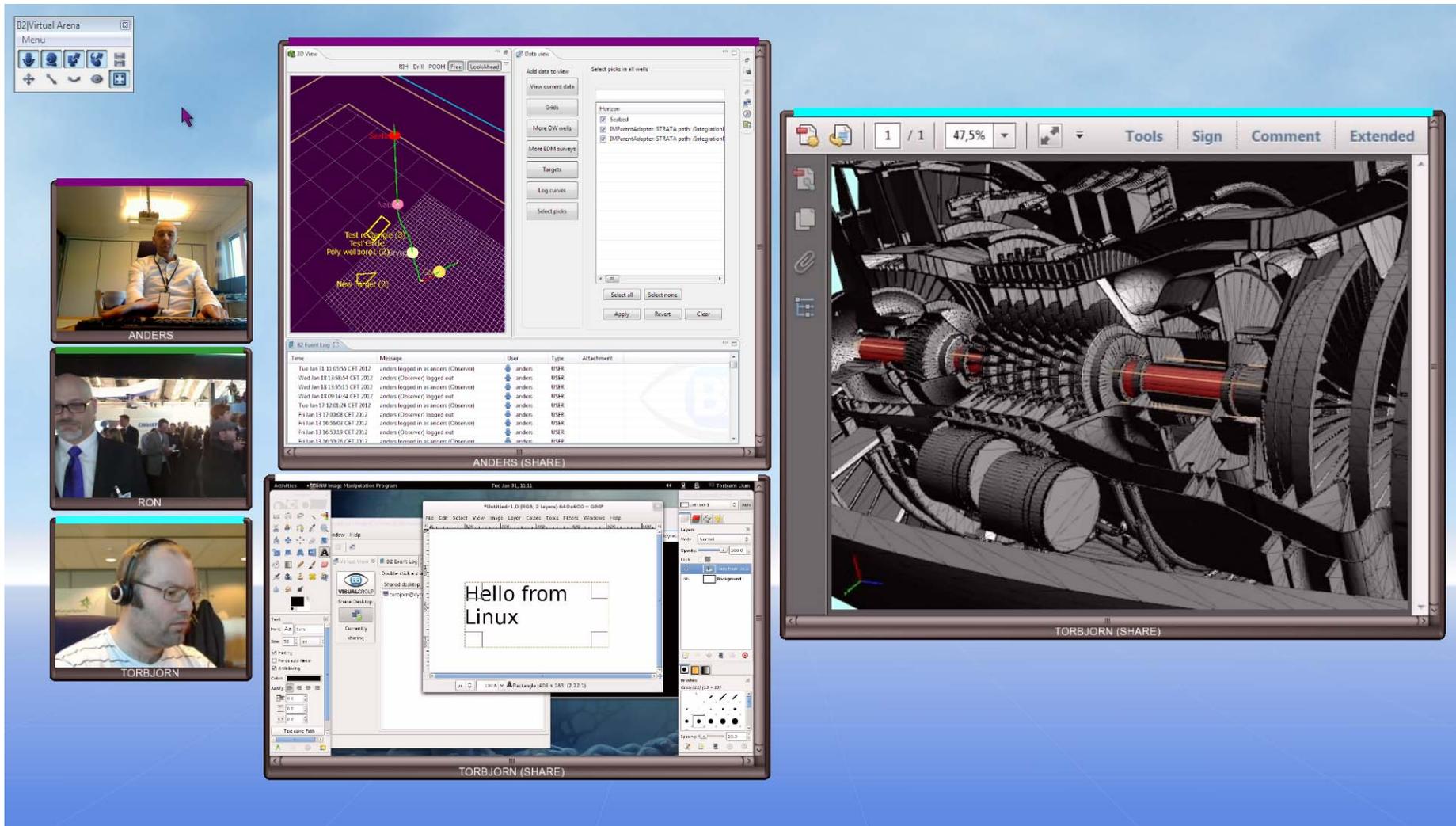
# Allow cross-discipline teams to make decisions

## B2 | Virtual Arena

- Application to support efficient virtual interactive meetings and work-sessions with video, audio and sharing of multiple technical applications within an integrated 3D scene



# Collaborative work environments examples





Can be used from your regular work place



# Real-time data influence to success of operations

Use of real-time data can contribute to success of operations by:

- Reducing risks
- Optimize the drilling process
- Allowing timely and effective decisions
- Enabling interdisciplinary and remote collaboration