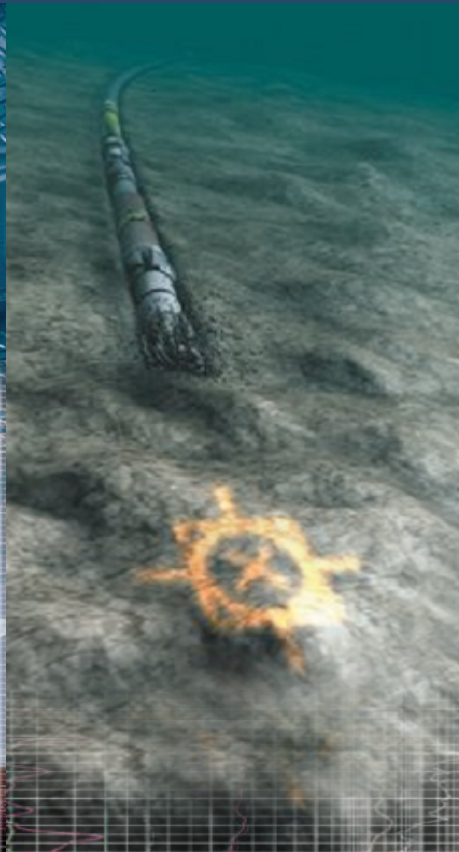


Drilling & well operations

SemanticDays April 2008



hemming-jansen@computer.org

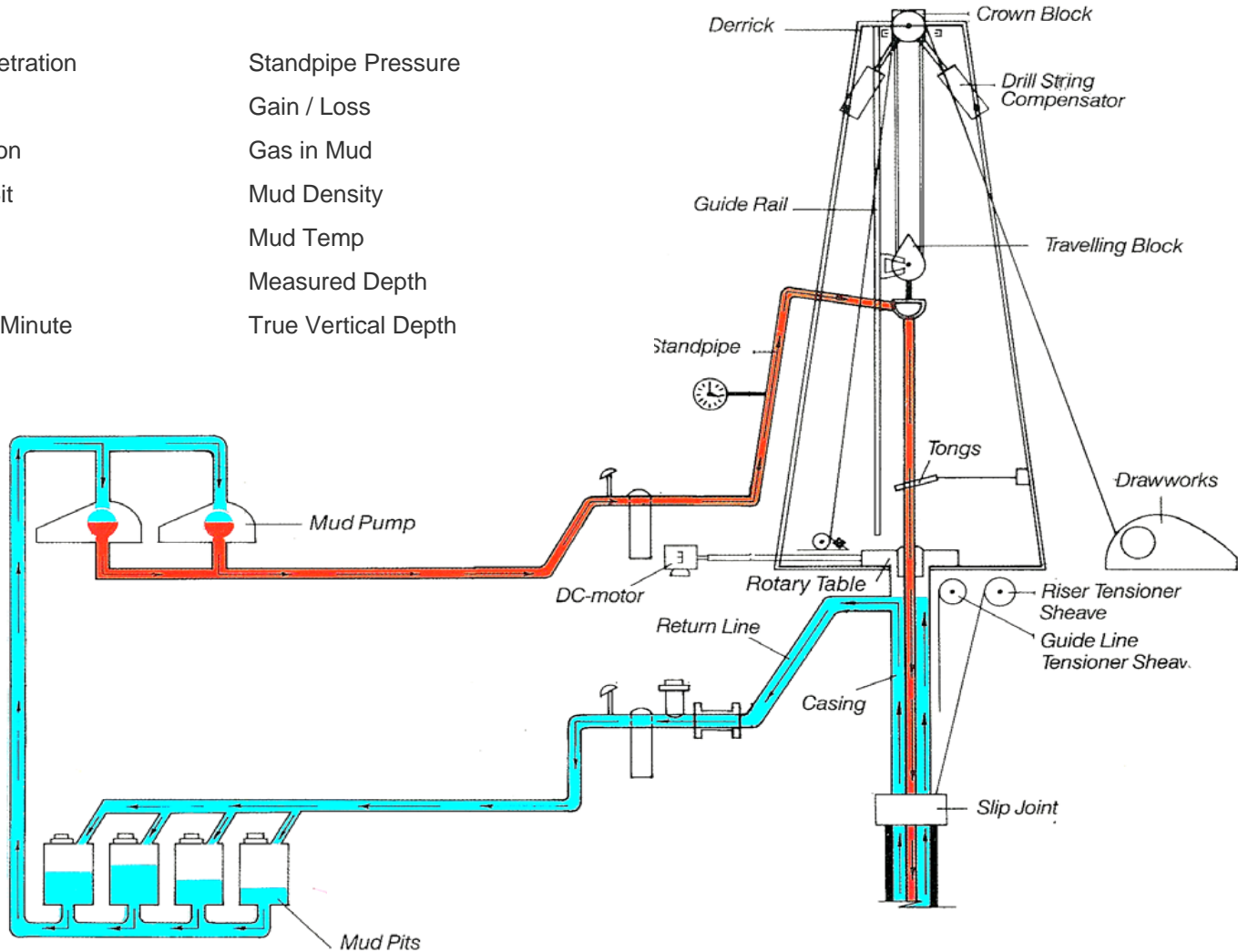
National Oilwell Varco

- **Founded 1862**
- **Revenues 2007: US\$ 9,7B**
- **Employees: 40 000+**
- **Technical leadership in drilling equipment and systems**
- **8 Business Groups: Presenting today is Rig Solutions**
- **25 years of experience with integrated drilling control and information systems**
- **Corporate HQ, Houston/Texas**



Drilling process

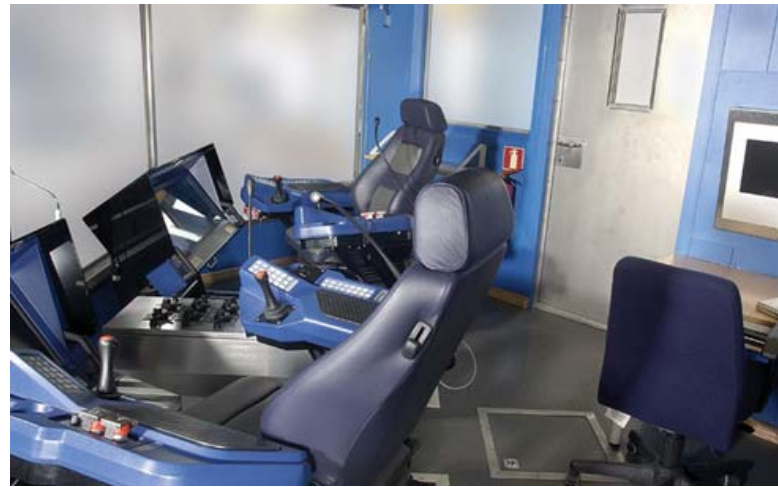
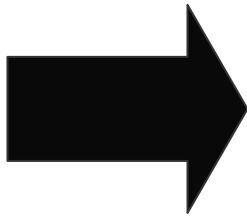
- | | |
|---------------------|---------------------|
| Rate of Penetration | Standpipe Pressure |
| Hookload | Gain / Loss |
| Block Position | Gas in Mud |
| Weight on Bit | Mud Density |
| Drill Torque | Mud Temp |
| RPM | Measured Depth |
| Strokes per Minute | True Vertical Depth |



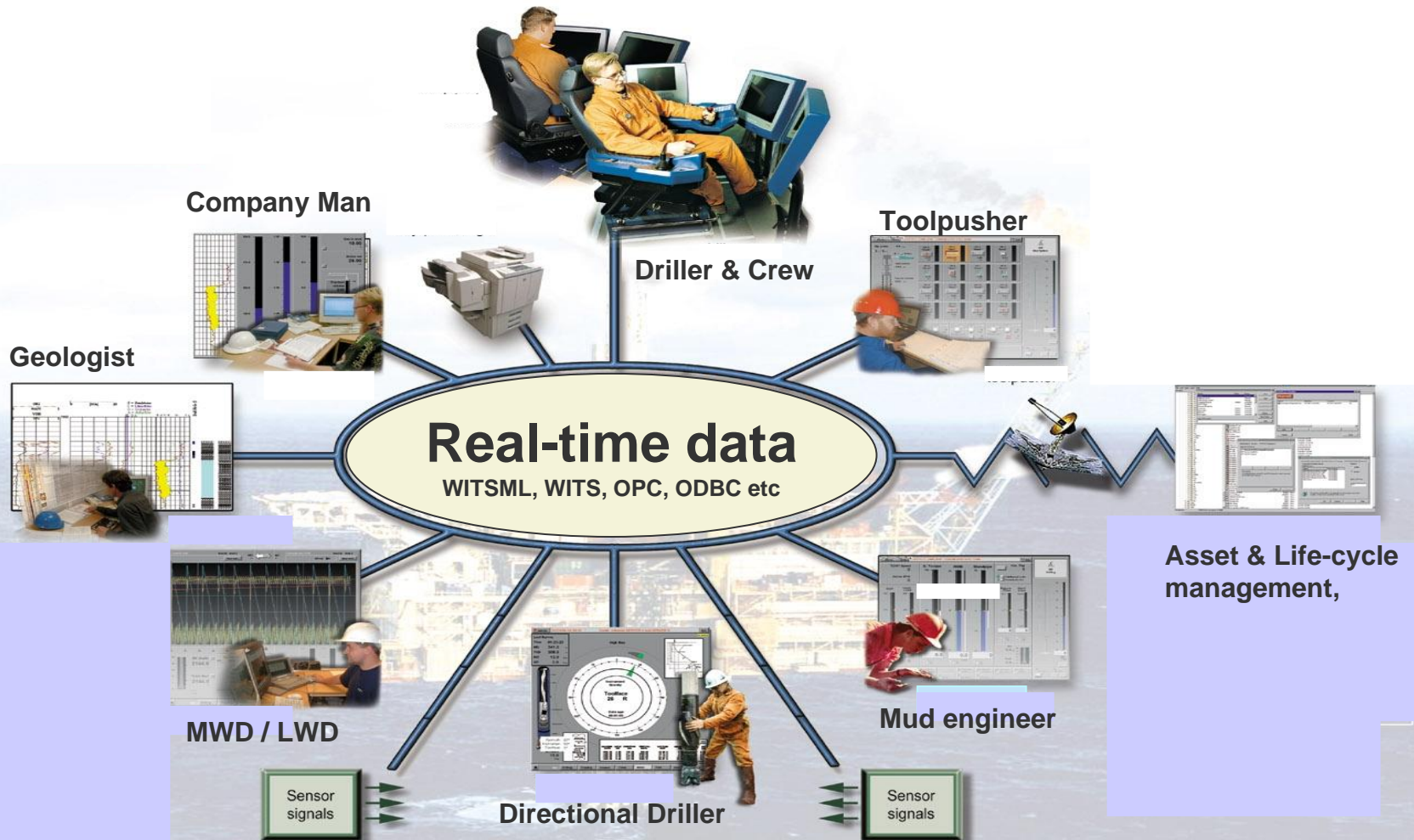
Drilling Process Control



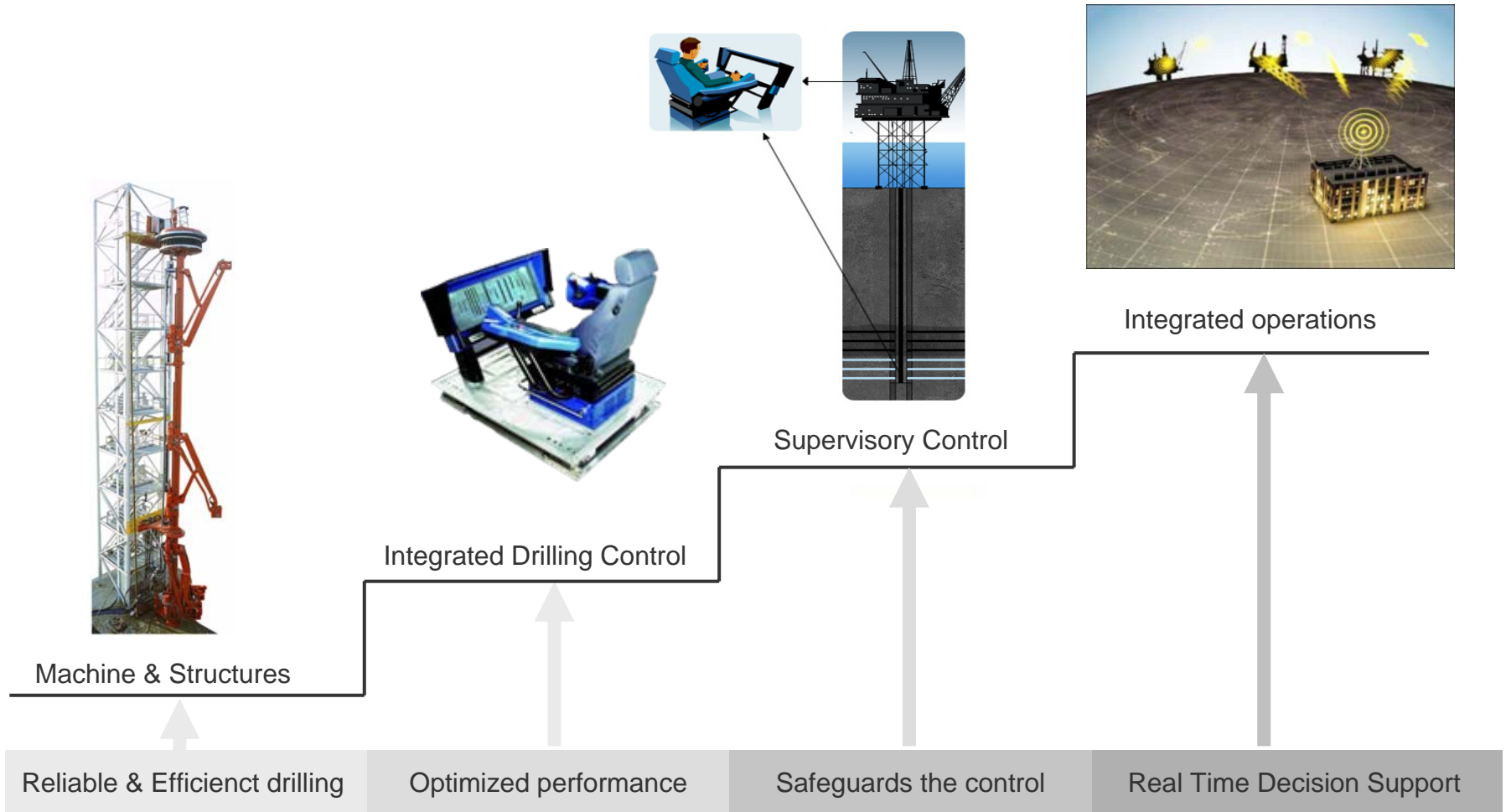
Towards integrated control



Real-time decision making



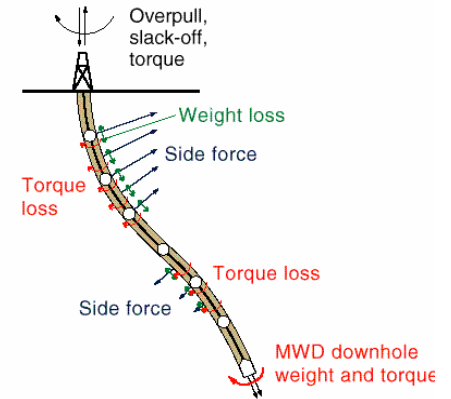
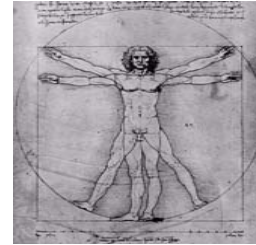
Integrated Drilling Control



Integrated Drilling Control

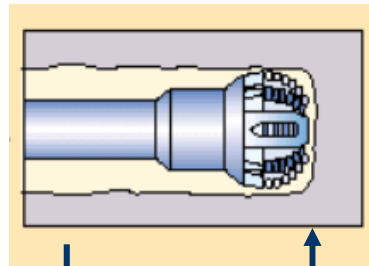
Block Position
RPM
Flow Rate

Drilling Process



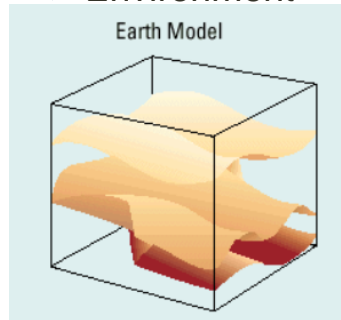
Rig State

Drilling System



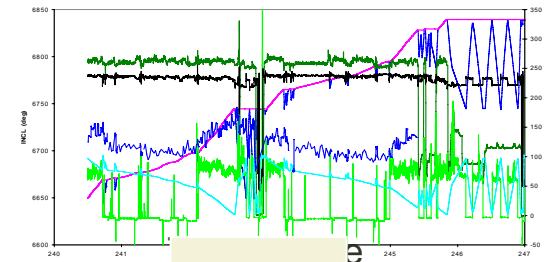
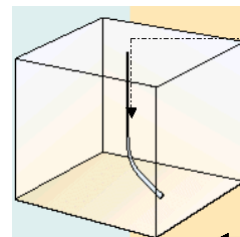
Drill String
Fluid
Hydraulics
T&D
....

Environment



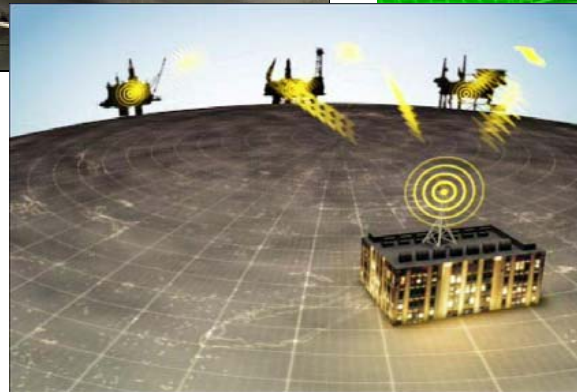
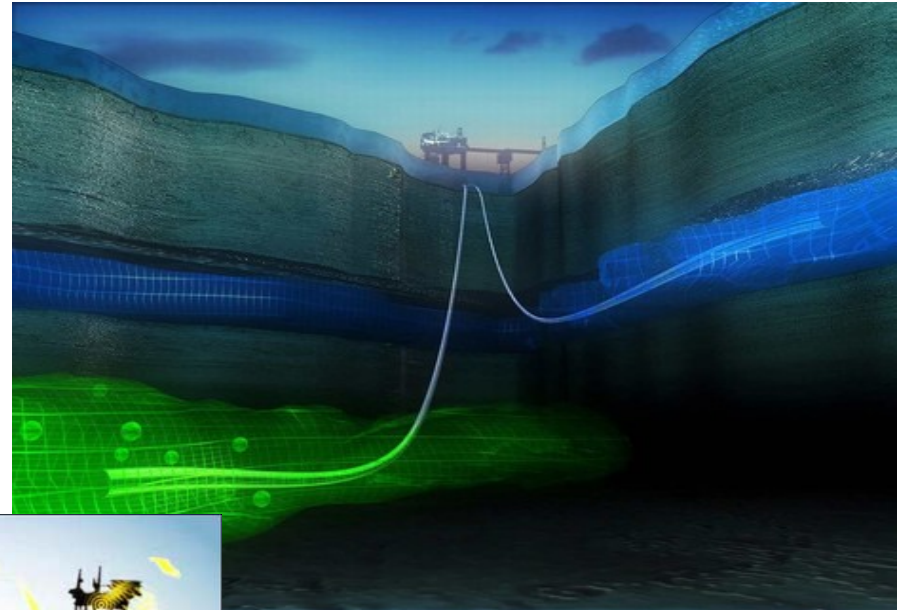
Geometry
Stress
Properties

Wellbore



The Vision

... integration across locations, companies and disciplines



PCA SIG Drilling & Completion Ontology

Purpose; to create & maintain drilling-related ontology's in ISO-15926:

- Continue ontology for drilling based on WITSML, started in 2005 in the IIP project
- Evaluate SA-WSDL (W3C Standard)
- Maintain and possibly further develop the ontology for Daily Drilling Reports, NPD
- Pipe Inspection Reporting, TrackID, StH
- Drilling Control ontology, JIP “Integrated Operations in the High North”

PCA SIG Drilling & Completion Ontology

- Meetings two times per year, ad-hock workshops when needed
- Active participants; IRIS, UiS, Baker Hughes, TrackID, NOV, Cap Gemini, DNV, Energistics, OLF, PCA
- Committed to participate; StatoilHydro, BP, Conoco Phillips
- need more representatives from Oil Companies, Service Companies and Technology providers.

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