Drilling Systems Automation Roadmap

An industry need looking 10 years into the future

Driver: John de Wardt, DE WARDT AND COMPANY

Presenter
Robin Macmillan
NOV
Industry Challenges

- Safety
- Environmental Responsibility
- Wellbore quality
  - Predictable Production
- Knowledge Capture
  - Training
  - Repeatability
- Predictable Logistics
- Reliability
- Public Relations
- Efficiency
  - Getting more wells from the same rig
  - Making projects profitable
Adoption Challenges

- Fragmented Industry – Interoperability
  - How do we all participate?
- ‘States’ require definitions
  - Drilling, Well, Equipment, Automation
- Geological Adaptability
- Communication Protocols
- Sensors
  - Whose? – Calibration?
- I.P. protection
- Liability
What Now?

SPE/IADC-173010
Drilling Systems Automation Roadmap
The Means to Accelerate Adoption

Affiliated with: SPE / IADC / AUVSI
Process from Sandia National Laboratories
Eight challenge areas address the roadmap spectrum

- Systems Architecture – John de Wardt, Slim Hbaib
- Communications – Moray Laing
- Instrumentation and Measurements Systems – John Macpherson
- Drilling Machines and Equipment – Robin Macmillan
- Control Systems – Calvin Inabinett
- Simulation Systems and Modeling – Blaine Dow
- Human Systems Integration – Amanda DiFiore, Mario Zamora
- Industry Standards and Certification – Mark Anderson
DSA – Roadmap - The Process

**Planning and preparation**
- Establish Steering Committee; determine scope, boundaries, and implementation approach
  - 3 people

**Visioning**
- Conduct senior-level vision online collaboration meetings to identify long-term goals and objectives
  - ~25 people

**Roadmap development**
- Conduct online collaboration meetings to identify and prioritize needed technologies, policies, and time lines
  - 50 - 150 people
- Develop roadmap document, launch strategy, and tracking systems

**Roadmap implementation and revision**
- Conduct expert workshop(s) to reassess priorities and time lines as progress and new trends emerge
  - 50 - 150 people

**Time Required**
- Phase I: 2 months
- Phase II: 2 months
- Phase III: 10 months

**24 months – all volunteer**
Workload from current state to Stage I report state

Integration work is the linkage between the 8 challenges to form a matched timeline for 10 years development.
Proposal: Fund a J.I.P. to compile Drilling Systems Automation Roadmap Stage I Report

$100,000
Consultant to lead and facilitate
Industry expert volunteers / Specialist consultant(s) for expertise
6 Months duration from funding
10 companies at $10,000 each

Scope for the Pricing Phase II – Stage I Report

Funds to:

• Manage challenge teams to deliver on time
• Integrate challenge team time lines and coordinate interdependencies
• Facilitate online meetings to keep maintain momentum
• Draft Stage I report - issue for industry review
• Engage consultant project driver and advisors
Structure of the Report

• Executive Summary
• Purpose, Scope and boundaries
• Needs for automation / needs for a roadmap
• Vision - define the product
  • Land - multiple wells & offshore exploration
• Describe development in terms of systems architecture and the 7 major technology areas
  • Problem statement, Performance targets, Forward plan
• The map
Benefits to funding companies

• Interactive session with employees explaining details of the report.

• Publish to the Industry via IADC and SPE

• Updates (D.O.D. updates every two years)
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Who’s joining the JIP?

http://www.iadc.org/DSA-Roadmap-JIP