JIP for Drilling Systems Automation Roadmap
An industry need looking 10 years into the future

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Proposal: Fund a JIP to compile Drilling Systems Automation Roadmap Stage I Report

$100,000
Consultant to lead / facilitate / undertake work
Industry expert volunteers / Specialist consultant(s) for expertise
Expenses (minor)
6 Months duration from funding
10 companies at $10,000 each
High value report for industry

- Background
- The Process
- Products: Phase I / Phase II / Phase III
- Value proposition
- Scope and Pricing
- Benefits to industry
Need for an industry roadmap

• Drilling industry is increasing the application of automation in a fragmented manner
• Desire and need to develop a highly automated system
  • End state still requires a common definition
• Full automation in other industries has yielded significant value
  • Wharf system: productivity + 18% / maintenance − 27% / fuel − 22%
DSA – R Roadmap Process

Phase I
- Planning and preparation
  - Establish Steering Committee; determine scope, boundaries, and implementation approach
  - Time Required: 2 months
  - People Involved: 3 people

- Visioning
  - Conduct senior-level vision online collaboration meetings to identify long-term goals and objectives
  - Time Required: 2 months
  - People Involved: ~25 people

Phase II
- Roadmap development
  - Conduct online collaboration meetings to identify and prioritize needed technologies, policies, and time lines
  - Time Required: 10 months
  - People Involved: 50 - 150 people

- JIP??

Phase III
- Roadmap implementation and revision
  - Conduct expert workshop(s) to reassess priorities and time lines as progress and new trends emerge
  - Time Required: Recurring (1–5 years)
  - People Involved: 50 - 150 people

Total Time: 24 months – all volunteer

Affiliated with:

[Logos of SPE International and others]
Products: Phase I / Phase II

Phase I
Preparation / Visioning

- Launched
- Adopted SNL Roadmap process
- Formed steering committee
- Affiliated IADC / SPE / AUVSI
- Advisors incorporated
- Developed:
  - Needs for automation
  - Needs for Roadmap
  - Vision
  - Scope
  - Boundaries
- Defined 8 challenges
  - Assigned committee member to lead each

Completed
Publications
To be developed

Phase II
Developing / Reporting

- Designed template for each challenge/product
- Industry workshops with IADC:
  - Vienna June 2014
  - Galveston Sept 2014
- Challenges developed forward looking content
- Developed DSA Decision
- Control frame work from ISA 95
- Published IADC / SPE Paper March 2015:
  - DSA Roadmap Update
  - Publish IADC / SPE papers
    March 2016:
    - Human Systems Integration in Automation
    - Systems Architecture and Operations States for Drilling and Completion Automation

Stage I Report
- Develop fully each challenge
- Compile all information into report
- Issue report to industry

Stage II Report
- Obtain feedback on Stage I report
- Hold [IADC] workshop to debate Stage I report with industry experts

Affiliated with:
Society of Petroleum Engineers
IADC
AUVSI

JIP DSA-R September 2015 DEC Houston.
Author: John de Wardt / Presenter: Moray Laing
VALUE PROPOSITION

The well drilling and completion industry is highly fragmented, it will require structure to enable the interoperability required to deliver functioning automated / autonomous systems.

The DSA-R will define supplier opportunities. Clear communication can overcome fear. Other industries have realized large business value from a comprehensive automation application
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.
Scope for the Pricing Phase II – Stage I Report

• Pricing has been developed to:
  • Coach / support challenge teams that are behind on delivery
  • Integrate challenge team time lines and highlight interdependencies
  • Facilitate online meetings to keep committee in full endorsement
  • Draft Stage I report, review with committee and issue for industry review
Pricing basis
Phase II - Stage I report

- Pricing has been developed based on:
  - Industry consultant John de Wardt (special rate) - $80,000
  - Ad hoc specialist consultant support (such as Tom Sheridan) for some expert input - $10,000
  - Expenses – primarily trip(s) to Houston to present the output - $5,000
  - Total cost for Stage I report due 6 months after funding - $100,000 ($95,000 plus contingency of $5,000)
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
- Current State
- Describe development in terms of systems architecture and 7 challenges (major technology areas)
  - Functional description / performance targets / current situation / problem statement / way ahead
- Represent graphically in a map
- Value proposition for integrated development of Drilling Systems Automation Roadmap
Benefits to funding companies

• No fee, half day interactive session in Houston, Tx with employees explaining details of the report.
• Publish to the Industry via IADC and SPE
• Non funders must pay $15,000 upfront for Stage II report funding if they want an interactive half day session on Stage I report.
Proposal: Fund a JIP to compile Drilling Systems Automation Roadmap Stage I Report

$100,000
Consultant to undertake work
Specialist consultants for expertise
Expenses
6 Months duration versus expected 2 years on non funded schedule