Crossing the Technology Chasm

A Special Presentation for:
Petroleum Equipment Suppliers Association
5 April, 2013
Presentation Outline

• Brief history of oilfield drilling technology
• Technology acceptance issues in oilfield
• Keys to accelerated technology acceptance
• Steps to crossing the technology chasm
Early Drilling Technology Progress

Early 1800’s
Oilfield Technology Chasm

Source: Geoffrey Moore
A Few Good (Bad) Examples!!

- Sub-sea trees
- GTL
- MWD
- Horizontal drilling
- 3D seismic
- FPSO
- Multiphase metering
- Subsea processing
- Downhole separation
- 4C seismic
- Slag cement
- Expandable casing
- Dual gradient drilling
- Seismic while drilling
- Smart wells
- Deepwater slimhole drilling
- Visualization

- Idea to prototype
- Prototype to field test
- Field test to commercial
- Commercial to 50% penetration

- Periods with low activity
- Not yet successful commercialized

McKinsey & Company
E&P Pace of Innovation vs. Other Industries

Average duration of the four phases in different industries

- **Consumer products**
- **Medicine**
- **Telecom**
- **E&P industry**

- **Orange:** Idea to prototype
- **Yellow:** Prototype to field test
- **Green:** Field test to commercial
- **Blue:** Commercial to 50% penetration

Time (years)
Oilfield Technology Acceptance Observations

• Technology is the intellectual currency of oilfield service companies/manufacturers

• Oilfield service companies are unsurpassed at developing technology, but often uninspiring in choosing which technology to introduce and how to accelerate its acceptance

• Good marketing will sell little of an inferior product -- bad marketing will sell even less
Oilfield Technology Acceptance Factors

- Immediacy and magnitude of technology benefit is the engine that drives operator acceptance.
- Level of “early” reliability can affect the slope of the technology acceptance curve.
- Cost of ownership in comparison to previous generation of technology can be an inhibitor.
Decision Strategies Technology Cube

- 3 X 3 X 3
- 27 cubicles
- Plot each axis
- Rough rate of acceptance can be estimated

Source: Decision Strategies
Failure Modes In Technology Acceptance

• Introducing poor or niche technologies
• Commercializing technology that is not ready
• Poor product/service introductions
• Not understanding operator risk perceptions
• Too aggressive pricing schemes
Steps to Crossing the Technology Chasm

• Technology providers must become better listeners

• Focus: What they will pay for – not what they “want”

• Develop better operator feedback mechanisms

• Better marketing/new product introductions

• Form more alliances with oil companies

• Conduct more market research