



RigLink

Virtually linking rig operations with solutions centers to create safe and productive working environments

The Village School



Problem

• Human Safety on Rigs

- Over 349 severe injuries reported on US rigs per year
- Large mental health incidence rates among rig workers
- Rig working environment is far riskier than an office space

• Remote Rig Location

- Lack of communication between operations teams and management resulting in poor decision making, which:
 - Decreases operational efficiency
 - Minimizes utilization of human resources and skills



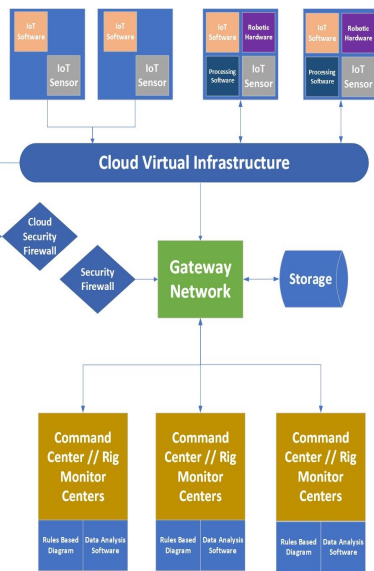
Solution - Data Interconnectivity

• Retrofit sensors

- Existing sensors on rig replaced with wireless sensors to create an internet of Things (IoT) in cloud:
 - i.e pore pressure sensors, rig floor safety alarms, etc.
- Sensor data sent to gateway for analyzing

• Data transported to cloud

- Users connect via internet to the cloud to access rig data and manage operations instantaneously
- Allows for access from servers anywhere on Earth



Solution - Data Interaction

• Remote access using Virtual Reality (VR)

- Creates immersive experience utilizing 3D virtual interactive model of rig for user accessibility
- Users interact with model to perform standard operations and anticipate possible equipment failures based on their work capacity (maintenance, geology, logistics, etc.)

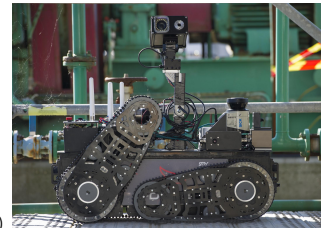
• Alterations in virtual model communicated to rig

- Changes made are reflected on rig in real time

Solution - Automation

• Implement autonomous machinery to manage rig

- Robots will enact on instructions sent by remote command centers to evaluate infrastructure integrity and manage drilling proceedings
- Only 10 workers specializing in different fields will remain on the rig to oversee operations, all others will be relocated onshore
- All robots fitted with 360 degree 4K cameras which allow users to view live rig footage for surveillance (Photo: ESA)



Impacts and Cost Benefit Analysis

• Improves Human Safety

- Relocating people onshore from rig eliminates current health hazards posed by rig working environment reducing risks

• Operations Connectivity Boosted

- Better use of human resources due to enhanced communication with worldwide teams and rig from onshore relocation

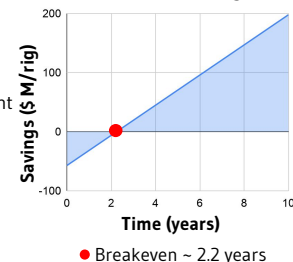
• Decreases Carbon Emissions

- Reduced need for helicopter travel limits emissions - 7000 lbs/flight

• Cost Savings

- Implementation cost: \$57.5M
- Automation saves \$25.5M/year/rig in efficiency
 - Uses AI for predictive maintenance, reduction in headcount, operation in adverse weather, faster speed than humans
- Compensation costs for injuries and deaths drastically reduced
- Likelihood of hydrocarbon loss mitigated due to increased reliability

Cost-Benefit of the Implementation of Autonomous Rigs



Sources

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