Is the IoT a Victim of or a Solution to Fracking?

An IoT Solution for Monitoring in Oil and Gas Wells

Nicholas Franconi
IoT and Smart Wells

- In an attempt to increase the efficiency and reduce the amount of waste water, Smart Wells have been developed during the past two decades.

- Smart Wells use permanently deployed sensors and control systems to allow operators to remotely monitor and shutdown poorly performing zones.

- These smart wells use a variety of sensor:
  - Temperature
  - Pressure
  - Strain
  - Flow Rate
  - Pressure
  - 3D Resistivity Mapping

- However, less than 1% of onshore oil and gas wells are instrumented with smart well technologies.
How can we increase IoT in Wells?

- The major barrier to the wide spread implementation of Smart Wells is the ability to efficiently and reliably communicate downwell over the lifetime of the well.

- Communication systems that are currently used in Oil and Gas Wells
  - Pressure-Wave Telemetry
  - Low-Frequency Electromagnetic
  - Wired Production Casing
  - Fiber Optic Cable

JPT (March 2012) The Promise of Fiber Optic Cable
What’s Next for Oil and Gas IoT?

• We have developed a model of the well casing that we are using to develop a communication system.

• There are significant barriers:
  • Temperature
  • Battery
  • Electronics
  • Sensor Lifetime
  • Points-of-Failure
  • Cost

• As the technology around IoT has advanced over the past decade, these barriers are no longer a significant problem.
Questions?