

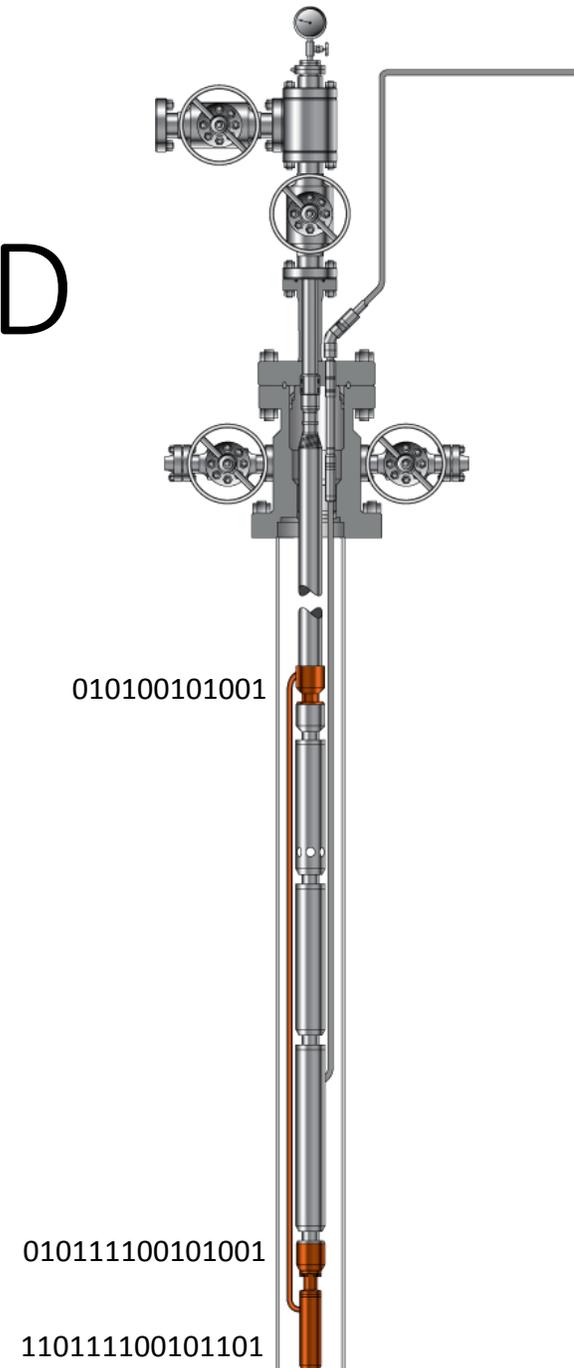
DOWN HOLE GAUGES AND DATA ACQUISITION

2017 ESP SYMPOSIUM Break Out Session III

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Topics for Discussion

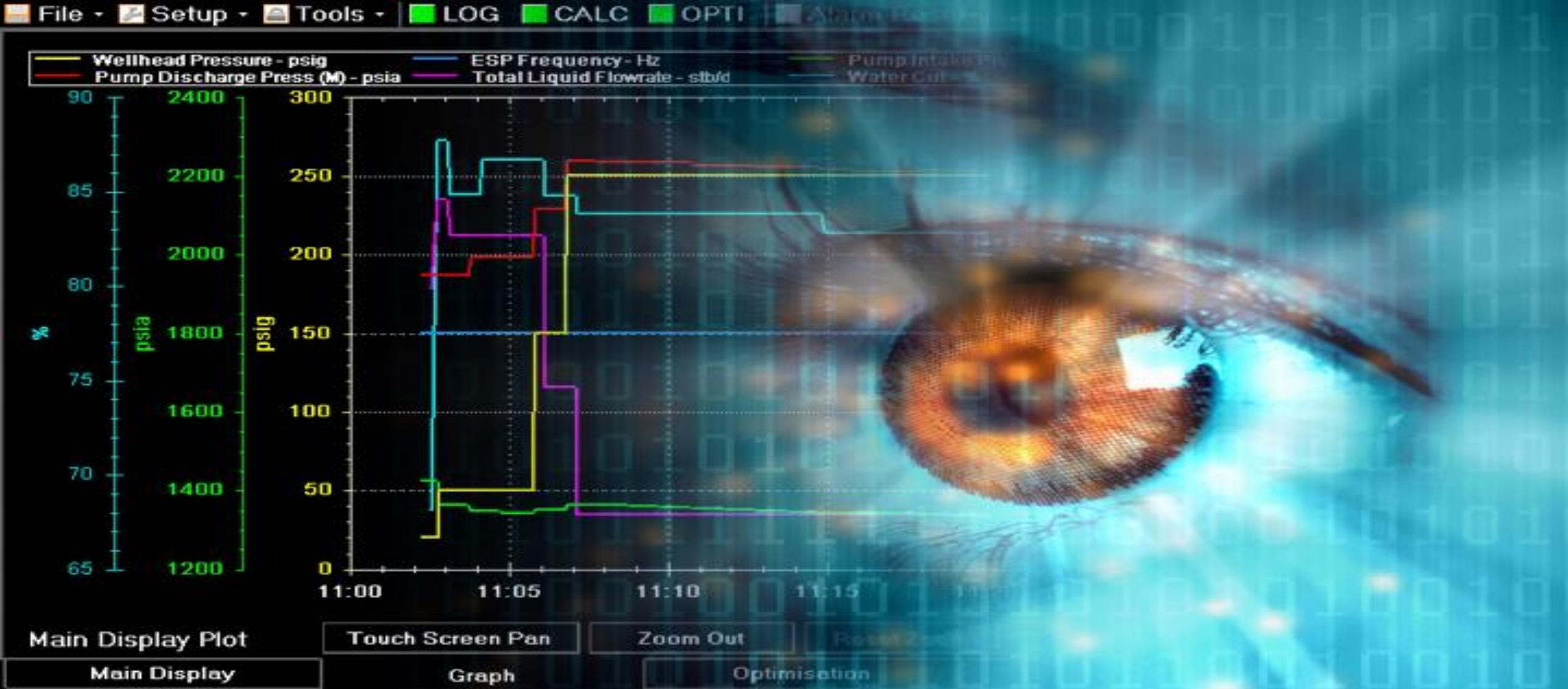
- Reliability
- Maximizing the value of the data
- Compatibility & Standardization
- New Technologies and innovations





Reliability

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- The background features a technical plot with a blue line graph and a color-coded map. The plot has a vertical axis labeled 'DegF' ranging from 408 to 428 and a horizontal axis with time markers at 06:00, 12:00, 18:00, 00:00, 06:00, and 12:00. The legend at the top left shows 'Fw(PSI)' and 'T(DerF)'. The blue line graph shows a fluctuating trend that generally increases from left to right, with a sharp drop around the 18:00 mark. The color-coded map in the background shows various shades of blue, yellow, and red, representing different data points or regions.
- Current reliability of downhole gauges – good or bad?
 - Has reliability improved?
 - What issues have users experienced?
 - What are the common causes of gauge failures/data loss?
 - Do we perform gauge RCFAs for continuous improvement?
 - What can be learned from gauge failures to benefit ESP reliability?

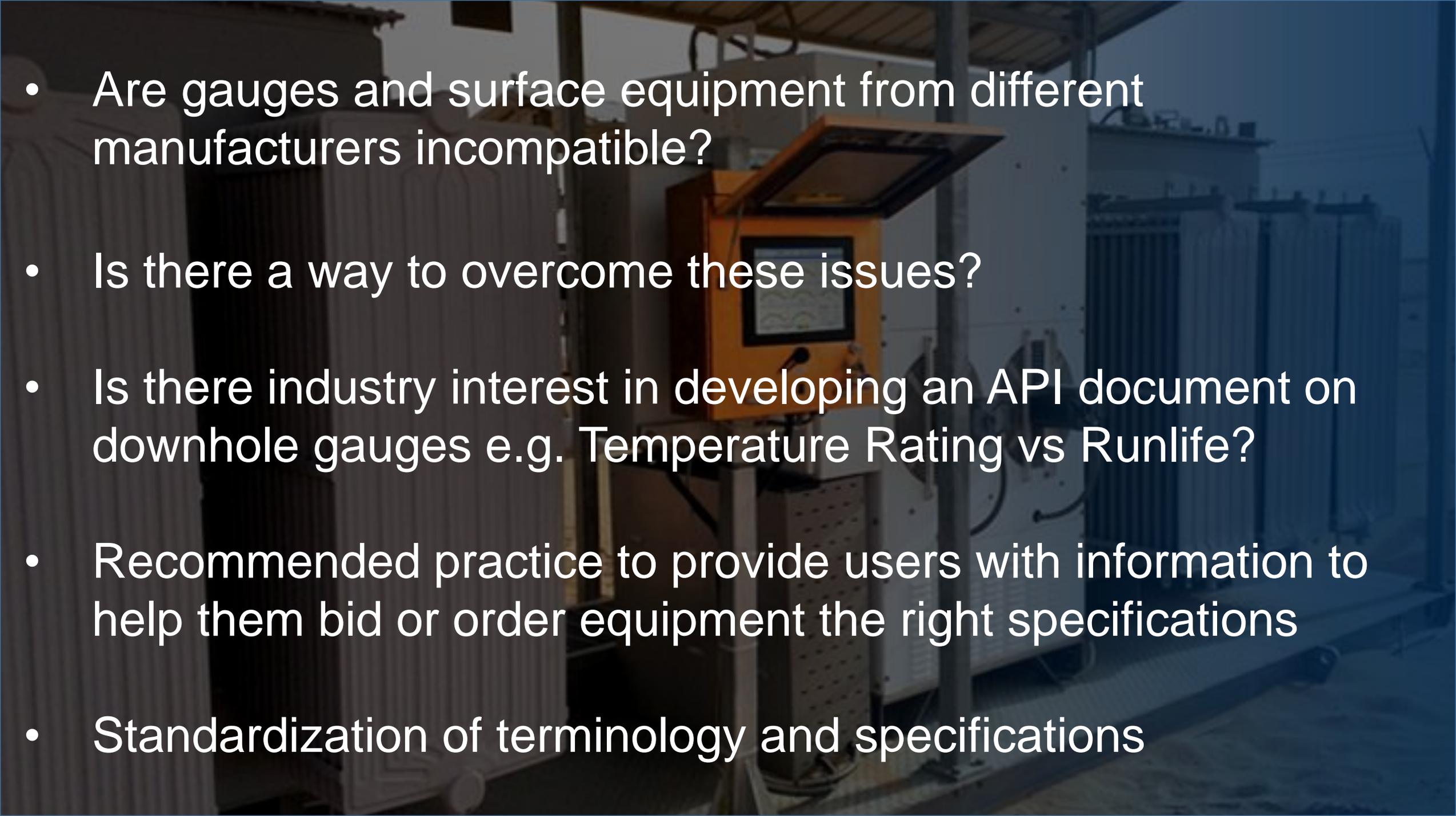


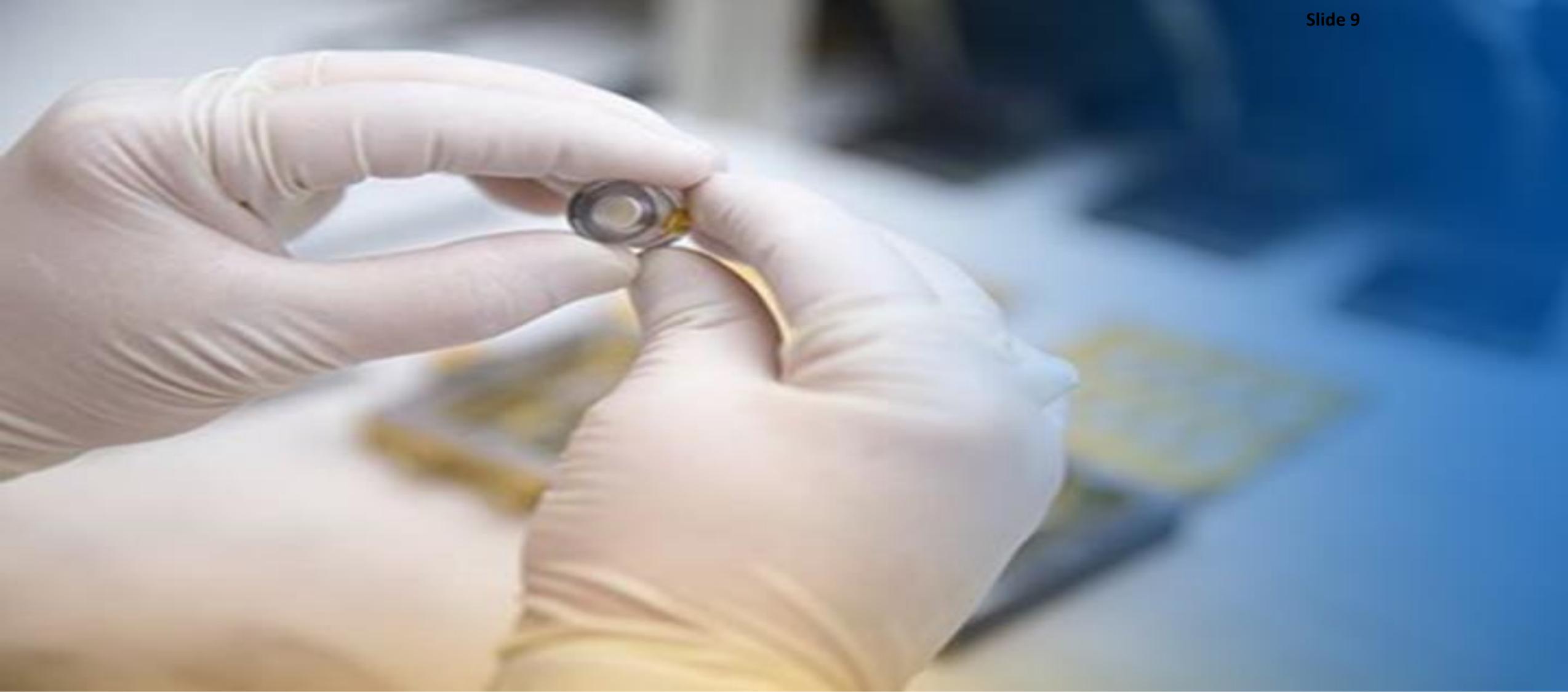
Maximizing the value of the data

- Monitoring and Trending
- Pump and Motor Protection
- Well Analysis
- ESP Failure Diagnostics
- ESP and Well Optimization
- Beyond the Pump - Well inflow and reservoir Performance
- Prognostics & Failure Prediction?



COMPATIBILITY & STANDARDIZATION

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- Are gauges and surface equipment from different manufacturers incompatible?
 - Is there a way to overcome these issues?
 - Is there industry interest in developing an API document on downhole gauges e.g. Temperature Rating vs Runlife?
 - Recommended practice to provide users with information to help them bid or order equipment the right specifications
 - Standardization of terminology and specifications



New Technologies and Innovations

What improvements are available or being developed...

- Fluid proofed electronics
 - Motor diagnostic readings – Rotation Direction, Power Factor, Imbalance
 - High speed vibration (wider band width capture, multiple data points)
 - Higher temperature ratings 250F, 300F, 350F and above
 - Downhole water cut and flow
 - Immunity to ESP Cable / Motor Ground Faults
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- Do we need faster data (eg Vibrations) for diagnostics and prognostics?
 - Embedded sensors – do we need more measurements?
 - Wireless?
 - Fiber Optics ?
 - Seal/Protector monitoring ?

What else do we need ?



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THANK YOU



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