**Operational Challenges**

<table>
<thead>
<tr>
<th>Wellbore instability</th>
<th>Ability to analyze 3D and 2D juxtaposed and overlaid well log data to preempt wellbore instability issues</th>
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</thead>
<tbody>
<tr>
<td>Deviation from well plan</td>
<td>Ability for near real-time visualization and comparison of planned and actual well path and well logs helps in analysis of deviation from a remote location</td>
</tr>
<tr>
<td>Aging workforce / loss of experienced staff</td>
<td>Ability to bring in work-life balance for SMEs (subject matter experts), geologists and other experienced personnel to improve working conditions through remote collaboration and reporting</td>
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<tr>
<td>Lag between event, analysis and action</td>
<td>Ability for near real-time alerts enables proactive risk mitigation</td>
</tr>
<tr>
<td>Time spent on analysis, interpretation and decision making</td>
<td>Ability to have access to historical well data deviation analysis and interpretation repository</td>
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</tbody>
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**In the pursuit of exploring new oil & gas (O&G) resources and increasing production, the exploration & production (E&P) enterprises encounter unique challenges in terms of working in remote locations, taking real-time decisions and complying to stringent safety norms. Figure 1 highlights some of the operational challenges and capabilities required by E&P enterprises.**

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**Infosys EMMV Solution**

Infosys Enterprise Mobile Multi-Dimensional Viewer (EMMV) is a visualization platform which analyzes complex and high volume real-time data to build real-time, interactive 3D and 2D visualization applications on mobile computing devices that help users take quick and well-informed decisions. Apart from visuals, the solution also provides notifications and reports which are used to assess and interpret an optimal well path. This enables risk mitigation and precise, informed and timely decision making thereby supporting enhanced well planning and well drilling operations even in remote environment with low network connectivity.

EMMV also enables the experts or geologists to collaborate with rig teams and provide their advice without having to be present on-site, thus enabling remote and faster solutions.

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**Figure 1: Need of the E&P enterprises**

**Figure 2: Applications of EMMV across O&G value chain**

**Upstream**
- E&P - 3D visualization of well planning and performance monitoring

**Midstream**
- 3D visualization of fault/corrosion & analysis by slicing the pipeline

**Downstream**
- Real-time monitoring of refinery with multi-dimensional visualization
Solution Value Proposition

CUSTOMER ORIENTED
• Layered architecture
• Fast development of specific systems catering to unique requirements

UNIVERSAL MOBILE VISUALIZATION
• Multiple channels
• Multiple devices
• Scaled to touch/non-touch events
• Cross platform

DEVICE SPECIFIC DATA MODELLING AND ADAPTATION
• Data processing on server based on the visualization device
• Optimal model adaption and data scaling for best user experience

COMPLEX AND HIGH VOLUME REAL-TIME DATA VISUALISATION
• Robust visualization and data management core
• Hybrid server-client design for near real-time user experience

CONTEXT-RELEVANT (Network/Device) PERFORMANCE
• Sensitivity to network bandwidth, device and browser
• High performance on low quality of service (QoS) environment

Figure 3: EMMV value proposition

Solution Architecture

Overall Drilling Cycle Support

Multiple Platform Support

Seamless Real-time Integration

User Preference Handling

Mobility Services

Data Modeling

Client Specific Context

Data Adaptation

Interactive Visualization

Context Sensitive Data Optimization

Interaction Models

Data Models

Alert Engine

Report Generation

Data Synchronization

Device Adaptation

Geological Model

Sensor Data & Simulation Model

Seismic, Earth Model

3D wellbore Trajectory

LAS / WITS PPDM WITSML

LAS / WITS PPDM WITSML

Business Benefits

• Enhanced operational efficiencies and work productivity: Enhances well planning, optimization and maximization of workforce effectiveness.

• Developing insights: The visualization of well equipment within its geologic context provides insight that is difficult to detect through direct measurements.

• Transparency in operators’ performance monitoring and evaluation: The ability to connect directly to various WITSML data sources allows visualization of both offline and real-time datasets through a common interface spanning across E&P operators.

• Quick and informed decision making: Enhances ability to anticipate undesirable events and enables the user to take mitigation actions quickly.

For more information, contact askus@infosys.com

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