Digitalization of Exploration and Resource Development

Questions driving the future direction of the digitalization of E&R&D

Data

- What data is there? (Is it owned and proprietary?)
- Where does the data lead to? (Is it connected? Is the data good?)
- Can the industry generally get all the insights needed for greater success from the data it already has?
- Who owns the AI-algorithm development and data inputs that improve the algorithm?
- What are the new business models (e.g., value from enabling) that will be made possible by the digitalization of E&R&D?

Industry progression toward digitalization of E&R&D

Organizational elements supporting digitalization of E&R&D

Upstream digitalization models

Comparative characteristics

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<th>Digitalization model</th>
<th>Digital transformation</th>
<th>Innovation strategy</th>
<th>Collaboration</th>
<th>Organizational philosophy</th>
<th>Performance measure</th>
<th>Value creation</th>
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<td><strong>Data-centric</strong></td>
<td>- Digital transformation drives focus on maximizing the value of existing data</td>
<td>- Emphasis on innovation through data-driven solutions</td>
<td>- Collaboration across functions and business units</td>
<td>- Focus on data-driven decision-making</td>
<td>- Measurable improvements in operational efficiency and cost savings</td>
<td>- Immediate benefits</td>
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<tr>
<td><strong>Technology-centric</strong></td>
<td>- Digital transformation drives focus on maximizing the value of new technologies and knowledge management</td>
<td>- Emphasis on innovation through technology advancement and capabilities</td>
<td>- Collaboration across technology and business units</td>
<td>- Focus on technology-driven innovation</td>
<td>- Measurable improvements in operational efficiency and cost savings</td>
<td>- Long-term benefits</td>
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E&P firms

- BP, ExxonMobil, Shell, Total, Chevron, Statoil, Petronas

- Use of data to improve decision-making and operational efficiency
- Use of AI and machine learning to automate activities and reduce costs
- Use of virtual and augmented reality for training and simulations

Business unit leadership

- Regional president, COO, CFO

Organizational value realized, to date

- Moderate to high

*E&P firms may be hybrids and not fall exclusively into a single digitalization model.