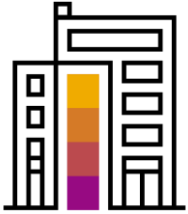




# SAP® Innovation Awards 2020 Entry Pitch Deck

Next Generation Digital Oil Field

*Murphy Oil Corporation (Partnered with Incture, LLC)*



## Company Information

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<b>Headquarters</b>	El Dorado, Arkansas
<b>Industry</b>	Oil & Gas
<b>Web site</b>	<a href="https://www.murphyoilcorp.com/">https://www.murphyoilcorp.com/</a>

**Murphy Oil** Corporation is an independent exploration and production company with a balanced portfolio of global offshore and onshore assets. Murphy produces oil and natural gas in the United States and Canada while conducting exploration activities worldwide.

**Murphy Oil** Corporation is extracting business value with various digital initiatives, impacting its key LOBs. In 2019, with SAP Cloud Platform, Murphy Oil Corporation has implemented complex solutions including visualization for high-velocity frac data, built remote assistant to bridge knowledge gaps in workforce and used iRPA to improve forecasting by identifying data anomalies and creating tasks in ROC workbench using AI based business rules. Through the use of real-time data in Completion process, Murphy is becoming an intelligent enterprise. Murphy is using advanced technologies such as AI, ML and Augmented Analytics to execute unique projects cost-effectively, deploy existing technologies in new ways and reduce downtime, improve its efficiency and maximize oil production.

# Next Generation Digital Oil Field



## Murphy Oil Corporation



**Murphy's advanced digital initiatives on SAP Cloud Platform are optimizing well operations. Onshore field operators can now operate with improved effectiveness and safety with touchless mobile applications. Machine Learning, Pattern Recognition and iRPA features are helping Murphy business operate effectively and efficiently.**

**- Rajesh Satewar,**  
Director SAP & Enterprise Applications

### Challenge

Murphy Oil Corporation was looking to reduce the non-productive time during well operations. Non-productive time caused by mechanical failures, weather, and logistical problems add substantial overhead to operations. Reductions in these overheads can result in lower costs and improved health, safety, and environmental performance.

### Solution

Advanced visualization to generate a more comprehensive view from field data to well completion  
Remote Assistant to bridge knowledge gaps in workforce between operators and field staff  
Robotic Process Automaton to mitigate operational risks and discrepancies for project cost tracking  
Touchless Mobile for operators using voice commands to complete the tasks on the field

### Outcome

Rapid decision making with real-time visualization of Completion data, driving down operational cost and expenses with remote assistant, improving forecasting by identifying data anomalies and creating tasks in workbench using AI based business rules, reducing operational risks and discrepancies in system by leveraging automation while improving communication across functions, ensuring consistency and repeatability in the Completion process.



**12%**

Cycle time reduction. 24M events processed from 800 wells to provide comprehensive view

**15%**

Improved Productivity. More work items completed by staff using disruptive features

**10%**

Improved Health and Safety



## Participating Partner Information

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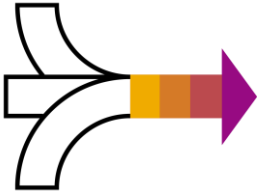
### Incture, LLC

**Incture developed Next Generation Digital Oil Field platform for Murphy Oil Corporation.**



Incture has been delivering technology-enabled business innovation to SAP customers since 2006. Its intelligent digital apps solve a multitude of business and technology problems. Digital apps integrate people, processes, data, systems, and the Internet of Things to make work easy, and deliver a shift in business performance and people experiences. With offices in the US, Canada, India, and Southeast Asia, Incture has been instrumental in technology-enabled innovation for its customers across the world.

Incture has had a very successful partnership with Murphy for a couple of years now, where it was able to add value to Murphy's technology and business investments by developing transformative solutions using SAP technologies. This has helped connect Murphy's processes and its people within a more efficient framework. Incture is helping Murphy find innovative ways to generate a more detailed view of its cost structure to identify opportunities for improvement.



## Business Challenges and Objectives

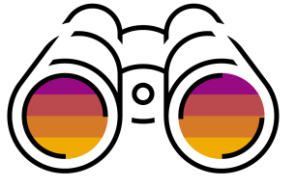
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Murphy Oil Corp wanted a holistic and real time view of its new well development as well as existing wells maintenance processes to provide better decision support for the operations and management teams. As part of the efforts to improve well productivity and production rates, constant collaboration and communication is critical, both within different divisions of Murphy as well as with their external partners and contractors. Unfortunately, this was not possible in existing landscape given the existing organization framework, processes and systems. Lack of visibility to real time data not only added complexity and cost to operations but compromised worker safety as well. Coupled with the need to be flexible, agile, automation and innovation, Murphy needed a solution that would help them navigate waters in an uncertain and evolving marketplace

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### **“Make New Wells the Best They Can Be” “Consistency and Repeatability” “Communicate Across Disciplines”**

The objective was to create a one-stop platform, which would capture data from multiple business processes, allow real-time data processing, and enable management teams to proactively monitor resources and assign tasks swiftly. This integration on SAP Cloud Platform combined with disruptive technologies such as remote assistant, touchless mobile, augmented analytics and visualization of high velocity frac data added visibility and helped predict, plan, and monitor in real-time, with more accuracy, while reducing the risk to worker safety and the cost of completion operations. The next generation digital oil platform created a mechanism which allows better management of people, processes and ultimately improving the efficiency of completion process.



# Project Details

Furthering the innovation on SAP Cloud Platform by building an integrated platform for Completion with an objective to digitize key field operations and improve process efficiency.

## Business Objectives

- 1 Improved Completion Process
- 2 Optimize Well Operations
- 3 Manage and Operate by Exceptions
- 4 Reduced Total Cost of Ownership
- 5 Faster Return on Investment



## Solution Capabilities

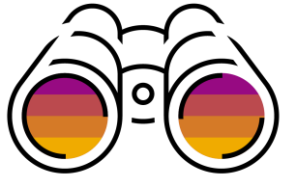
1 Completion Real Time	2 OBX Route Optm - Machine Learning
2 Voice to Action - Task Mgt	3 Insight To Action
1 Augmented Reality	6 Virtual Assistant
5 Robotic Process Automation	2 Plant Maintenance App
1 Well View	4 Costing Analysis Tool
5 Interface Consolidation	4 Application Platform Consolidation

**SAP Cloud Platform**

**10-12 weeks implementation**

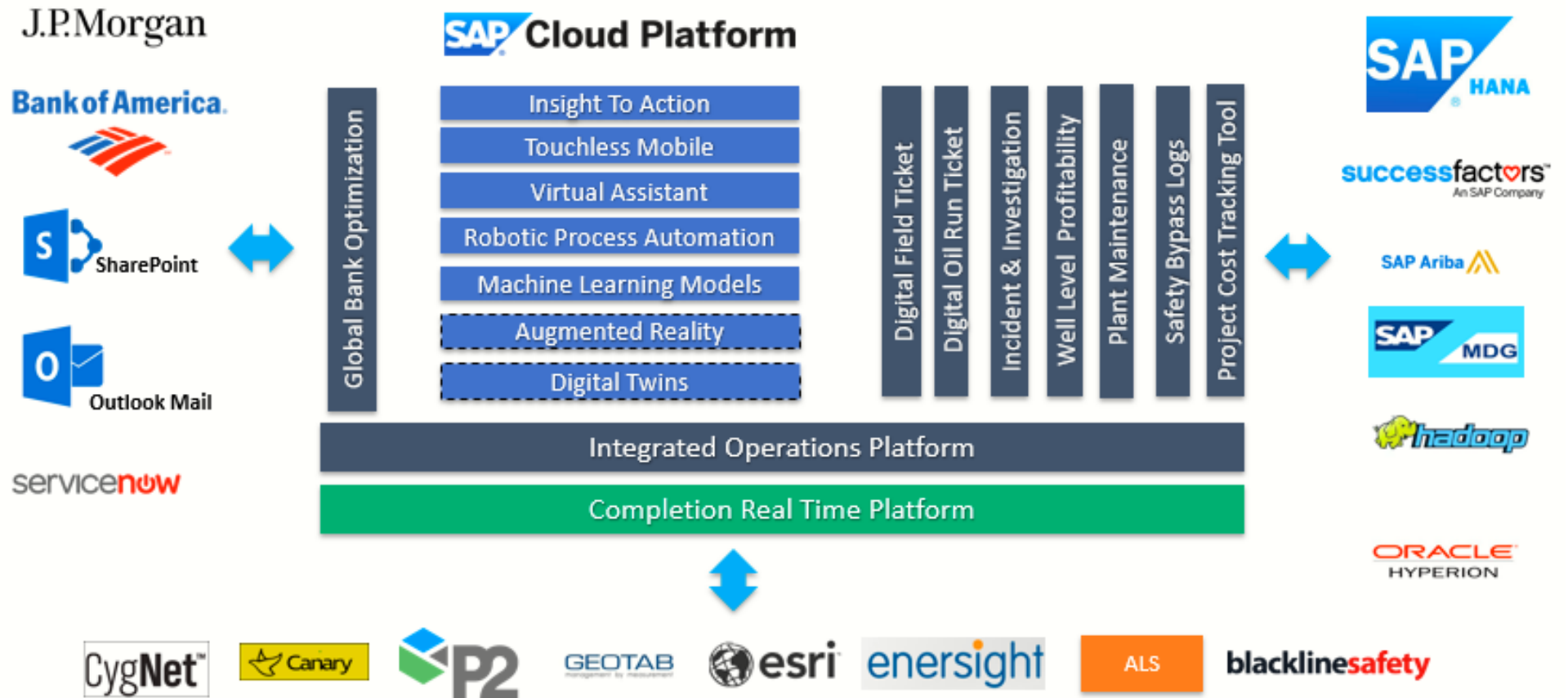
**Use of Disruptive Technologies**

**Faster and accurate decisions**

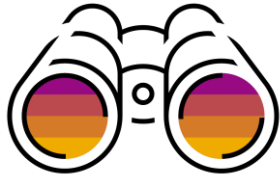


# Project Details

Leveraging SAP Cloud Platform and SAP HANA and multitude of non-SAP systems and applications for building the Next Generations Digital Oil Platform







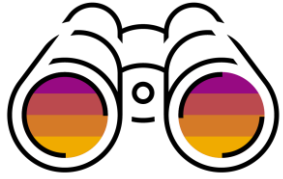
## Project Details

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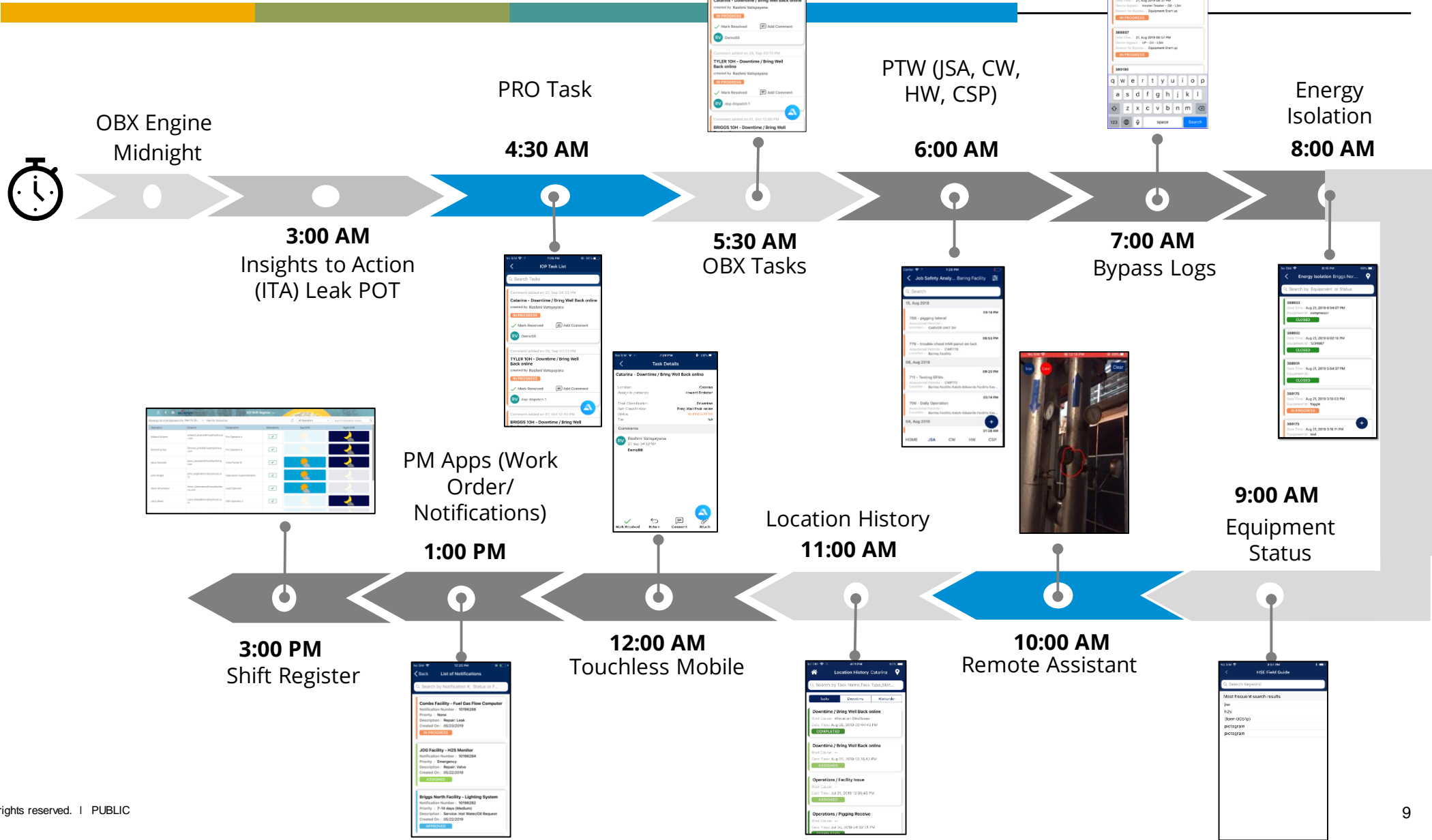
**Next Generation Digital Oil Field** is a centralized monitoring cockpit, which brings in the essential business process efficiencies and visibility into day-to-day activities. Harnessing the power of SAP Cloud Platform and its services, the features include:

- **Insight to Action** - Processing over 24M events from 800 wells and provide best suggestions
- **Communicate Across Disciplines** and **Real time Collaboration** – Tagging anomalies in time and sharing with different teams
- **Real time visibility** - Providing views of different phases during D&C Process
  - Timeline view for Pressure and Chemical
  - Active/Historical Well Comparison for over 30 Tags
- **Optimize Well Operations:**
  - Optimize cost leveraging **Virtual Assistance** - SMEs providing remote guidance to Operators
  - Optimize Process cycle time leveraging **Touchless Process** – Operators sending voice commands for faster data entry, validation and enquiry. Focusing on performing core activities than system updates.
  - Optimize Process efficiency leveraging **Intelligent Robotic Process Automation** – Bots validating business rules, reconciling information and updating information in multiple systems
  - Optimize Process performance leveraging **Image Processing** – Equipment and Asset information including FLSOP and vendor provided guided procedures.

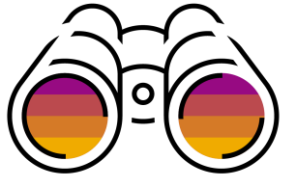




# Project Details



## Next Gen Digital Oil Field

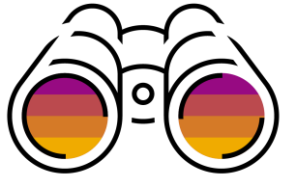


# Project Details

## Real-Time Visibility during Completion Process

Search Active / Historic Wells and Tags

Active / Historical Well Comparison and Collaboration



# Project Details

## Demo Videos



Equipment status



Touchless Mobile



ITA



Remote Assistant



Remote Assistant Live Demo



# Benefits and Outcomes

## Business or Social

- Real-time visual representation of Completion data which aids rapid decision making.
- Reduction of operational cost and expenses by leveraging remote assistant
- Mitigation of operational risks and reduced discrepancies by leveraging bots
- Breakdown organizational and data silos by creating a single view of data and completion process

## IT

- Process over **24M Well Tag information** to detect real-time and near time information over **800 wells**
- **Insight To Action** – Identify Data Anomaly and suggest correction tasks
- Enable SMEs to immediately support Field Operations via **Virtual Assistance**
- Increase efficiency by enabling Voice Functions using **Touchless Mobile**
- Integrated information from 15+ **On Prem and Cloud applications**

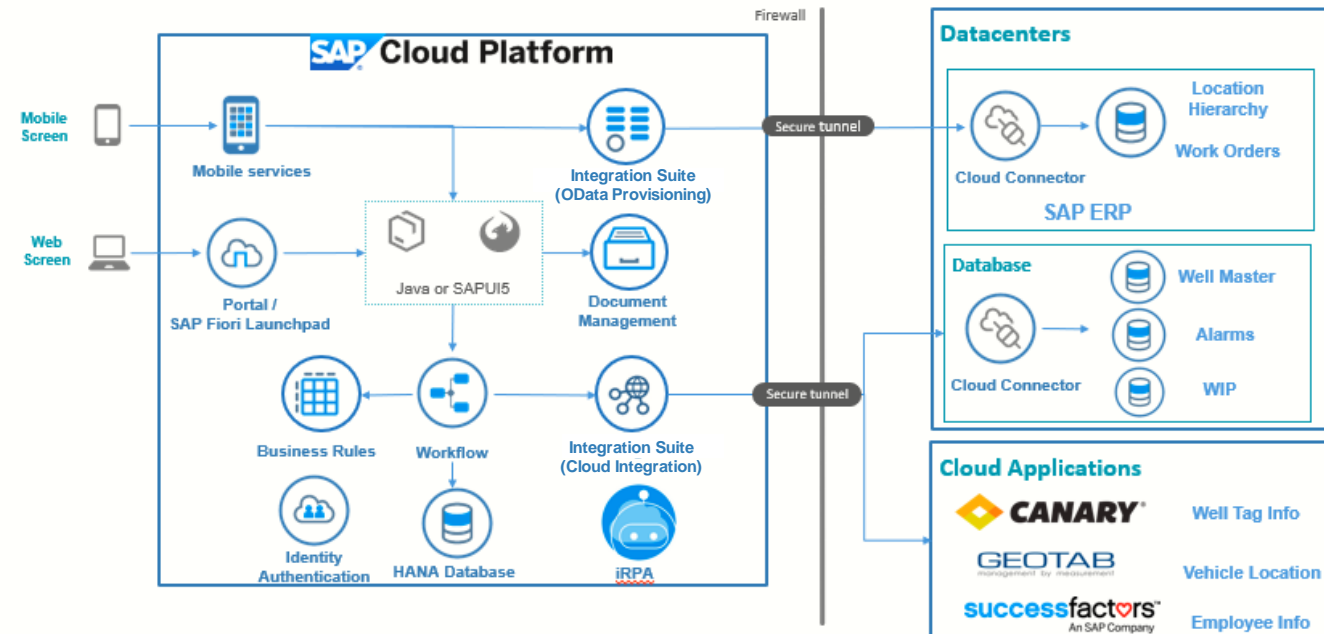
## Human Empowerment

- Empowered operations staff members
- Improved communication across disciplines, consistency and repeatability in the Completion Process



# Architecture

- **Workflow and Rules:** Process Automation and Rules Triggering to manage task creation and system integration during process execution.
- **Integration Services:** Push/Pull and conversion of data from various backend systems like On Prem - SAP ECC & multiple Databases and Cloud Applications - Canary, Geotab, SuccessFactors.
- **Mobile App with iOS SDK:** Mobile application with native features like Offline, ARKit, Push notification, camera, voice to text etc.
- **SAP Fiori on Cloud:** Unified and Simplified Interface web Interface for developers and key users to operate multiple modules.
- **SAP Cloud Platform, SAP HANA service:** SCP HANA DB for application details as well as storing information from various data sources (On- Prem and Cloud)



- **iRPA:** Unattended Bots from SAP Cloud Platform Cloud Foundry to automate the data entry and post after applying business rules.
- **Document Services:** Documents upload during transactions using Document services on SCP. Document Services is being used as the Cloud Document Management System.



# Deployment

**Deployment status** Live

**Date** 14<sup>th</sup> Oct 2019

**Number of users** 300

## SAP technologies used:

	SAP product	Deployment status (live or proof of concept [POC])	Contribution to project
1	SAP Cloud Platform, SAP HANA service and SAP Leonardo AI	Live	Route Optimization algorithm to increase operator efficiency
2	SAP Cloud Platform – Mobility and SAP Fiori	Live	Mobility for all Field Users and Employees. Remote Assistant feature to help Field operators and SMEs interactions
3	SAP Cloud Platform Integration Suite	Live	Real-time information from different systems: On-Prem Systems and Cloud Applications including: Integration Suite (Cloud Integration) and Integration Suite (OData Provisioning)
4	SAP Cloud Platform – SAP Intelligent Robotic Process Automation (SAP IRPA)	Live	Automation using BOTS with Well Projects and WBS data entry, business rules application and posting to different systems

**If you have used one of the services or support offerings from SAP Digital Business Services during the implementation or deployment phase, please select with  one or more of the following offerings:**

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SAP ActiveAttention™

SAP Advanced Deployment

SAP Value Assurance

SAP Model Company

Others:

SAP Innovation Services

SAP Innovative Business Solutions



# Advanced Technologies

The following **advanced technologies** were part of the project.

	Technology or use case	Yes or No	Contribution to project
1	3D printing		
2	Blockchain		
3	Internet of Things (IoT)		
4	Machine learning or AI	Yes	Route optimization by leveraging clustering techniques for operators
5	Conversational AI	Yes	Voice Processing based functions on Mobile.
6	Robotic process automation	Yes	Automation using BOTS with Well Projects and WBS data entry, business rules application and posting to different systems
7	Data anonymization		
8	Augmented analytics	Yes	Equipment Image Recognition and Asset Intelligence Network
9	Insight to Action	Yes	Improving forecasting by identifying data anomalies and creating tasks in workbench using AI based business rules



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