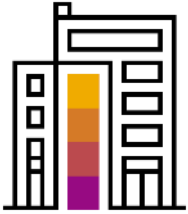# SAP Innovation Awards 2021 Entry Pitch Deck

Intelligent Completions and Smart Well Technology Platform

Murphy Oil Corporation (Partnered with Incture, LLC)

THE BEST RUN **SAP**

Company Information

Headquarters	Houston, Texas
Industry	Oil & Gas
Web site	https://www.murphyoilcorp.com/

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 generating business value with various digital initiatives, impacting its key LOBs. In 2020, with SAP Cloud Platform Neo & Cloud Foundry services, Murphy Oil Corporation has implemented complex suite of solutions like **Real-time Reaction (RTR)**, **Digital Twin**, **Offset Frac Monitoring**, **Insight to Action,** which encompasses the Smart Well Technology platform. Murphy is using advanced technologies such as **Intelligent Robotic Process Automation (RPA)**, **Conversational AI**, **ESRI Integration**, **Voice integration**, and **Augmented Analytics** to execute complex projects cost-effectively and deploy existing technologies in new ways to improve efficiency and maximize oil production.

Murphy team has adopted **SAP Cloud Platform** as the **Enterprise Cloud Middleware & Digital Application Platform** for its agility, cost effectiveness and scalability benefits.

Intelligent Completions and Smart Well Technology Platform
Murphy Oil

MURPHY
OIL CORPORATION

"

Murphy's advanced Smart Well Platform Initiative on SAP Business Technology Platform (BTP) are optimizing well Completions and providing transparency and real-time visibility. NA Onshore completions team can now operate with improved effectiveness leveraging digital twins & simulations and by looking at data from multiple sources in one place. Machine Learning Voice Processing and Intelligent RPA features are helping Murphy business operate effectively and efficiently.

- Rajesh Satewar, Director Digital & Enterprise Applications

Challenge

- Drive real-time decision making with huge data volume, standardized & clean data set, real-time visibility in progress completions and comparing with historical well completions data
- Enterprise Applications and Integration Consolidation Initiative
- Improve user experience and bring about a digital first mindset in the field

Solution

- **Smart Well Technology** platform for Completion process leveraging enterprise messaging queue, multi-threading, proactive alerts based on pattern detection and threshold, digital twins to compare planned and actual pump data
- Displace multiple middleware platforms like **MuleSoft and Dell Boomi** to SAP Cloud Platform Integration and thus providing a unified digital platform for innovation

Outcome

- One platform to monitor, analyze and make decisions based on historical as well as real-time high velocity and high-volume data
- Reduced Maintenance & License cost, Fast tracked development and Best Practices implementation

25%	**15%**	**50M+**	**350+**
Reduced General and administrative (G&A) Expenses	Reduction in SWB	Data points analysis	Interfaces Consolidation & Migration

# Participating Partner Information

Incture, LLC

Incture developed Intelligent Completions and Smart Well Technology Platform for Murphy Oil Corporation.

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Incture has been delivering technology-enabled business innovation to SAP customers since 2006. Its intelligent digital applications and systems are delivering integrated hyper automation for SAP Customers. These digital applications integrate people, processes, data, systems to make work easy, and deliver a shift in business performance and people experiences. With offices in the US, Canada, India, Europe, Middle East, Southeast Asia and Australia, Incture has been instrumental in technology-enabled innovation for its customers across the world.

Incture has a very successful partnership with Murphy for a few years now, where it has been 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, people and systems and create a digital ecosystem within the enterprise. Incture is helping Murphy find innovative ways to generate a more detailed view of its cost structure to identify opportunities for improvement.

Incture ®
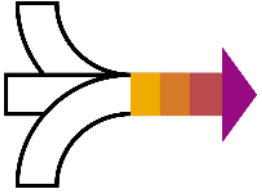
Business Challenges and Objectives

Murphy Oil Corp wanted to drive real-time decision making with large volume & clean data set, 360-degree view in new well completions process and comparing with historical wells. This helps to provide better decision support for the completions and geology teams. Foster collaboration and knowledge transfer between teams is critical, both within different divisions of Murphy as well as with their external partners and contractors.
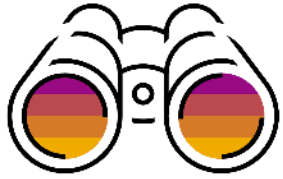
Due to Pandemic, there was an immense pressure to reduce the G&A cost and consolidate multiple applications and integration platforms.

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 well completions. 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
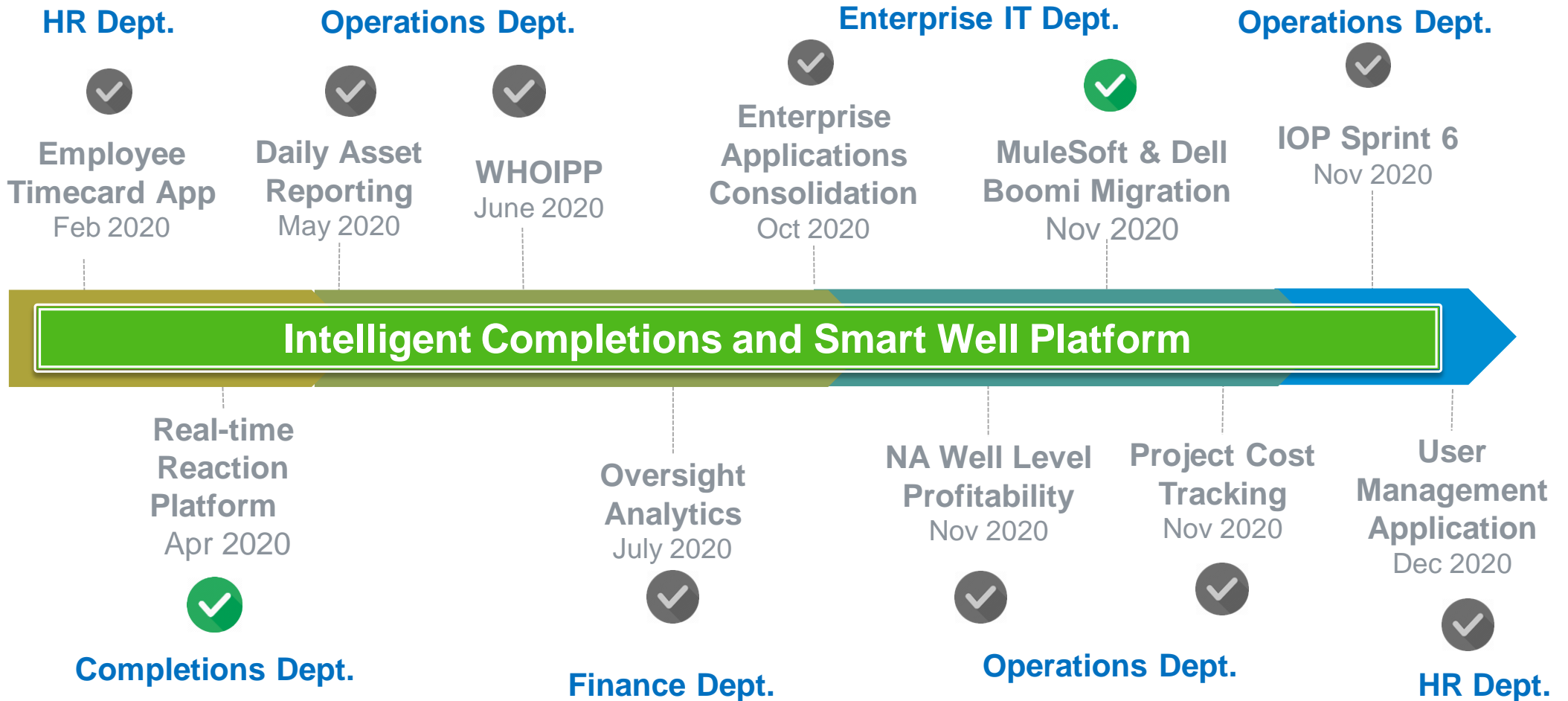
"Manage by Exception" "Consolidation and Simplification" "Collaborate and Reuse" "Think Template"

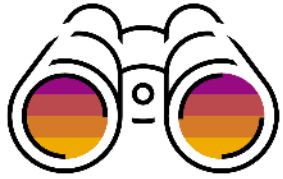The objective was to create an Integrated platform to deliver:

- Maximum returns by providing the real-time information from multi cloud data sources and various business processes

- Reduce cost of completion process by providing data points to predict, plan and execute events in real-time

- Reduce expenses by consolidating infrastructure, platforms and maintenance cost

- Improve productivity by multiple disruptive technologies like RPA, AI, Natural Language Processing, BOTs,

- Enable collaboration to generate maximum output and reusability
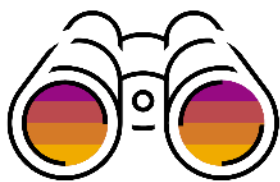
Project or Use Case Details

Building a Digital Ecosystem on SAP Cloud Platform

HR Dept.

Operations Dept.

Enterprise IT Dept.

Operations Dept.

Employee Timecard App
Feb 2020

Daily Asset Reporting
May 2020

WHOIPP
June 2020

Enterprise Applications Consolidation
Oct 2020

MuleSoft & Dell Boomi Migration
Nov 2020

IOP Sprint 6
Nov 2020

Intelligent Completions and Smart Well Platform

Real-time Reaction Platform
Apr 2020

Oversight Analytics
July 2020

NA Well Level Profitability
Nov 2020

Project Cost Tracking
Nov 2020

User Management Application
Dec 2020

Completions Dept.

Finance Dept.

Operations Dept.

HR Dept.

Project or Use Case Details

Click to watch: Intelligent Completions & Smart Well Platform

Project or Use Case Details

An Integrated platform leveraging enterprise messaging queue, multi threading, proactive alerts based on pattern detection and threshold, digital twins to compare planned and actual pump data.
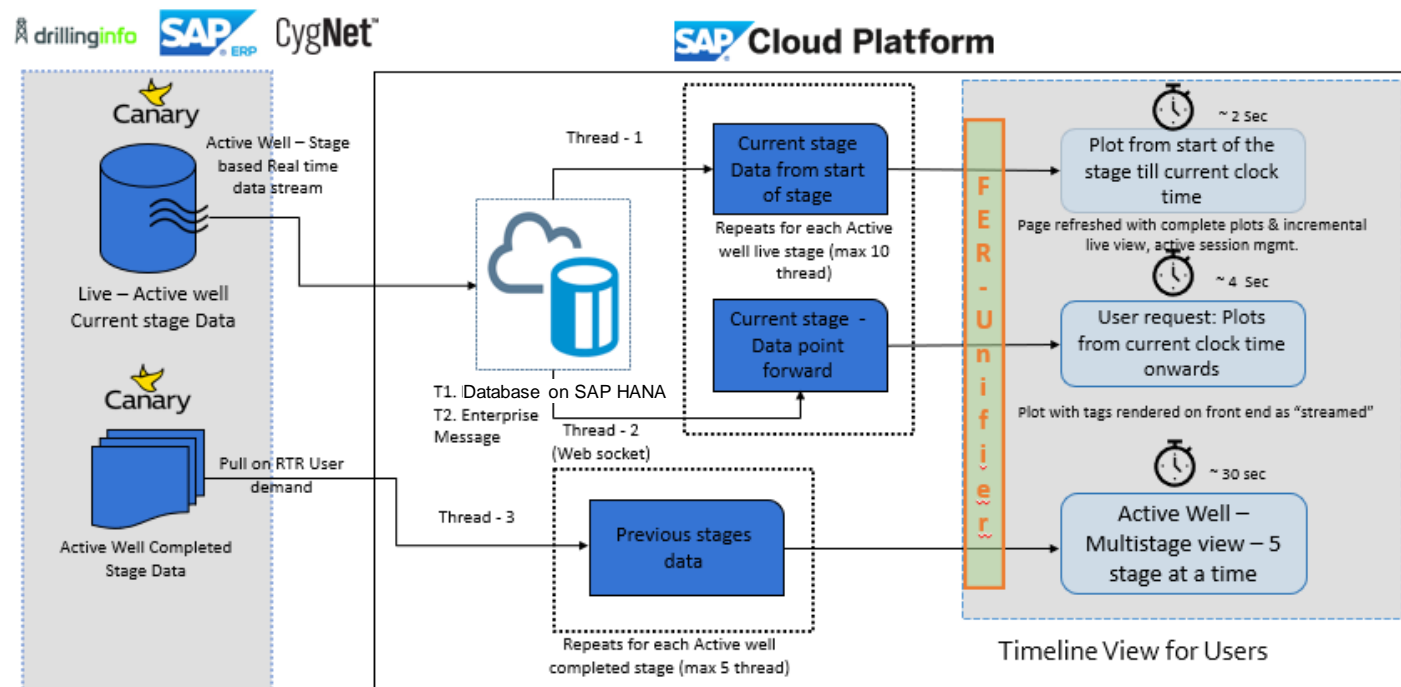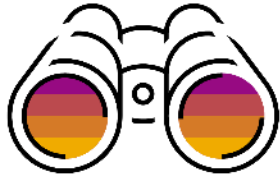
Intelligent Completions & Smart Well Platform

900+ Wells

18000+ Stages

10+ Year data

50M+ Data points

9+ Pumping Vendors

- **Real-time View** of different parameters like Chemical, Pressure, Sand, Blender Properties, Fluid impact on Live well completions process
- **Digital Twin of Wellbore** 3D and 2D view and simulation of different parameters like GR, MSE, ROP, Total Gas, Rotary RPM etc.
- **Insight to Action to Closure** Threshold based identification and raise alerts to users in real-time for corrective measures
- **Offset Frac Monitoring** to ensure no or minimal impact on nearby operating wells from Murphy and other parties
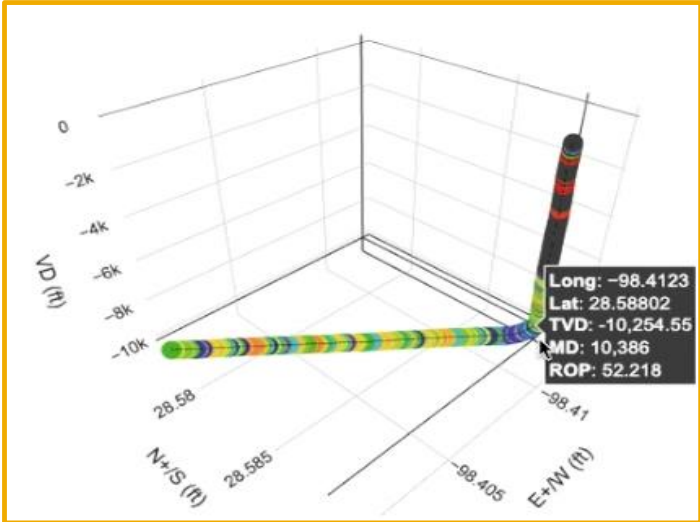- **Multiple Data Sources** like Canary, Drilling Info, Ely sheets, Cygnet and SAP
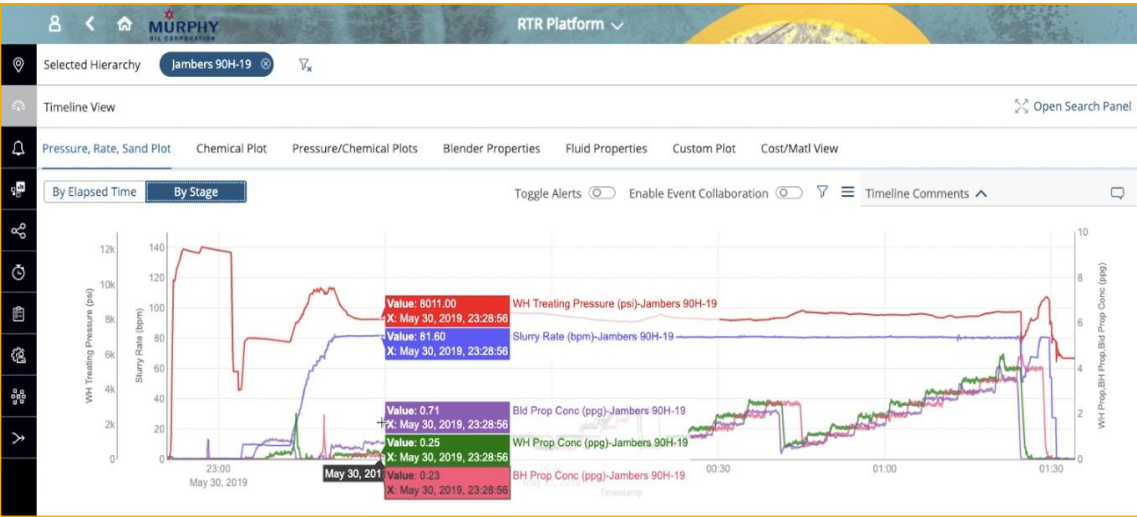
Project or Use Case Details
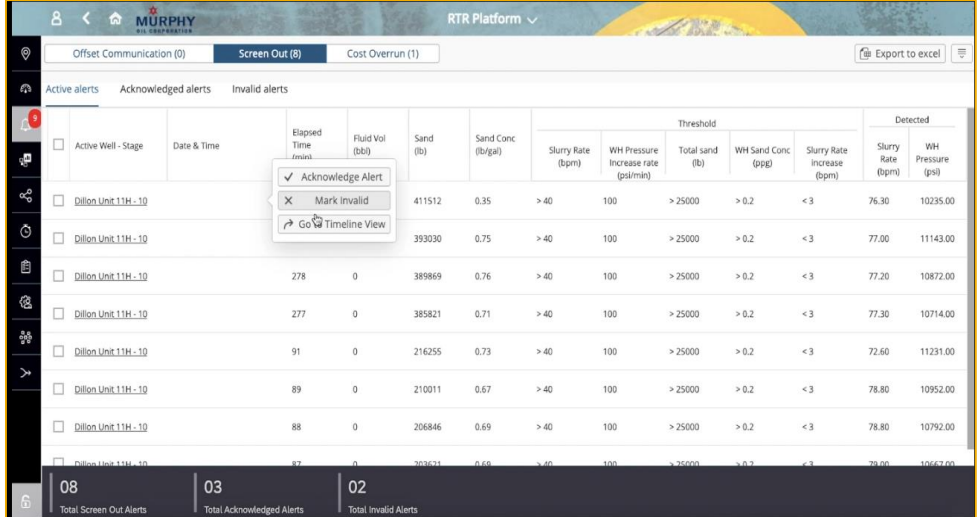
Intelligent Completions & Smart Well Platform
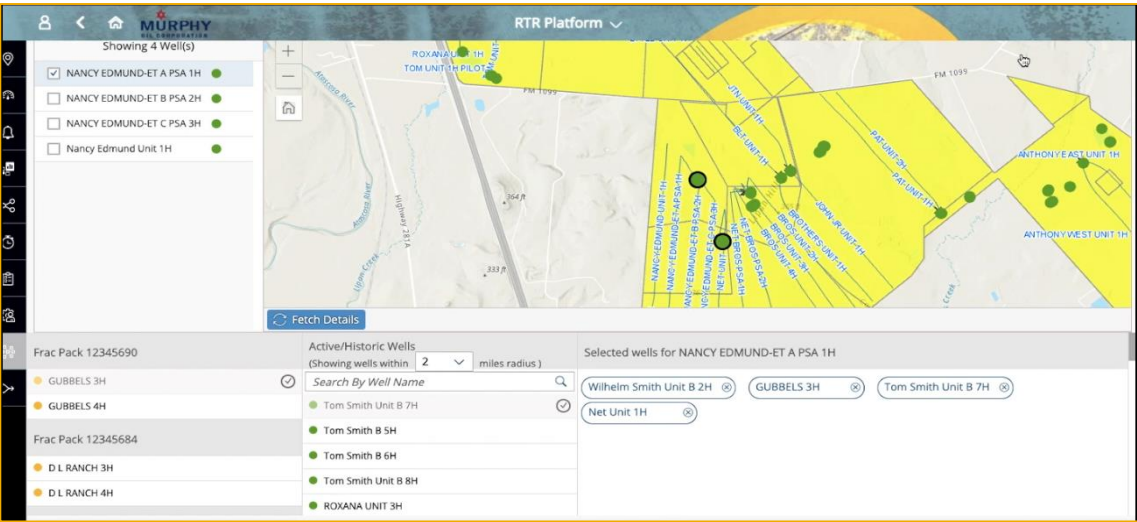
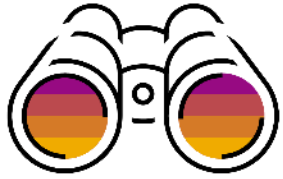**Real-time view of Active and Historical Wells**

Digital Twin of Active Wellbore

Multiple plots with various parameters impacting Live Well completion process
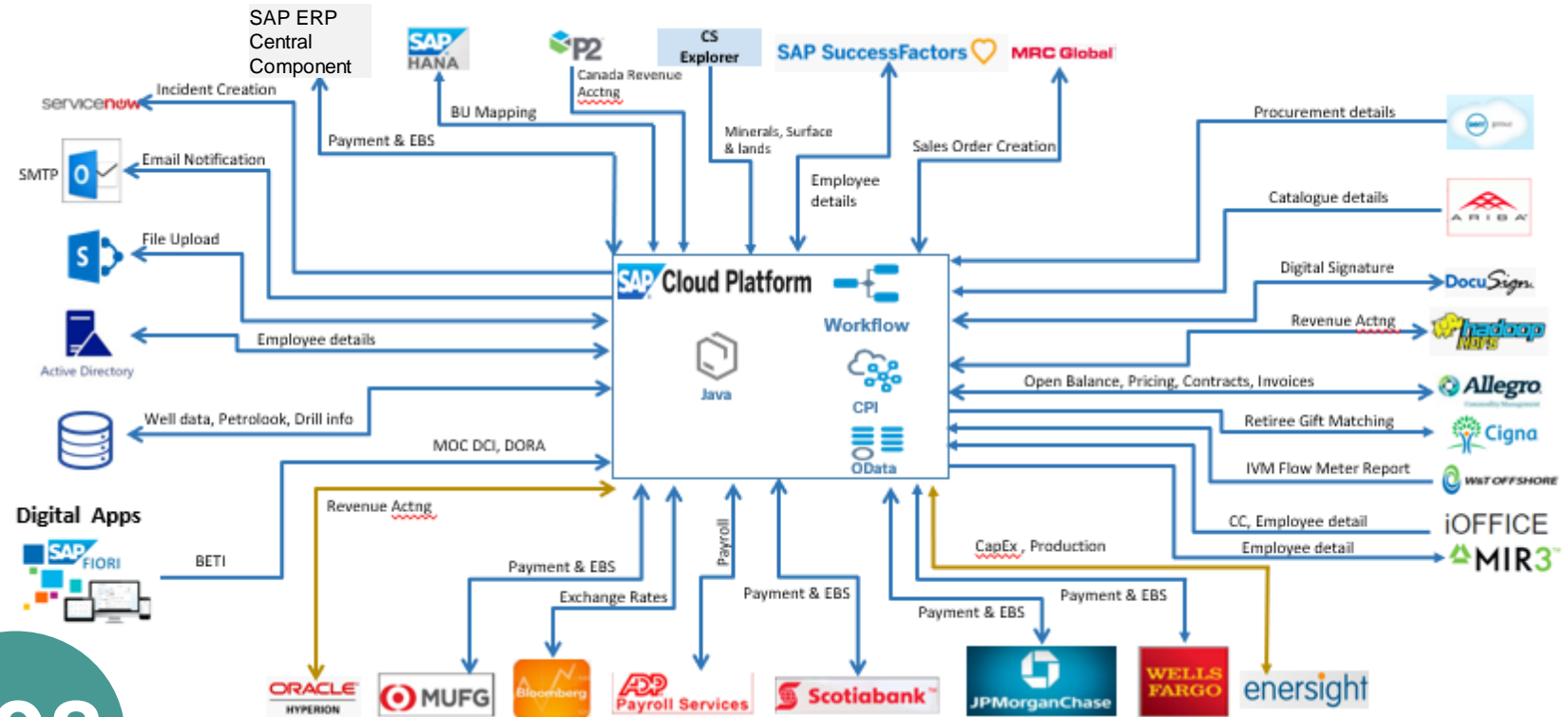

Insight to Action to Closure

Project or Use Case Details

SAP Cloud Platform Integration as Enterprise Cloud Middleware

384 → **298**
Interfaces

254 → **150**
APIs
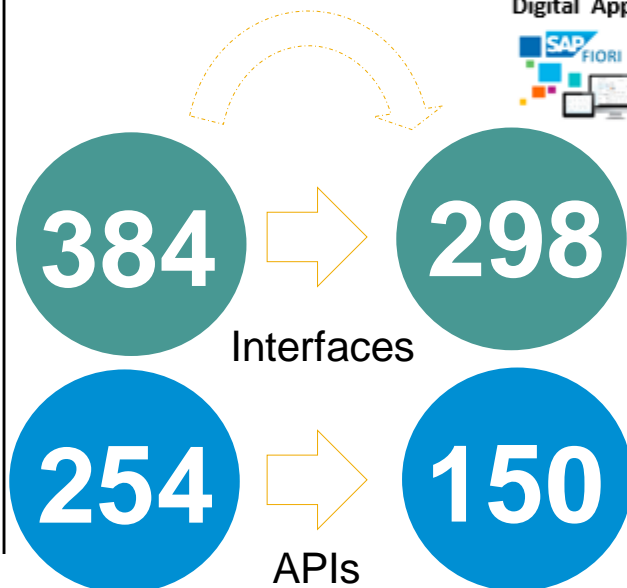
- Consolidation from **MuleSoft and Dell Boomi** to SAP Cloud Platform
- Landscape Optimization & Technology Consolidation
- Easy to manage and support for all Integrations from Single System
- Business Event Processing based on demand through BETI application
- Enabled concepts of Enterprise Search and Unified Interfaces
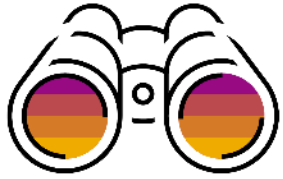
Project or Use Case Details

Intelligent Completions & Smart Well Platform

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[iRPA_based Project_Cost_Tracking](#)
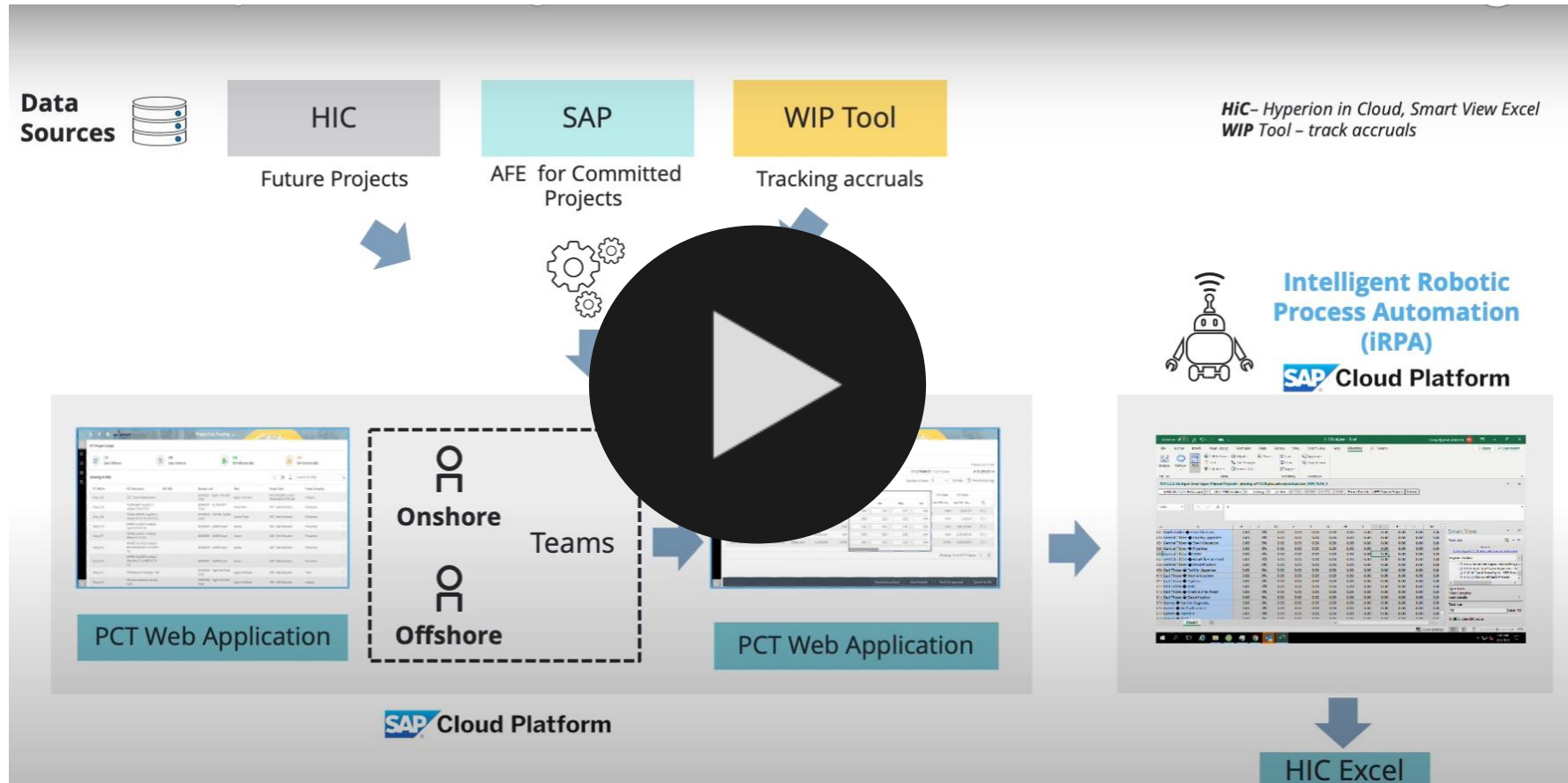
Click to watch: iRPA_based Project_Cost_Tracking

Benefits and Outcomes

Business or Social

- Productivity gains and Improved forecast planning through different initiatives leveraging **Robotic Process Automation**

- Improved decision making with standardized across North America

- Better trend analysis with historical profitability, granular view of LOE and Profit & Loss at a well level

- **25% reduction** in G&A expenses

IT (optional)

- Enterprise application and Integration consolidation leveraging SAP Cloud Platform

- Unified platform to monitor, analyze and take decisions based on historical as well as near real-time high velocity data

- Improved control and efficiency. Productivity gains and cost avoidance

- **Insight To Action** – Identify Data Anomaly and suggest correction tasks and bring to closure.

Human Empowerment

- Empowered operations staff members

- Improved communication across disciplines, consistency and repeatability in the Completion Process

Architecture

- **iRPA:** Bots from SAP Cloud Platform, Cloud Foundry to automate the data entry legacy system, ARIBA, MS Excel, MS Teams, Non-SAP system and desktop applications

- **Integration Services:** Push/Pull and conversion of data from 34+ systems like On Prem - SAP & Non-SAP and Cloud Applications. Ex. Canary, Drilling Info, Ely DB

- **Enterprise Messaging:** Real-time Completions data subscribe and publish with Enterprise Messaging Queue

- **Alerts Notifications Service:** Publish CPI and Application exceptions to different channels like MS Teams & Outlook

- **Mobile App with iOS SDK:** Mobile application with native features like Offline, Push notification, camera, voice integration

- **Fiori on Cloud:** Unified and Simplified Interface web Interface for developers and key users to operate multiple modules. Integration with Plotly, SpreadJS and ESRI

- **Document Extraction Service:** Extract data from different templates like Invoices and Digital Oil tickets.
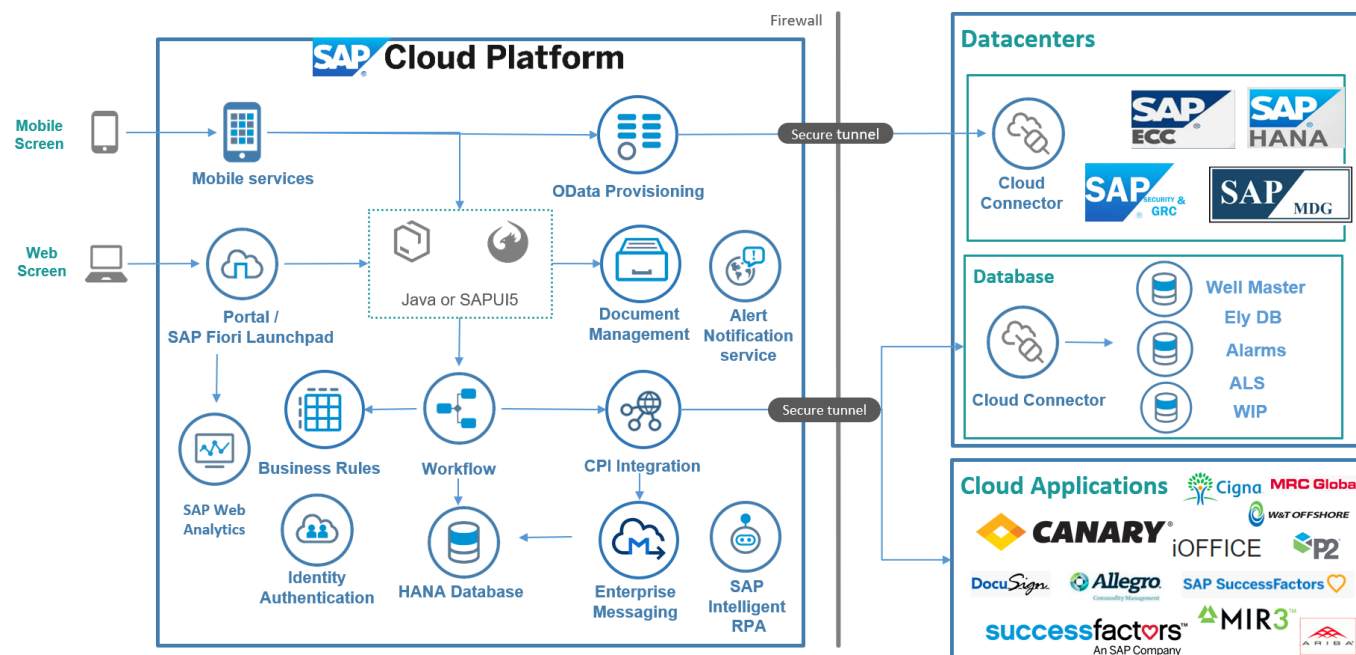
- **SAP HANA:** SAP Cloud Platform and SAP HANA for application details as well as storing information from various data sources (On-Prem and Cloud)

- **Workflow and Rules:** Process Automation and Business Rules for User Management Applications & Insight to Action.

- **Document Services:** Documents upload during transactions using Document services on SAP Cloud Platform. Document Services is being used for Business Application objects like SES, Invoice and Purchase Order documents.

- **Web Analytics:** Usage analytics for 30+ Digital application deployed on SAP Cloud Platform

Deployment

Deployment status Live

Date 17th Nov 2020   **Number of users** 450

SAP® technologies used:

	SAP product	Deployment status (live or proof of concept [POC])	Contribution to project
1	SAP Cloud Platform – SAP Fiori, Mobility and Web Analytics	Live	Unified Portal, SAP Fiori & SAPUI5, iOS SDK and MDK based applications for employees, vendors and executives
2	SAP Cloud Platform – Integration, Enterprise Messaging, Alert Framework	Live	34+ systems integration using Adapters, Prepacked Content, Enterprise Messaging, Alert Framework,
3	SAP HANA	Live	Real-time information for digital application and Business Rules to find data anomaly to raise alerts
4	SAP Cloud Platform Workflow Management, foundation package	Live	Process Orchestration between 14 different systems and Approval mechanisms. Business Rules for approver matrix

If you have used one or more of the services or support offerings from SAP Services and Support during the implementation or deployment phase, please indicate which one(s) below with an ☒

☐ SAP MaxAttention™   ☐ SAP ActiveAttention™   ☐ SAP Advanced Deployment

☐ SAP Value Assurance   ☐ SAP Model Company   ☐ Others:

☐ SAP Innovation Services   ☐ SAP Innovative Business Solutions

Advanced Technologies (1 of 2)

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

Technology or use case	Product used*	Contribution to project and how product used integrates with SAP products
1 Machine learning or artificial intelligence Robotic process automation, conversational AI	SAP Cloud Platform – SAP Intelligent RPA SAP Cloud Platform – SAP Conversational AI	Unattended BOTs for data entry in SAP Ariba, Non-SAP Cloud Applications, Desktop Applications, MS Excel and MS Teams for collaboration. Enabled Chat functions for Inquiry on Web application
2 Intelligent data management Multi-cloud, data virtualization and governance, smart data tiering, persistent memory, data privacy		
3 Advanced and augmented analytics • Real-time and streaming analytics, spatial analytics • Natural language query and generation • AutoML to identify trends, patterns, outliers • Predictive analytics (time series analysis and forecasting, regression, classification)	Apple iOS ARKit (Augmented Reality) Google Dialogue Flow and Speech (NLP)	Native iOS ARKit has been leveraged in iOS SDK for SAP BTP based Mobile application Leveraged Virtual assistance scenario for Field Operators Google Dialogue Flow and Speech framework has been integrated with iOS SDK for SAP BTP based Mobile application. Voice function enabled on Mobile Users from Field Operations team
4 Data and analytics solutions in the cloud • Unified data and analytics cloud platforms by SAP • Modern/self-service data to analytics	SAP HANA SAP Message Queuing SAP Alert Notification service for SAP BTP	Real-time information for digital application and data steaming from multi-cloud sources to SAP HANA via SAP Message Queuing

*If this is not an SAP product, explain how it integrates with SAP products.

Advanced Technologies (2 of 2)

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

	Technology or use case	Product used*	Contribution to project and how product used integrates with SAP products
5	**Advanced cloud integration** • API economy (monetization and API marketplaces) • AI-based or crowdsourced integration • High throughput, low-latency digital integration hub	SAP Cloud Platform Integration	Pre-packaged content and APIs for integration with SAP ERP Central Component with SAP SuccessFactors and and non-SAP systems.
6	**Industry cloud platform**		
7	**Blockchain**		
8	**Digital Twin & Map View**	SAP HANA SAP Fiori and SAPUI5 ESRI Plotly	**Map based view of Active and Completed wells**. ArcGIS JS included as reference. Digital twin of live wellbore which is getting completed. Also impact of different parameters can be simulated on 3D and 2D model. Plotly JS has been included into SAPUI5 project
9	**Insight to Action**	SAP HANA SAP Cloud Platform Business Rules	Improved forecasting by identifying data anomalies and creating tasks in Workbench using AI based business rules

*If this is not an SAP product, explain how it integrates with SAP products.