

Scale the Shale with Pump by Exception Platform

Production Efficient Oilfields Scale Shale Game

Shale is your business. And scale is the game. Permian is the playground for the next phase of shale revolution, and you must play your hands well. Your bets on shale pay off when your oilfields are lean, intuitive and production efficient. Your fast-evolving priorities demand your oilfield technologies to respond by equipping you to pump more without adding more people in the field or increasing cost. In short, everyone in your oilfield must be equipped to pump by exception.

Pump by Exception Leads the Path to Scale

Addressing high value assets in distress on priority requires the ability to pump by exception. Your operation technologies and field optimization teams are leading significant initiatives to build pump by exception capabilities in house. The fast-evolving priorities in oilfield demand that they move at lightning speed and deliver enterprise level scalability with ease. They have not found much help with available tools in the market as most production software vendors do not innovate fast enough and are still trying to move past traditional paper or spreadsheet-based data gathering practices, static routes and disparate interfaces. And, off-the-shelf generic tools do not understand oilfield nuances, hence, fail to deliver. Thus, your teams are driven to build software for tech driven efficiencies, inhouse. But their earnest intent efforts require support in:

- **Driving Higher Adoption:** The field optimization applications are geared to provide better routes but are low on mobility and trust and are difficult to navigate. This makes more demands on the field than equipping them to deliver more, leading to lower adoption.
- **Focused Innovation:** The inhouse software development requires a lot of effort in maintaining large teams of software professionals focused on solving specific issues. They are challenged to bring in industry best practices and meet the pace of technology innovation in cloud, mobility, AI and big data technologies.
- **Easy Scalability and Speed:** Taking one step at a time to solve for one business case in one oilfield, the inhouse teams need a lot more time and effort to build enterprise level scalability. This makes their applications slower in time to value.

Oil and gas companies poised for the next big leap, ready to scale the shale in Permian, need an alternative to inhouse development, legacy systems and generic horizontal tools. The answer lies in a scalable technology platform that allows their teams to build their own workflows to keep pace with the rapidly changing business priorities and address the requirements of every oilfield function, equipping each field worker to pump by exception.

JOYN 2 - The First Pump by Exception Platform Built for Oilfields

JOYN 2 is designed to equip oil and gas producers to scale with speed, ease and confidence. It delivers a connected, scalable and cost-lean oilfield with:



- Intuitive mobile app for trustworthy data capture and last-mile connectivity to access, execute and update task status on the go.
- Configurable task scoring and rules engine for faster incubation of evolving business priorities.
- Dynamic routing engine to address high value assets on priority by matching best suited resources to most critical tasks.
- Integration of legacy systems and automation technologies (SCADA) on one platform for workflow automation.

Connect Everyone, Get Last Mile Connectivity

JOYN 2 bridges the last mile connectivity gap with mobility, providing each field worker easy access to all assets data and every task through the day on their mobile phone. Now every field worker can:

- Gather variety of field data on the go on an intuitive mobile app with easy navigation.
- Validate data at the point of entry and do away with erroneous or double entry.
- Access history of asset performance, previous readings or other details for informed execution of tasks.
- Accept tasks and get directed to task location, or choose their own stop sequence.
- Update status with comments, images or follow up action recommendations.
- Create new or follow up tasks on the go and assign them to specific teams / technicians.

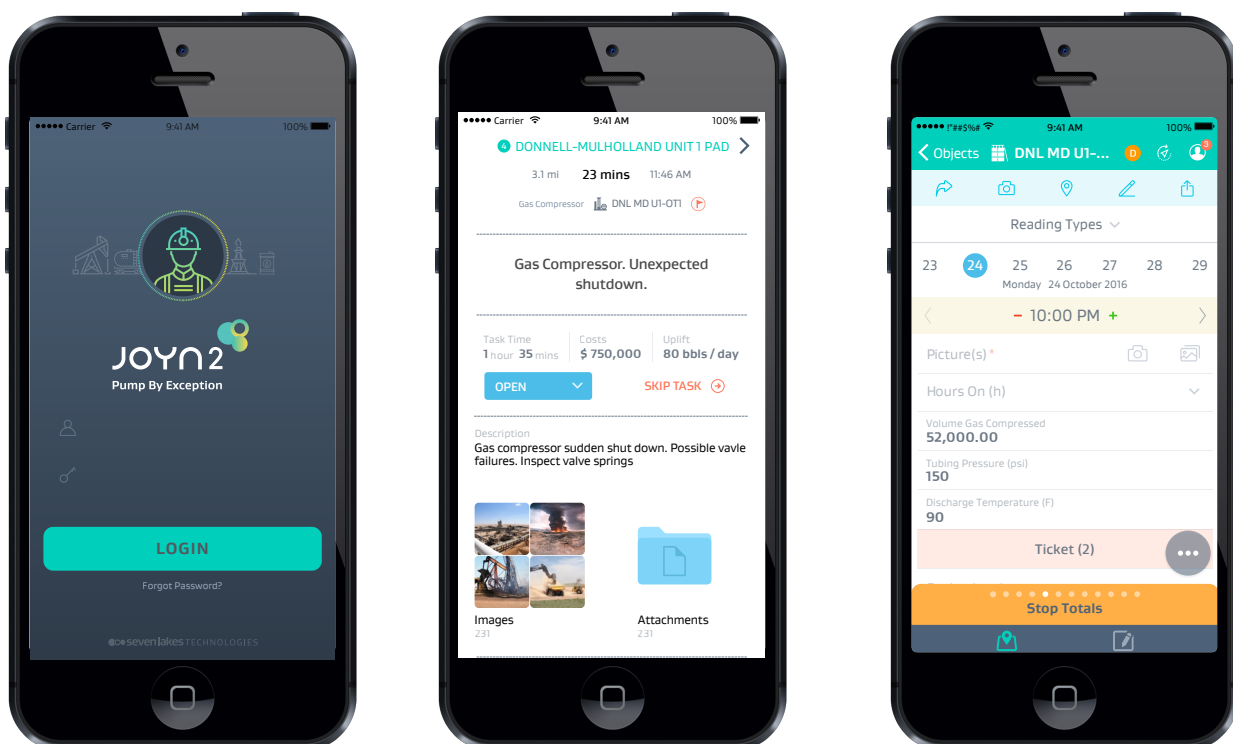


Figure 1. JOYN 2 Mobile App



Configure Critical Business Rules, Address Evolving Priorities

JOYN 2 equips oil and gas producers to address every business criticality to be on top of the game, not by hard coding each use case but by dynamically configuring several hundred business rules as per the oilfield priorities. With a formula-based task scoring rules engine at its core, it addresses every scenario from production uptick to preventive maintenance or managing leasing priorities. For instance, there is no need for another tool to manage E&H compliance or to address downtime of high producing wells, now users can:

- Configure data attribute based or, calendar-based rules using a variety of logical and math expressions for wells, tanks, meters and various other assets in the oilfields as per their function and production value.
- Get aggregate scores at stop level and handle tasks spilling over to next day with score increment logic.
- Create and score tasks based on SCADA alerts, readings from field assets and other logical expressions.

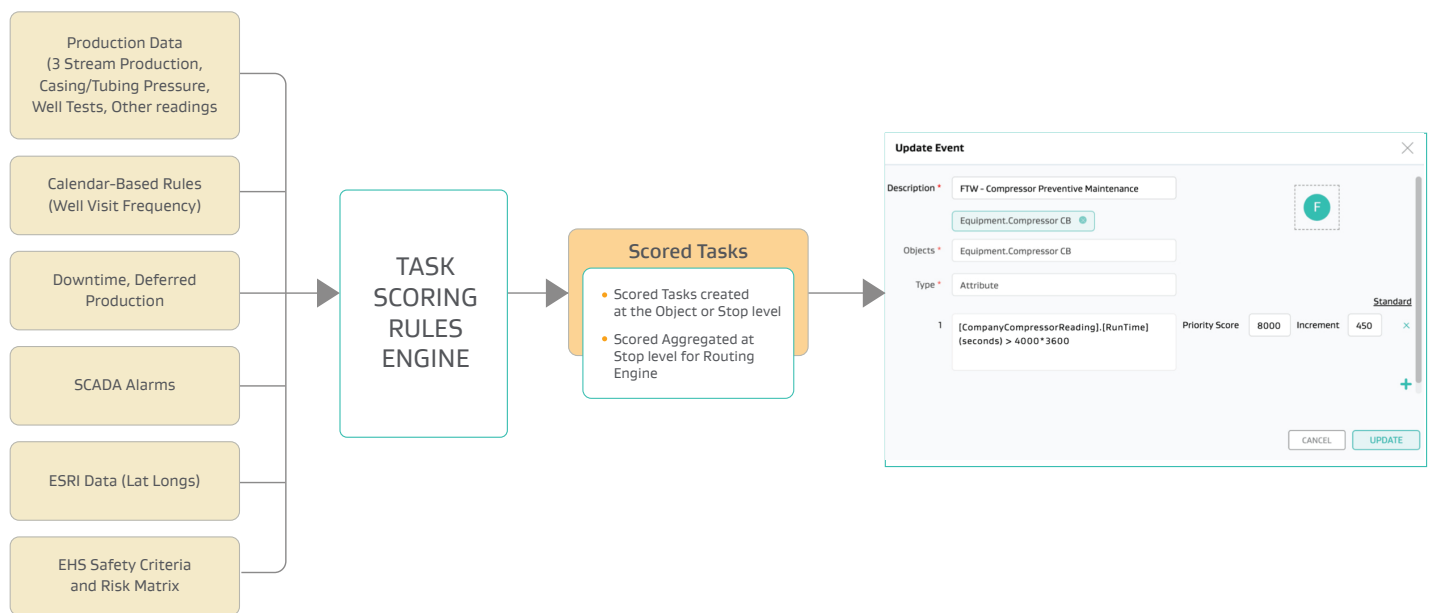


Figure 2. JOYN 2 Task Scoring Rules Engine

Execute High Value Tasks on Priority

Uberize oilfields for route-less operations and address high value assets on priority with artificial intelligence powered dynamic routing engine at the heart of JOYN 2. Developed with over 3 years ongoing R&D effort by a team of experts, the dynamic routing engine leverages leading optimization techniques and frameworks to solve larger, variant routing problems extending the Vehicle Routing Problem (VRP) model beyond heuristics. JOYN 2 equips oilfields to:

- Match the most critical tasks to best suited workers based on their proximity to the event, their skills and priority score assigned to the task, automatically.



- Create teams based on the role and skills of workers and assign them areas to operate.
- Assign teams to cover multiple areas as per requirements or pull resources from different teams to execute certain tasks, with ease.
- Pre -schedule preventive maintenance tasks such as change of compressor at wells. JOYN 2 picks the right resources from various teams and directs them to the location with a “hard-start time” configured at desired frequency.
- Respond with speed to emergent events like oil spill or high value well going down by automatically dispatching the right resource with the right skills at the right time.
- Execute tasks in a sequence to ensure every minute of the field teams is optimized and utilized for productive work.

● Indicates activities in JOYN ● Indicates integration activities with EAM

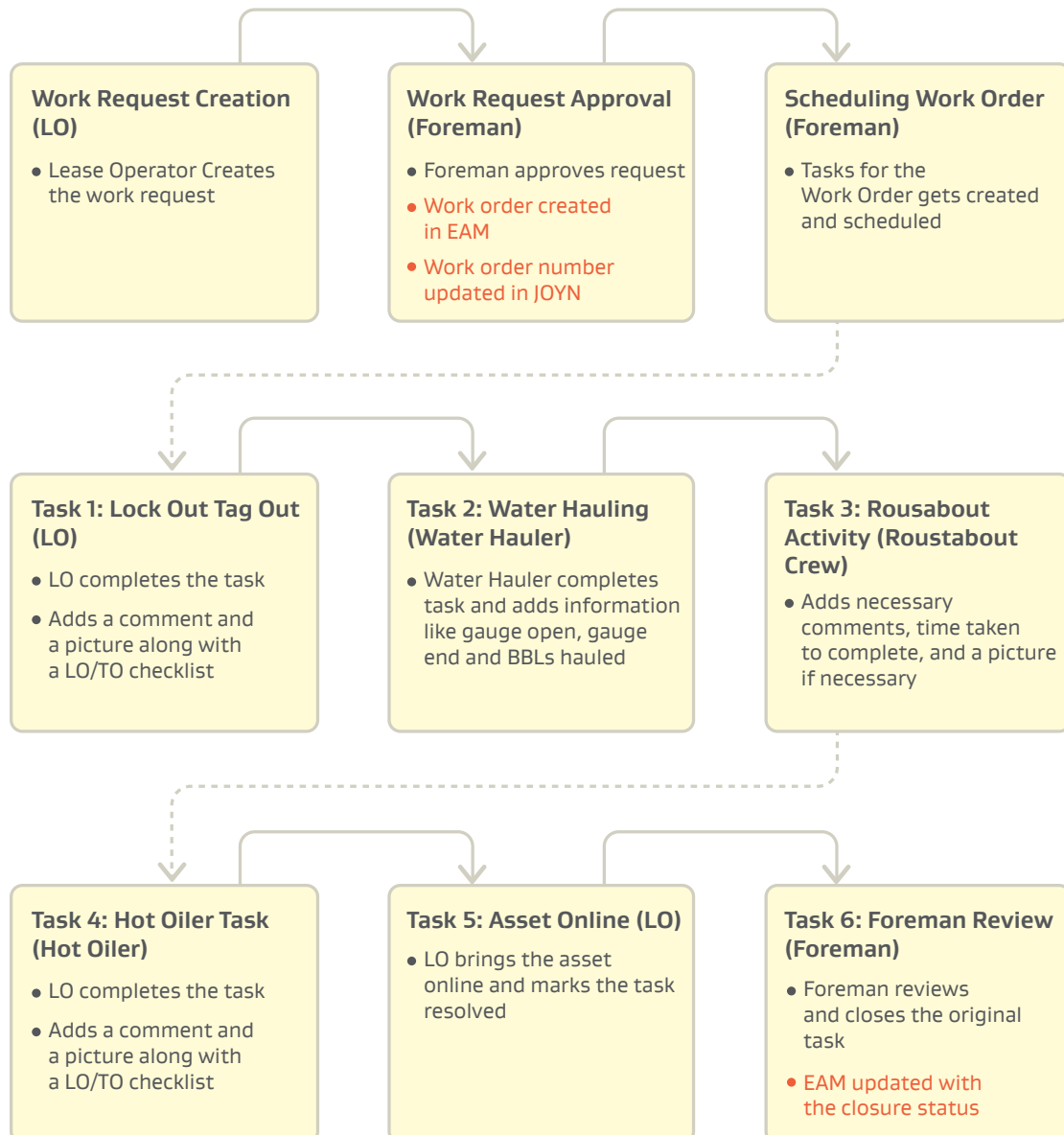


Figure 3. Task Sequencing with Dynamic Routing Engine

Seamless Integration for Prioritized Task Execution

Streamline each activity in the oilfield by breaking it down to executable tasks, put them all in one place, and connect everyone in the field and office with seamless integration of data from Production Accounting, ESRI, SCADA and different Enterprise Asset Management systems. JOYN2 equips oilfields to:

- Integrate assets master data from Production Accounting systems to identify the different asset types and their production volumes.
- Direct workers to the exact location of assets with ESRI data.
- Prioritize and rationalize alerts by integrating and analyzing Scada alerts in conjunction with production data.
- Access workorders and inventories on the go to complete tasks and update status with EAM systems integration.

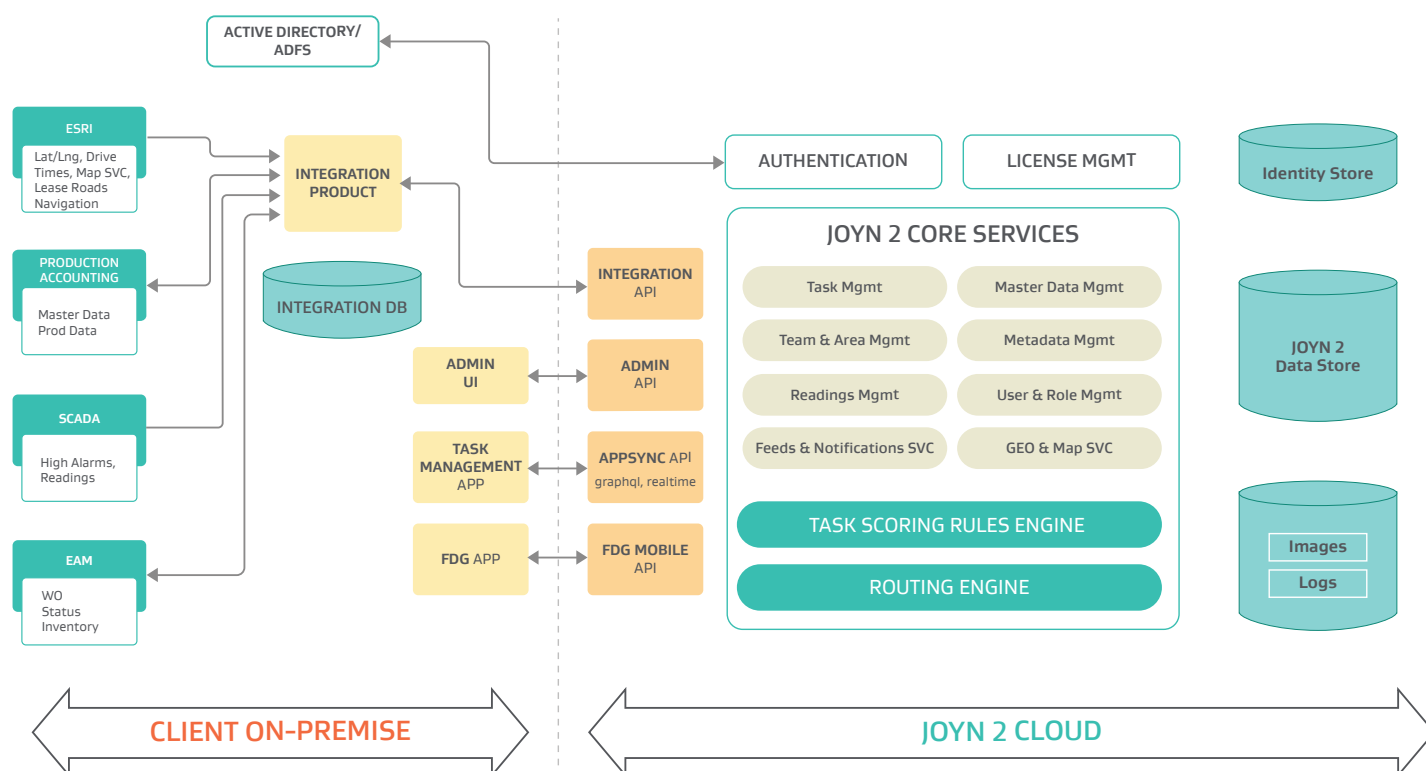


Figure 4. JOYN 2 Integration Architecture

Create Connected Oilfields that Pump by Exception

Your oilfields pump by exception connected with intuitive mobility - every function, every role and every activity, is on one platform. Field, office, operations, production accounting and business decisionmakers – all have complete visibility of every aspect of field operations with cloud-based access to data. Risks are easily identified and promptly addressed with workflow automation through seamless integration of SCADA and other legacy systems. Every business-critical priority is addressed swiftly with simple configuration of rules. Workers are dynamically routed to deliver more by cutting down office work in field and addressing high value assets on priority. Connected oilfields powered by artificial intelligence, cloud and mobility are a reality with JOYN 2.