We have successfully completed over 200 projects in 65+ countries

Cloud-Based SaaS Platform for Well Drilling & Construction Management

A centralized digital drilling management SaaS platform tailored to streamline the complex and multi-phase process of oil and gas well construction. The cloud-based solution is designed for Operators and Service Providers, helping them to manage the entire project lifecycle, from construction and drilling to completion and facility setup, through one cohesive and scalable system.

Timeline

Reports

۲³

0

Мар

26" / 350' MD/350

16" / 5000' MD/5000

12" / 6000' MD/6000

8" / 9000' MD/9000'

Satellite

Wellbore Diagram

Projects

Well Info

56894

Cascade Ridge 2B

Juan Martinez

Well Info

Projects • Cascade Ridge 2B • Cascade Ridge Resource

Wellbore Diagram

Dakota, USA

Phase

Location Coordinates

36 06566 - 96 1312853

Permitting / Planning

@ L7

MAIN MENU

Projects

\$ AFE ∠ Users

(Timeline Manager

Well Builder

Dashboard

Drilling Scheduler Q 2 Timeline Reports ■ Documents Date Report Name **1**1 Milestone Status Duration 04 05 06 07 08 14 days 06/02/2025 Permitting / Planning **Drilling Operations Summary** In Process Construction Pending 16 days 06/02/2025 Daily Rig Hour Log (Shift-by-Shift) 06/02/2025 Mud Program & Fluid Report Pending 20 days 06/03/2025 → Facility Daily Cost-to-Date & Expenditure... Pending 14 days 06/03/2025 → Testing Pending 10 days Personnel & Crew Assignment Re.. ③ Support Evaluation 06/03/2025 Safety, Incidents & HSE Report 〔→ Log out Project in Facts **Industry** Project life (months) Region Initial Release: 12 months Oil & Gas USA Final Release: 8 months **Estimated Man-Hours** Business Middle-sized 30,000+ Key technologies Node.js React Native Webix TypeScript MySQL Amazon AWS **Business Challenge**

piece for budget control and project evaluation. Our client struggled to automate these interconnected processes. They relied on Excel, Word, manual graphics, and shared/hard drives to manage daily tasks. But this scattered approach brought along an avalanche of issues: process delays and time gaps, manual input errors and discrepancies, forecasting challenges, lack of synchronous updates, inefficient collaboration, etc. To address these issues, our client aimed to build a scalable SaaS platform that supports internal operations and can also be licensed to other oil & gas companies. The solution required advanced project management tools to enable smooth cross-functional collaboration, integrate dynamic well construction modules for real-time visibility, and provide reliable AFE tracking — all

of which are top priorities for decision-makers managing complex well construction projects.

Thus, the goals for this drilling & wells management system development project were

ambitious:

personnel allocation;

tool decision-makers use to compare actual spending against what was planned — a critical

and communications should be managed in one place, ensuring consistency, traceability, and easier access for stakeholders across different time zones; Lack of Real-Time Updates and Full Resource Visibility: Dynamic dashboards and automated status updates have to provide project managers, engineers, and field operators with up-to-the-minute information on well progress, equipment status, and

Delays Due to Manual and Disorganized Operations: Automated scheduling and

drilling, and completion phases, while built-in analytics should identify process

resource management tools should help to minimize idle time between construction,

Disconnected Systems and Communication Issues: All project documents, schedules,

inefficiencies and suggest improvements, further accelerating project timelines; Collaboration Silos Between Operators and Service Providers: The system has to facilitate secure, role-based access for both internal teams and external partners, such as drilling contractors and equipment suppliers. Integrated communication tools (e.g., chat, file sharing, task assignments) would be suitable to streamline coordination, while

automated logging of all interactions would ensure accountability and transparency.

Solution

We worked closely with the client to engineer a powerful yet flexible <u>SaaS platform</u> for well drilling

that tackles both current inefficiencies and future growth. It was decided to develop a full-cycle

well construction management solution built around a modular architecture and designed for

subscription-based access by third-party companies. For added security, each operator's and service provider's data was stored in separate databases, connected through a multi-connection setup. Documents such as certificates, licenses, or RFPs, once shared with a counterparty, cannot be deleted or modified — only new versions can be uploaded. This safeguard, enforced at the file system level with hard links, prevents conflicts

where one party might otherwise remove a document another one is already working on.

Another challenge was inconsistent coding: the same operation could have different codes or

operations code dictionary for the entire service and applied custom mapping for each operator

levels of detail depending on the operator or service provider. To solve this, we built a unified

By bridging the needs of engineers and executives, the software wouldn't just digitize, it was

intended to transform how drilling operations & project management programs and drilling

software & automation tools are used to manage well construction across the organization.

Streamline collaboration between Ensure quick updates and real-time **Operators and Service Providers** for forecasts for scheduling and resource onboarding and RFP with the Service monitoring via the Drilling Scheduler Module and enable scheduling tasks, module, helping crews to stay ahead of allocating resources, and tracking delays. Drag-and-drop planning allows

When operations span multiple departments, time zones, and tools, delays and

data inconsistencies become inevitable. Our challenge was to design a system

both in data and strategy. The key was finding common ground between those in

the field and those in the boardroom, only then could we develop a solution that

where everyone — from drilling engineers to leadership — stays synchronized,

software.

effortlessly to build Gantt charts for

Timeline Manager workflows and phase

expected in top-tier drilling optimization

Integrate Reports module to eliminate

manual data entry for reports. Tailored

for onsite personnel, the system allows

operators, managers, and other staff to

material usage with precision and ease

log daily activities, hours worked, and

even in low-connectivity zones.

interdependencies, reflecting features

Marina Khramtsova

Well Builder

(\) Timeline Manager

Drilling Scheduler

Well Builder ∠ Reports

■ Documents

③ Support [→ Log out

II. Dashboard Projects

Services

\$ AFE

Q Users

∠ Reports

Timeline Manager Well Builder

Trilling Scheduler

■ Documents

Support

[→ Log out

Smart Design, Fewer Errors

management systems.

Design Visualization & Automation

and provider.

milestones across all four construction

phases. Instant data sync ensures live

Simplify Authorization for Expenditure

(AFE) and implement Well Builder

module with intuitive dashboards to

support live monitoring of financials

against planned budgets and allow

instantaneous tracking of AFE budgets,

NPT, and drilling progress via dynamic

truly delivers value across the board.

expected from advanced drilling engineering software.

updates throughout the system for

seamless execution.

grids and charts.

Well Builder Well Builder • Cascade Ridge 2B • Cascade Ridge Resource II. Dashboard Location Drilling Completions Facility Projects Services **2D** 3D Stage Data Well Info [0, 7 Wellbore Diagram (\$) AFE Number of Stages Sand Concentration, ppf ○ Users 12,000 2 30 70 days Fluid Type Stage Length, ft Phasing, deg Latitud Slick Water 220 60 29.760427

Fluid Intensity, bpf

Drilling Rig Layout

Pumps

Gen

Gen

Based on our experience developing planning tools for complex engineering environments,

we focused on eliminating time-wasting back-and-forth between siloed teams. Every design

edit made in the module — say, changing casing depth — automatically adjusts both the

Engineers can use the Wellbore Diagram (WBD) to visualize the entire trajectory, from

vertical and horizontal profiles to casing strings and section details. Each section of the well

between departments, which are common pain points in traditional well drilling

AFE budget and the Timeline Manager. No more spreadsheet shuffling or manual syncing

Sand Size, mesh

Mud Tank

Plug Type

Composites

151.209900

Satellite

@ ₂7

围

Pipeline

40

@ L7

Lease Name

Stillwater

Show: All 🗸

11

Last Modified

12 13 14 15 16

02.08.2025 by Joan Benson

∏ Filters ∨ "2"

Sioux Falls, South Dakota, USA

June 2025

Surface Location Coordinates

36.06566 - 96.1312853

04 05 06 07 08

Creating a modern oil & gas SaaS platform isn't just about collecting data — it's about making it

work across all planning phases. That's why we implemented a fully integrated Well Builder

module to help users to cover all stages in one connected flow, aligning with the capabilities

includes everything from bit selection and BHA configurations to mud programs and drilling hazards. The visual components are vital in drilling optimization systems and help to ensure that software for the drilling industry actively contributes to risk reduction and better planning. Timeline Manager Planning a well is one thing. Keeping everything on schedule is a whole different game. That's why we developed a Timeline Manager module with phase-specific workflows that connects every stage of well construction to an operational timeline — a must-have for any modern drilling management system — ensuring that no detail gets left behind or delayed. Frank Flores
Operator **Timeline Manager** MAIN MENU

50123645687

Anadarko

Timeline Manager . Cascade Ridge 2B . Cascade Ridge Resource

70 days

56894

Start Date

06/02/2025

06/02/2025

06/02/2025

06/06/2025 06/10/2025 06/12/2025

06/12/2025

06/14/2025 06/14/2025

06/16/2025

07/03/2025

adjusting the AFE and keeping the entire operation on track.

Duration

70 days

14 days

2 days

2 days

16 days

21 days

Drawing on our background in <u>developing project scheduling systems</u>, we made sure the

Builder module, meaning once the design is finalized, the timeline updates automatically,

With DvD (Depth vs. Days) charts, users can track drilling progress and spot delays early.

Gantt charts map out phase dependencies, like making sure pad construction wraps up

The system also includes automated lead time alerts. When a user needs a cementing crew

before rigs move in, so nothing gets blocked at the last minute. These capabilities are

essential for teams relying on drilling optimization software and drilling operations &

management programs to ensure success across complex, multi-stage projects.

mobilized 5 days ahead of casing, they get a heads-up, not a headache. And as the schedule shifts, the AFE (Authorization for Expenditure) adjusts in real time, keeping

budgets realistic and decision-makers informed. This level of coordination is critical for

users of oil & gas well drilling software and aligns with best practices in software for the

The AFE (Authorization for Expenditure) module is designed with built-in compliance and

Well Status

In Process

In Process

In Process

Completed

Need to compare a 3-string design to a 4-string setup? The system lets the users create

multiple AFE versions and run scenario analyses in minutes. Everyone involved can

optimize well economics and make faster budget decisions, such as evaluating cost

To prevent critical service gaps, key services like cementing or casing are flagged as

"obligatory." That means no one can accidentally delete them without the right approval,

Design Name

Draft well design -11

Well A-101 (Rev 02)

Draft well design -11

Well A-101 v1.1

Directional Drilling Plan

BOP & Surface Equipment Lay...

Well Integrity & Cement Evalu...

Drillpipe & BHA - AFE-7890

Drilling Design AFE-7890 (Su...

Temperature & Pressure Profil...

As-Built Drilling Report - Well-...

Rig Mobilization & Move Plan

Corrosion Control / CP Design

Well A-103 v1.2

Drill String / BHA Design

Hydraulic Fracture Design

Well A-11 (Multi-stage)

↓↑ AFE

98965

34465785

123687794

1023478

6583948

35473239

69679374

56632890

5634783

5674373

67578499

34465294

676869

574744748

Description

Detailed site investigation,...

Bore construction to indus...

Bore construction to indus... Corrosion-resistant casing...

Installation of a submersib..

On-site storage capacity si...

Detailed site investigation,...

Water quality testing regime

Access track improvement...

Environmental impact ass...

Mitigation measures to pr...

A local operator/manager...

A water allocation and acc..

Detailed site investigation,...

Updated ↓↑

06/02/2025

06/02/2025

05/23/2025

05/22/2025

05/20/2025

05/16/2025

05/10/2025

04/26/2025

04/23/2025

04/17/2025

04/09/2025

04/04/2025

03/30/2025

03/22/2025

03/16/2025

Frank Flores
Operator

Drill Bits, Mud, Casing Detailed site investi...

Under-reamer, Drill B... Installation of a sub...

Mud, Casing, Casing... On-site storage cap...

Mud, Casing, Casing... Detailed site investi...

Drill Bits, Mud, Casing Water quality testin...

Under-reamer, Drill B... Mitigation measure...

Design with interme... A local operator/ma...

Drill Bits, Mud. Casing A water allocation a...

Under-reamer, Drill B... Detailed site investi...

Drill Bits, Mud, Casing Detailed site investi...

Under-reamer, Drill B... Detailed site investi...

Design with interme... Detailed site investi...

Under-reamer

Under-reamer

Drill Bits, Mud, Casin...

Drill Bits, Mud, Casin... Bore construction to... 06/02/2025

Under-reamer, Drill B... Corrosion-resistant... 05/23/2025

Access track improv...

Environmental impa...

Detailed site investi...

Detailed site investi... 03/16/2025

Updated ↓↑

06/02/2025

05/22/2025

05/22/2025

05/16/2025

05/10/2025

05/08/2025

04/23/2025

04/17/2025

04/10/2025

04/04/2025

03/30/2025

03/22/2025

Export

Rig-102 Delta Report Nº

7,920 ft

Pine Creek Field

Juan Martinez

24 HR FTG

\$2,000,000.00

150 ft

+1 (432) 555-1212

20250827-PINEA12-001

Executive Summary Report

Acme Drilling LLC

RIH with 9 7/8" casing,

Cement shoe and circulate;

running to 8,400 ft

POOH with drill pipe

Activity Planned

\$34,580.00 \$1.234.560.00

2025-08-27

8,450 ft

Timeline Manager would do more than just chart dates. It's fully synced with the Well

Well Info

Project Name

Well Name

Gantt

Cascade Ridge Resource

Cascade Ridge Resource

Permitting / Planning

Select rig and negotiate

Construction plan

Apply for permit

Wait for permit

Permit approval

Construction
 ■

Drilling

Timeline-Driven Accuracy

Visual Planning, Better Decisions

Never Miss a Mobilization

drilling industry.

AFE Module

MAIN MENU II. Dashboard

Projects

Services

\$ AFE

○ Users

(1) Timeline Manager

Trilling Scheduler

Well Builder

■ Documents

③ Support

Log out

∠ Reports

Cascade Ridge 2B

financial control to keep Operators audit-ready at all times. Recognizing that cost codes vary widely between operators and service providers — often drastically — the solution includes customizable cost code automation and flexible mapping. This allows each stakeholder to track and report labor and equipment costs using their unique coding systems without confusion or data loss.

Authorization for Expenditure

Cascade Ridge Resource Cascade Ridge 2B

√ Filters
✓

Well Name

Harbor Test-01

Harbor Test-01

Desertwell A3

Desertwell A3

Desertwell A3

Copperleaf-01

Copperleaf-01

Ridgeview-3

Frontier-12

Frontier-12

Highland Spring-5

Highland Spring-5

List Tree

Project Name

Blue Harbor Offshore

Blue Harbor Offshore

Blue Harbor Offshore

Outback Water Access

Outback Water Access

Outback Water Access

Outback Water Access

Copperleaf Groundwater

Copperleaf Groundwater

Blue Ridge Aquifer

Northern Borehole

Northern Borehole

Springs Wellfield

Springs Wellfield

savings across different configurations.

protecting both compliance and continuity.

Equipment Cost Tracking Across Stages

Service Module & RFP

and timelines.

MAIN MENU II. Dashboard

Projects

RFP

\$ AFE

O Users

(1) Timeline Manager

Trilling Scheduler

■ Documents

Support

Well Builder

∠ Reports

to course-correct early and stay within financial targets.

Request for Proposal

Project Name ↓↑ Well Name

Cascade Ridge Res... Cascade Ri

Cascade Ridge Res... Cascade Ri

Cascade Ridge Res...

Cascade Ridge Res...

Blue Harbor Offshore

Outback Water Acce...

Outback Water Acce...

Outback Water Acce..

Outback Water Acce...

Copperleaf Ground...

Copperleaf Ground...

Blue Ridge Aquifer

Northern Borehole

Northern Borehole

Springs Wellfield

Springs Wellfield

Standardized & Streamlined Process

Seamless Onboarding, Fewer Delays

handoffs from planning to execution.

relationships.

Reports

MAIN MENU

(\$) AFE Q Users

3 Support

[→ Log out

□ Dashboard

Built-In Collaboration with Service Providers

Desertwell

Desertwell

Copperleaf

Copperleaf

Ridgeview-

Frontier-12

New RFP

Project Name

Well Design

Services

Highland Spring-5 • Completed

is already in place, cutting procurement cycle times by up to 50%.

Highland Spring-5 • Completed 13

Select or type

Cancel

Completed

Completed

33

Forget manual RFPs and email chaos. The system auto-generates RFPs with pre-filled

specs pulled directly from the Well Builder module. Everything from rig specs to mud weight

Awarded providers move straight into an onboarding workflow that tracks COI (Certificate

other must-have documentation. Nothing gets lost. Nothing gets skipped. Only clean

of Insurance), MSA (Master Service Agreement), NDA (Non-Disclosure Agreement), and any

Vendors aren't just vendors — they're partners. That's why the system includes a feedback

loop where providers can recommend design optimizations (like a more cost-effective BHA

Manual reports and data entry were eliminated. The reporting feature centralizes the field data

reports are instantly available to the crew. Whether it's mud properties, BHA configurations, or NPT logs, the departments are always working with the most up-to-date information, reducing

+ P10 + P50 + P90

• P10 • P50 • P90

Cascade Ridge Resource, days

No need to reinvent the wheel every day. Predefined templates make reporting a breeze,

from routine activities to incident tracking. Automated fields like wellbore geometry and

Get reports approved faster. With an easy-to-follow approval process, supervisors can

quickly review, approve, and track field activities. There is no need to wait for days on end

for sign-offs. Any adjustments are instantly reflected across the project, and everyone gets

on the fly, ensuring everyone has access to the latest updates. With automated syncing, all daily

configuration) right inside the RFP response. It helps to build stronger designs and

Cascade Ridge Resource

Select available well or create new well for project.

Cascade Ridge 2B

Select project from the list or start typing, or add new project here.

16

28

24

20

Q Search

Smarter Planning & Spending

Controlled Flexibility

Live Syns, No Surprises As proposal costs flow in from the Service Module or activity durations shift in the Timeline Manager, the AFE updates in real time. That means financial forecasts are always aligned with operational reality, helping personnel to stay on budget and in control.

AFE also enables departments to track the budgeted vs. actual costs of key equipment

throughout all stages of the project. This financial monitoring ensures better visibility into

equipment usage and flags budget overruns tied to specific services or assets, helping staff

(automation systems, communications gear, metering and measurement tools) used

Slow vendor onboarding and inconsistent proposals can bring well planning to a crawl. The

Service Module was built to speed things up and clean things up, so procurement aligns with

instrument rentals. For example, if a Coiled Tubing Unit includes embedded automation or if

you're contracting directional drilling with MWD tools, the module logs requests, vendor details,

design, timelines, and compliance, as well as to request, procure, and track service providers and

(1) Timeline Manage Well Builder ∠ Reports Drilling Scheduler ■ Documents

Template for Every Situation

Enhanced Approval Workflow

Mobile & Desktop Access

Tools & Technologies

complex drilling workflows across all phases.

Amazon AWS. This cloud backbone enabled:

High availability and performance, even under heavy load;

Secure data storage that meets industry compliance standards;

comparisons in reporting).

new users.

feel in control of their field ops.

across teams.

equipment lists save time and prevent errors.

full-circle visibility to drive better decisions.

administrative overhead by 70%.

Reports

Reports • Cascade Ridge 2B • Cascade Ridge Resource

Depth vs Time Progression

connected. Whether someone is in the field or at headquarters, everyone's on the same page, with no delays in communication.

Logging activities on the go or from the office makes it easier for departments to stay

smoother, audits are no longer a headache, and they finally have full transparency on who approved what and when. Before we stepped in, daily reporting meant manual entries, inconsistent formats, and long delays waiting for supervisor approvals. With Report Manager, our client now has a centralized hub where field data flows in real-time. Predefined templates and automated fields (like equipment lists and wellbore geometry) keep reports consistent and accurate. Live approval

Result

shift from outdated manual methods to a modern, cloud-based SaaS platform brought

immediate benefits. The drilling system transformed well construction from a patchwork of

disconnected tools into a streamlined, audit-ready digital ecosystem. After going live, our client

Let's start

management system; Admin overhead dropped by 60%, as real-time dashboards replaced spreadsheets, emails,

Visit

https://xbsoftware.com/

choosing Node.js allowed the client to have a fast and responsive process with no delays or bottlenecks. A powerful relational database sits at the heart of the platform, capturing everything from service provider bids to drilling hazards, because MySQL ensured data is always accurate, queryable, and compliant (supporting fast scenario analysis in the AFE module or historical

To ensure the software could grow alongside the company operations, we deployed it on

Scalable infrastructure that evolves as the business expands across new regions or adds

The Webix JavaScript Ul library was used to ensure a smooth workflow and rich, interactive

interface. Just clean, intuitive components that reduce training time and increase user adoption

Our client was tired of chasing down the latest version of drilling programs buried in email chains

structured space where every compliance document is auto-organized, version-controlled, and

and mismatched folders. With the Webix Document Manager, we gave them a centralized,

ready for sign-off. Now, their teams build standardized programs faster using predefined

templates and real-time data from across the platform. Besides that, internal reviews are

flows mean supervisors can review and sign off without delays, and the entire team sees

updates immediately. Reporting that used to take hours now happens in minutes, and they finally

We deployed a scalable, high-performance tech stack that acts as the centralized core for

complex logic and instantaneous data processing. Whether it's syncing AFE budgets with

Using Node JS paired with TypeScript, we developed a high-performance backend that handles

updated durations in the Timeline Manager or pushing daily report activity logs across modules,

The company needed a better way to keep complex well activities on track, and spreadsheets weren't cutting it. By implementing <u>Scheduler</u> and <u>Gantt Charts</u> we gave the client a clear, visual timeline where teams could plan, track, and adjust each phase of construction with confidence. Now, when timelines shift, the system auto-updates downstream dependencies and keeps all teams aligned. The client especially loves how easy it is to spot bottlenecks early and reallocate resources on the fly. Fewer delays, better coordination, and way less stress.

The solution we developed integrates well drilling management systems and drilling software & automation tools to optimize workflows and monitor well integrity throughout this stage. The

Interested in developing a similar solution

or have your own idea in mind?

We are ready for any challenge, just contact us!

- and Timeline Manager that eliminated manual syncing and rework. In fact, the solution helped to plan extra wells in the time it would normally take to plan just one.
- saw measurable improvements across key operational areas: ✓ Full visibility into the financial and operational status of every well granted a centralized digital workspace instead of juggling Excel files, paper documents, and manual reports for both engineers to executives. Drilling engineers can now perform planning, reporting, and coordination faster and more accurately. And C-level decision-makers are able to benefit from real-time dashboards and detailed AFE tracking capabilities of the drilling information Planning efficiency increased by 50%, thanks to interconnected modules like Well Builder
 - and fragmented apps. ✓ Procurement cycle time was cut in half, with the Service Module's auto-generated RFPs and structured onboarding workflows. ✓ Budget planning became 3x faster, with dynamic AFE versions, live-synced financial updates, and scenario analysis tools built right in.

Daily reporting efforts were reduced by 70%, giving field personnel additional time to focus on drilling and less on documentation. Beyond the numbers, the business now operates with total visibility, real-time collaboration, and confidence that the data is always up-to-date, audit-ready, and working for the teams, not against them.

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Your questions and requests are always welcome!

Contact Us →

Well construction in the oil and gas industry is no small feat. Each well must go through several meticulous phases. Each stage generates documents, requires strict coordination, and involves numerous players (drilling engineers, managers, construction supervisors, HSE specialists, etc.) operating across different time zones:

specifically for the oil and gas industry; **Completion** – installing the necessary equipment to make the well operational, supported by well drilling monitoring systems and drilling optimization software to ensure performance and compliance; **Facility setup** – connecting the well to processing infrastructure for production and storage; **Production** (for the AFE module) – ongoing operations where AFE (Authorization for Expenditure) tracks actual costs against planned budgets to ensure financial control. It's the

Construction – design, site preparation, including access roads, rig foundations, and securing permits; **Drilling** – creating the borehole and reaching the target depth while ensuring safety and precision, BOPE (Blowout Preventer Equipment) testing. This stage heavily relies on advanced drilling software and drilling information management systems developed