GENESISCORE
Product Sheet

GENESISCORE
GC

SENTINEL

SENTINEL is a behind-the-scenes rig data watchdog. If you have bad data, which is statistically the case, SENTINEL improves the fidelity of decision making throughout your well plan execution. The result equals faster well delivery through improved rate of penetration and reduce non-productive and invisible lost time.

SENTINEL Value Drivers

1. Improve toolset calibration and data confidence,
2. Detect motor failure, loss of drill string, and kicks, and
3. Decision-making in minutes, not days.

RIGTIME

RIGTIME is like a heat-seeking missile for invisible lost time – timely and accurate reporting of key performance indicators that compares rig-to-rig, crew-to-crew, shift-to-shift performance, and recommends an action plan for improvement.

RIGTIME Value Drivers

1. Reduce inefficiencies that lead to invisible lost time (ILT),
2. Identify efficiencies – in in-slip, connection, circulating and wash times, and
3. Improve tripping speeds by 50%.

STRESSWORKS

STRESSWORKS is an all-new geo-mechanics application for identifying potential mechanical borehole stability issues, allowing for lower mud weights, improved casing designs and a higher rate of penetration. The STRESSWORKS calculation engine is a state-of-the-art elasto-plastic mud weight prediction tool using fast finite element code that has been validated against a proprietary borehole stability tool used by a leading super major.

Approximately 20% of drilling operations expenditures is wasted on Non Productive Time, and nearly half of all Non Productive Time is associated with borehole stability and pore pressure / fracture gradient challenges. STRESSWORKS offers the power to plan, predict, and visualize borehole stresses along the wellbore path.

STRESSWORKS Value Drivers

1. Reduce delivery days,
2. Save $100k per well or $1 million per rig, per year – assuming on average 10 wells delivered per year.

RTOC

GenesisRTS' Real-Time Operations Centers (RTOC) provide collaborative workspaces to focus precious tools and resources on supporting the drilling plan against actual and remote drilling operations. Our flexible and scalable product deliverable offers your operation a state-of-the-art, vendor-neutral design that arms your people with the ability to access, visualize, and analyze real-time data from multiple drilling rigs as well as historical well data from completed wells.

RTOC Value Drivers

1. Monitor well delivery planned versus actual
2. Connect rig events with decision makers throughout well delivery lifecycle
3. Promote clear communication among thought leaders

DRILLFAST

DrillFast is a state of the art drilling optimization capability that is design to reduce your well delivery timeline while reducing rig drilling performance deviations across your whole fleet. DrillFast can reduce your well delivery time by 10 percent by increasing drilling technical boundaries while simultaneously identifying and reducing non-productive time (NPT) thru real-time and post-well analysis. Capabilities

DRILLFAST Value Drivers

1. Provide historical analysis; identify well delivery best practices
2. Create a NPT pattern based upon historical cases
3. Generate performance monitoring on a post-well and real-time analysis
4. Maximize ROP and minimize NPT events via real-time capability

SENTINEL, RIGTIME, STRESSWORKS and DRILLFAST currently make up the core components of GENESISCORE; however, our other toolset capabilities in the works include...

ZONECONTROL – an intuitive cementing planning and analysis tool for zonal isolation.

STOPLOSS – provides comprehensive modeling, evaluation and resolution for loss of drilling fluid.

Learn more about GENESISCORE at genesisrts.com.

GENESISCORE is a robust, client-driven tool suite that offers operators mission critical dependability, functionality, and versatility. Optimized drilling saves time and money. The DNA of all tools and software applications within GENESISCORE revolves around the capability to provide essential, best-in-class visualization tools and operations centers for planning, real-time monitoring, and reporting.

SENTINEL RT
Product Sheet

GENESISCORE
SE

The smarter
decision

SENTINEL RT

The extraction of oil and gas from the subsurface of the Earth is a high cost, high risk and high consequence business. A single decision could lead your operation either closer to or safely away from potential disaster. As target depths plunge deeper and pressures increasingly grow the margin of error in these hostile environments has become miniscule. That is exactly why GenesisRTS and Intellicess partnered to develop SENTINEL RT, a revolutionary behind-the-scenes rig data quality watchdog tool for onshore and offshore drilling operations.

Recent industry studies suggest that up to 90% of sensors on rigs are inaccurate, with a sensor reading variance of up to 50% high or low compared to a correct, calibrated reading.

If your drilling operation is receiving bad data, and it probably is, SENTINEL will know – preventing problems before they happen. Sentinel intuitively improves the fidelity of data for more intelligent decision making throughout well plan execution for faster, safer well delivery.

Learn more about SENTINEL at genesisrts.com.

The overall benefits of SENTINEL include:
- Drastic improvements in real-time decision by allowing operators to make the right decision from accurate sensor data vs. making the best guess based on data in which you don't have confidence;
- Dramatic reduction of alarms during drilling operations that are caused by bad data being fed into real-time data analysis software;
- Substantial reduction in NPT by pin-pointing the source of the problem when or even before it occurs, allowing operators to intervene in real-time ;
- Significant increases in drilling efficiencies due to improved MSE calculations; and
- Much higher quality of data that can be utilized for closed loop drilling automation.

REAL-TIME RELIABILITY
SENTINEL greatly improves the quality of sensor data coming from the rig during well delivery. SENTINEL leverages a Bayesian network model to determine if a sensor value is erroneous, while accurately evaluating the working condition for sensors and then replacing the incorrect value with a true value. Features of Sentinel's real-time reliability include:
- Processes data from WITS, Modbus and WITSML sources;
- Designed for high-availability and reliability;
- Flexible scalable ¬¬model architecture that easily handles sensor differences between rigs; and
- During network failure, SENTINEL stores processed sensor data locally and syncs with remote data stores when communications are restored.
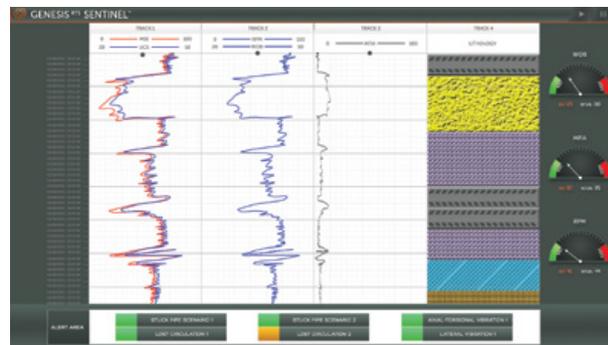
HISTORICAL ADVANTAGE
Generated as reports for individual wells, SENTINEL processes individual historical wells drilling data – in both WITSML and CSV formats – and then seeks to improve the data quality by identifying, engaging, and terminating faulty data, replacing them with a value derived from the model. Improved data can be used to:
- Improve post drilling performance analysis;
- Amplify the quality of data for data analytics; and
- Improve well planning from higher quality sensor data.

MAINTAIN HIGH PERFORMANCE
SENTINEL enables condition-based maintenance by monitoring drilling rig equipment performance in real-time and identifying performance problems:
- Notifies maintenance personnel of a possible problem before it occurs;
- Proactive problem detection provides early diagnostics and leads to greater probability of successful equipment repair;
- When repair is not an option, provides an advanced warning for better planning for the replacement of a component; and
- Increases rig utilization, by reducing the number of NPT events and limiting the duration of NPT events that occur due to rig equipment failures.

RIGTIME
Product Sheet

GENESISCORE
RT

Target
invisible
lost time

RIGTIME

ACTIVATE PERFORMANCE EXCELLENCE

How long should it take? How long does it actually take? Tick tock. RIGTIME maximizes task completion efficiencies among rig crews throughout the well delivery process – and across the enterprise – by first identifying the high frequency activities that are a common cause for Invisible Lost Time (ILT). Specifically, RIGTIME uses surface data to calculate and analyze the following type of rig activity: drill bit depth, drill speed, flow rates, rotational speed, and hook load while tripping in, drilling, and tripping out.

RIGTIME offers operators timely and accurate reporting of key performance indicators (KPIs) – comparing rig-to-rig, crew-to-crew, and shift-to-shift. Most importantly, RIGTIME finally gives operators a tool that provides interpretation and comparison by well section – vertical, curve, and lateral. RIGTIME provides a detailed analysis of historical rig performance that can be utilized to set future performance benchmarks while establishing a seamless path to perform planned versus actual performance monitoring by providing weekly, biweekly, or month planned compared to actual performance reporting.
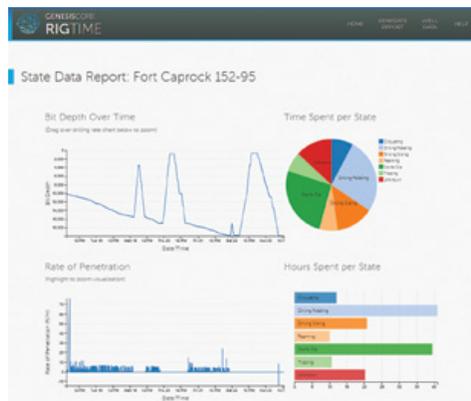
TIME IS MONEY

RIGTIME saves your operation money by reducing ILT by 20% *(ex. for a 30-day well delivery plan with a spread rate of $100,000/day and an average of 5,000 connections per well, a one-minute reduction has the potential to save operators more than $3.4 million per year, per rig).*

RIGTIME VALUE DRIVERS

Actual trials of rig-state tools for offshore and onshore wells identified early learning related to mechanical issues and identified dramatic improvement in operational efficiencies.

Toolset identified potential efficiencies of 50% reduction in days to complete batch wells and 50% reduction in minutes for in-slip

Identified 50% improvement opportunity in tripping speeds.

Just-when-you-thought-you-could-not-possibly-squeeze-out-another-ounce-of-performance-from-your-already-optimized drilling operation, here comes RIGTIME by GenesisRTS. This next generation rig activity detection tool gives you the flexibility to accurately pinpoint performance gaps with easy-to-use, easy-to-understand visualization that helps define best practices and improves communication among key decision makers.

It's no secret...ILT represents 30% of time/cost of traditional well delivery.

DRILLING TECHNICAL LIMIT	NON PRODUCTIVE TIME	INVISIBLE LOST TIME
50%	20%	30%

Learn more about RIGTIME at genesisrts.com.

STRESSWORKS
Product Sheet

GENESISCORE
SW

The stable
solution for
wellbores

STRESSWORKS

SW

STRESSWORKS is an elasto-plastic borehole stability tool developed by Genesis RTS, designed to be an intuitive application for calculating safe minimum mud weights. STRESSWORKS offers well planners and drilling engineers the power to plan, predict and visualize mud-related downhole mechanical stresses and their impact on borehole stability. Genesis RTS developers and subject matter experts understand that careful mud selection and management reduces the frequency and severity of borehole stability events, maximizes penetration rates, and maintains good overall borehole health. Having the proper tools for well planning and monitoring is critical for safe, effective drilling operations, and STRESSWORKS allows faster, safer well delivery than ever before.

WEB-BASED ACCESSIBILITY
Genesis RTS engineers developed STRESSWORKS as a web-based software application so that your people can easily access the application from any Internet-enabled mobile device.

WELL PLANNING, PREDICTING & VISUALIZATION
STRESSWORKS helps you identify the best mud weight as it relates to borehole stability, mitigating problems that may otherwise occur. The more you know, the better prepared you are to get the fluid requirements right, which improves safety and performance.

Cutting edge software for planning, predicting, and visualizing borehole stresses, STRESSWORKS was designed using finite element elasto-plastic modeling of mechanical stresses established by one of the industry's leading drilling optimization experts.

REAL-TIME SITUATIONAL AWARENESS
STRESSWORKS computes wellbore stresses using real-time data, which allows drilling engineers to closely monitor progress as it relates to the health of the wellbore and overall safety and performance.

POST-DRILL ANALYSIS
STRESSWORKS compares the pre-drilling plan with the real-time data to provide you with a comprehensive report that helps improve future drilling performance. Well data and performance improvement recommendations are made available in various file formats that can be accessed and shared among key decisions makers responsible for well delivery.

Did you know major oil and gas operators waste approximately 20% of their drilling operations expenditures on Non Productive Time (NPT), and nearly 25% of all drilling NPT is associated with Borehole Stability (BHS) and Pore Pressure Fracture Gradient (PPFG) challenges?
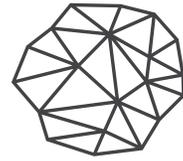

Learn more about RIGTIME
at genesisrts.com.

RTOC
Product Sheet

GENESISCORE
RT

Connect
people, places,
and processes

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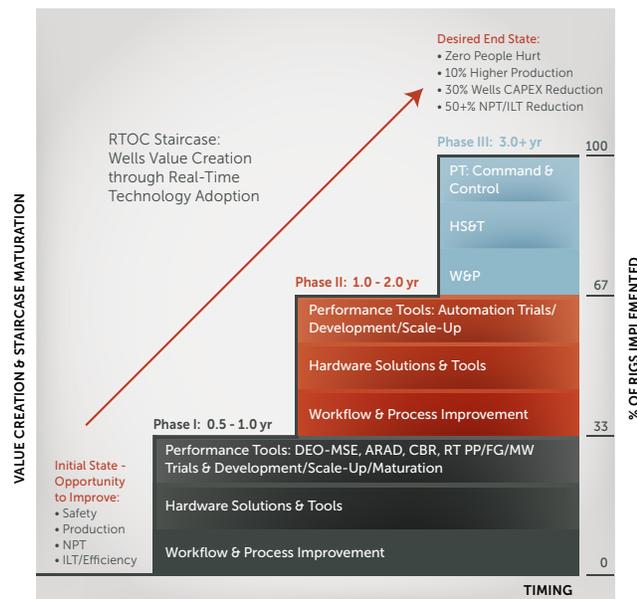
Learn more about RTOC at genesisrts.com

Creating value for our clients through:

1. Monitoring well delivery planned vs. actual.
2. Evaluate, determine, and develop capabilities to optimize well delivery performance.
3. Evaluate and develop capabilities to proactively identify and mitigate/prevent drilling risks, hazards, and other costly unplanned NPT events.
4. Perform Invisible Lost Time analysis and optimization.
5. Evaluate and develop capabilities to improve drilling and production Health, Safety, Environment (HSE) metrics.
6. Provide the capability to evaluate new drilling and production technologies and tools as they become available.
7. Training capability that utilizing real world scenarios and state-of-the-art drilling and production software.

Unlike other service provider solutions, GenesisRTS delivers real-time operations systems that our clients own and manage. GenesisRTS does not design in our own personnel to operate the RTOC as part of the overall solution. We empower your operation to have full control over the people, process, and tools needed to create value for your organization.

RTOC Staircase: Wells Value Creation through Real-Time Technology Adoption

VALUE CREATION & STAIRCASE MATURATION

% OF RIGS IMPLEMENTED

Desired End State:
• Zero People Hurt
• 10% Higher Production
• 30% Wells CAPEX Reduction
• 50+% NPT/ILT Reduction

Phase III: 3.0+ yr — 100
PT: Command & Control
HS&T
W&P — 67

Phase II: 1.0 - 2.0 yr
Performance Tools: Automation Trials/ Development/Scale-Up
Hardware Solutions & Tools
Workflow & Process Improvement — 33

Phase I: 0.5 - 1.0 yr
Performance Tools: DEO-MSE, ARAD, CBR, RT PP/FG/MW Trials & Development/Scale-Up/Maturation
Hardware Solutions & Tools
Workflow & Process Improvement — 0

Initial State - Opportunity to Improve:
• Safety
• Production
• NPT
• ILT/Efficiency

TIMING

DRILL**FAST**
Product Sheet

GENESISCORE
D F

Maximize ROP/Minimize NPT Events

DRILLFAST

DrillFast is a state of the art drilling optimization capability that is design to reduce your well delivery timeline while reducing rig drilling performance deviations across your whole fleet. DrillFast can reduce your well delivery time by 10 percent by increasing drilling technical boundaries while simultaneously identifying and reducing non-productive time (NPT) thru real-time and post-well analysis.

Capabilities
1. Use library of Mechanical Specific Energy (MSE) or customer derived equations to identify and characterize deviation trends from Unconfined Compressive Strengths (UCS)
2. Correlate with other performance indicators such as Bit Aggressiveness (BA) and Stick-Slip Alarm (SSA) to confirm Rate of Penetration (ROP) limiters and recommend operational responses
3. NPT Pattern recognition based upon historical cases for use in future drilling ventures
4. Algorithms identify best parameters from benchmark wells to create drilling road maps that improve ROP

DrillFast HISTORIAN

History is a great teacher. DrillFast provides you the means to find and leverage the knowledge that is locked into your historical drilling data. This capability will analyze your historical drilling data finding the drilling technical boundaries limiters you are currently experiencing while simultaneously identifying and non-productive time events that are affecting our well delivery. From this analysis, DrillFast will provide recommendations along with coordinated performance indicators, allowing operators can easily identify problem areas in drilling programs, maximize drilling rates and minimize NPT events, while decreasing mechanical fatigue. DrillFast Historian has been successful in multiple geologically distinct drilling plays by utilizing the fundamentals of drilling optimization and these features.
1. Complete field drilling optimization by analyzing from one to hundreds of wells
2. ROP analysis performed by hole section, activity, formation, bit size, bit type utilizing time and depth based data
3. NPT identification and analysis with recommendations and scenarios produced that can leveraged in future wells to prevent occurrences from happening
4. Analysis based KPI benchmark creation allowing for performance monitoring on a post-well and real-time analysis basis that quantitatively and qualitatively outline optimization progress
5. Creation of drilling learnings that can be shared among business units

DrillFast REAL-TIME

To realize the saving from drilling performance optimization analysis it requires a capability that helps standardize drilling practices while preventing problems across the drilling feet. We achieve this by provides drilling parameter recommendations that maximize ROP while monitoring real-time data looking to identify and prevent ROP limiters and NPT events before they occur. This capability provides the following features:
1. Automatic formation based drilling parameter recommendations
2. Real-time formation top detection
3. Identify well control and loss circulation events when they occur
4. Monitor real-time drilling operations looking for ROP limiters like vibration and suggest mitigation procedures
5. Identify NPT events like stuck pipe utilizing generic and historical scenarios that are monitored in real-time to identify the problem before it occurs allowing the problem to be mitigated before it needs to be resolved

Learn more about DRILLFAST
at genesisrts.com