SigmaStream

VERAS

Real-Time Data Quality Intelligence

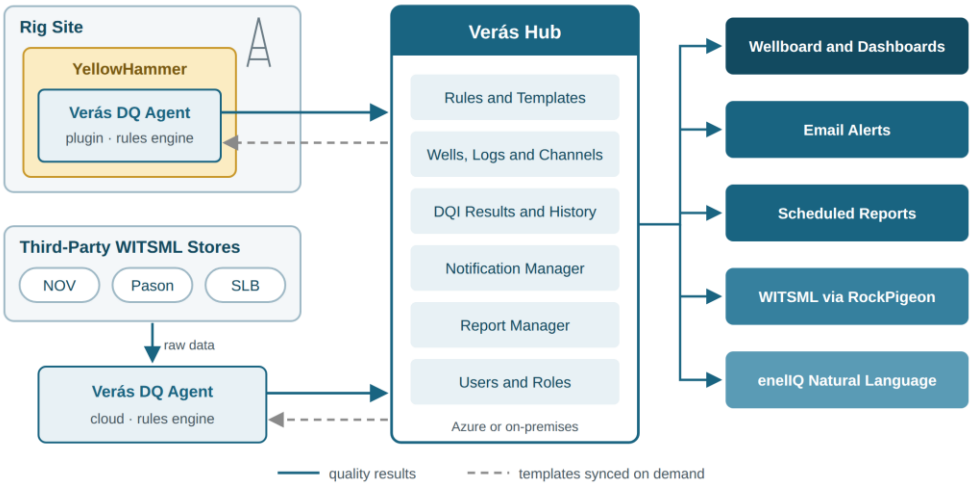
BENEFITS

- Continuous and objective measurement of every monitored channel
- Each data service provider scored independently on its own data
- Scores computed on raw source data and defensible in disputes
- Fleet-wide view of data quality across every active well
- Automated alerts replace manual dashboard watching
- Scheduled reports scoped to operators and to each provider
- Rules and templates reused across business units, rigs and wells
- Works with any aggregator and survives contractor changes intact
- Runs at the rig edge or in the cloud
- Time-indexed and depth-indexed logs supported
- Quality results published over WITSML
- Plain-language questions answered through enelIQ

Overview

Verás is SigmaStream's real-time data quality platform for drilling operations. It measures the quality of streaming data from electronic drilling recorders and third-party WITSML stores one channel at a time. Results reach the operator and the data service providers who supply the data. Every monitored channel carries a Data Quality Index (DQI) that rolls up to the log, the well and the fleet.

The platform has two components. The Verás Data Quality Agent runs a rules engine close to the data, either at the rig as a YellowHammer plugin or in the cloud against third-party stores. The Verás Hub is the single point of control. It holds every rule, template and well configuration, gathers results from all agents and presents them through dashboards, alerts and scheduled reports.



Verás Data Quality Agents at the edge and in the cloud report to a central Verás Hub

Operators use Verás to hold providers to an agreed standard. Pason, NOV, SLB and other providers are scored on their own data, and each provider sees only its own results. Because Verás reads from any source, it keeps working when the aggregation contractor changes. Channel configurations, templates, DQI baselines and notification schemes carry over without a rebuild. Verás runs in production at a US super-major across a multi-well, multi-provider drilling fleet.

Scoring and Trouble Time

Each channel is evaluated against the rules in its active template. Where a channel falls short of expectations, Verás records trouble time and reflects it in the channel's DQI on a scale of 0 to 100. Channel scores are recalculated hourly and roll up as shown below.

Channel ▸ Log ▸ Well ▸ Fleet

The ASWI scoring method and the trouble time computation are proprietary to SigmaStream. They are applied the same way to every provider, well and period, so scores remain comparable across the fleet and over time.

SYSTEM REQUIREMENTS

Data Quality Agent

Deploy: YellowHammer plugin at the rig, or standalone in the cloud

OS: Windows
Ubuntu 14+
CentOS 6+

CPU: Quad-core 3.0 GHz or higher

Memory: 8 GB+

Verás Hub

Hosting: Microsoft Azure or on-premises

Nodes: Application node
Database node

Storage: PostgreSQL
MongoDB
Cassandra

Data Sources

Input: WITSML 1.3.1.1 and 1.4.1.1 stores
YellowHammer

Client

Browser: Google Chrome
Microsoft Edge

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Features

The key features of Verás are:

Eight Quality Dimensions

Every monitored channel is evaluated on data count, data gaps, frequency, maximum value, minimum value, repetitive data, precision and latency. A frozen sensor, a quietly degrading connection and a truncated decimal each register even when the channel appears to stream normally.

Proprietary Scoring and Trouble Time

Rule evaluations become trouble time and a Data Quality Index through SigmaStream's proprietary ASWI method. The method is identical for every provider, well and period. A score on one rig means the same as a score on another, and last month's score can be compared with today's.

Rules Engine and Templates

Rules set the expectations for each channel. Templates group them along the operator's hierarchy of business unit, rig, well and data service provider. Master templates hold defaults and inherited templates tailor them to a unit or well. Cloning speeds up new wells and pad drilling. Every change is logged and archived templates preserve the record for historical wells.

Edge and Cloud Agents

The Data Quality Agent runs at the rig as a YellowHammer plugin or in the cloud against third-party WITSML stores. Many agents run at once. The Hub distributes templates to agents on demand and collects their results continuously.

Tiered Dashboards

The Wellboard lists every active well and its current DQI in list, card or map view. The Operational Dashboard shows a gauge and history line for each provider on a well. The Informational Dashboard breaks a log down by channel, dimension and time window, filtered by date or depth. Main View plots raw data beside operational events so a disputed score can be checked against the source.

Alerts and Notifications

Thresholds can be set at the well, log or channel level across five severity tiers. Email cadence is set per tier, from minutes at the highest severity to a daily digest at the lowest. The Notifications Dashboard records every alert with its channel, DQI, threshold and timestamp.

Scheduled Reports

Daily DQI Summary, Daily DQI Detail and Monthly DQI Detail reports are generated on schedule and delivered by email. Operators receive cross-provider reports. Each data service provider receives reports limited to the rigs it serves.

Role-Based Access

Operators, data service providers, viewers and system administrators each see what their role allows. A provider has exclusive access to its own quality results and cannot view results for any other provider.

Open Output and enelIQ

DQI results are published as WITSML through RockPigeon for any WITSML-aware application. With enelIQ a user can ask which channels are failing frequency checks right now and get the answer from live Verás data.

Operational Context

With the Relevance Matrix Service, Verás judges each channel against what the rig is doing at that moment. Zero flow rate during a connection or an unchanging bit depth while waiting on cement is expected behavior and is scored accordingly.