NOVA SensAI

Operational Analytics

Delivering actionable insight from network performance data

EXFO

Table of contents

Making sense of network performance

Service providers are ill-equipped to handle a tsunami of data

As service providers transition to cloud-native 5G networks, they also seek to transform and optimize their operations—**reducing operating costs and augmenting efficiency**—to maintain the profitability required to continue funding these investments.

However, in doing so, service providers struggle to generate insight from a flood of network performance data—higher volumes, greater variety. This leaves them ill-equipped to assure service quality, maintain network control, optimize performance and deliver lasting enhancements to the customer experience.

The sources of this data are more diverse than ever, each providing a partial picture of the network's operating performance and customers' experience. The challenge is to see the whole picture in order to draw meaningful conclusions about the causes of impairments and opportunities for improvement.

Siloed systems are only part of the problem. Performance data evolves over time as new devices come online, new services are introduced, new network use cases emerge, and new the new service-based architecture disaggregates and distributes network functions.

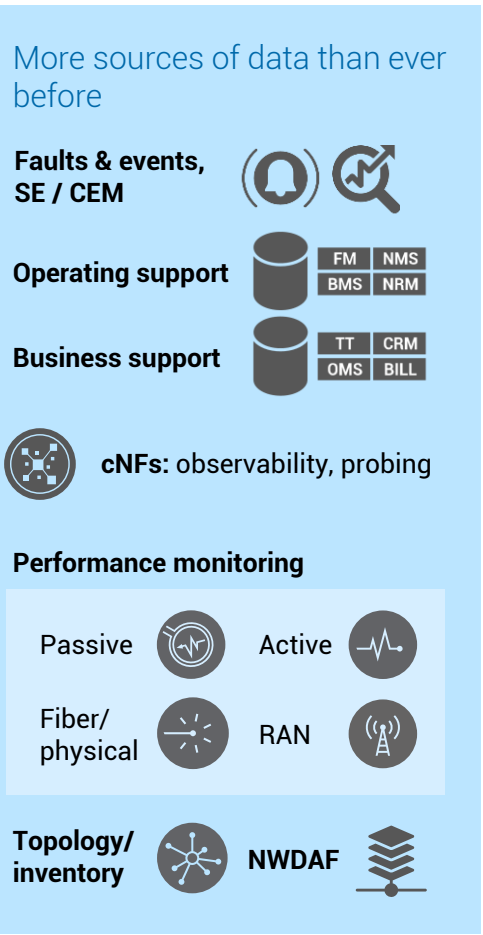
Unfortunately, efforts to stitch together these different data sources have failed to provide a sustainable solution, one that can evolve along with the network.

5G probing will overwhelm traditional service assurance

The deployment of 5G stand alone promises to make things worse. The data processing requirements of 5G—estimated at 125 Gbps per 5G probe[1]—will overwhelm conventional service assurance approaches.

Nonetheless, an integrated view of all these data sources will be necessary to assure 5G networks.

More sources of data than ever before



1. Estimates provided are based on 5G network probing requirements provided by leading Tier-1 North American operators

Little data reveals the big picture

Machine learning turns Big Data into actionable insight

Conventional service assurance tools make it extremely difficult to explore, analyze and prescribe action **from existing performance data** sourced across multiple systems. It's like looking for the needle in the haystack while the farmer piles on more hay.

Even before the wave of data turned into a tsunami, most subscriber-affecting impairments weren't being surfaced by service assurance systems. In fact, 98% of degradations aren't severe enough to trigger alarms[1], yet they impact the customer experience and, ultimately, satisfaction.

These impairments are invisible to the human eye, beyond the ability of Big Data solutions, which rely upon user queries to correlate data, to provide insight in anywhere near real-time, which is necessary to be actionable by Operations. In fact, it can often take days to find the causes of impairments; by that time, the damage to customer satisfaction is done.

This type of problem is, in fact, only solvable via artificial intelligence and machine learning technology. The vast data sets thrown up by daily operations provide a wealth of information that can be analyzed automatically for trends and correlations.

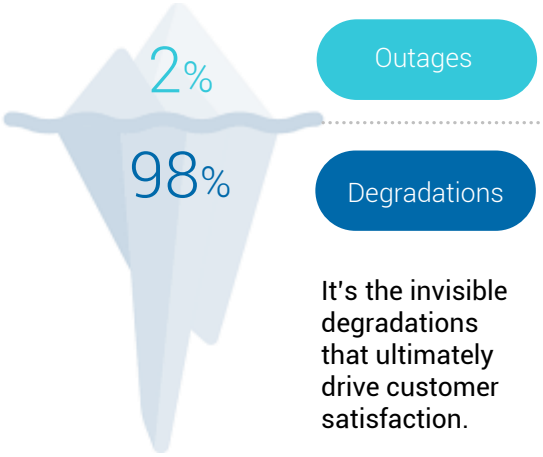
From a sea of data to a pool of insight

How can service providers surface performance trends and turn a sea of data into a pool of actionable insight?

The answer is little data, essentially data about data, also known as meta data. In this case, a series of metrics measuring network performance, QoS and QoE, among other key quality indicators. And since these need to capture trends over time, a stream of metrics is necessary. This stream **makes it** possible to identify patterns of performance degradations or opportunities for improvement over longer periods of time.

This approach works in a world of petabytes of performance data by keeping only the case data and metrics at hand and disposing of the underlying raw performance data. KPIs and counters can be stored for long-term analytics or reporting.

Customer impacting events[1]



It's the invisible degradations that ultimately drive customer satisfaction.

1. Heavy Reading custom survey July 2019

The need for operational analytics

Improving customer experience and resource usage over time

When you consider the fact that nearly all customer-impacting degradations are lost in averages or KPIs, faster than systems can report them, you quickly begin to realize that you need to look elsewhere. This is where operational analytics comes into play.

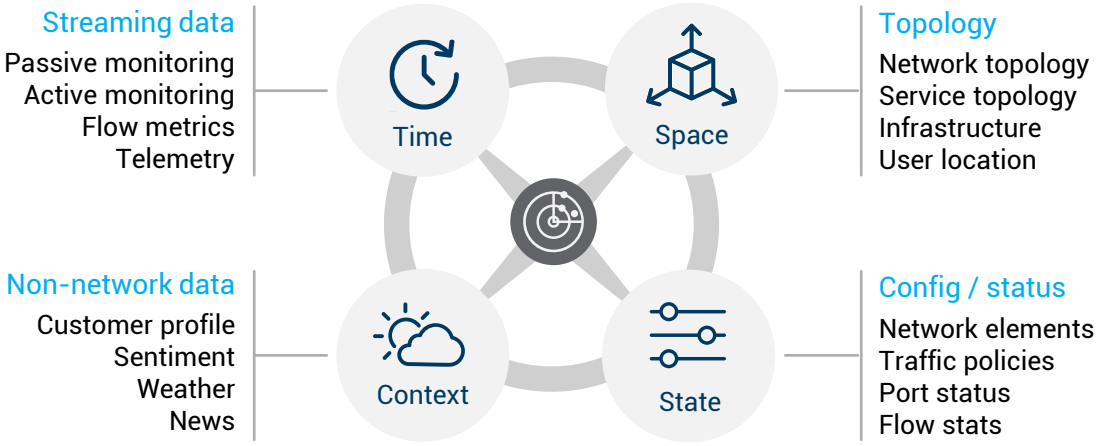
While troubleshooting, root cause analysis and resolution are key to ensuring the optimal customer experience today, operational analytics is concerned with the improvement of network and service performance and customer experience over time.

Like anomaly detection and root cause analysis, operational analytics benefits from machine learning to automate the identification of trends and the production of actionable insight.

In addition to discerning impairments not visible by traditional service assurance solutions, operational analytics helps to detect inefficiencies, uncover opportunities for added capacity, discover sources of customer frustration and identify areas for improvement.

Operational analytics is the business process of analyzing operating data across multiple dimensions (e.g., time, location, service, device) to discern trends and derive insights that are used to improve the operations of a network.

Correlating data across multiple dimensions drives actionable insight



NOVA SensAI Operational Analytics

Right data. Right now. In context.

Nova SensAI Operational Analytics (OA) builds on the core foundation established by SensAI, the revolutionary real-time service assurance solution that enables service providers to detect, predict, and diagnose customer-impacting events in real-time using AI-driven analytics.

SensAI OA leverages the same machine learning technologies that power SensAI while adding support for real-time stream processing of metrics.

SensAI OA supports service providers' goals of optimizing the performance of their networks and delivering lasting improvements to the customer experience.

SensAI OA offers trending, reporting and predictive analytics over long time periods, while simultaneously out-performing slower Big Data systems that lack per-second granularity. It features sub-second graphing, data exploration and querying.

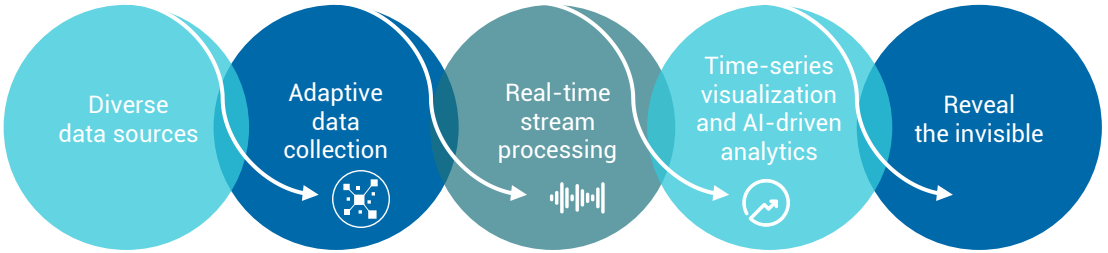
SensAI OA sees trends that are invisible to the naked eye, including long-term trends as well as periodic or intermittent issues that occur over an extended period (days, weeks or more). It features drill-down across multiple dimensions, enabling analysis from a variety of angles.

SensAI OA is data-agnostic, offering the ability to ingest data from a wide variety of data sources.[1]

Use cases for SensAI OA include active performance management, passive control plane and user plane analysis, passive roaming performance, 5G SA monitoring and fiber monitoring.

Benefits

- **Correlates network performance with QoE to uncover dependencies and resolve issues**
- **Contextual drill-down accelerates data exploration and root cause analysis**
- Puts insight into the hands of those who can act on it for faster resolution.
- Identifies opportunities to improve and optimize customer experience, while breaking down silos
- Aligns capacity planning with real-world trends and predictive analytics



[1] network telemetry, performance monitoring (passive probing and active testing), OSS/BSS and NWDAF, as well as 3rd-party data sources.

An intuitive user experience

NOVA SensAI Operational Analytics

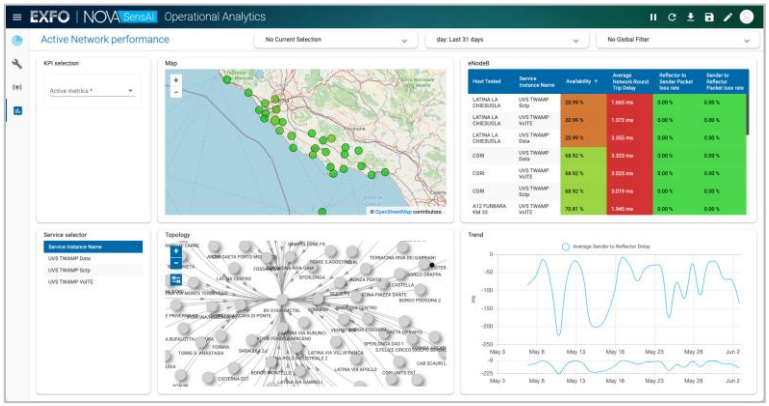
Customizable, modular user interface

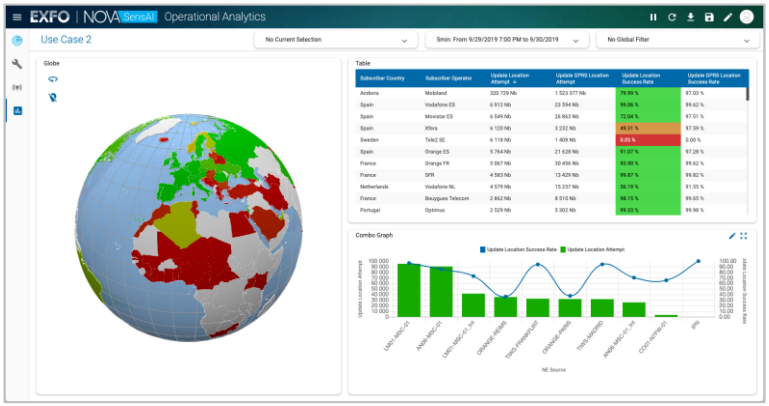
Operational Analytics' dashboards are completely interactive. It lets users select, customize and re-size widgets.

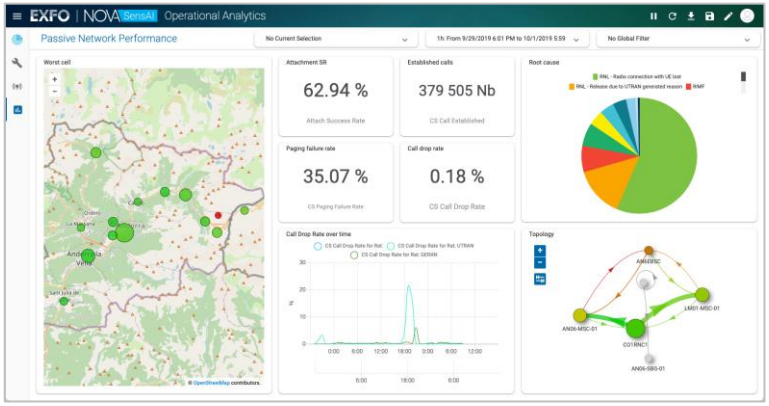
Selecting data in one widget cross-filters the others for rapid contextual analysis.

Use contextual drill-through to view data in SensAI modules such as anomaly detection, alerter, and troubleshooting.

Build unique dashboards for different teams or share dashboards for a unified view.





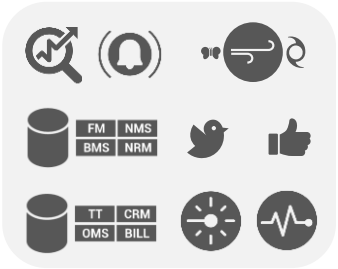


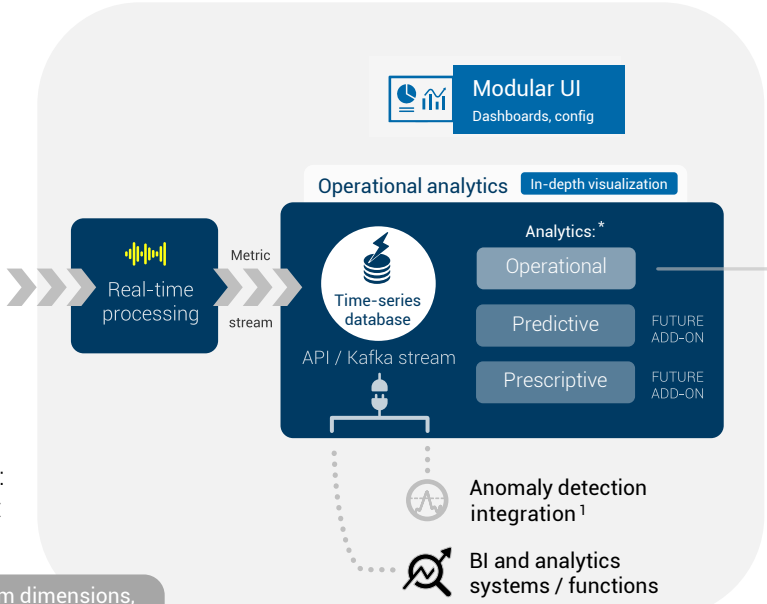
Key features and capabilities

NOVA SensAI Operational Analytics

Rich customization of data sources, granularity, metrics and streams

1 Source-agnostic monitoring and reference data ingestion





2 Compute efficient: scalability without breaking the bank

- Define stream dimensions, metrics and granularity
- Activate streams as needed

3 Analyze and visualize: trending, seasonality and predictive analytics

- Performance and QoE trends
- From KQIs to underlying metrics
- Correlation between metrics and dimensions

4 Unified time scale: Automatic data reconciliation varying sampling intervals for accurate analytics and visualization

- FAST dimensional analytics
- Historical and trending insight
- User-defined metrics | dimensions
- Build your own dashboards
- Contextual cross-filtering
- User-defined granularity: metrics (1s+) and reporting (1m+)

5 Stream data and relevant KPIs to other systems and functions like BI tools, NWDAF and orchestrators.

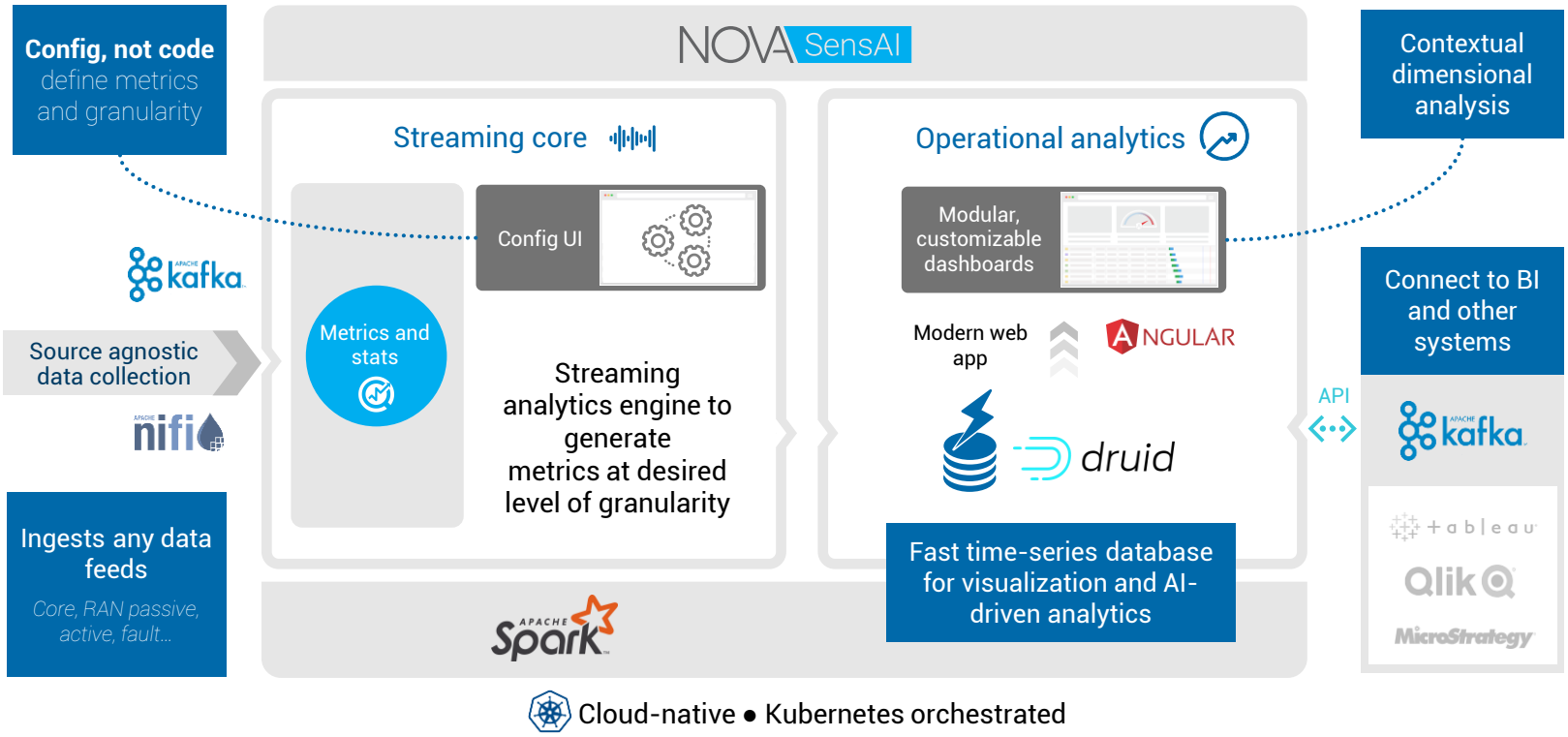
1. Provided by Nova SensAI anomaly detection module

Architecture and enabling technologies

NOVA SensAI Operational Analytics

Scalable open-source and micro-services architecture

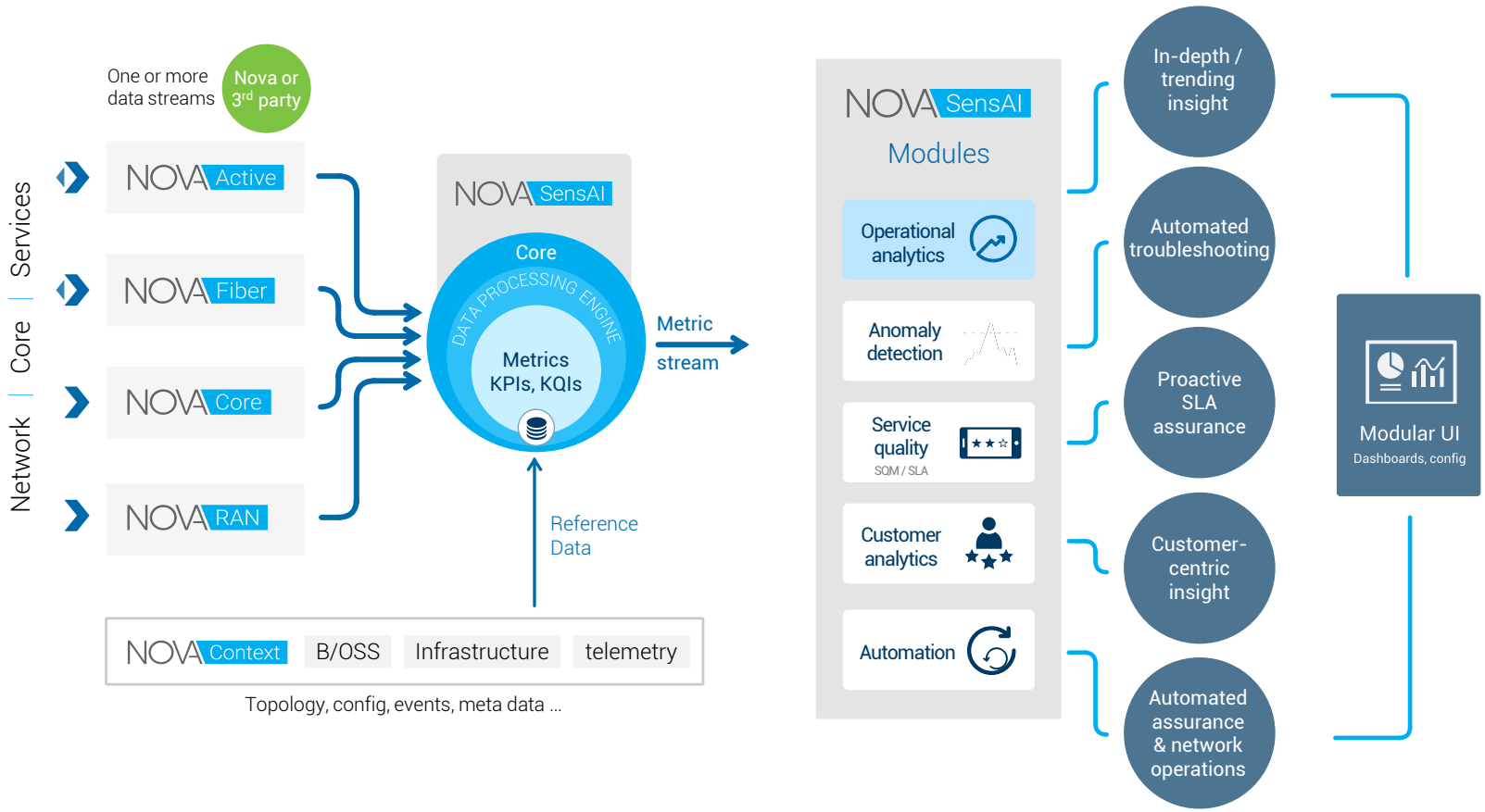
Open source technologies enable SensAI to run multiple services, including Operational Analytics, from the same data sets. A fast time-series database enables multiple levels of granularity and powers AI-driven analytics. Microservices provide a lightweight application footprint while offering superior performance, scalability and user experience. SensAI Operational Analytics streams metrics and insights to business intelligence systems such as Tableau, Splunk and MicroStrategy in real time. User configurable KPIs mean that data wrangling and reconciliation are kept to a minimum.



NOVA SensAI modular architecture

Learn more

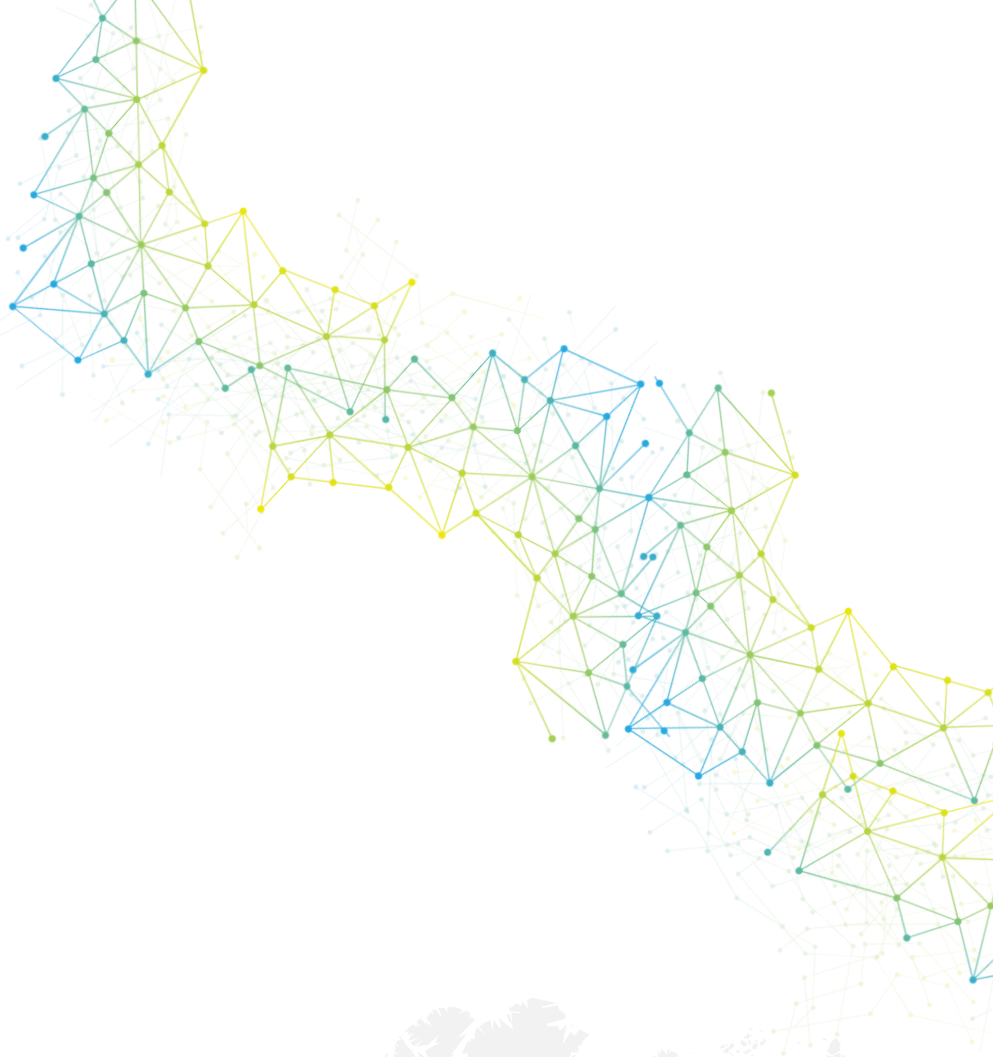
Operational analytics is a module within the Nova SensAI platform. Other modules easily integrate to incrementally add service and customer analytics, and real-time anomaly detection with integrated root cause analysis.



Learn more

Glossary

Request demo



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