



Helix Analytics

Deep insights.
Efficient operations.
High-quality digital
services.


www.teoco.com

Helix Analytics



Embedded in daily workflows
Based on deep telecom expertise
Foundation for process automation and closed-loop

Get actionable insights - Provide better service

Analytics. The telecom industry uses the term to describe various information processing capabilities. But what's in it for service providers in the new digital economy? What can it really do to improve operations and service quality?

“For service providers, the ultimate goal of analytics is to improve the subscriber experience or the service quality, in a way that is cost effective and optimizes the use of network resources.”

Monica Paolini – Author of “Mastering Analytics”

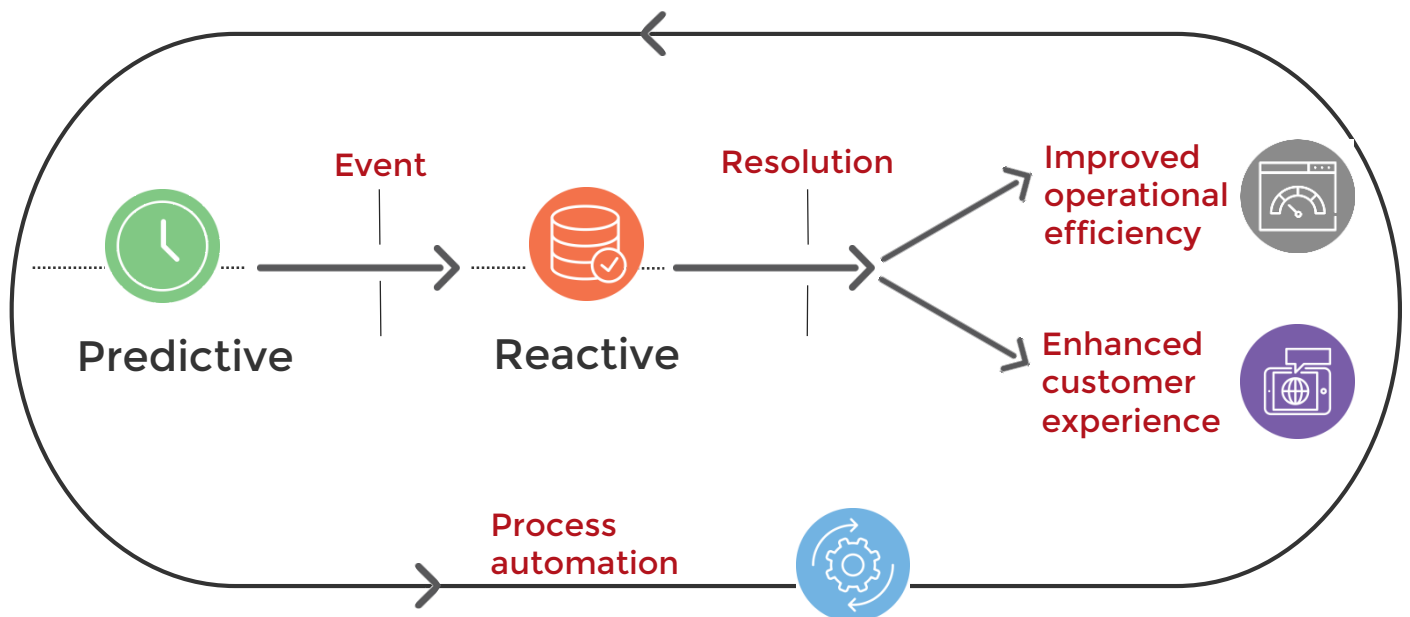
TEOCO is spearheading the market with cutting-edge capabilities that help service providers reach this ultimate goal. **Helix Analytics** is a set of software tools that apply unique patented algorithms on large volumes of data from diverse sources such as alarms, performance, trouble-ticketing, session-based flows and more. These tools reveal deep, actionable insights about services and their underlying network resources performance – providing one of the supporting pillars of TEOCO’s proactive approach to service assurance that enables operators to:

- Focus their NOC, SOC and Engineering attention on critical issues
- Predict and prevent service degradations and SLA violations
- Expedite the resolution of fault, performance and service events
- Automate the most complex processes to support self-healing and closed-loop orchestration

Analytics at your fingertips to elevate your processes

At TEOCO we believe that in the new digital age the winning service providers will be the ones that **deliver cost-effective high-quality digital services**. To get there, they need to adapt their service assurance methodology and its related operations and engineering processes.

Helix Analytics includes both predictive and reactive tools designed to lift the service assurance to that new level. When combined together – and made easily accessible – these tools reduce the volume of data that needs to be acted upon and the time and effort it takes to fix the network outages. The value of those analytical tools grows significantly as they become essential elements in process automation, leading to improved operational efficiency and enhanced customer experience.



Helix Analytics **predictive** tools help engineering and operational teams to predict potential problems and prevent them in advance. They detect service and resource anomalies to trigger preventive care, predict failures and calculate their impact on services and customers.

Helix Analytics **reactive** tools analyze events, alarms and key performance indicators (KPIs) to gain valuable insights. They help operational teams focus their attention on the most important problems, and resolve them quickly and efficiently.

Unleash the value of your Big Data investments

“Without big data analytics, companies are blind and deaf, wondering out onto the web like deer on a freeway”

Geoffrey Moore – Author of ‘Crossing the Chasm’

Data has come to be referred to by many people as the ‘new oil’. British mathematician Clive Humby pointed out that data needs processing just as oil needs refining to unlock its true value. However, contrary to the dwindling oil reserves, data in telecom networks and specifically in service assurance applications has become increasingly available and continues to grow at an astonishing rate, to a point in which it is hard to process and consume in a meaningful, efficient way.

Entering Big Data, likely more comparable to renewable sources – sun, wind and tides – that require more sophisticated means to extract their full potential. The service providers’ challenge is to make sense and better decisions of their big data rather than being swallowed by it and be run over by more sophisticated competitors. Nowadays artificial intelligence (AI) and machine-learning (ML) have emerged as the data analytics fields of expertise that can cope with this complexity. customer experience.

Through deployment of AI and ML techniques along with newly-developed, patented algorithms, Helix Analytics extracts value from enormous streams of data collected from multiple diverse sources, such as: xDRs, historical and real-time events and alarms, counters, sets of KPIs and KQIs, thresholds, user actions, network topology changes, and more.



The patterns detected by Helix Analytics help NOC, SOC and Engineering personnel to uncover, understand and optimize their network and service performance by detecting correlations and anomalies that cannot be traced by human inspection – at near real-time. At TEOCO we identified numerous use cases and processes that can directly benefit from this kind of deep insights, and built a series of analytics modules to address them. Some of these modules, such as Machine-Learning Root Cause Analysis, introduce a leap forward from existing rule-based techniques; while other modules, such as Anomaly Detection and Adaptive Thresholds, open up new possibilities for preventive measures and efficiencies that have never existed before.

Helix Analytics

Selected Helix Analytics Modules

The toolset to power and automate modern service assurance

Screener

Prioritize and focus on important alarms

Screener is a machine-learning driven tool for alarms noise-reduction and prioritization when coping with large volumes of alarms. Based on automated analysis of alarms history and the related user behavior and actions, it assigns each of the current active alarms one of three tags to mark its importance: Premium, Standard or Spam. These tags help NOCs become more efficient by focusing their staff attention on the most important alarms while suppressing the “noise”, and shorten the time it takes to resolve the more critical issues.

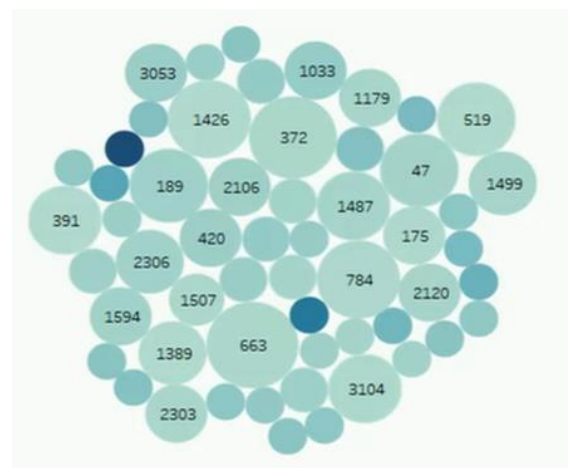


Machine-Learning Root Cause Analysis (ML-RCA)

Locate the source of the problem

ML-RCA adds an important level of automation to fault management, which extends the traditional rule-based RCA with adaptive mechanisms to quickly locate the source of problems. The set of unsupervised machine-learning algorithms study and analyze the stream of alarms reaching the system, both offline and in real-time, automatically suggesting grouping and correlation between alarms and tagging the potential root-cause alarms among them.

ML-RCA is independent of the network technology or topology, and automatically derives the relationship between network element and events without human intervention or predefined rules.



Predictive Failure

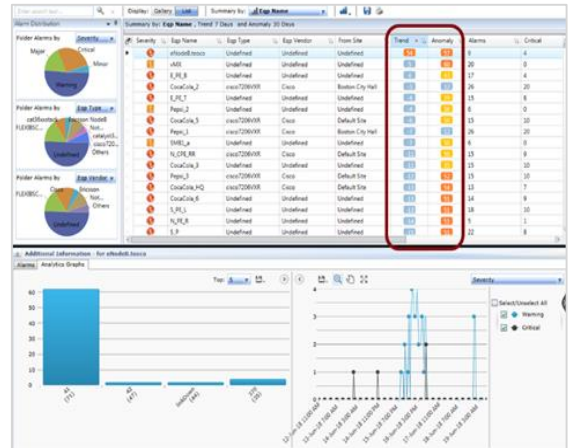
Detect outliers and upcoming problems before they escalate

NOCs and SOCs tend to concentrate on current active alarms, with emphasis on the most severe ones, which naturally seem to represent the most urgent problems. But ‘underneath the surface’ there could be hidden developing issues that might not reflect in the current active alarms.

Predictive Failure detects these emerging problems before they escalate and become significant. The algorithms analyze different types of entities and dimensions such as sites, equipment, virtual network functions (VNFs), physical network functions (PNFs), services and customers, producing two important scores for each analyzed entity:

- **Trend** – represents the change in the volume of alarms on a given entity from a previous time period to a current time period.
- **Anomaly** – compares the entity’s behavior to similar peer-group entities.

High scores indicate outliers and irregularities or point out on upcoming malfunctions to trigger preventive and corrective actions by NOC/SOC personnel.

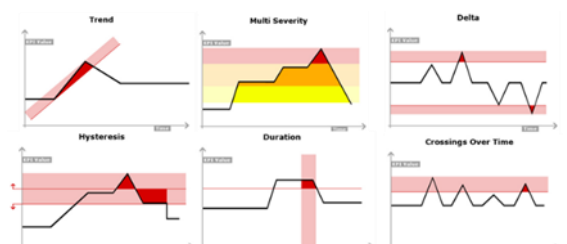
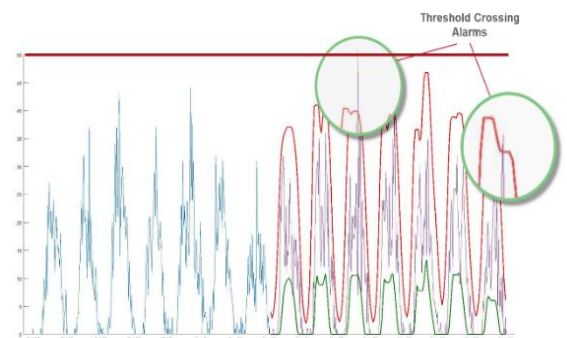


TrafficGuard and Adaptive Thresholds

Automatically learn your network behavior

TrafficGuard provides a proactive problem detection and notification layer as part of the Helix Performance Management solution. It uses smart thresholds with several simple-to-complex comparison rules to proactively analyze evolving network patterns and create threshold crossing alarms (TCAs).

On top of TrafficGuard, Adaptive Thresholds automates the thresholds’ creation and maintenance. It significantly reduces the number of required alarm thresholds in the system and the time to deploy new services. Adaptive Threshold uses several statistical algorithms that can calibrate and fine-tune the thresholds to detect non-trivial problems in an early stage.

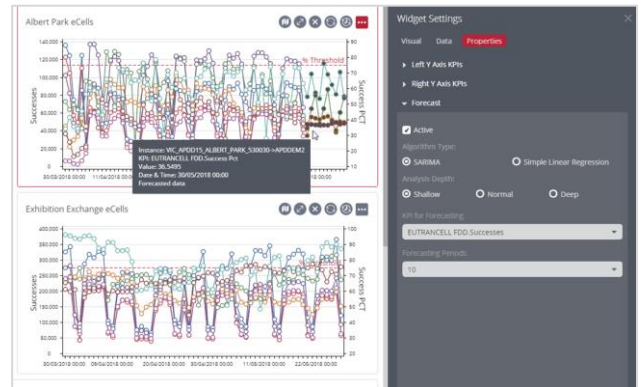


Forecasting

Predict your network behavior

Forecasting enables users to schedule regular automatic executions of data forecasts and trend analysis for any counter, KPI or network element in the system. Our patented, self-developed algorithm efficiently applies the SARIMA (Seasonal Auto-Regressive Integrated Moving Average) model on large datasets. The results of these calculations are stored in the database and can be used for reporting and alarms creation.

Alarming over forecasted data provides a proactive approach for detecting and resolving issues in the system. In conjunction with our automated root-cause analysis and fault resolution capabilities, not only can the system prevent network faults from becoming service issues, but it can predict and resolve them before they even become network faults.



Anomaly Detection

Uncover irregular behavior in your network

In data mining, anomaly detection – often referred to as outlier detection - is the identification of items, events or observations which do not conform to an expected pattern or other items in a dataset.

As part of Helix Analytics and the Helix Performance Management solution, Anomaly Detection is a machine-learning algorithm that automatically identifies entity instances with high level of abnormal KPIs behavior or non-trivial KPI-to-KPI relation. The algorithm learns the behavior of the KPIs, compares the patterns, and automatically identifies anomalies. The score results are displayed per instance, enabling easy identification of the anomalies and their distance from the common cluster or the common behavioral patterns in the network.

