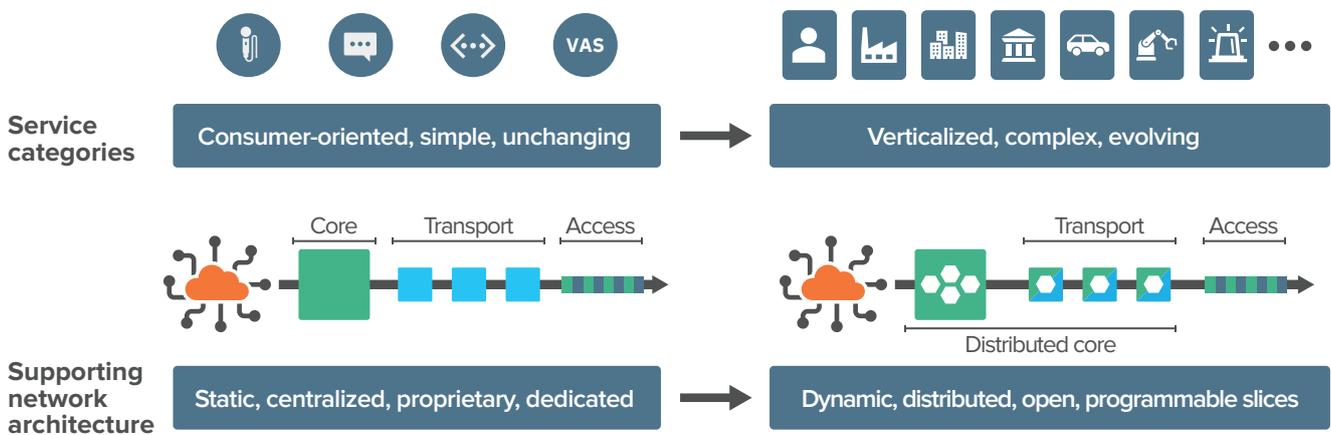




Customer experience  
assurance  
for network slicing

# Ubiquitous visibility and proactive control to monetize network slicing at scale – redefining ‘carrier-grade’ differentiation

Mobile networking technologies have undergone significant change in recent years, with the adoption of 5G Standalone (5GSA) coinciding with the effort to establish new revenue streams from newly unlocked service categories that rely on guaranteed latency, speed and connection density to create value for a broad range of industry verticals. But managing these new services and underlying networks that enable them has become a much more dynamic, complex undertaking, and network slicing in the context of the coexistence of 5G and legacy wireless networks adds yet another dimension to the complexity now faced by network and service operations (NOC/SOC) teams.



Establishing a new watermark of ‘carrier-grade’ performance; reliability; speed; and latency, as distinct from OTT services, is becoming a cornerstone of the mobile network operator’s value proposition differentiation. But network slicing is no simple task. Different categories of services generate diverse peaks and troughs in usage throughout the day, and are generally less predictable, or cyclical, both individually and in aggregate.

5G network slicing involves the allocation and instantiation of resources and network functions, from the core to the access network, to sufficiently fulfil overall capacity demands on the services within the slice and sub-slices at any given time to meet any SLAs between the service provider and customer.

As such, network operators are faced with two new realities; first, ubiquitous visibility is critical to unlocking new revenue streams from SLA-backed services, because without it, the operator can’t identify and respond to network conditions and

orchestrate the network to avoid or minimize SLA breaches. Second, the network operator that can orchestrate network slices most efficiently stands to generate the highest incremental profit, by minimizing the overall resource cost of service delivery.

## UNLOCKING NEW MARKETS TAKES UBIQUITOUS VISIBILITY

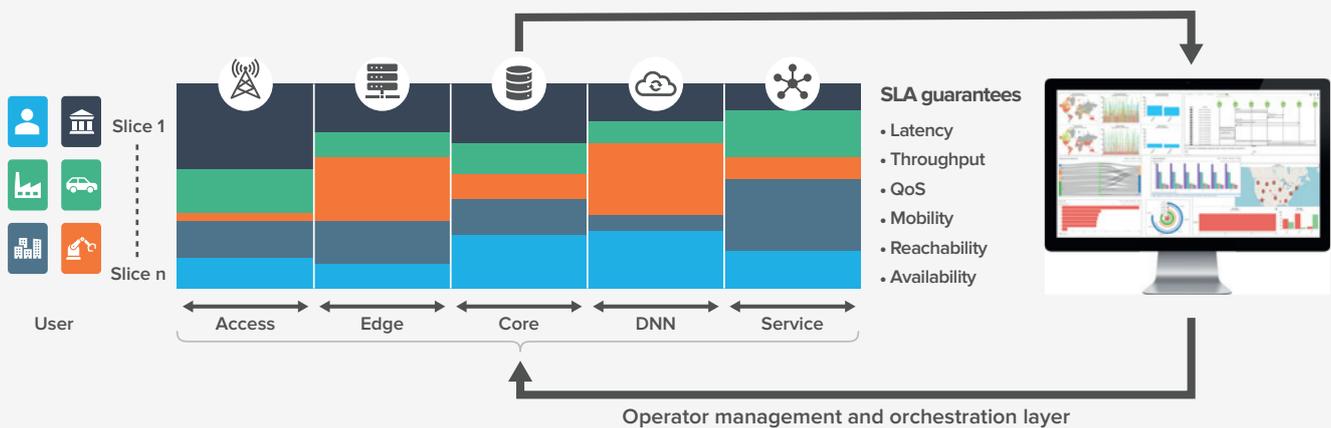
- Resource performance and faults
- Resource faults
- Traffic, content and QoE
- Resource telemetry
- Resource call trace
- Testing and simulation
- Configuration and inventory
- Ubiquitous visibility and correlations across customer experience and resource, service and application performance

# Introducing Infovista’s cloud-native customer experience assurance products and solutions: Experience assurance that is native to 5G network slicing

KLERITY™ has been built from the ground up as a solution framework with a fully containerized library of cloud-native functions and applications that leverage them. It brings transparency to networks, services, devices, and applications. It empowers operations, performance and quality teams to quickly identify service-impacting issues and their true root cause. While current monitoring and assurance solutions provide limited visibility into issues and require users to interpret and triage what they see, KLERITY™ provides transparency within,

and across, network, service, device and application domains so that the “what, where and why” of an issue is clear at-a-glance. Through the collection, analysis and correlation of events, KLERITY™ simplifies troubleshooting, optimizes root-cause analysis and accelerates root-cause identification and resolution. Overall, this combination of capabilities enables network, service and application providers to build trust with both their ecosystem and the end users of the service.

## The greater the visibility and control, the greater the profitability

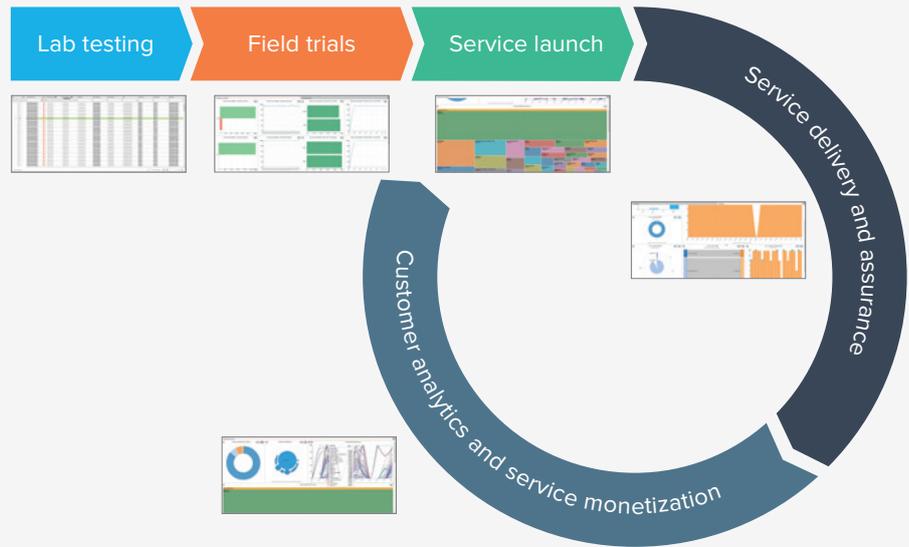


### Product capability highlights

For network slicing specifically, KLERITY™ natively supports the following slicing-specific requirements:

- Classification and isolation of traffic pertaining to specific network slices and subnet slices based on slice identifiers such as S-NSSAI (SST, SD);
- Visualization through dashboarding and reporting on specific network slice performance, and comparative slice performance across a range of KPIs including latency, throughput, mobility, reachability, availability and others;
- End to end correlation of distributed CUPS scenarios by efficiently and scalably correlating control plane and user plane traffic for specific network slices;
- Alarming for SLA breaches or threshold crossing with automated trouble ticketing and alignment with open API standards including those specified in the TMF APIs.
- Automated activation of monitoring for the KPIs and thresholds of new and updated network slices as they are launched or managed by service orchestrators
- Validation of the alignment of network slice configurations with service KPI (such as the QCLs codified in 3GPP) expectations across the various orchestrators
- Service Impact Analysis: Automated correlation of performance degradations for specific network functions with the specific network slices

Modern, programmable networking technologies have enabled more agile service creation, but retaining the carrier-grade advantage means integrating assurance from the beginning. Whether rolling out in new territories or innovating and monetizing new services; KLERITY™ supports the full service lifecycle; from pre-launch to live service operations, through close alignment to peripheral systems including network domain and service orchestrators.



## KLERITY™ automates manually intensive tasks to simplify, accelerate and improve the cost-efficiency of network and service operations

**Site testing workflow automation** for complex site deployments involving new technologies such as 5G, significantly reducing testing and site activation times.

**Automated assurance activation** for rapid turn-up of new sites and customer deployments, to maximize the benefits deployments remotely orchestrated and managed from the cloud.

**Automated data enrichment** with the use of AI/ML, for proactive prioritization and optimization of network and service operations to maximize business outcomes such as availability and performance of critical services.

**Automated root-cause analysis** for the rapid isolation and resolution of service impacting issues

---

### KEY BENEFITS

- Automation reduces manual intervention, time and effort, errors and delays
  - Reduce time-to-market for new services by removing assurance activation bottlenecks
  - Reduce TCO for customer experience assurance systems even as the workload and demands on NOC/SOC teams increases
  - A single ‘pane of glass’-correlated view of network, infrastructure, services and devices
  - Establish visibility and trust across the service delivery ecosystem
  - Improve customer experience and reduce churn
  - Reduce operational costs by consolidating tools
  - Assure advanced fixed networks and services architectures including Fixed wireless access (FWA), SDN/NFV and datacenter infrastructure
-

# Maintain continuous, consistent visibility of the customer experience even for sessions handover across multiple access technologies

For the foreseeable future, operators will need to maintain customer experience intelligence across multiple Radio Access Technologies (RATs). Infovista’s customer experience assurance products and solutions enables this by providing a unified view of customer experience for any individual or segment, regardless of the RAT.

In addition, as customer sessions traverse multiple RATs (inter-RAT handover) - even if this involves the transfer from a 5G network slice to any other RAT that does not involve network slice allocation – service and network operations teams maintain a continuous, integrated and comparable view of the end-user’s perceived Quality of Experience (QoE) across time.

<div style="background-color: #2c4e64; color: white; padding: 5px; margin-bottom: 10px; border-radius: 5px;">Session connectivity</div> <ul style="list-style-type: none"> <li>Session success and failures</li> <li>Call drops</li> <li>Session setup duration</li> </ul>	<div style="background-color: #2c4e64; color: white; padding: 5px; margin-bottom: 10px; border-radius: 5px;">User plane performance</div> <ul style="list-style-type: none"> <li>Throughput, volume, ...</li> <li>Latency, packet loss, ...</li> </ul>	<div style="background-color: #2c4e64; color: white; padding: 5px; margin-bottom: 10px; border-radius: 5px;">Visualize by different perspective combinations</div> <ul style="list-style-type: none"> <li><b>Region:</b> state, city, roaming partners, ...</li> <li><b>Network elements:</b> gNB, cell ID, network function, producer, consumer, interface, protocol, DNN, ...</li> <li><b>Network slice</b></li> <li><b>Application:</b> voice, video, data, YouTube, Facebook, ...</li> <li><b>User/Device:</b> device type, user group</li> </ul>
<div style="background-color: #2c4e64; color: white; padding: 5px; margin-bottom: 10px; border-radius: 5px;">User/Device experience</div> <ul style="list-style-type: none"> <li>User QoE score</li> <li>Visualize individual or group</li> </ul>	<div style="background-color: #2c4e64; color: white; padding: 5px; margin-bottom: 10px; border-radius: 5px;">Mobility performance</div> <ul style="list-style-type: none"> <li>Cell handover success and failures</li> <li>Location-based analytics</li> </ul>	

## Powered by the most advanced cloud-native technologies



Infovista’s customer experience assurance products and solutions deliver the advantages of a truly cloud-native architecture, such as evergreen functionality; seamless upgrades; multi-tenancy support and high availability through self-orchestration under diverse workload scenarios:

- Infrastructure-agnostic:** Deployable on any combination of on-premises, public or private cloud, and entirely independent of underlying operating system or platform;
- Optimal microservices disaggregation:** Our microservices are grouped into major categories, including: system orchestration; collection and mediation; data capture and processing; analytics and AI/ML; recording; interfaces; multi-tenancy and user management; and results management;
- Advanced event and data correlation:** Our platform collects, in real-time, diverse data for a holistic view of customer experience and the underlying contributors of it. The distribution of data collection across locations significantly minimizes infrastructure cost and workload;
- Openness, CI/CD and high availability:** Our platform is powered by the latest containerization and orchestration technologies, simplifying interoperability across peripheral products, reducing time to support new service categories and resulting in more reliable performance and availability.

## About Infovista

Infovista is the global leader in network lifecycle automation (NLA) for the next-gen networks era. With its unique NLA approach, Infovista allows communications service providers (CSPs) and enterprises to improve their network performance and customer experience, optimize their productivity, and reduce their costs, while maximizing return on their investments. Spanning the entire network lifecycle, Infovista's products and solutions leverage an open, integrated, cloud-native portfolio that automates tasks, flows, analytics, and decisions to the greatest extent possible. More than 1,500 customers, including 400 Mobile Network Operators, around the world rely on Infovista to plan, design, deploy, test, operate, support, optimize, evolve, report on and monetize their networks.