Brochure

Automate 5G slice
lifecycle management
with Nokia Digital
Operations software

NOKIA

Industry analysts project huge revenue potential for CSPs through network slice-enabled services. But 5G-era networks are complex. They run on virtualized and containerized infrastructure with 100-fold more actions within the network.*
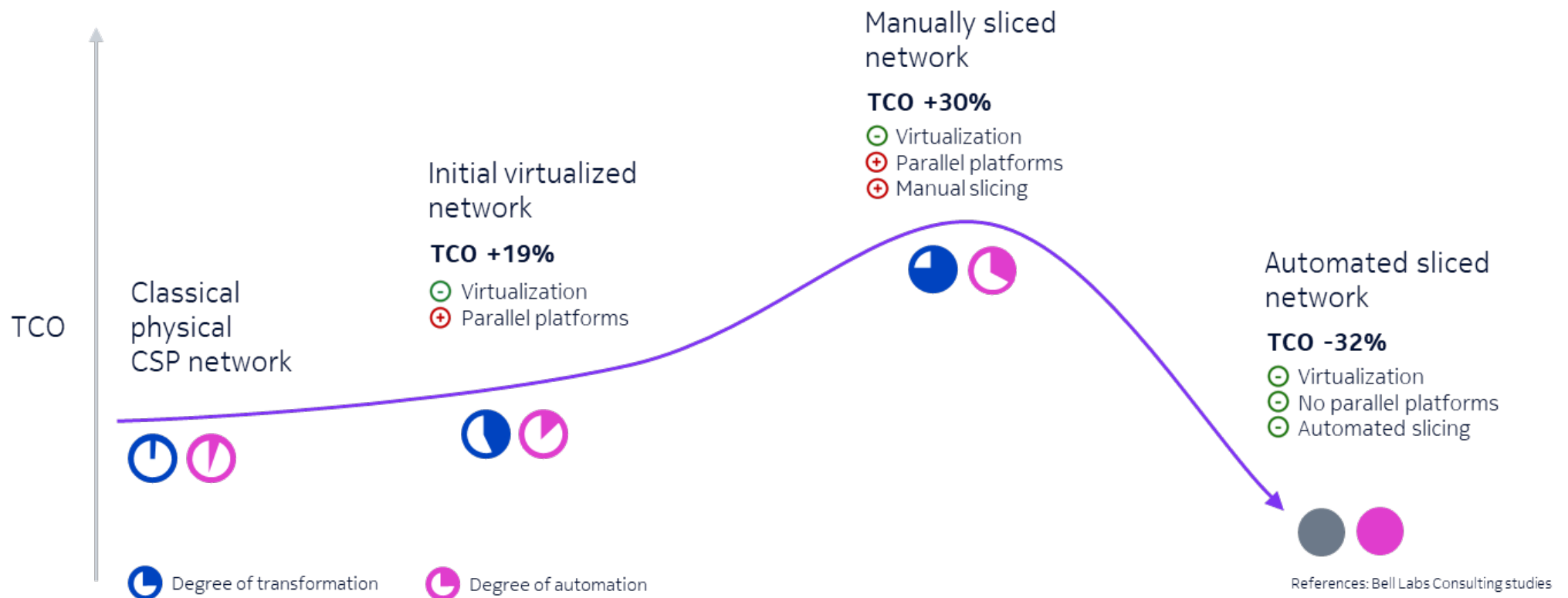
100x

more actions in virtualized and containerized infrastructure *
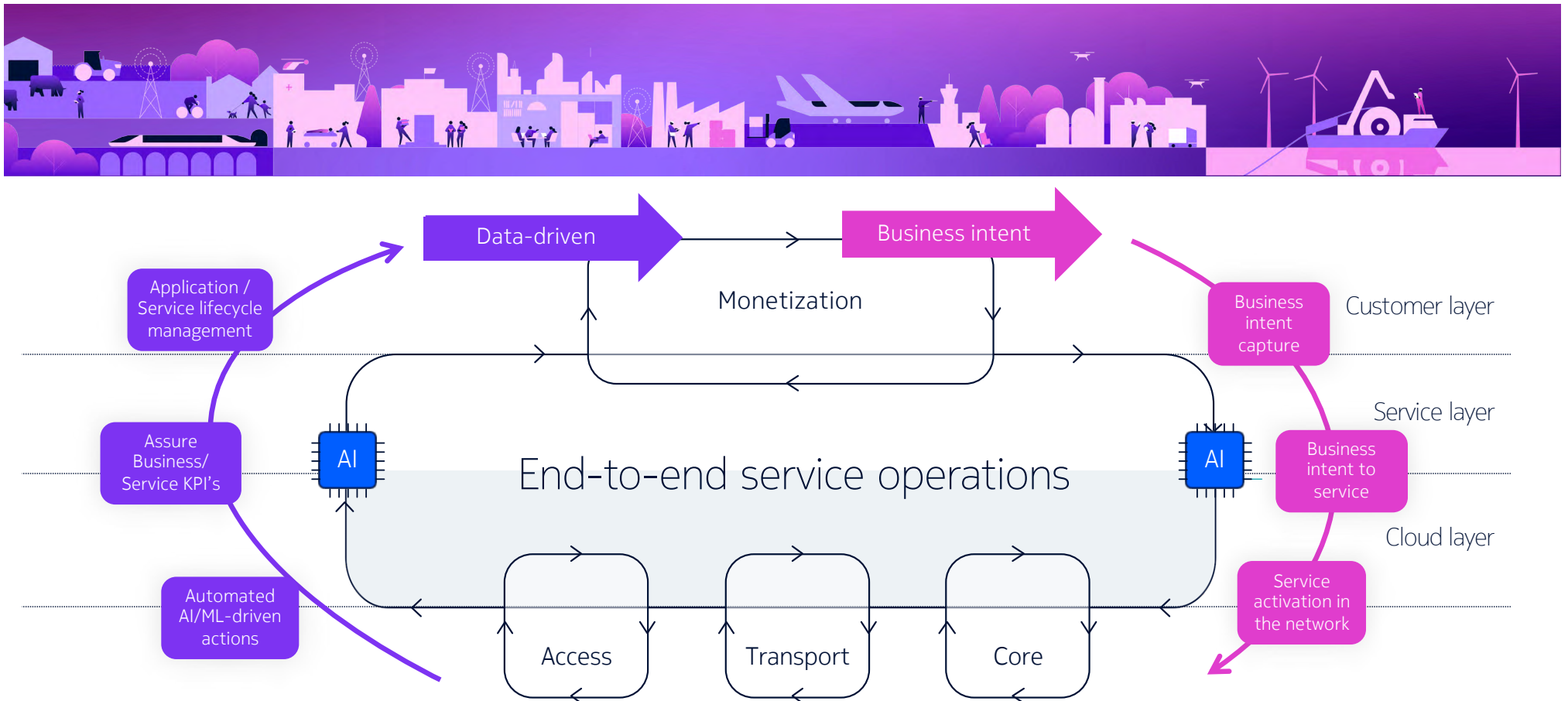
*Appledore Research

The power of automated network slicing

The power of automated network slicing enables CSPs to efficiently package these valuable network capabilities into differentiated, SLA-based services in a cost-effective way that can drive profitable growth.

Manually sliced network

TCO +30%
⊖ Virtualization
⊕ Parallel platforms
⊕ Manual slicing

Initial virtualized network

TCO +19%
⊖ Virtualization
⊕ Parallel platforms

Automated sliced network

TCO -32%
⊖ Virtualization
⊖ No parallel platforms
⊖ Automated slicing

TCO

Classical physical CSP network

⊙ Degree of transformation   ⊙ Degree of automation

References: Bell Labs Consulting studies

Unlock the value of your network with business-intent driven slice operations

By closing the loop between traditionally separate orchestration and assurance processes, CSPs can intelligently manage the full service lifecycle with data-driven, business intent-based end-to-end service operations.

Data-driven

Business intent

Application / Service lifecycle management

Monetization

Business intent capture

Customer layer

Assure Business/ Service KPI's

AI

AI

End-to-end service operations

Business intent to service

Service layer

Automated AI/ML-driven actions

Access

Transport

Core

Cloud layer

Service activation in the network

With automated slice creation the time required to set up
a single slice is reduced while also minimizing human errors

90% time reduction

Leveraging correlation and root-cause analysis, automated
assurance increases reliability and simplifies troubleshooting
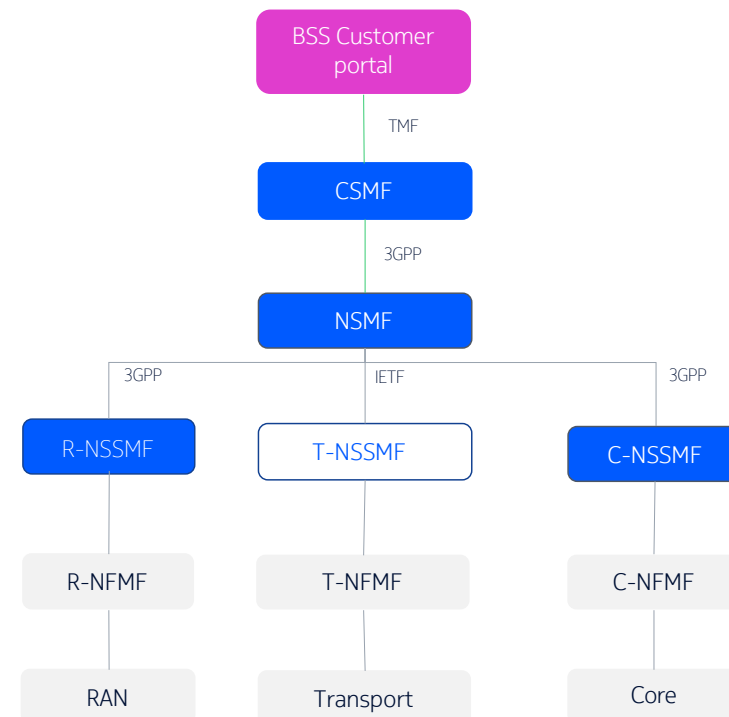
90% alarm reduction

85% fewer field dispatches

5G slicing architecture

In the 5G architecture, the functions delivered by Digital Operations Center are known as the Communication Service Management Function (CSMF) and the Network Slice Management Function (NSMF). In addition, the solution can provide the Core Network Slice Subnet Management Function (C-NSSMF) and RAN Network Slice Subnet Management Function (R-NSSMF).

Nokia's CSMF, NSMF, R-NSSMF and C-NSSMF capabilities can be delivered as a single solution that supports all four functions. They can be deployed together or added over time.

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                    ┌─────────────────┐
                    │  BSS Customer   │
                    │     portal      │
                    └─────────────────┘
                            │ TMF
                    ┌─────────────────┐
                    │      CSMF       │
                    └─────────────────┘
                            │ 3GPP
                    ┌─────────────────┐
                    │      NSMF       │
                    └─────────────────┘
        3GPP         │      IETF       │        3GPP
   ┌──────────┐  ┌──────────┐  ┌──────────┐
   │ R-NSSMF  │  │ T-NSSMF  │  │ C-NSSMF  │
   └──────────┘  └──────────┘  └──────────┘
   ┌──────────┐  ┌──────────┐  ┌──────────┐
   │  R-NFMF  │  │  T-NFMF  │  │  C-NFMF  │
   └──────────┘  └──────────┘  └──────────┘
   ┌──────────┐  ┌──────────┐  ┌──────────┐
   │   RAN    │  │Transport │  │   Core   │
   └──────────┘  └──────────┘  └──────────┘
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End-to-end network slice orchestration and assurance

Nokia's Digital Operations Center provides a comprehensive solution to effectively manage the design, deployment and assurance of slice-based services end-to-end and at scale. Its automated slice lifecycle management capabilities are designed for multi-vendor, multi-cloud and multi-edge environments, relying on standards-based open interfaces and SDKs.

- **Nokia Orchestration Center** offers orchestration capabilities to enable rapid design and deployment of slices, significantly reducing time-to-value.

- **Nokia Assurance Center** provides AIOps capabilities, enabling proactive assurance of slices in runtime to meet KPIs and to drive down costs.

- Unified Inventory provides discovery, reconciliation and ongoing synchronization of network and service assets in near real-time, closing the loop between orchestration and assurance processes.

Orchestration Center	Assurance Center

Unified Inventory

Any cloud

Nokia's Digital Operations Center

Discover more here

Nokia Orchestration Center

Discover more here

Nokia Assurance Center

Discover more here

Network slicing within network domains

A network slice extends from an end device to an application and includes all intermediate functions and domains. Those domains include access, transport, and core. Nokia has a strong value proposition in each of the domains to deliver a true end-to-end solution.

Slicing the Radio Access Network

RAN performance is usually the gating factor for user experience in terms of throughput, latency and reliability. The Nokia RAN Slice Controller is a multi-vendor, multi-cloud solution that provides the R-NSSMF capability for physical RAN, Cloud RAN and O-RAN deployments. It comes pre-integrated with Nokia Digital Operations Center (CSMF/NSMF), Nokia MantaRay NM (R-NFMF) and Nokia's 5G RAN.

Slicing the Core Network

The core network is the anchor for 5G network slices, as it controls device subscriptions to network slices and UE network slice selection. The Nokia Core Slice Controller solution is designed for multi-vendor, multi-cloud and multi-edge environments, and provides the C-NSSMF capability for 5G core deployments. It's pre-integrated with Nokia Digital Operations Center (CSMF/NSMF), Nokia MantaRay NM (C-NFMF), Nokia Cloud Operations Manager (NFVO) and Nokia 5G Core.

Slicing the Transport Network

Transport slices offer deterministic Service Level Agreements (SLA's) and play a large role in ensuring the end-to-end slice SLA. This enabled by Nokia's Network Services Platform.

Nokia's expertise

Nokia uniquely combines extensive knowledge of 5G networks and network slicing with service and network operations know-how.

5G expertise
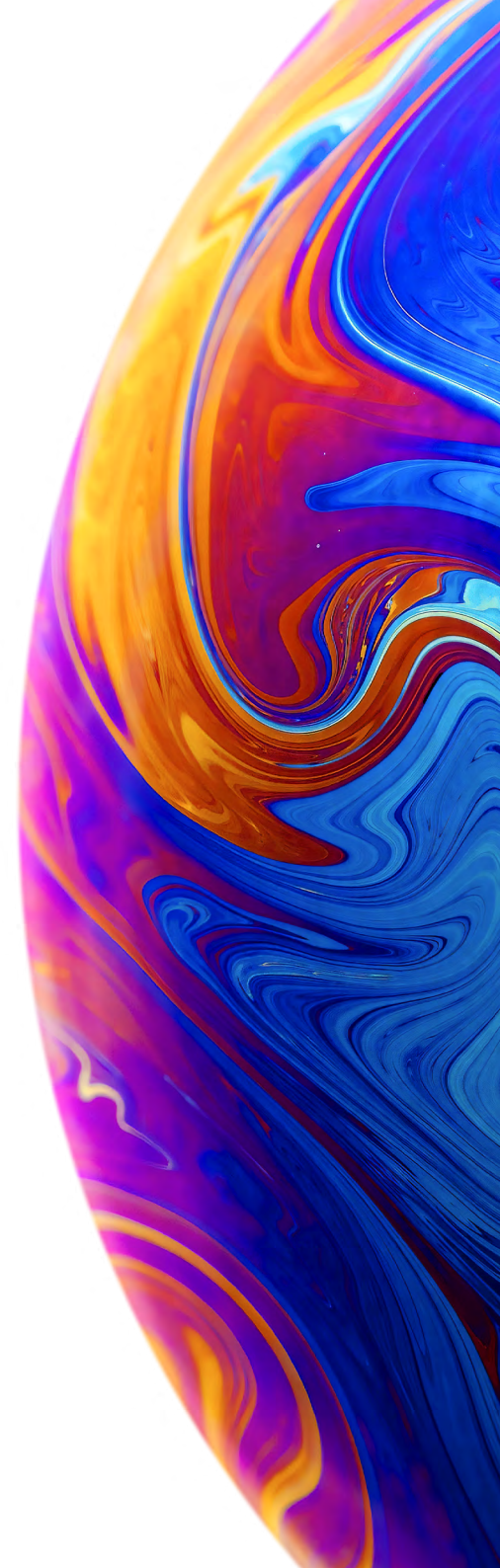
100s of commercial 5G deals

100+ live 5G networks

Orchestration and Assurance expertise

200+ distinct customers

Involved in 5G slicing standardization, trials, PoCs and deployments from day 1

Industry analyst endorsements

Ranked by Appledore Research

Ranked by Analysys Mason

#1
in Network Automation Software

#1
in AIOps

#1
Network automation and orchestration

#1
in Cross-Domain Service Orchestration

#1
in Domain Management

#1
in Automated Assurance

Customer case study

A CSP in North America required fully automated end-to-end slice management capabilities for its multi-vendor network.

Requirements

- Enabling different use cases such as events and private 5G eMBB slice service for enterprise customers
- Support for multi-operator core network with shared RAN
- Very short project timeline in full multi-vendor environment

Solution

- End-to-end slice orchestration (CSMF & NSMF), plus RAN and Core slicing functions (R-NSSMF, C-NSSMF)
- Slice assurance with closed-loop automation
- Integration with enterprise marketplace for automated order processing
- Using public cloud for faster deployment on a readily available flexible infrastructure

Outcome

- Fast implementation due to compliance with industry standards, extensive library of network adapters and cloud deployment
- Simplified closed-loop automation due to single design for both orchestration and assurance
- Fully automated slice implementation: from the customer order submitted via the self-service enterprise portal to slice instantiation across multi-vendor cloud, core and transport domain

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About Nokia

At Nokia, we create technology that helps the world act together.

As a B2B technology innovation leader, we are pioneering networks that sense, think and act by leveraging our work across mobile, fixed and cloud networks. In addition, we create value with intellectual property and long-term research, led by the award-winning Nokia Bell Labs.

Service providers, enterprises and partners worldwide trust Nokia to deliver secure, reliable and sustainable networks today – and work with us to create the digital services and applications of the future.