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Rešitve za telekomunikacijske operaterje

Razvojna konferenca Telekom Slovenije, 18.10.2024

Dr. Mitja Golja, Janez Öri

Kontron in Figures

Leader of Smart Industrial IoT Solutions

8,000
Employees*

1.9bn
Revenue (EUR)*

100m
Net Result (EUR)*

>10%
Organic growth p.a.*

Member of SDAX®
Member of TecDAX®

HQ in Austria; listed in Germany

*Management estimates for 2024 and organic growth mid-term guidance.

Focused on large and growing B2B-IoT market
Number of connected IoT devices grows globally by 30%

Fully integrated technology platform
Integrated (SW+HW) solutions

Driven by customers success, blue-chip customers
> 4,500 customers in total

Leading provider of disruptive IoT connectivity technology
Real time 5G/6G connectivity, susietec® toolset, Kontron OS

Kontron 2024 Structure

10 new divisions in 3 segments

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The Power of IoT

Europe

update





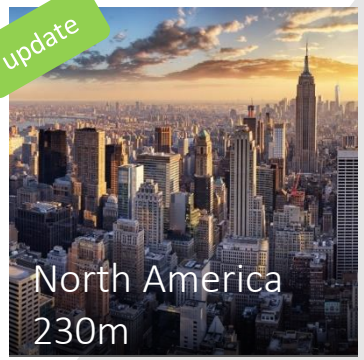


new



Global

update





Software + Solutions





update



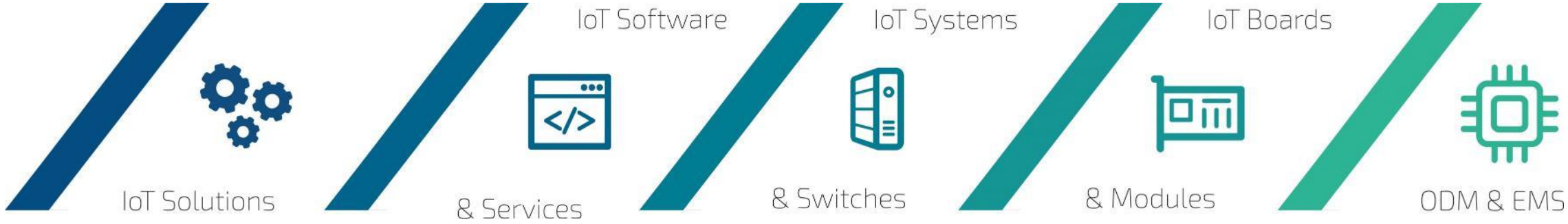
new



Macro Trends Driving IoT Business

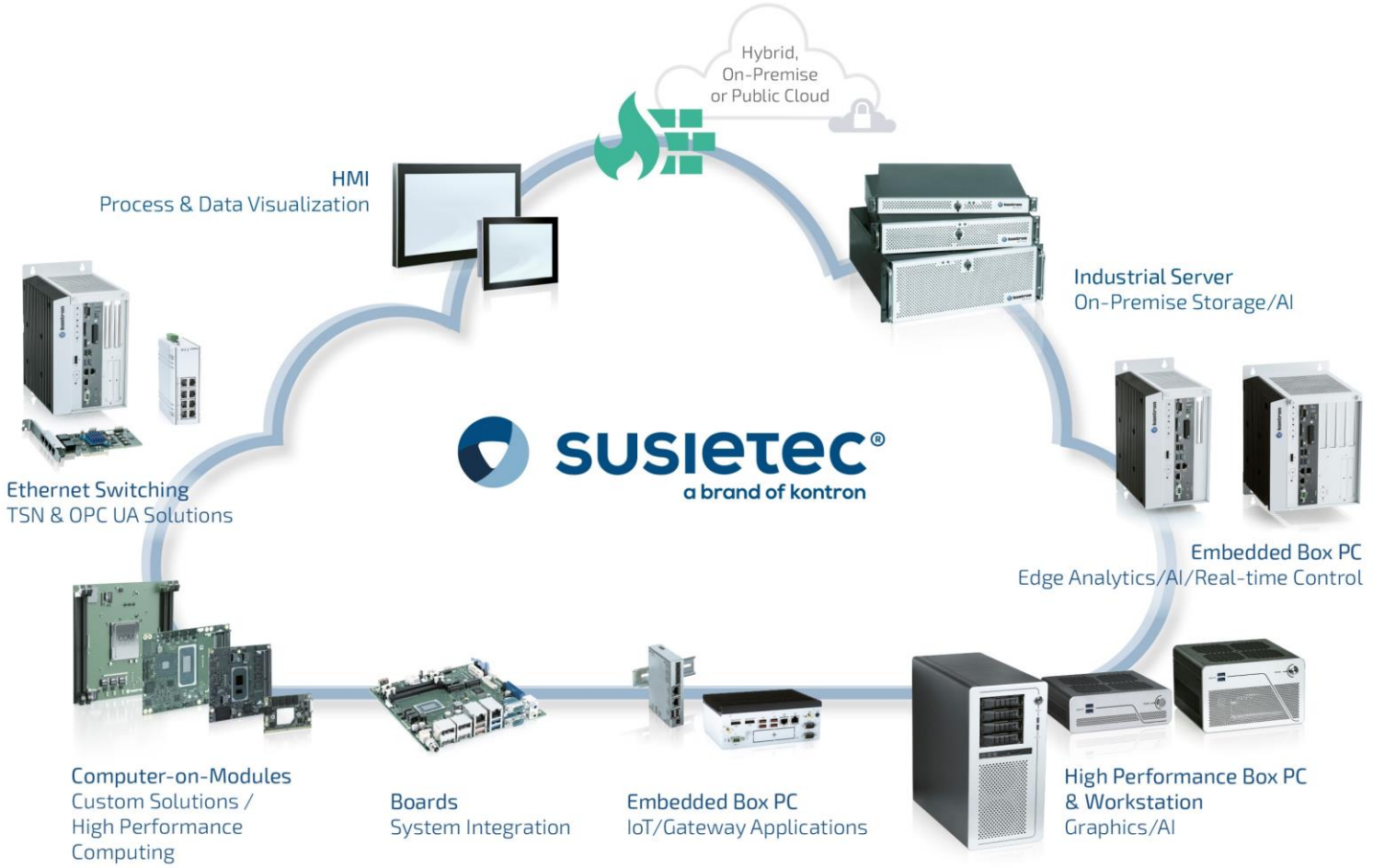
5G	• Next gen industrial wireless • Intelligent modules offer security • Shift from GSM-R/4G/Wi-Fi to 5G • 5G private networks for factories
Autonomous driving	• Unmanned trains, construction machines, harvesters save cost • Increase security of traffic
Medical	• Aging population • Pressure on healthcare systems • Ambitious projects (e.g., US “Moonshot” for curing cancer)
Smart factories	• Nearshoring/factories coming back • Robots increase automation budget • Connected IoT production machines
Aerospace and defense	• Recovery of travel • Technological shift to orbit • NATO goal: 2% GDP defense budget • Perception shift in Europe
High-speed trains	• EU “Green deal”: expand high-speed tracks from 11,000 to 33,000km • Technological shift from GSM-R to FRMC (based on 5G)
Artificial Intelligence	• High computational requirements of running complex AI models • Taking over human tasks like defect detection
Broadband Telecom	• FTTH and 5G expanstion: faster, smarter • AI-powered and Cloud Native networks • Cloud Edge and hybrid public/private 5G vertical solutions

Kontron Holistic IoT Solution Portfolio



Trusted and financially stable partner for end-to-end IoT solutions.
From Edge to Cloud to enterprise.

Industry 4.0 – Smart Factory



Kontron susietec® toolset, Artificial Intelligence, Time Sensitive Networking (TSN) & OPC UA

Communications hardware plaforms

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› Telecommunications Solutions



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Multi-access edge computing (MEC)

4G/5G | Private Networks | OpenRAN vRAN



Data center environment



Far edge environment

Resolving Restricted Space, Power, and Environmental Challenges

CORE — EDGE

3-in-1 Integrated Solution: Processing, Timing/Sync, and Switching/Routing

› Media Delivery Platforms



Video/broadcast/OTT

Digital pay TV | HEVC HD-UHD transcoding | DRM | Head end | Ad insertion



Carrier-grade servers





Converged infrastructure platforms - 2U / 1U



IP65 / IP67 MEC / vRAN platforms



Far Edge MEC / vRAN platforms

Core to edge high-density & GPU servers for challenging environments with extended product lifecycles

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Broadband Solutions

Top 5 Telco Trends for 2025

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Trend 1: FTTH & 5G Expansion**:** Faster and Smarter Connectivity

Trend 2: AI-Powered Networks**:** Intelligence in the Network

Trend 3: Protecting Privacy**:** Safeguarding Customer Data

Trend 4: Enhanced Cybersecurity**:** Defending against Evolving Threats

Trend 5: Cloud-Native Architecture**:** Flexibility and Scalability

Trend 1: FTTH & 5G Expansion: Faster and Smarter Connectivity

ISP competition is the main driver

Data **annual growth rate 19.2 percent**

In 2025, global data creation is projected to more than **180 zettabytes***

Iskratel Lumia T6:
World's Fastest Combo OLT



XGS-PON

Innbox X108



Wi Fi 7

Mobile

Global Performance

Download	Upload	Latency
55.80 Mbps	11.02 Mbps	27 ms

#		Country	Mbps
1	-	United Arab Emirates	398.51
2	-	Qatar	344.34
3	-	Kuwait	239.83
4	-	South Korea	141.23
5	+2	Netherlands	133.44
6	-1	Denmark	130.05
7	-1	Norway	128.77
8	-	Saudi Arabia	122.28
9	+3	Bulgaria	117.64
10	-	Luxembourg	114.42
39	-2	Slovenia	69.65

Fixed Broadband

Global Performance

Download	Upload	Latency
93.99 Mbps	48.36 Mbps	9 ms

#		Country	Mbps
1	-	United Arab Emirates	297.62
2	-	Singapore	297.57
3	-	Hong Kong (SAR)	280.00
4	-	Chile	265.62
5	-	United States	242.27
6	-	Thailand	232.15
7	+1	France	223.72
8	+1	Denmark	219.23
9	-2	Iceland	213.98
10	+2	Israel	206.42
55	+1	Slovenia	92.98

Ookla: Speedtest Global Index Aug 2024

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* Statista: Volume of data/information created, captured, copied, and consumed worldwide from 2010 to 2020, with forecasts from 2021 to 2025

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Trend 2: AI-Powered Networks: Intelligence in the Network

AI is used for optimizing networks, predicting maintenance needs, fortifying security measures, and enhancing customer service experiences

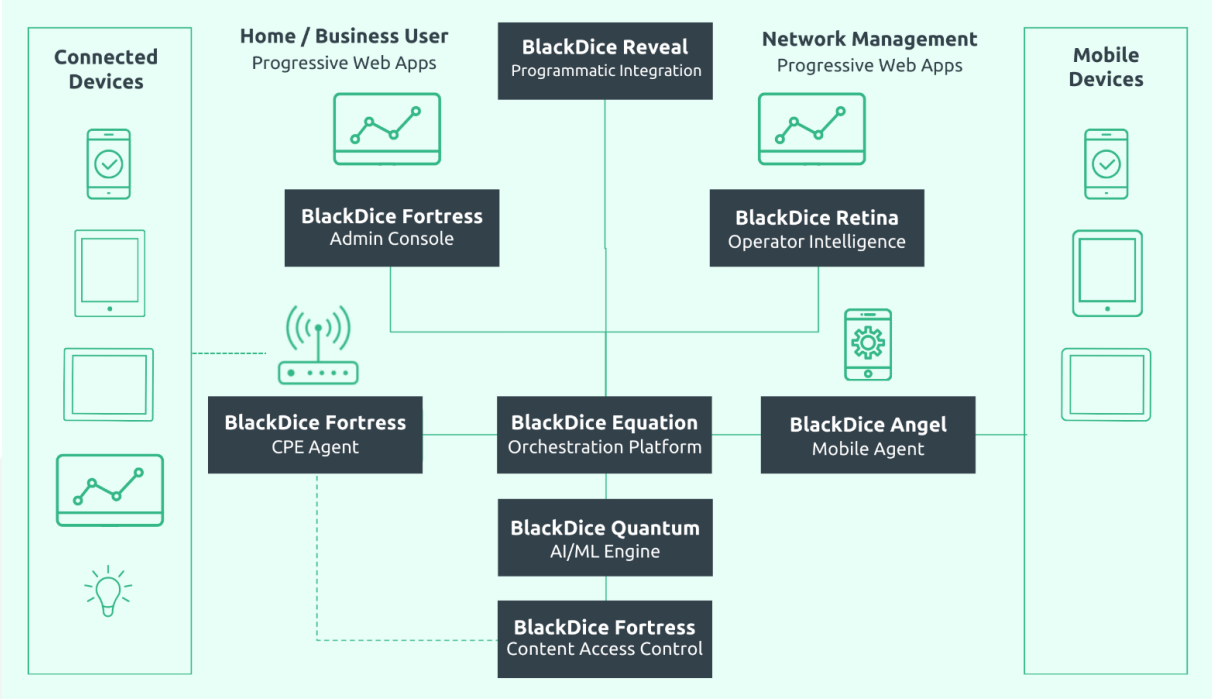
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Lightweight Monitoring System

AI Network Diagnostics

AI Cybersecurity integrated in CPE

Home network & mobile device protection



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Trend 3: Protecting Privacy: Safeguarding Customer Data

GDPR plays an important role in telecom operators' cybersecurity strategies

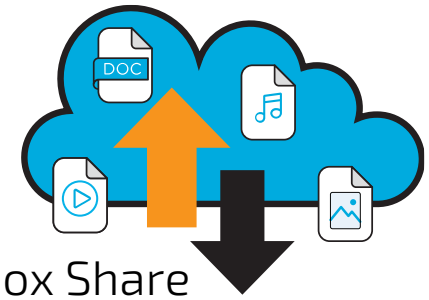
Data protection standards

Comprehensive security frameworks

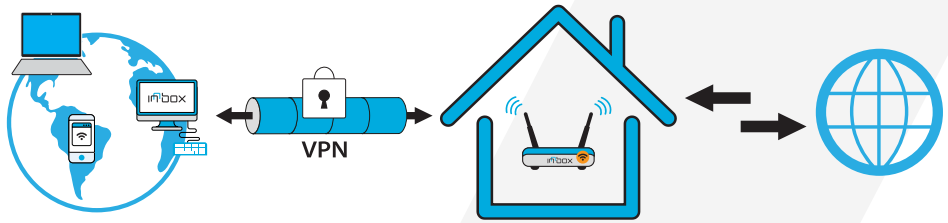
Mitigate risks, enhance resilience, uphold the trust of both consumers

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Innbox Premium Application Suite



Innbox Share



Innbox VPN



Innbox MeetInn

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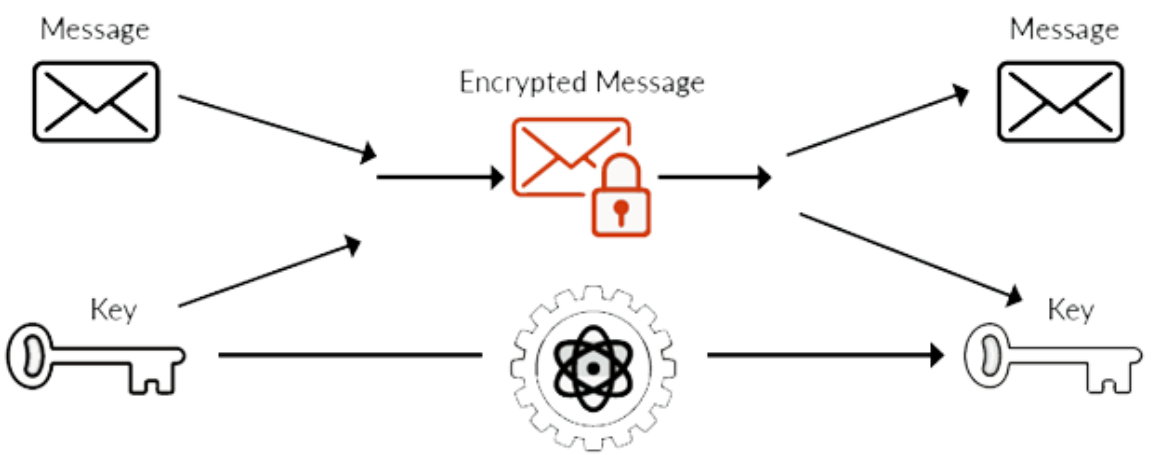
Trend 4: Enhanced Cybersecurity: Defending against Evolving Threats

Telecom security services will expand as new computing and networking technologies – such as 5G, cloud, edge, IoT, and mobile private networks – are deployed more widely

Customers: Banking and Finance, Government and Defence, Critical Infrastructure, Datacentres

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PQC solutions:
Quantum Key Distribution



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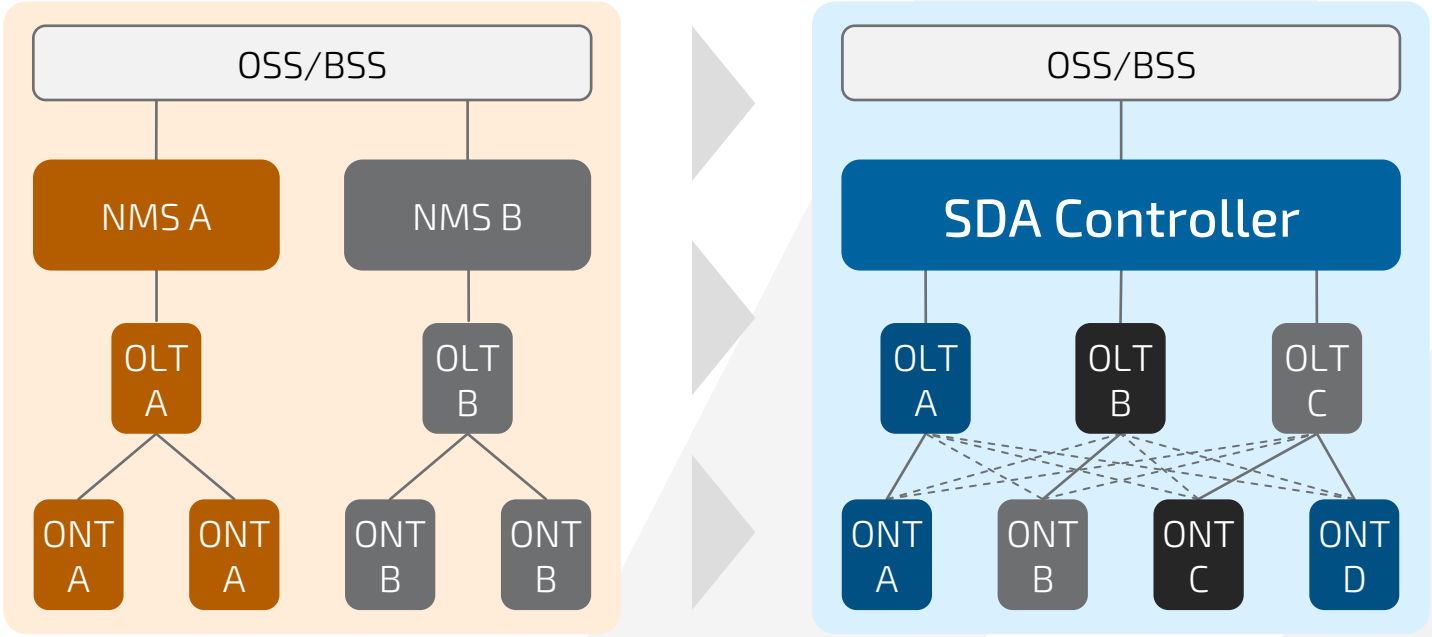
Trend 5: Cloud-Native Architecture: Flexibility and Scalability

Introduction of Infrastructure as a Service (IaaS),
Platform as a Service (PaaS), and Software as a Service (SaaS)

Embracing cloud-native principles enables telecoms to meet the demands of a dynamic and evolving digital landscape, ensuring seamless and agile operations

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Conventional Access Network



Software-Defined Access Network

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Cloud-Edge and 5G MPN

5G Mobile Private Network

Answering key **connectivity challenges** of advanced **industrial use cases**













Kontron MPN Complete Solution

5G User Devices



- Supporting **end-to-end solution**
- Expertise in device selection, rigorous testing, and seamless integration into customer's environment
- **Kontron 5G devices**

5G RAN

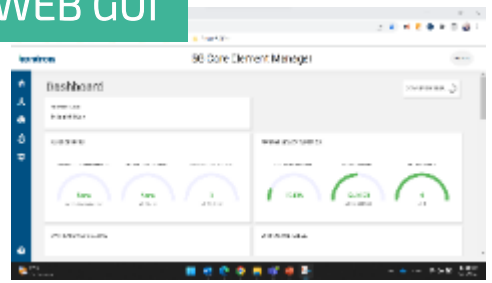


- **Interoperable with various RAN networks**
- Seamless integration of any leading radio station vendors
- **Kontron 5G RAN**



Kontron 5G SA Core

WEB GUI



5G kontron

From concept to reality: our **100% in-house development** ensures quality, control, and innovation

Apps and IT/OT Integration



- **Integration into IT and OT networks** for an end-to-end solution
- Providing Kontron and integrating customer's apps

Competitive KONTRON's 5G MPN offerings for industry

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- 5G core on Single server
- 5G BBU + RRH (macro / small cell)
- Switch
- Management
- Ruggedized case

Plug-and-play solution offering from public cloud:

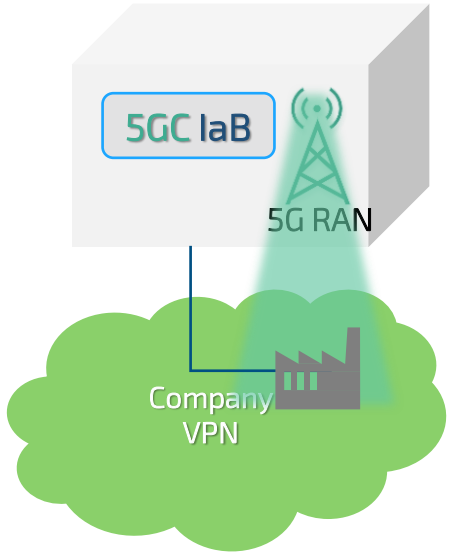
- Automatic provisioning
- Edge capabilities
- Cloud app integration
- Seamless Cloud integration
- On-site 5G RAN

Single-server or HA config.:

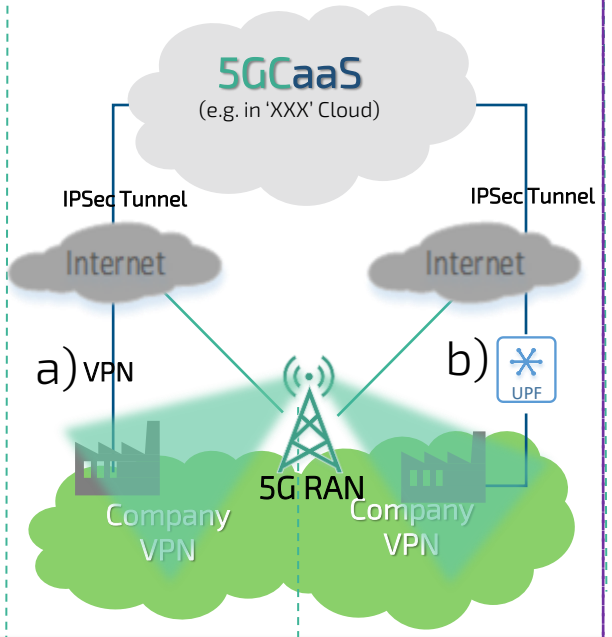
- 3 Servers solution
- 2 Switches
- SBA 5G core
- High throughput, high availability
- On-site , stand-alone 5G RAN
- Additional applications

- All-in-one or HA configuration for 5GC
- 5G RAN as a shared infrastructure subscription or hosted service provided by Telco operator

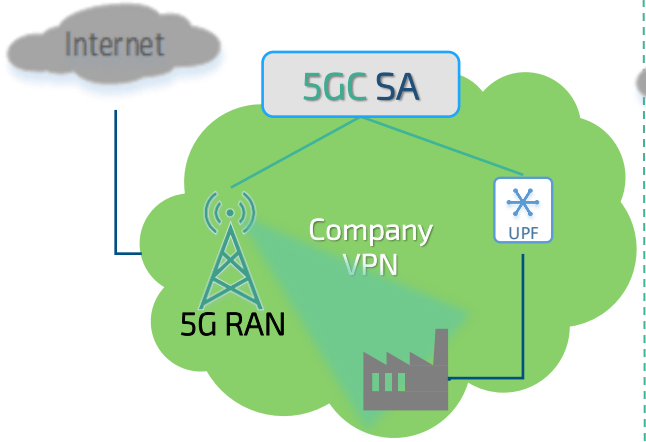
5G SA MPN All-in-One



5G MPN as a service

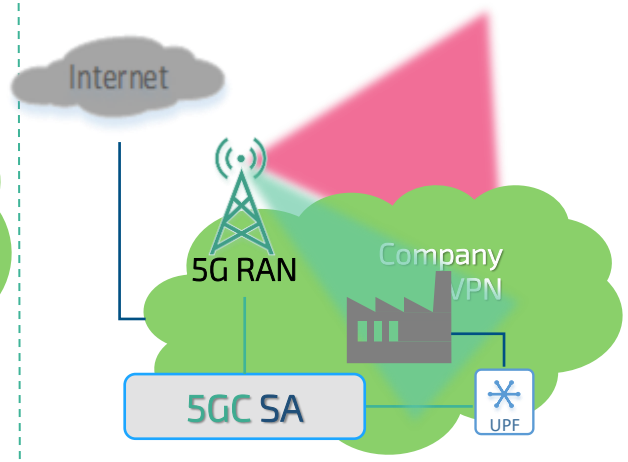


5G stand-alone MPN (On-premises, 5G MPN HA)



5G MPN in partnership with MNOs

Shared RAN or dedicated 5G RAN operated by MNO (5GRANaaS)



Portable | Cloud (Design to Scale) | Design to Requirements

Cost conscious | Risk-Conscious & Convenient Oriented

Cloude Edge Products and Deployment options

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ICP Virtualization Platform

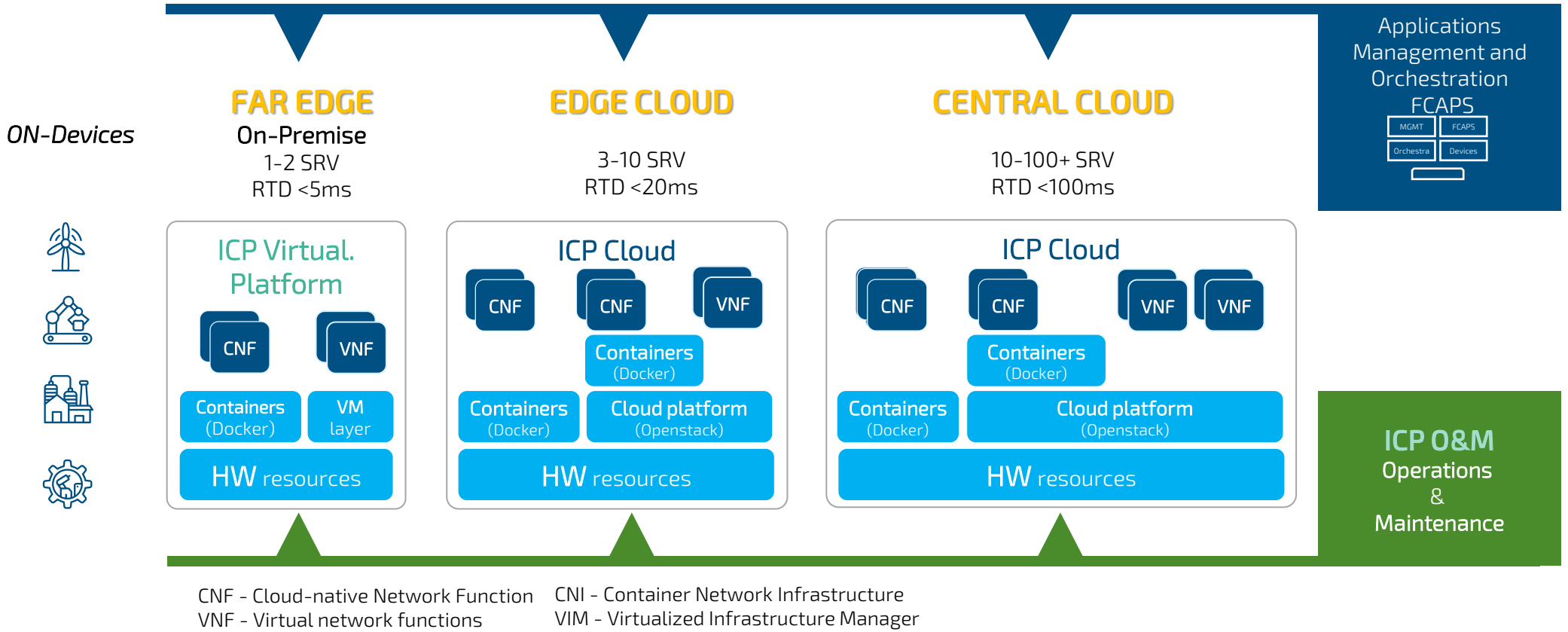
- 1 – 5 serves setup
- OS: Ubuntu Linux
- Hypervisor KVM
- HA/Geo, automation and support tools
- Integrated O&M

ICP Containers

- Container support with docker
- RKE, bare metal or VM installation

ICP Cloud (HCI architecture for 3 - 100+ servers)

- HCI architecture
- OS: Openstack container based on Ubuntu Linux,
- Hypervisor KVM, SDS - CEPH based storage
- NFV Orchestrator



central services for

- Operations
- Logging & Monitoring
- Authentication
- Backup

CNF - Cloud-native Network Function
VNF - Virtual network functions
CNI - Container Network Infrastructure
VIM - Virtualized Infrastructure Manager

Hybrid Cloud-Edge offering

Opportunities and value proposition

Opportunities:

- EU is/will be heavily investing in building EU-sovereign and federated digital infrastructures
- Telekom Slovenije as supplier of Slovenian critical ICT infrastructure with scalable, independent offer

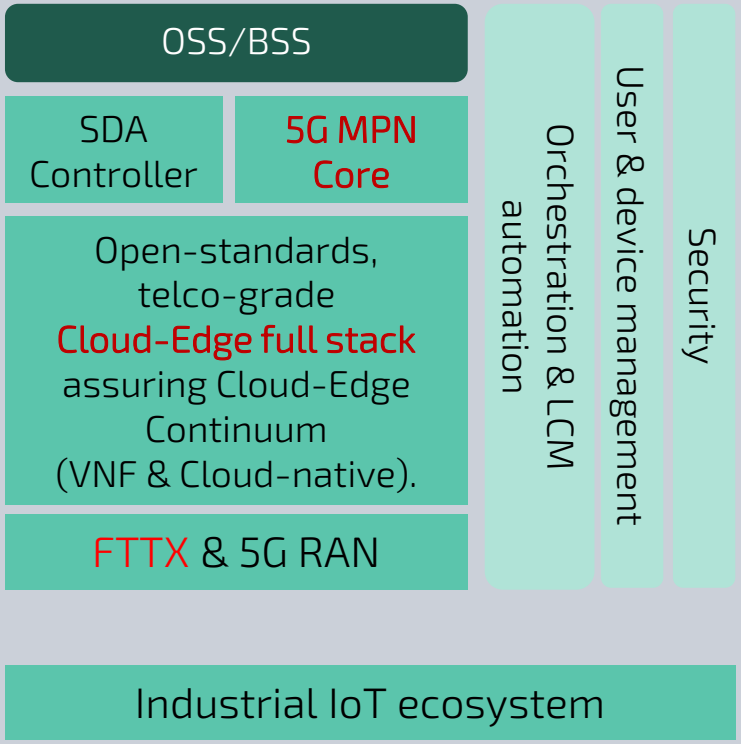
Kontron's position:

- Kontron's Cloud already used in telco and rail critical digital infrastructures: FRMCS (DB), vIMS, 5G Core
- Partner of an on-going EU IPCEI CIS project
- Full cloud stack offering

- **Telekom Slovenije** and **Kontron** may jointly build technical, operational and business capabilities to develop & offer fully EU-compliant cloud-edge digital infrastructures for public and private Slovenian market.

Collaboration on Cloud-Edge & 5G MPN

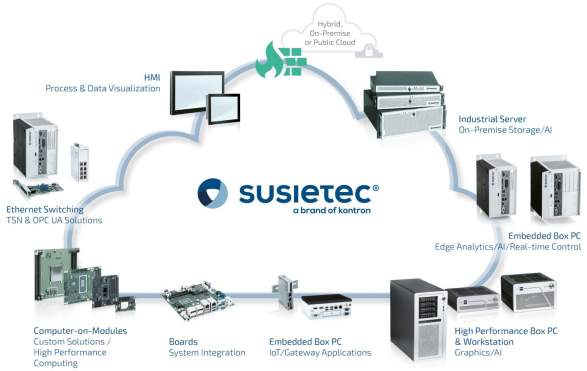
Challenges & Value Propositions for Strategic Collaboration

Challenges and Opportunites	Solutions, Innovations	Market Focus
• Aligning with EU goals for digital sovereignty, innovation, regulatory compliance • Setting strategic alliance for future public incentives and/or PPP projects on building future EU digital infrastructures for public & private confidential, resilient and secure services. • Find and target EU funding initiatives		• Public services: ✓ eGovernment, eHealth, Education, ✓ PPDR ✓ Other critical infrastucture sectors • Industrial sectors: ✓ Manufacturing (I4.0) ✓ Logistic Nodes ✓ Power Grids

Building on competitive advantages Combining **Telekom Slovenia** market strength, know-how and operational excellence in service offerings & **Kontron's** unique value chain, telco & industrial know-how & innovations.

Conclusion

Kontron is an EU vendor with local R&D, support and production capabilities



MADE IN EUROPE



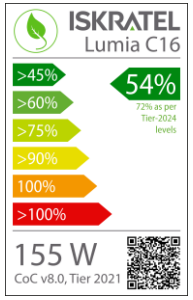


5G kontron

Committed to sustainability









Long term partner

Thank You for Attention

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Family Friendly Enterprise

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