Nokia Digital Automation Cloud

Industrial end-to-end connectivity platform and applications

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1. NDAC
2. Access points and Edge
3. Industrial devices
4. Application framework and applications
5. Options for consortium
6. Support and maintenance for 3rd party SW

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1. NDAC

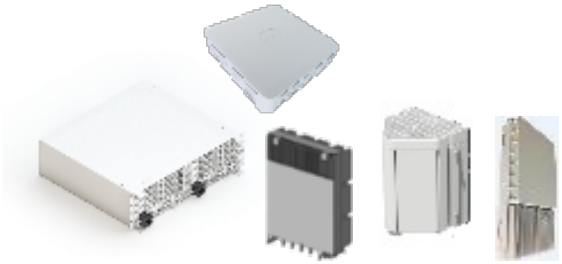
Scales to any size of factory, mine, port, utility…

End-to-end platform for private wireless connectivity and automation.

Comes with spectrum,

edge computing,

access points,



applications through NDAC catalog,

and industrial devices.

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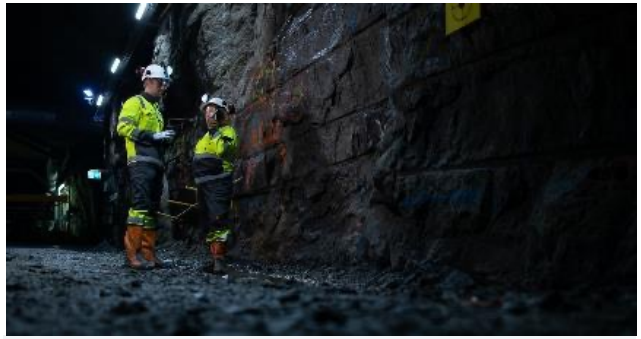
Serving vertical specific blueprints everywhere

Our customers are asking for reliable connectivity beyond Wi-Fi

Energy

- Automate falling conductor disconnect to avoid fire,
- Maintain grid reliability with growing distributed renewables / storage,
- Monitor wind turbines for predictive maintenance,
- Support FAN convergence and automation.



Mining

- Solve Wi-Fi related autonomous vehicle collision, downtime, and resulting wear & tear issues
- Increase safety by monitoring driver fatigue and enable remote drilling
- Increase business efficiency with Push-to-X communication,
- Introduce wall-slope & environment sensors.

Transportation

- Provide connectivity inside the plane (pilots, crew, workers),
- Predict plane departure time using cameras & analytics,
- Replace Wi-Fi and PMR for reliable airfield marshal work-orders & push-to-talk.

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Serving vertical specific blueprints everywhere

Our customers are asking for reliable connectivity beyond Wi-Fi

Ports

- Introduce real-time work order systems for cranes & AGV drivers,
- Automate site access system and parameter security,
- Monitor reefers,
- Enable remote control, autonomous cranes, and AGVs,
- Improve worker safety with Push-to-X communication.

Manufacturing

- Digitalize legacy assets for predictive maintenance,
- Fix AGV Wi-Fi imposed low speed & reliability issues
- Connect digital twin machines
- Improve worker safety and enable connected tools
- Supports “lot-size one” manufacturing.

Public safety

- Aid search & rescue missions with connected UAVs
- Boost traffic safety & event monitoring
- Prioritize fire prevention through live video streaming to improve situational awareness
- Monitor facilities for overheated areas and leakages.

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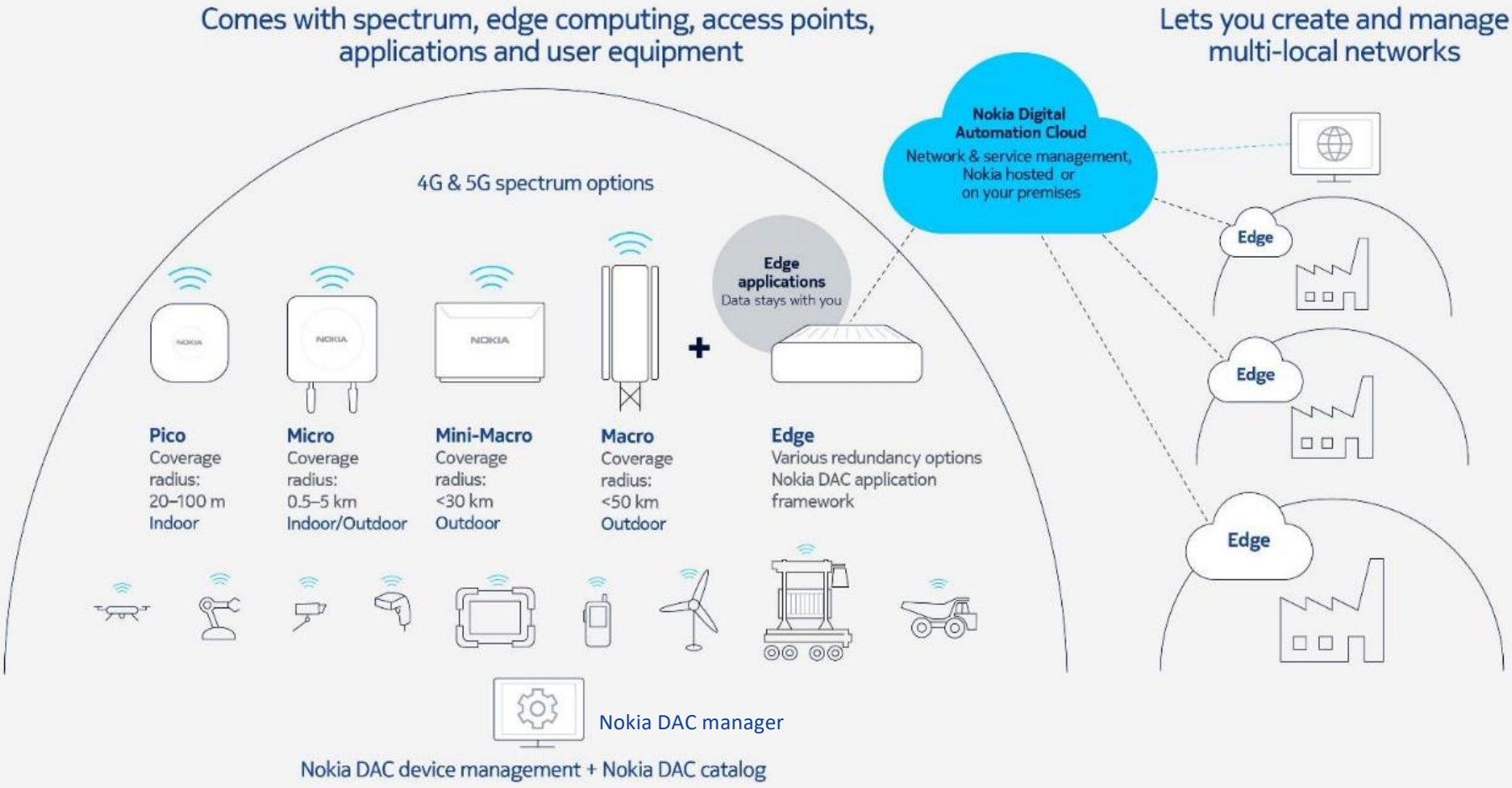
E2E platform for private wireless connectivity and automation.



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2. Access points and Edge

Nokia Digital Automation Cloud supported access points

ASiR = AirScale indoor radio
RRH = remote radio head
MBI = Multiband indoor
MBO = Multiband outdoor

Pico / MBI

4G ASiR-pRRH

5G ASiR-pRRH

Micro / MBO

Mini Macro

mRRH

Macro RRH

4G/5G outdoor rack

AirScale 4G/5G baseband unit

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Nokia Digital Automation Cloud
Edge server

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3. Industrial devices

Nokia Digital Automation Cloud
User and customer premise equipment

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Integrated ruggedized Nokia Industrial user equipment

Devices with hardened enclosure

- Industrial-grade components and IP67 protection level.
- Designed and developed for heavy use in demanding industries, such as manufacturing, port logistics, and mining.
- Managed, controlled and supported via Nokia DAC device management

High performing devices for different technologies

- Different form factors certified to address various markets and frequency bands, covering customer demands for 4G, 5G and MulteFire
- Devices are tested and validated with Nokia in-house expertise.
- Comprehensive feature set to enable efficient traffic for PROFINET communication and several other protocols, like EtherCAT and Modbus.

Easy to manage and access

- You get integrated device management in the Nokia DAC private 4G/5G wireless network.
- It supports plug & play and seamless onboarding of user equipment, with scalability to manage thousands of devices.

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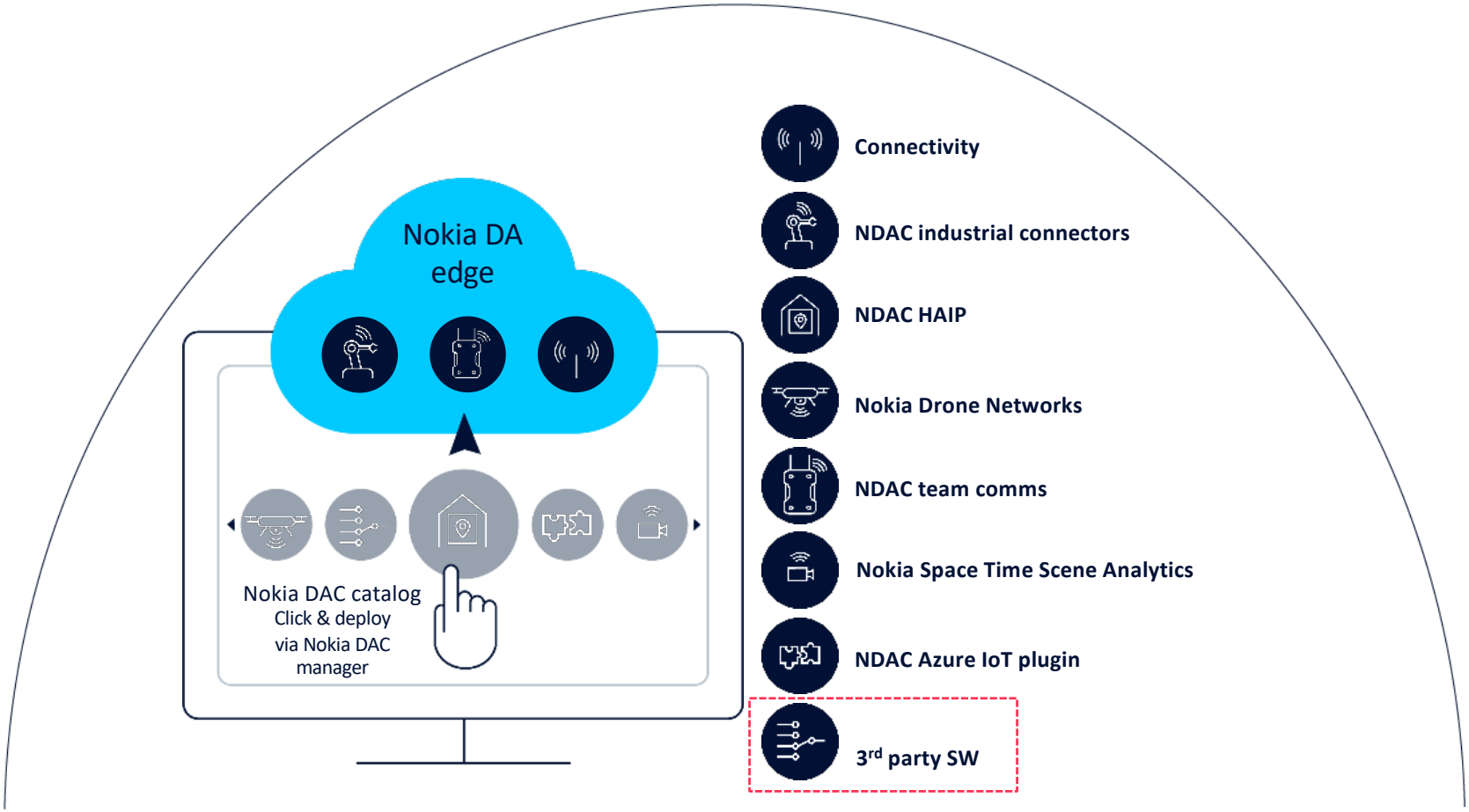
4. Application framework and applications

Nokia DAC catalog brings value beyond connectivity



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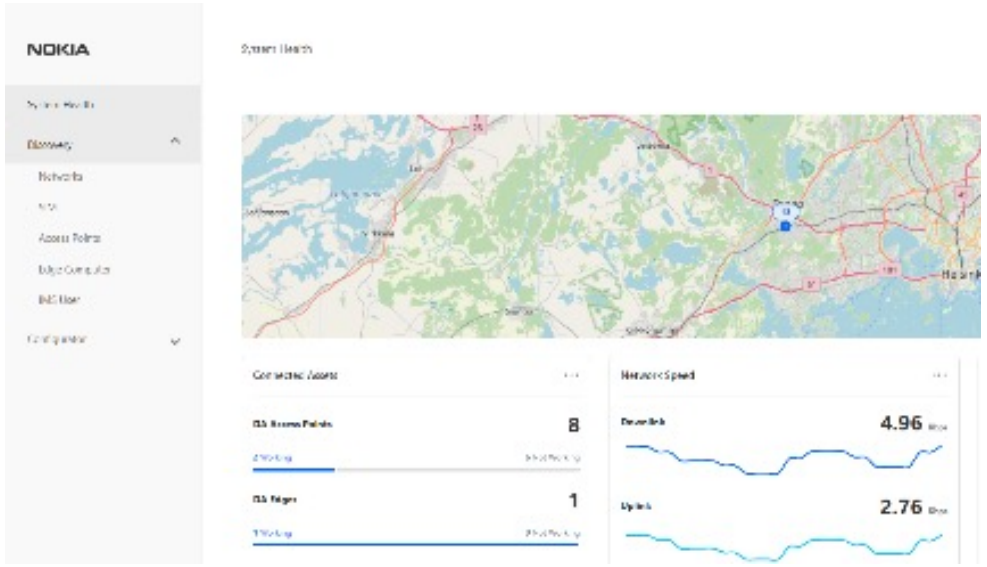
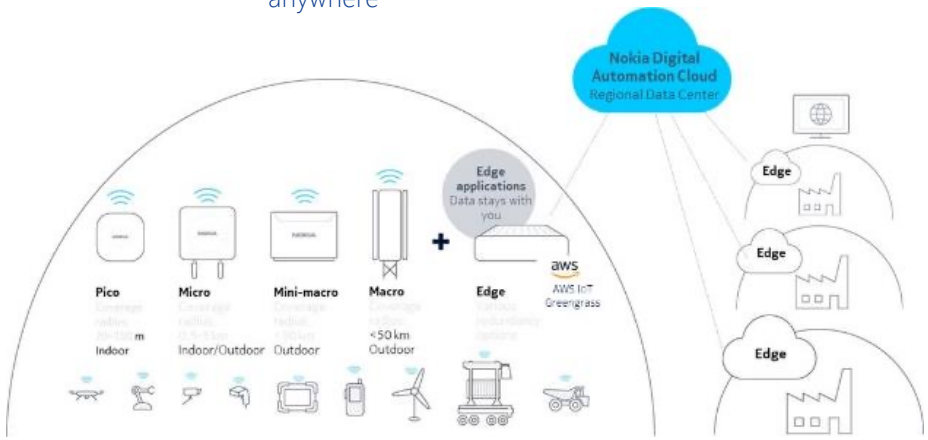
All customer networks managed with single web portal

Nokia Digital Automation Cloud

- Customer account, SIM, HW, network, application management
- All customer networks in single NDAC manager portal and individually manageable
- Access via HTML browser
- Alarms, FM/PM views
- Online trouble shooting tools
- API available for client backend integration
- Same style dashboards available for end clients' self service
- Deployment of applications by single click



Secure login from anywhere



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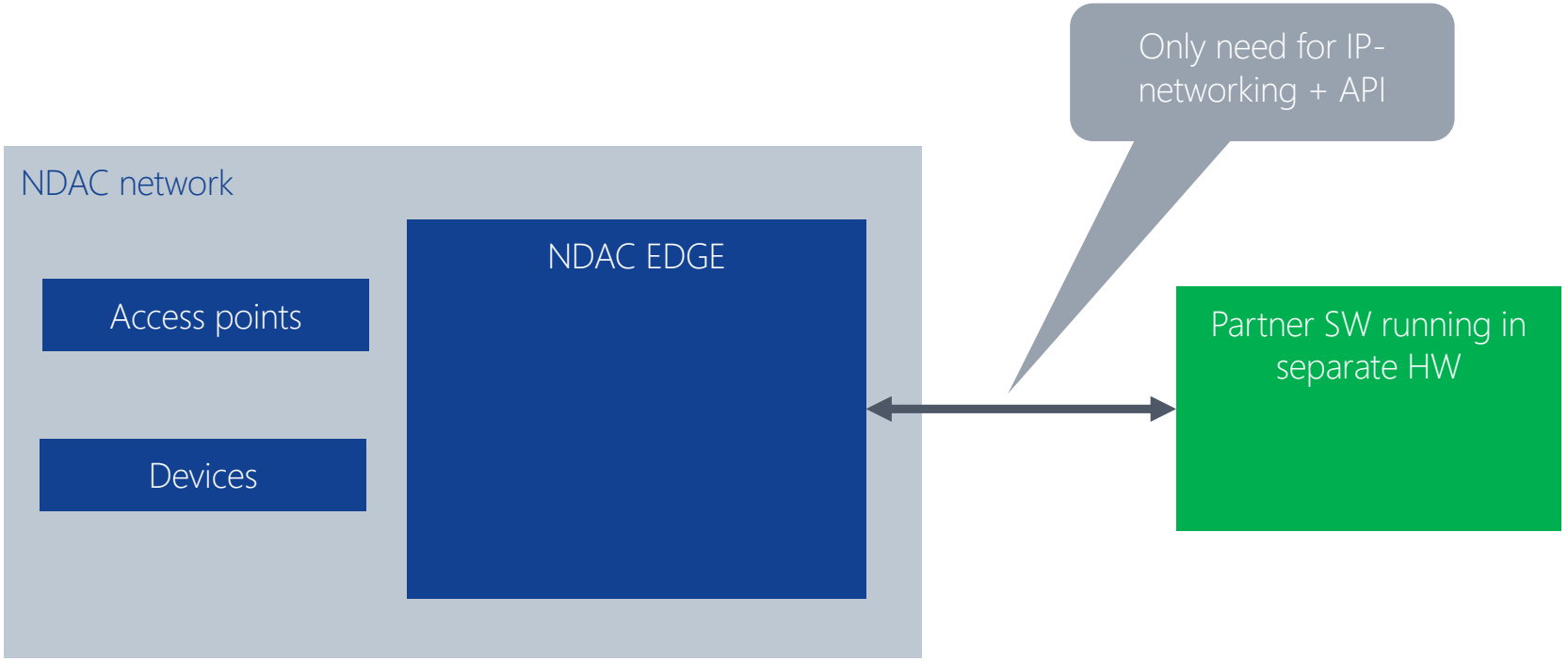
5. Options for Partners

Option 1



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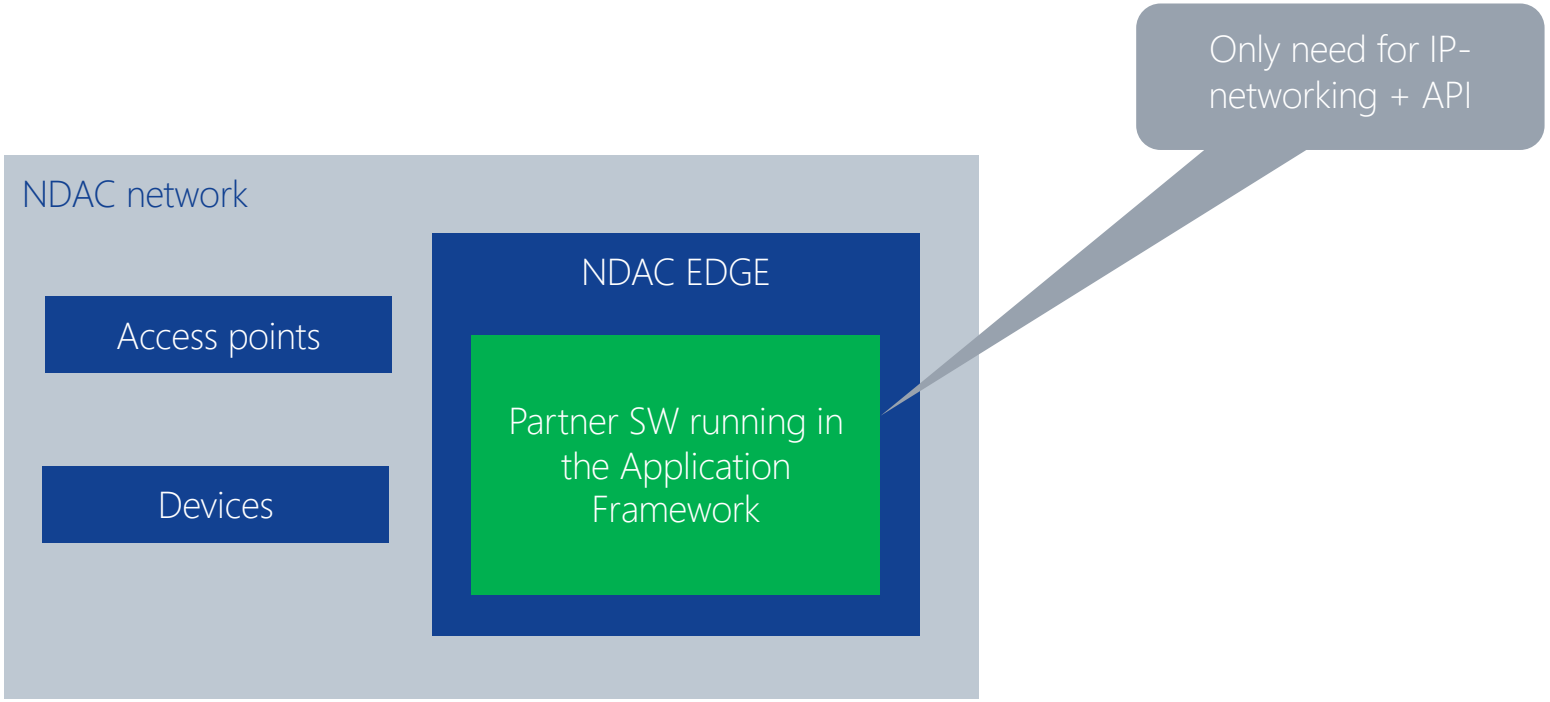
Option 2



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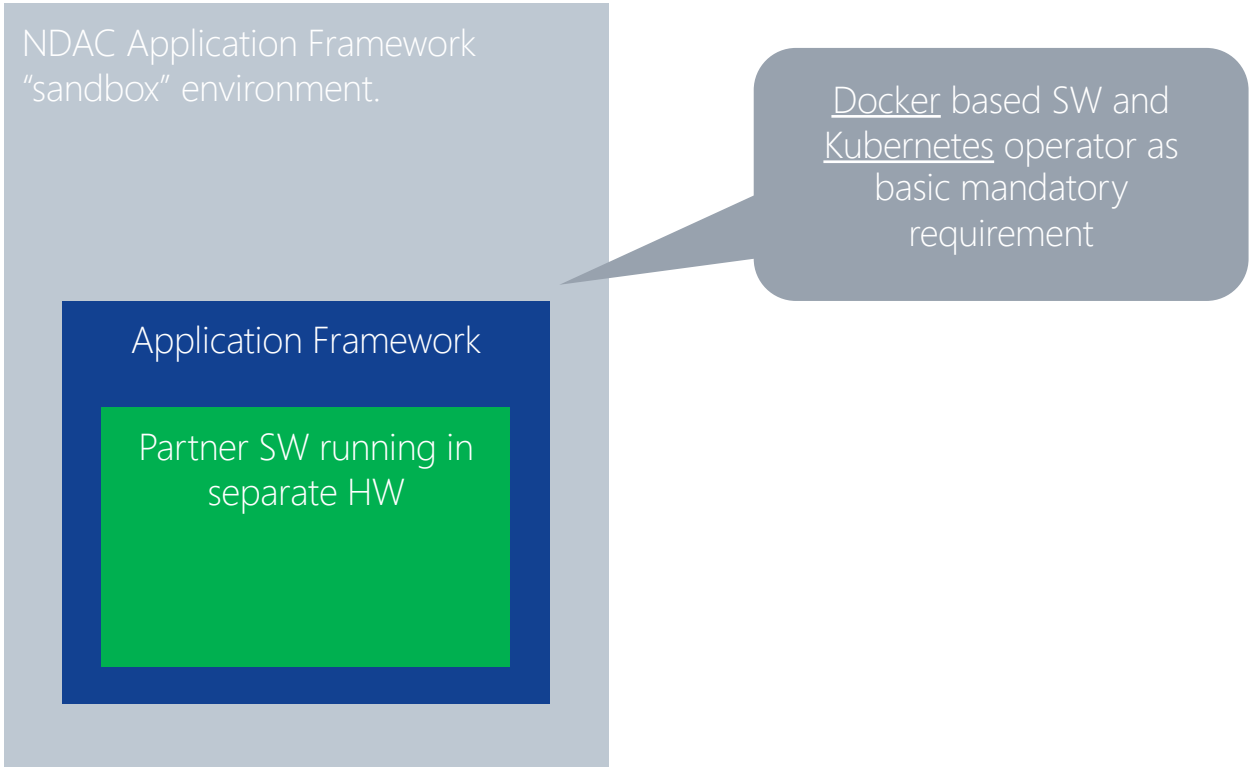
Option 3



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Collaborating with entire ecosystem to drive Industry 4.0

Service provider partners

Expertise in building & operating mobile network or public clouds, spectrum partners.

Industrial bodies and ecosystem partners

Kick starting the industry with more LTE and 5G industrial connected things.

System integrators & consulting

Deeper industry expertise and specialised channel to market.

Broadening the sphere of influence.

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6. Support and maintenance for 3rd party SW

Deploying Your Application To NDAC Edge App Framework

- Data Stays local
- Robust “in own hands” applications on premises
- Application Life cycle management comes with AppFW (deployment, updates, removals …)
- Common OAM: Alarms, Alerts and performace data can use the same framework as the NDAC itself. Troubleshooting and diagnostics benefits. (see next slide)
- Peformance benefits in communications (your app runs near to the core and radio)
- Ecosystem benefits
- Scale together with the Edge Cloud and take benefits of the Geo Redundancy (later)

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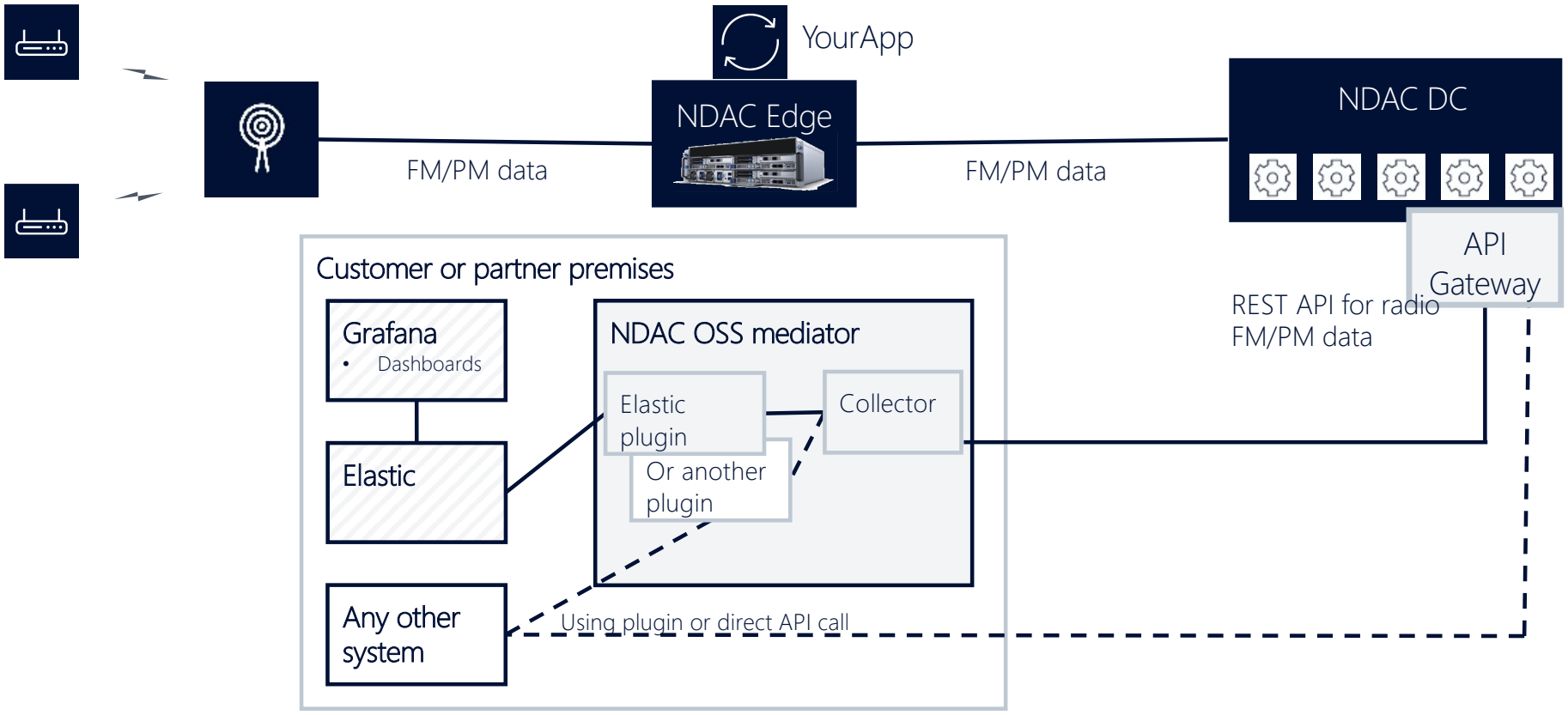
API for Access point FM/PM Data for Customers and Partners



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Deploying Your Application Outside NDAC

- Cases where separation of Communications and Application gives benefits
- Integration via NDAC API Gateway
- Separate solutions for
  - Life cycle management
  - OAM
  - Technical support
- Still many communications services are available via NDAC API Gateway

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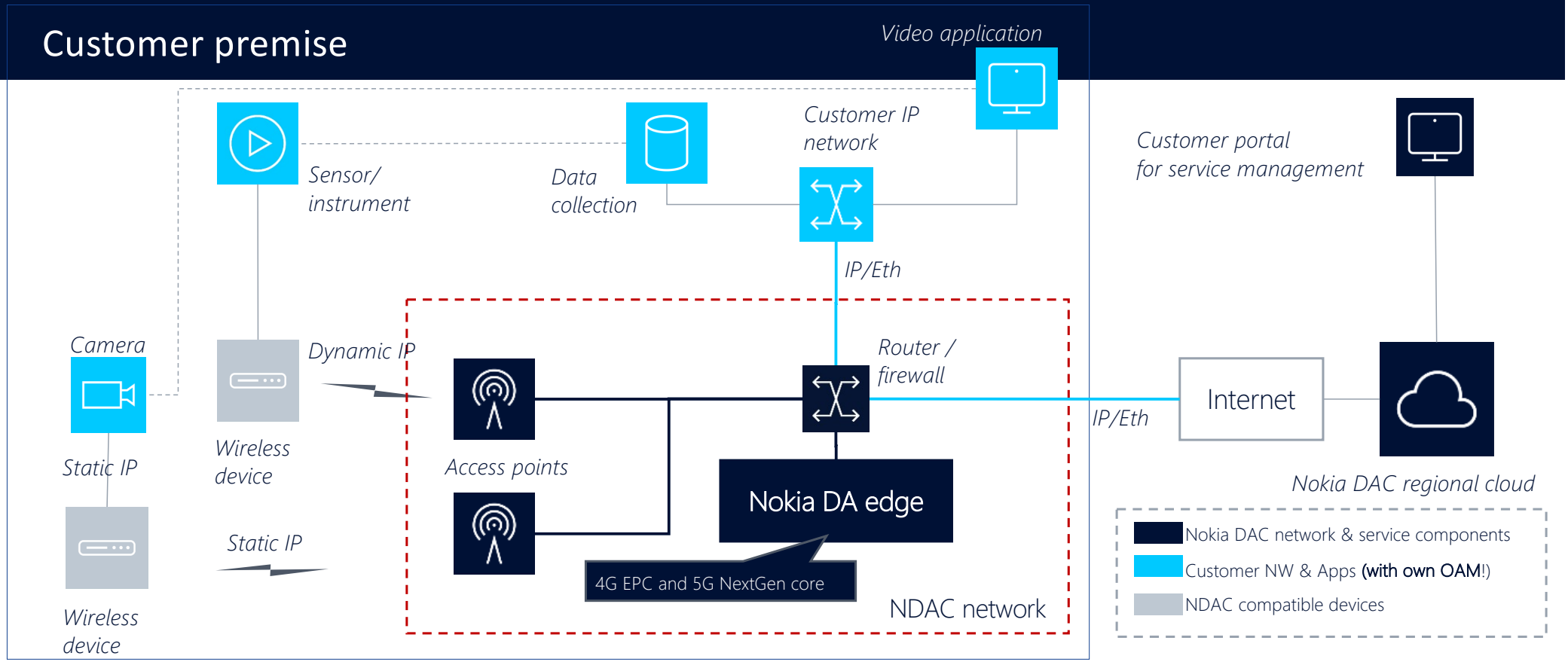
Nokia DAC Solution Overview With Demarcation Points



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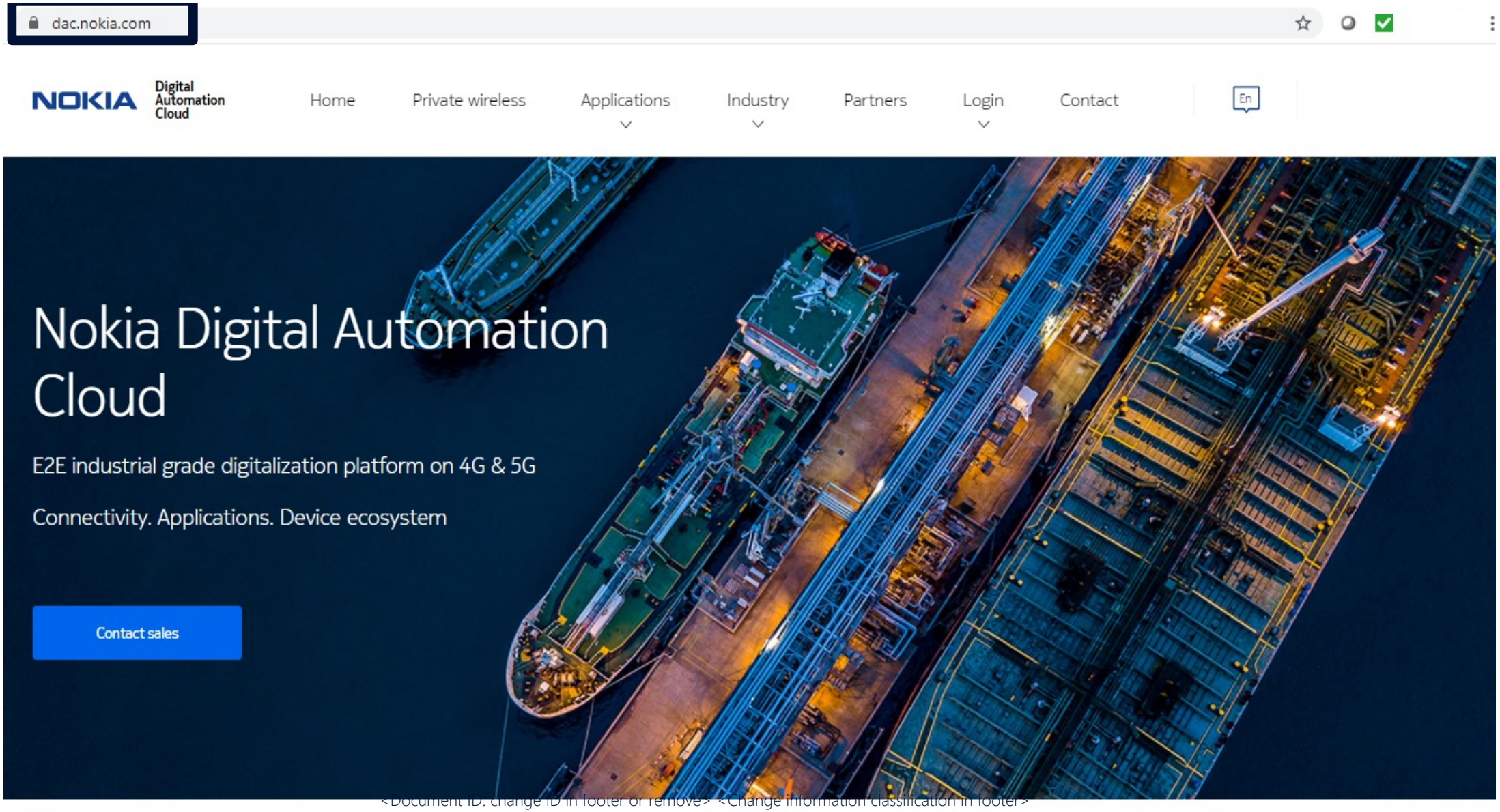
Devices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