



AFFORDABLE 5G

POTENTIAL USE CASES FOR PRIVATE 5G NETWORKS

NKUA DISSEMINATION WORKSHOP

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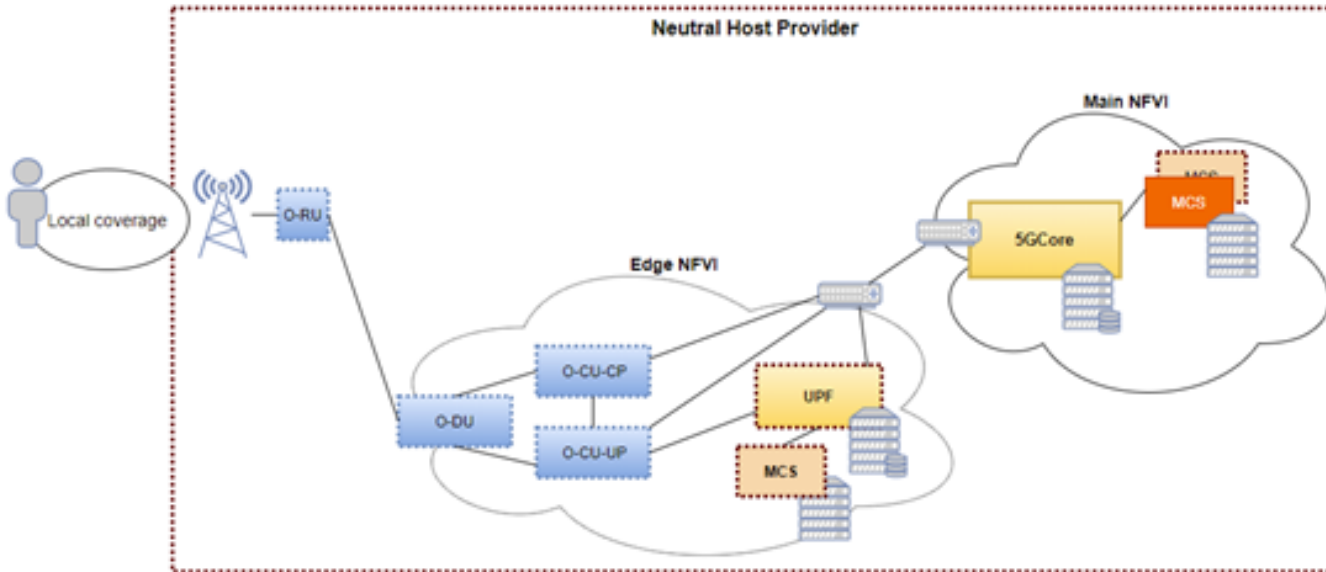
Emergency Communication Critical System (1/2)



- This use case aims at demonstrating the robustness or “criticality” of an emergency communication system under different conditions and potential mission stages
- The key idea is to have a responsive service that is able to cope with drastic network conditions, so that the first-responders are able to keep communicating regardless of the outage, communication demand increase, detection of poor communication quality and so forth
- The final objective is to offer a cost-effective, open, interoperable alternative to legacy mission critical networks, while paving the way to the upcoming data and video services with broadband requirements

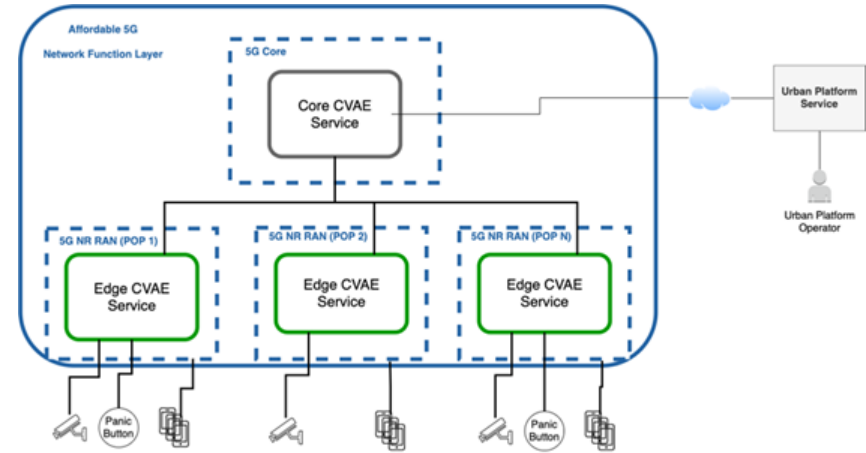
Emergency Communication Critical System^(2/2)

Provision of coverage in a concrete geographical area



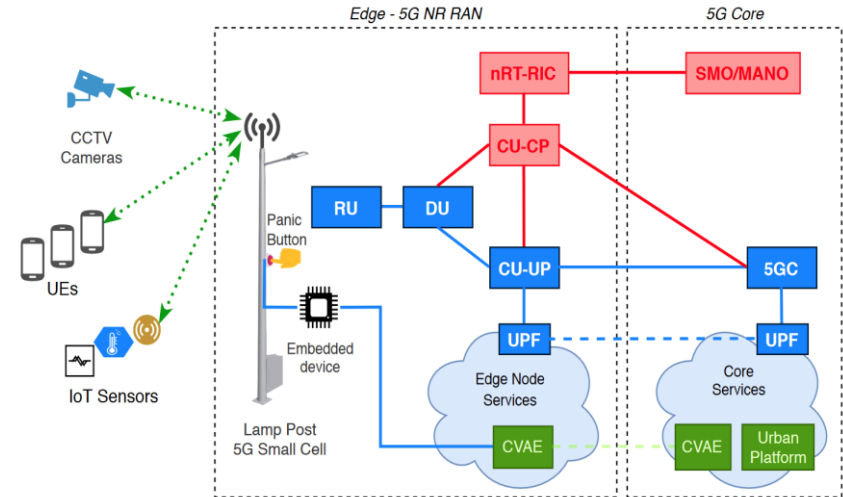
Smart City Video Surveillance over 5G (1/2)

- The computer vision analytics for emergencies (CVAE) solution is expected to deploy network services both at the core as well as the edge of a 5G ecosystem



Smart City Video Surveillance over 5G^(2/2)

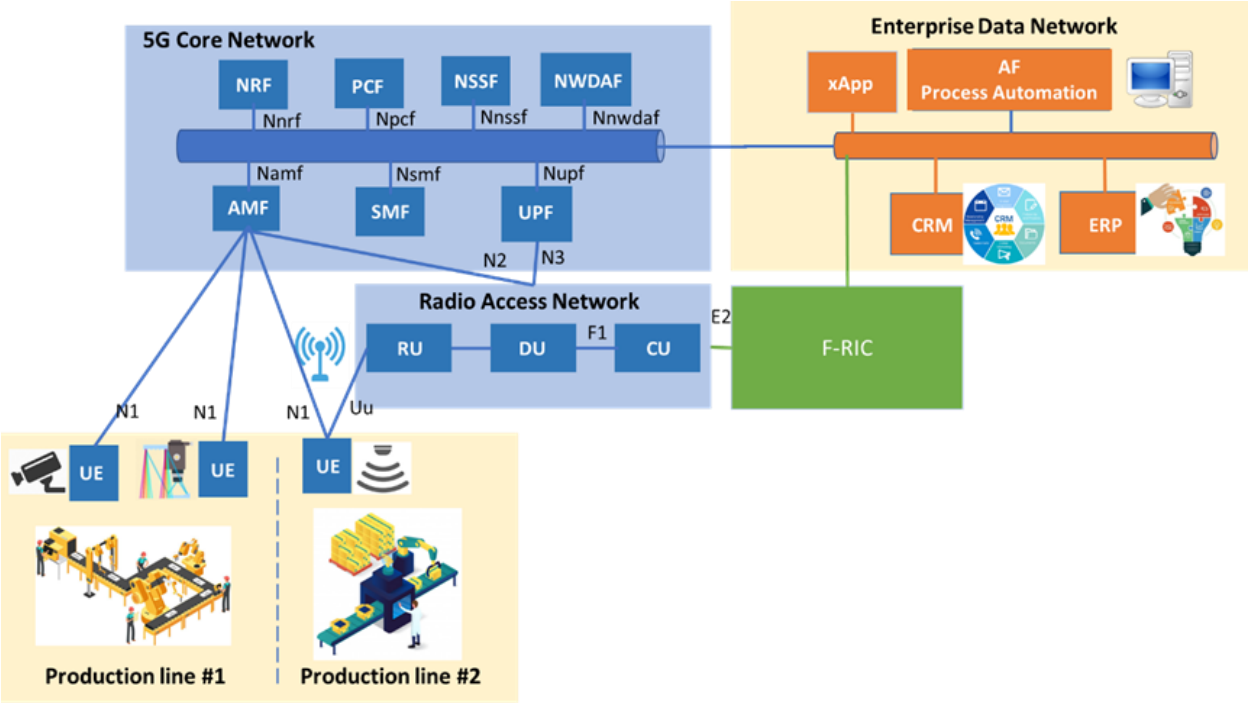
- The end-user devices, such as CCTV cameras, UEs and IoT devices are connected to the small cell (also indicated as lamp post) via 5G new radio (NR)
- The lamp post is equipped with 5G NR RAN, computing and network resources, which are abstracted by a virtualized infrastructure, i.e., virtual RAN (vRAN) and virtualized infrastructure manager (VIM) in order to instantiate services at the edge node
- As such, the data fed from the end-user devices flow through the DU and CU, where they can be intercepted and processed by the services running at the edge NFVI
- At the 5G Core a VIM is also available to ensure the instantiation of NFV services



Services Exploiting TSN over 5G^(1/2)

- Autonomous Mobile Robots Fleet Management
 - ✓ Dedicated 5G private networks supporting high bandwidth zero latency applications
- Process Automation in Factories of the Future
 - ✓ Sensors deployed over a 5G private network
 - ✓ Transmission of high quality 2D/3D images from the produced items
 - ✓ AI/ML algorithms that examine the quality of the images and decide further actions in the production line

Services Exploiting TSN over 5G^(2/2)



Conclusions

- ✓ Private 5G Networks are expected to have a key role in Industry 4.0 environments
- ✓ TSN combined with the support of advanced AI/ML techniques
- ✓ Additional potential use cases, such as emergency communications in the maritime sector
- ✓ Flexible network deployment with reduced installation and maintenance costs

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THANKS FOR YOUR ATTENTION