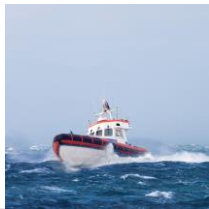# Potential Smart City Applications

DigitalCity.Wien: Digitale Montagsrunde

Dezemberausgabe 2021

We set standards in control centres worldwide

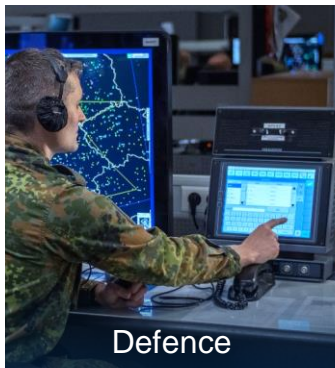FREQUENTIS

We are the only company focusing solely on safety-critical control centres

Air Traffic Management

Public Safety and Transport

Civil

- Air navigation service providers
- Aeronautical data service providers
- Flight information service providers
- Airports
- Unmanned traffic service providers
- Space agencies

Defence
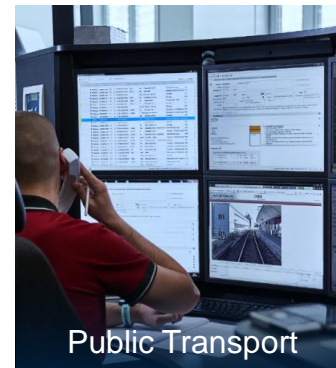
- Air force
- Army
- Navy
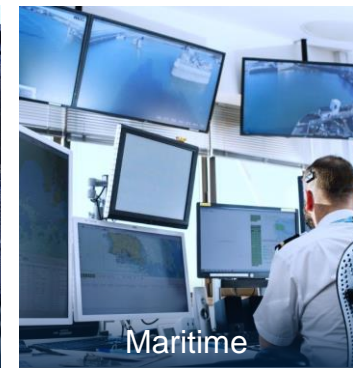- Homeland security
- Joint forces

Public Safety

- Police forces
- Fire services
- Emergency and medical services
- Critical infrastructure for industries

Public Transport

- Heavy rail
- Urban rail

Maritime

- Coast guard / navy
- Offshore
- Port authorities
- Search and rescue

FREQUENTIS

Translating technology trends into innovative solutions
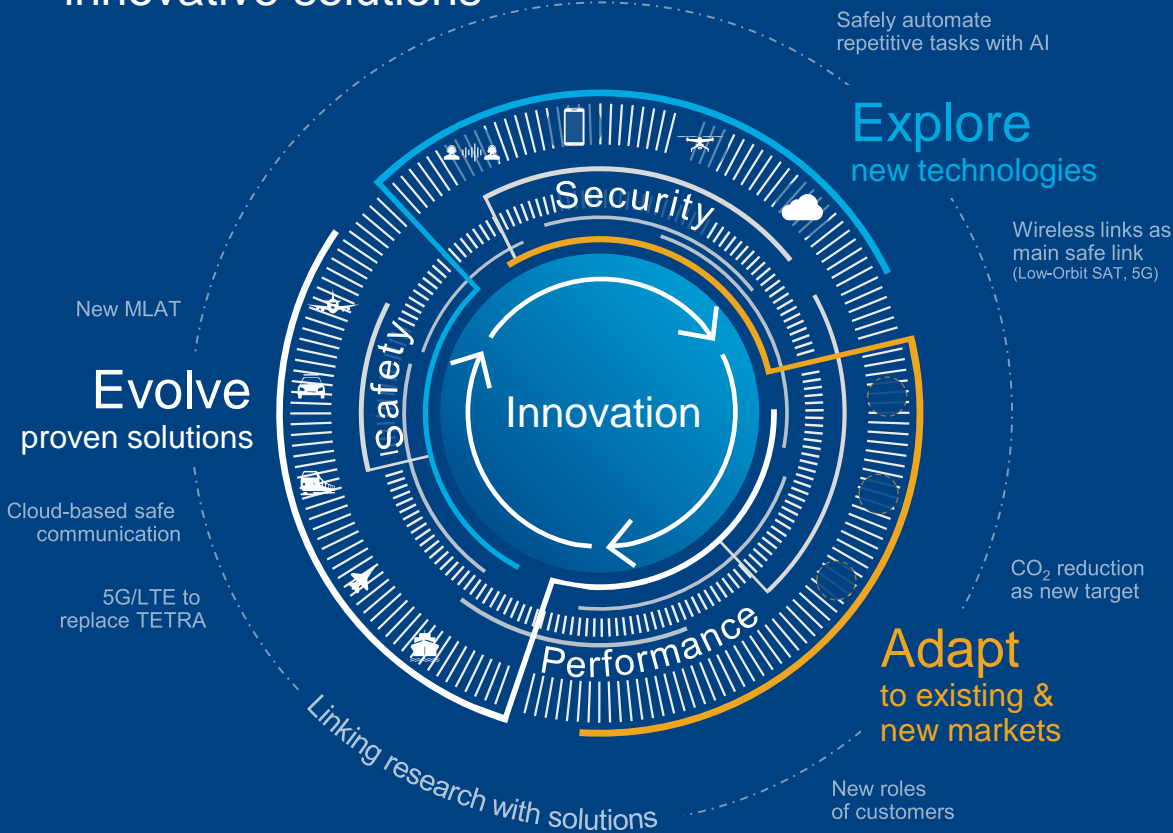
Transforming safety-critical markets

Safely automate repetitive tasks with AI

Explore
new technologies

Wireless links as main safe link
(Low-Orbit SAT, 5G)

New MLAT

Evolve
proven solutions

Cloud-based safe communication

5G/LTE to replace TETRA

Security

Safety

Innovation

Performance

Linking research with solutions

CO_2 reduction as new target

Adapt
to existing & new markets

New roles of customers

Remote Digital Tower

StartUps programme

Since 1990

Global

70+
new businesses

Drones mgmt.

Mission-critical broadband

FREQUENTIS

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back

Mission-critical broadband communication

- **+** Cross-media
- **+** Cross-national
- **+** Cross-organisation
- **+** Proprietary and legacy

BroadWay BroadPort

Creating a Pan-European broadband mobile system for public protection and disaster relief

New devices and applications

- Ruggedized smartphones and tablets
- Mobile Control Rooms or offices
- Maps, Videos, Images at your fingertips

IoT becomes "IoLST"

"Internet of Life Saving Things"

Internet & intranet

Smart office

Voice

Drone & robot control

Video streaming

DBs & cloud services

Locali-sation

Critical IoT

Tactical networks

Situational awareness

Situational awareness

- (High resolution) images, extended information (data)
- Videos, live streaming
  - Fixed positioned cameras
  - UAVs
- Positions of other units (any first responder)

Special communication requirements

Extended coverage | Highest reliability | Priorities | Additional security | Small user group

Joachim Edel   General | © Frequentis AG 2021   « back

FREQUENTIS

Key challenge | Higher requirements for a smaller user group

	Commercial infrastructure	Mission-critical infrastructure
Users	Millions	X-thousands
Coverage	User-driven	Geography-driven
Priorities	Internet neutrality	Priorities can save lives
Reliability & availability	Driven by commercial aspects	Mission-critical availability
Security	Encryption and authentication	+ addition requirements
Data owned by	?	Federal organisations!

back

FREQUENTIS

Making any broadband network mission critical

Plurality
Access to all relevant data and information to save lives serving different target groups within countries and first responders
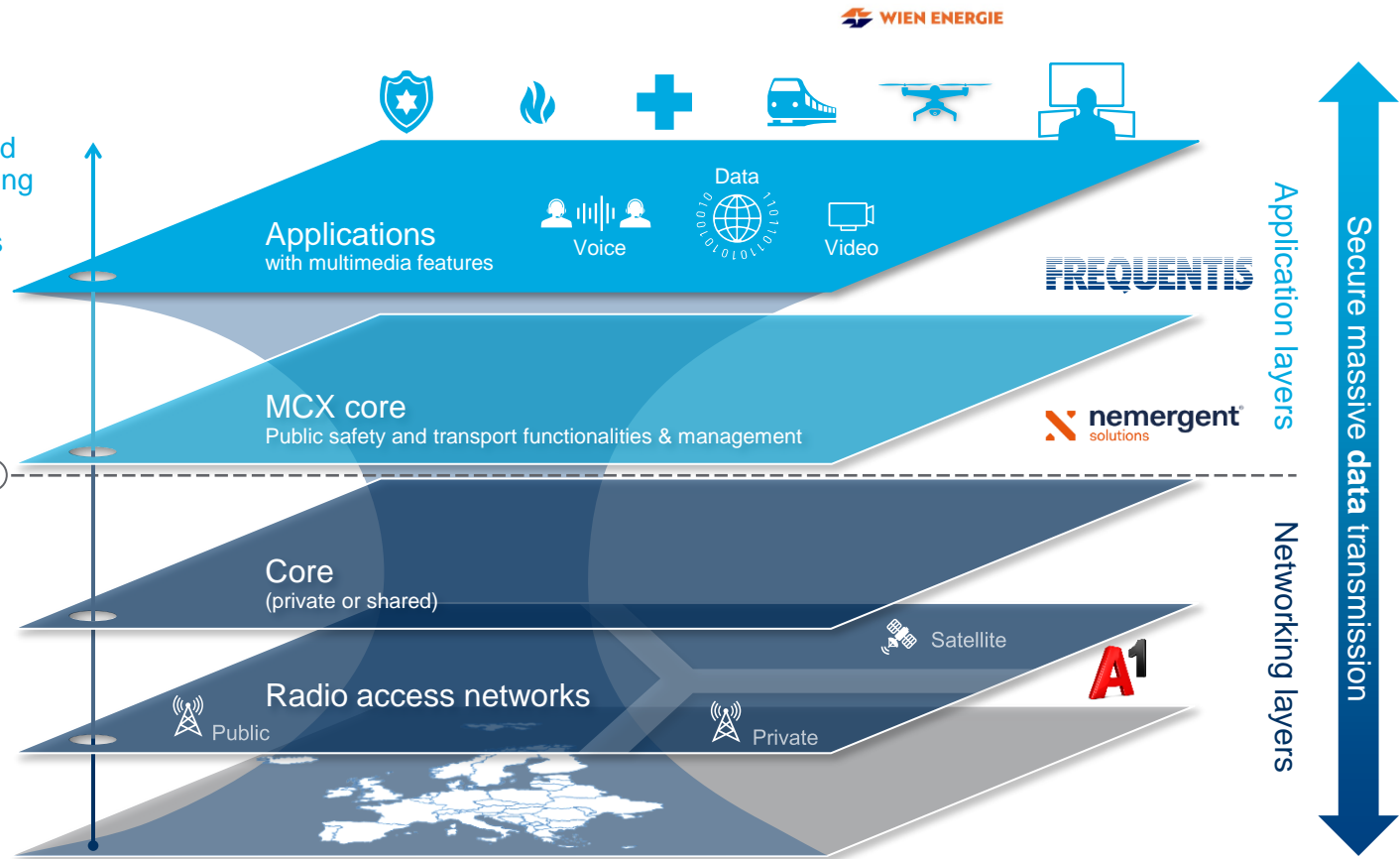
Standardised core
ensuring basic feature set and interoperability

- - - - - - - - Abstraction - - - - - - - -

+ additional resilience
+ dedicated coverage

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+ additional resilience
+ dedicated bandwidth
+ up/download symmetry

General coverage

WIEN ENERGIE

Applications
with multimedia features

Voice   Data   Video

FREQUENTIS

MCX core
Public safety and transport functionalities & management

nemergent solutions

Core
(private or shared)

Satellite

Radio access networks

Public   Private

A1

Application layers

Networking layers

Secure massive **data** transmission

Drone integration & management

Seamless information exchange between all stakeholders

Interoperability and standardisation are key enablers to build the ecosystem.

GOF 2.0

Large scale demonstration

AVINOR

First ATM/UTM integration system in the EU

DETECTION
Identify unfriendly drones

MANAGEMENT
of the amount of drones & integration with manned aviation

COMMUNICATION
Leveraging public networks while ensuring safety-criticality

Frequentis UTM Platform

Agriculture   Inspection   Housing heat maps   Quick disaster reporting   …
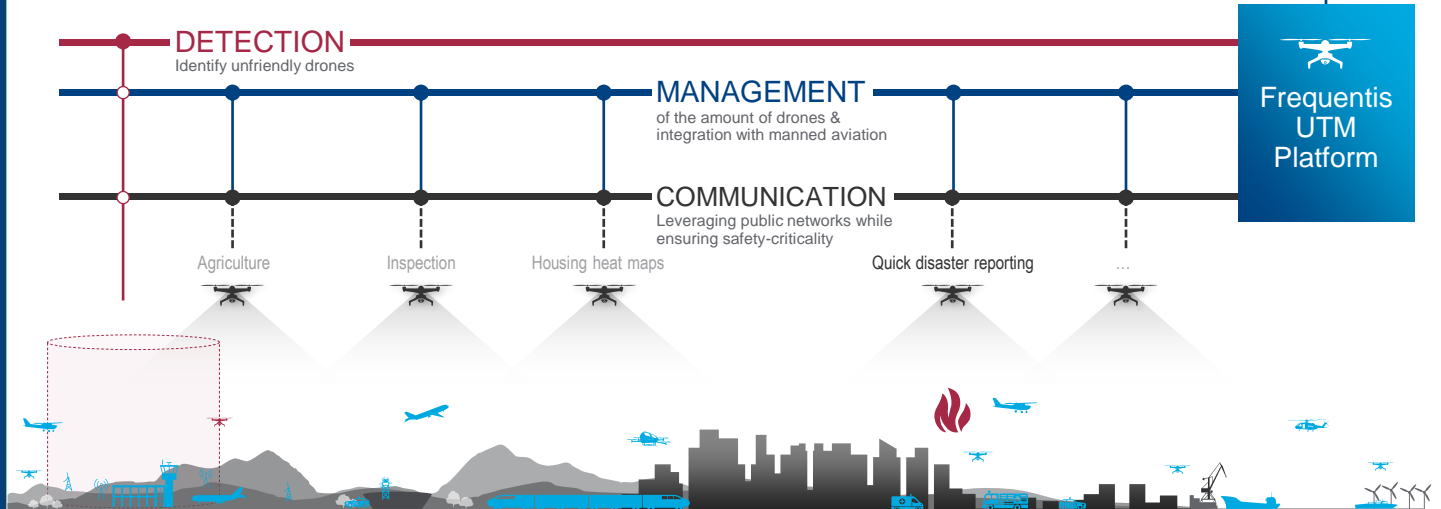
Uniting the things that fly

Leap frog to a state-of-the-art solution – benefitting from ATM experience

Remote Digital Tower

Remote   Multi-remote

Advanced   Contingency

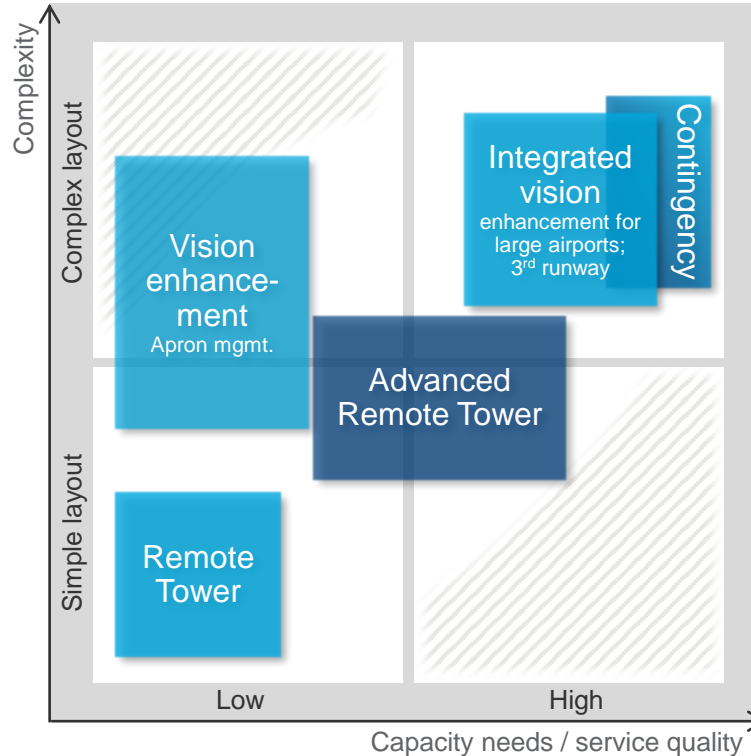| **DFS Germany** 3 regional airports in one remote tower centre	**Santa Cruz Airport** First Remote digital tower in Latin America
Jersey Int. Airport contingency operations at reduced cost	**Vienna Airport** Shared situational awareness

Advanced remote sensing

Complexity

Complex layout

Simple layout

Vision enhance-ment
Apron mgmt.

Integrated vision
enhancement for large airports; 3rd runway

Contingency

Advanced Remote Tower

Remote Tower

Low   High

Capacity needs / service quality

Visibility and situational awareness ↗

Increased safety due to additional support tools

Multi-remote ops

Synergies without loosing performance

Staff efficiency ↗

Maintenance cost ↘