# Next Step Towards a Modern Public Safety Communications System

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# Rakel – serving 650 user organisations and 95 000 users

**99,993%**
Uptime

**2 000**
sites

**95%**
Tetra coverage

**99,84%**
Population coverage

**190 000**
Calls/day

**20 million**
SDS/day

**7 days backup**
On 85% of sites

**24-36 hours**
Remaining sites

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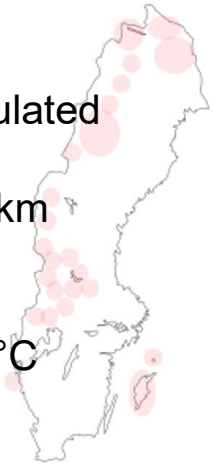
# Predictable Connectivity for Critical Operations

## Sweden



- Sparsely populated
- 10.5 million
- 450K square km
- 1572 km long
- 69% forests
- -43.8 / +37.2 °C

- Land borders to Finland and Norway

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*A first step*

*- mobile broadband solution*

**Implementation ongoing**

- Dedicated Core (awarded to Ericsson)
- Dedicated SIM/OTA (awarded to G+D)
- Commercial RAN (awarded to Telia)

**Plan to complete by the end of 2025**

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## Governmental national budget bill for 2025 with assignment to establish a new communication system for mission critical use

200 million euro awarded for 2025-2027

Key aspects

- MSB is assigned to start the establishment of the new communication system
- Initial funding for 2025-2027
- Hybrid infrastructure approach
- Re-use existing capabilities and infrastructure
- Utilize market capabilities
- End user organizations need to prepare

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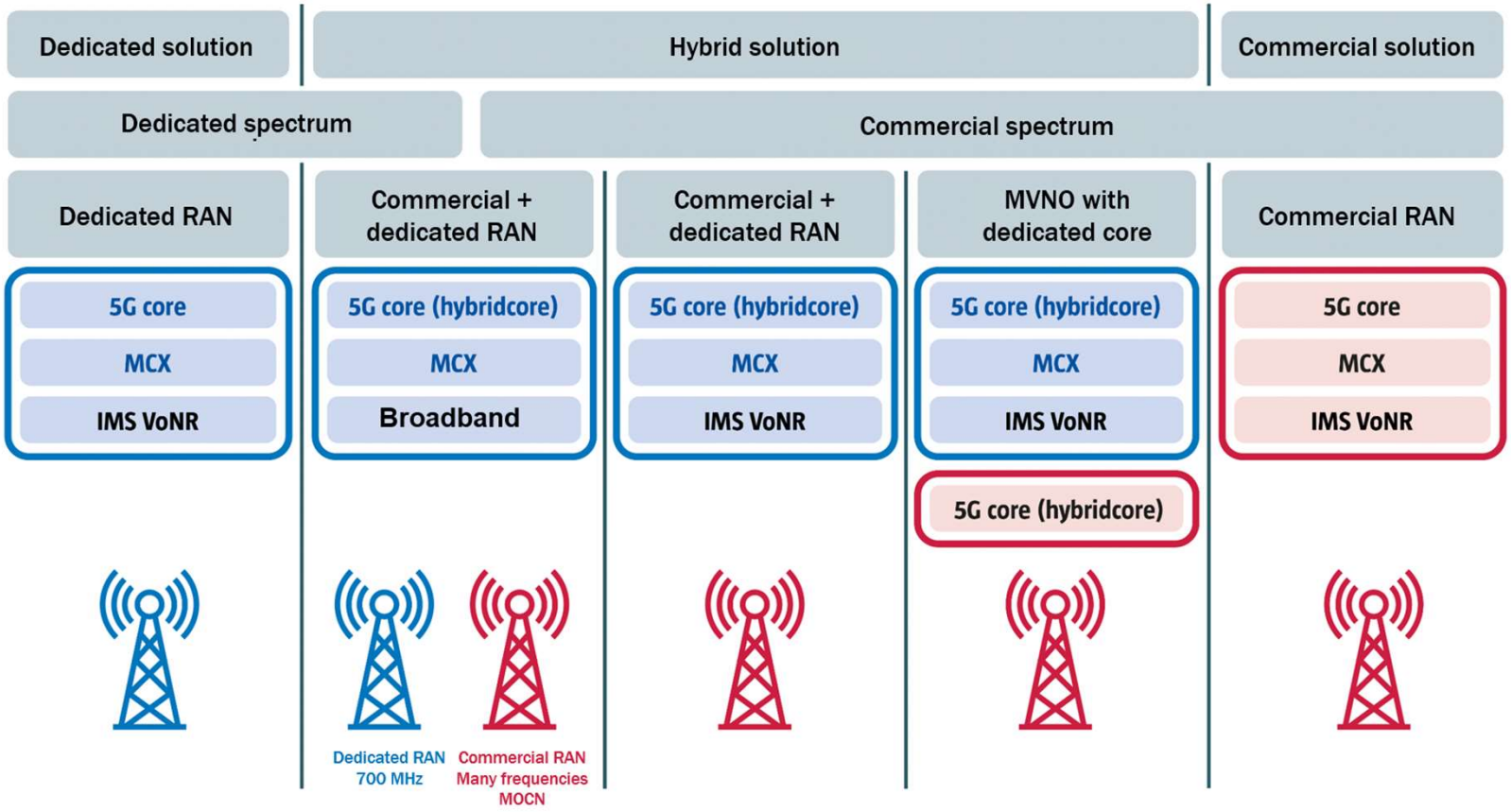
# Hybrid solution

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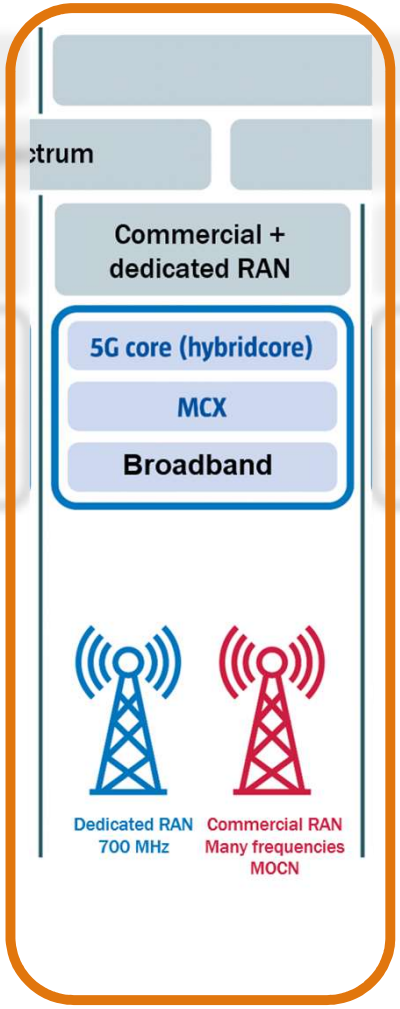
# Hybrid solution




- MOCN architecture with dedicated Core
- Use of commercial RAN provides good coverage as well as capacity
- Dedicated spectrum of 2x10 in the 700 MHz band ensures functionality in overload situations

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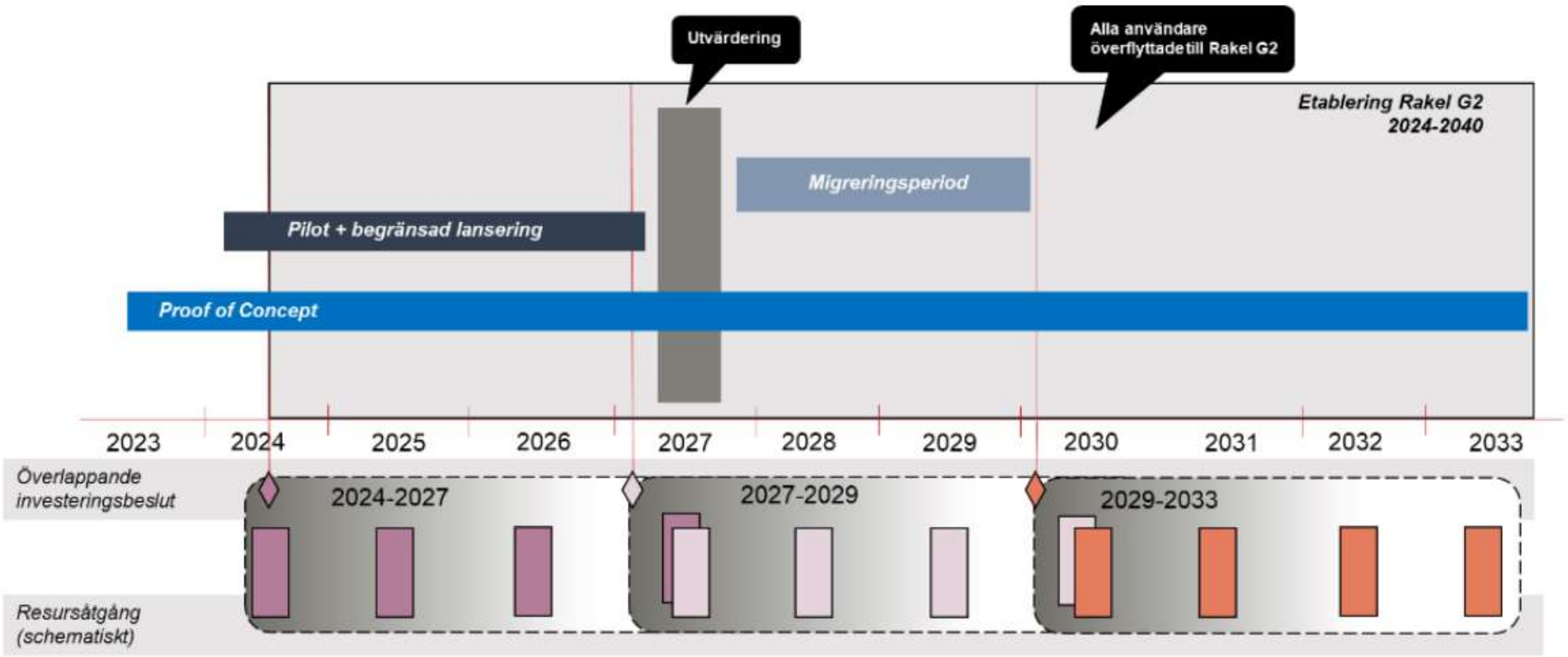


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# Status February 2025

- Establishment project for Core, RAN and SIM ongoing according to plan, to be completed by the end of 2025.
- Focusing on MCX, migration, ICCS and user organisations input through test and evaluation (PoC)
- Continued external monitoring and international collaboration
  - EUCCS, MCCG, BroadEU.net, TCCA etc.
  - Research projects
- Establishing operator capabilities (NOC/SOC/Customer support)
- New programme organization being established
- First report to the government, March 3rd 2025

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# Forging a Resilient Ecosystem for Mission Critical Services

## End-User Engagement

- Embrace new technology
- Evaluate hardware
- Assess software
- Explore services
- Develop methodology
- Strategic involvement

**Collaborate. Innovate. Empower Success.**

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# Samverkansforum

Trials have been performed by:
- User organisations
- MSB
- User orgs and MSB jointly

# User organisation trials (PoC)

Over 500 executed test cases within the following areas:

- Migration of existing services
  - Comparison tests where Rakel functionality is compared to functionality in a smartphone
  - ”Bridging tests” on the connection between Rakel radio and smartphone
- 4G/5G PTT and Tetra DMO in the same device (dual-mode smartphone)
  - Functional tests
- New MCX services
  - Exploratory testing

User organisation specific testing

- User orgs have defined test scenarios from their workflows/methodology
  - These test scenarios have had limited possibilities in the test environments we have had so far.
- Limited user org field trials have also been conducted

Selection of areas where differences have been identified:
*SDS, Individual calls, DMO, Incoming calls, Call-back, ITSI dialling, Notifications*

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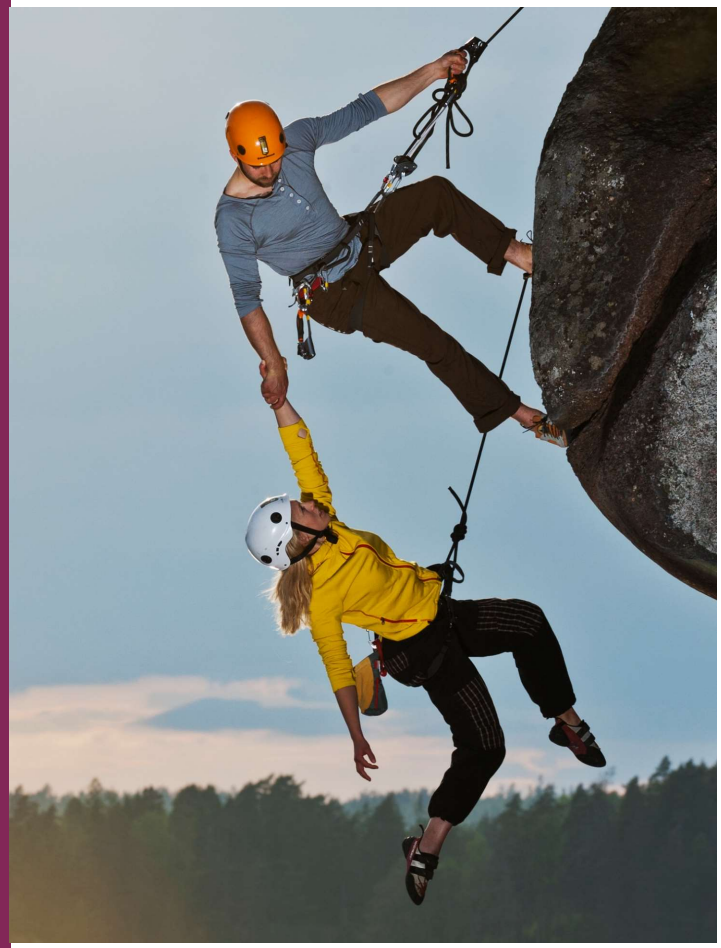
# Main Challenges



- End user readiness and acceptance
- Transitioning from TETRA to MCX
- Replacing current DMO
- MCX product maturity and standardization
- Maintaining cross border communication
- Eco-system for devices and applications
- Hybrid network business models

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# Questions?

Sandra.lithman@msb.se

www.msb.se

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# Global collaboration

- BroadEU.net
- EU Mission Critical Communication Group (MCCG)
- Standardization bodies such as GCF/TCCA/GSMA/3GPP etc.
- Sweden has reached out to around 20 countries in Europe, North America and Australia during 2022-2023 addressing common challenges
- Global collaboration through different TCCA working groups
- Nordic Collaboration (NCCOM)
- White paper "*PPDR Rugged Handheld Device for heavy use v1.0*" https://www.msb.se/siteassets/dokument/verktyg-och-tjanster/rakel/nasta-generation/ppdr-rugged-handheld-device-for-heavy-use-nccom-whitepaper.pdf

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# Dynamic Purchasing System (DPS): Proof-of-Concept for Rakel G2

## User Equipment

- Area 1: Rugged heavy use handheld devices
- Area 2: Non-rugged handheld devices
- Area 3: Vehicle mounted devices
- Area 4: Accessories
- Area 5: Device and/or Accessories with D2D-capabilities

## Mission Critical Services

- Area 1: MCX platforms
- Area 2: MCX clients
- Area 3: Interconnectivity between Airbus TETRA and 3GPP MCX
- Area 4: Dynamic autonomous MCX/group communications

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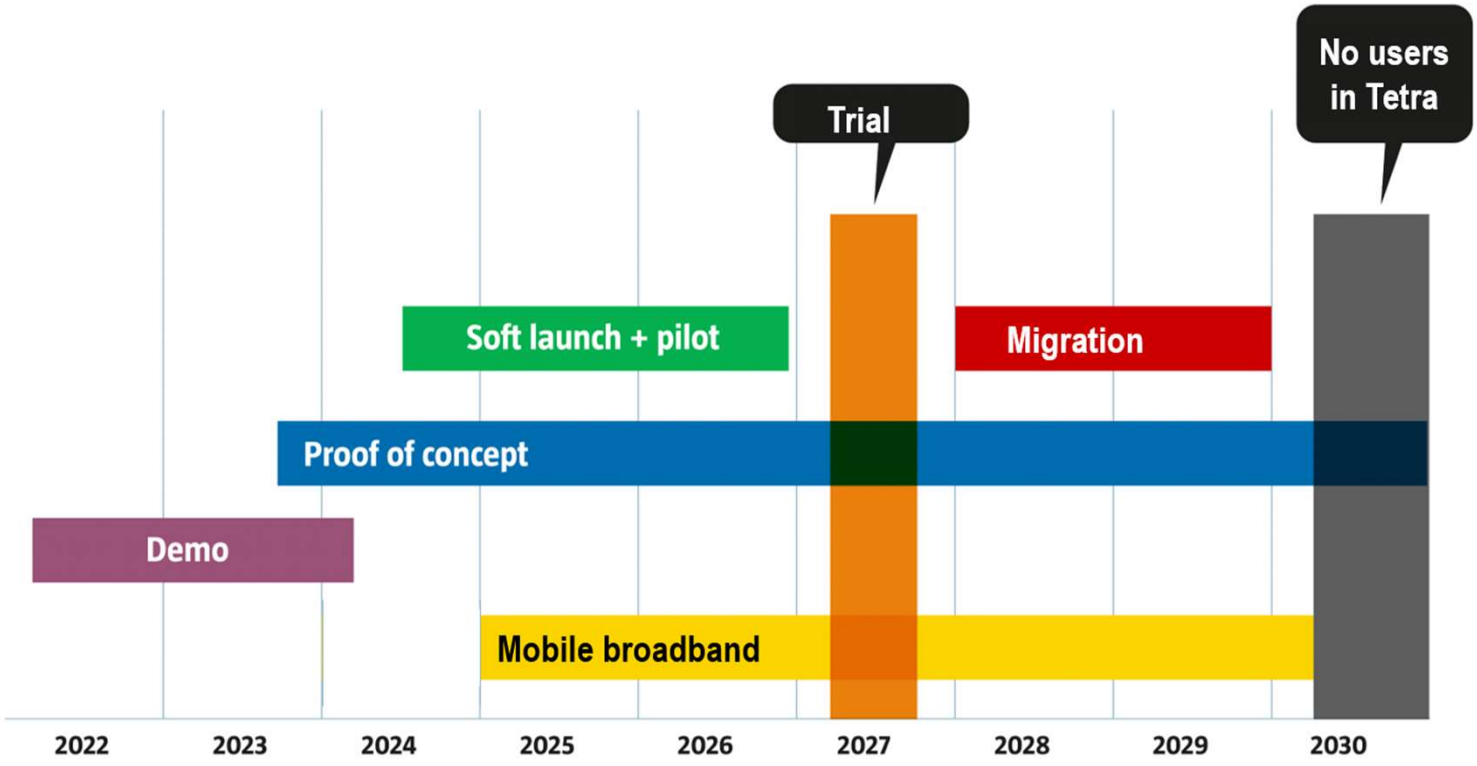
# Preliminary plan 4G/5G, 2x10 700 MHz-band

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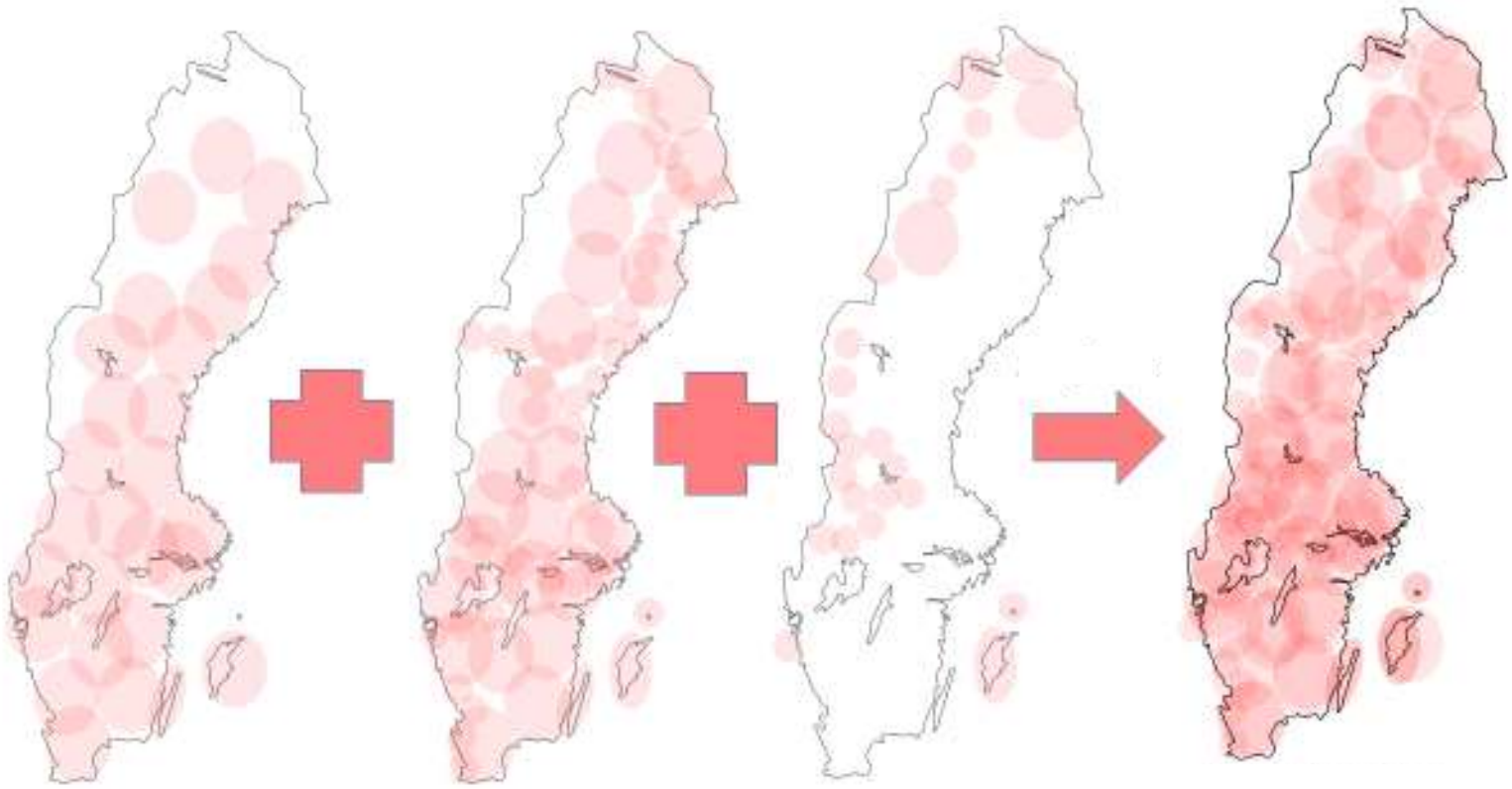
# Gradual rollout of Radio Access Network



MOCN with MNO  Tetra and GSM-R sites  New sites

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