

# Wireless Alerting System

## Our road to DASH7

Trond Enger  
Technical Manager

 VESTFOLD AUDIO

Norwegian company established in 1985

- Wireless Sound Field Systems
- Wireless Alerting Systems



*“We have a driving force to improve people's lives”*

# Wireless Alerting System

Initially designed for people with hearing loss





Keeping the neighborhood safe

# Wireless Alerting System

## Nurse call system

- Bed occupancy sensors
- Door sensors
- Calling/alarm buttons

*Requires high reliability and low latency*



# Wireless Alerting System

## Colleague alerting system

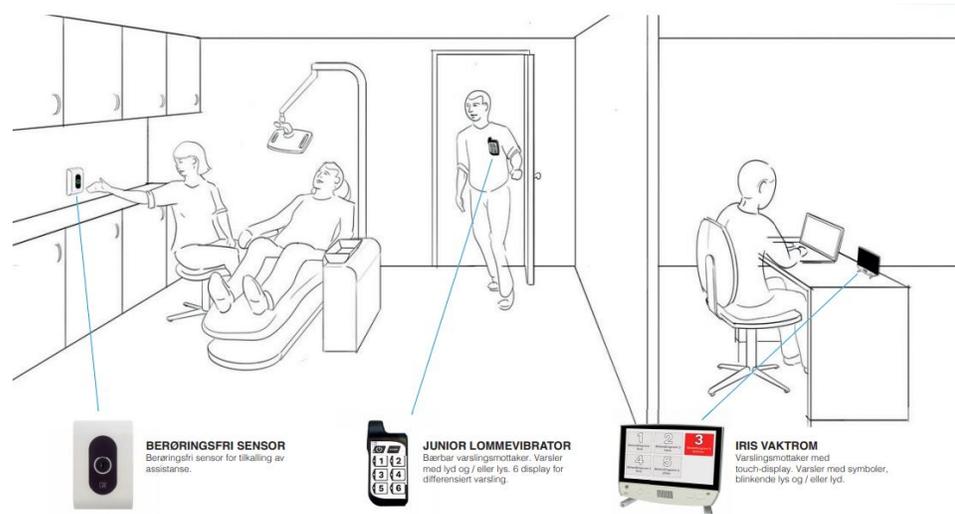
- Wristband alarm buttons
- Carry-on pagers
- Stationary displays



# Wireless Alerting System

## Dental calling system

- No-touch buttons
- Integration with dental chair
- Carry-on pagers
- Stationary displays



A modern living room interior featuring a yellow armchair with a grey and white chevron patterned pillow and a light blue blanket draped over it. To the right is a wooden side table with a small television displaying a person walking. A tall floor lamp with a black shade and a wooden base stands to the left of the chair. The room has light wood flooring and white walls.

and a lot of other applications...

- School security
  - Fire system for apartment buildings
  - Alarm system for hotels
  - Alert system for workplaces
  - Wandering alarm for people with dementia
- and so on...

# Background

1985 – 2019: The 142 MHz VHF System



## Pros

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- Long range
- Neighbor alert
- Simple installation

## Cons

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- Power consumption
- Limited data flexibility
- Large physical size
- Reduced scalability



# Requirements for new system



## Properties:

- Long range
- Simple installation
- Neighbor alert
- Small physical size

## Scalability:

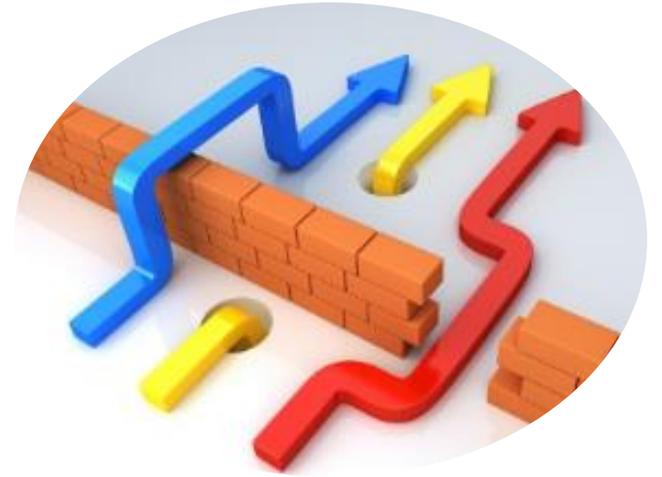
- Ability to support large buildings

## Logistics

- Manufacturer independent COTS hardware

# Alternatives

- Use existing COTS modules
  - Z-wave (Proprietary)
  - Lemongrass (Proprietary)
  - BLE (Proprietary, Range/Frequency)
  - Zigbee (Range/Frequency, cost, power consumption)
  - tinyMesh (Proprietary)
  - ...
- Develop a new proprietary system on 868 MHz
  - Work-intensive
  - High risk
- Develop a system based on open standards for 868 MHz



# DASH7



- Open standard
- Hardware independent
- Extremely versatile
- Options for encryption and certification
- Frequency agility
- File-based (!)

# VEA Wireless

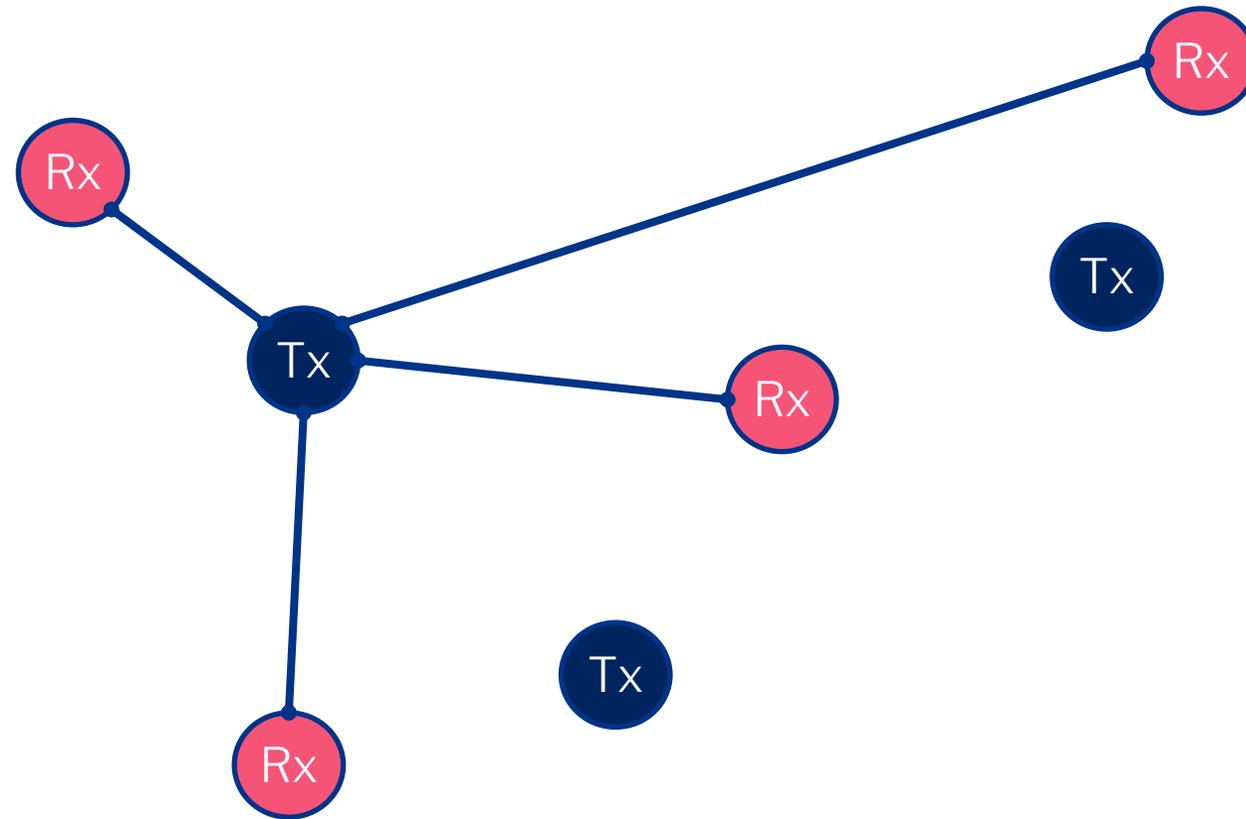
MADE POSSIBLE BY  
DASH7

- Reliable
  - Frequency agility
  - Decentralized/no controller necessary
  - Two-way monitored link
- Very simple commissioning
  - Easy to understand unison pairing
  - Self configuring infrastructure
  - Fully wireless backbone/core network
- Scalable



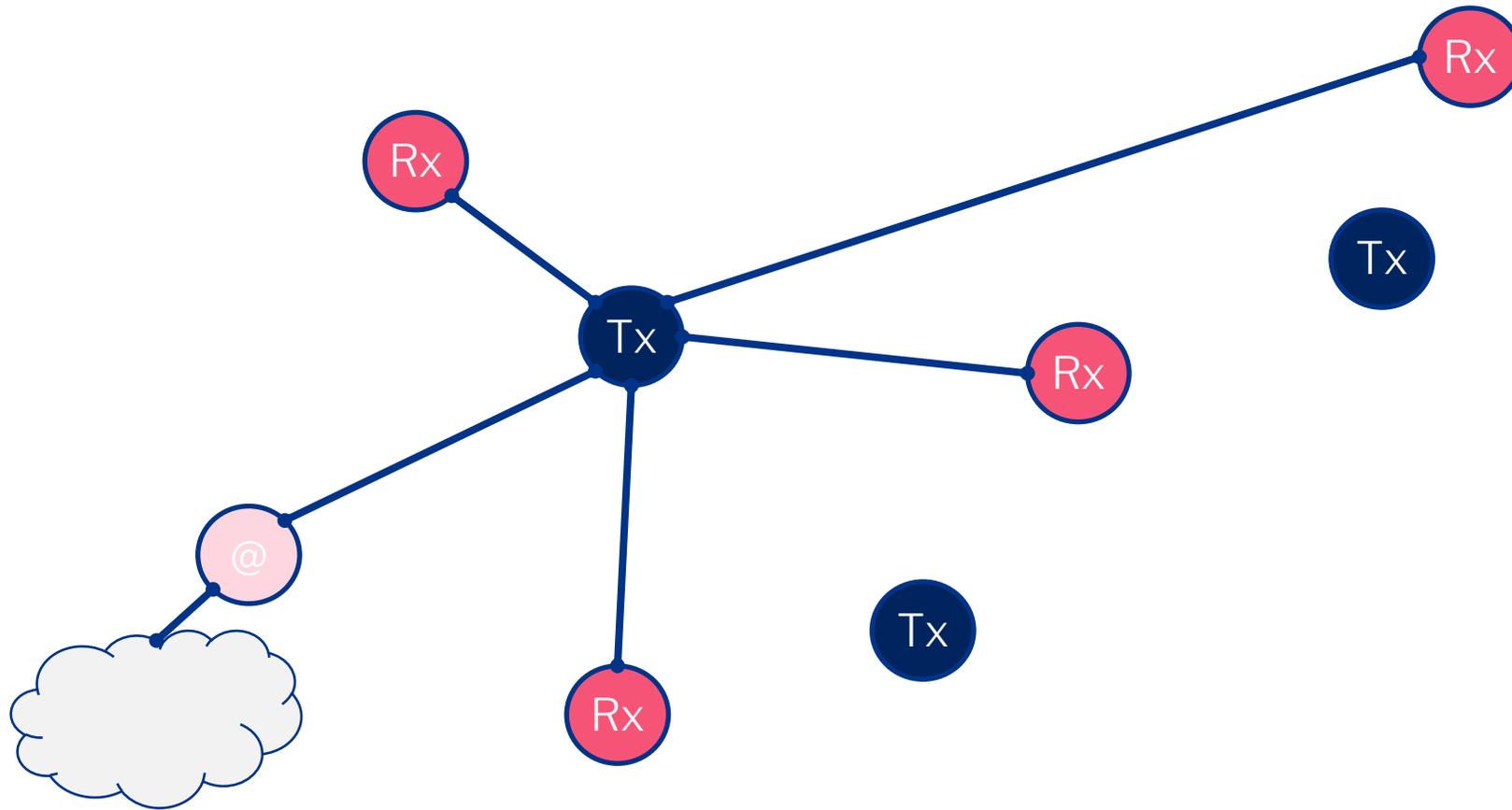


# Small-scale network





# Small-scale network with uplink



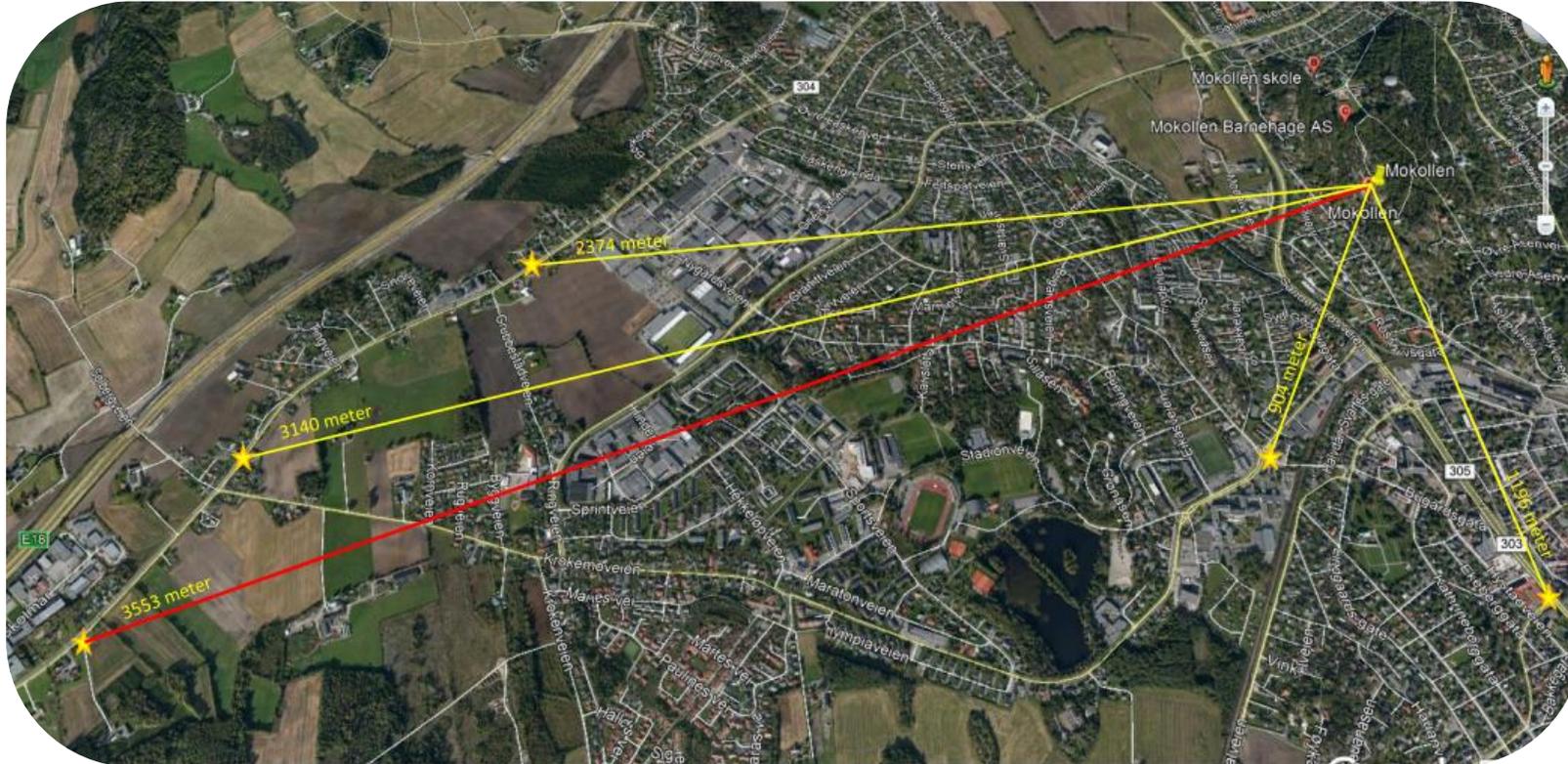


# Small-scale network

- Very simple pairing - no additional setup required
- No master or base station required
- One-to-all principle
- “Unlimited” amount of transmitters and receivers
- Immune to interference at channel-level
- Long range

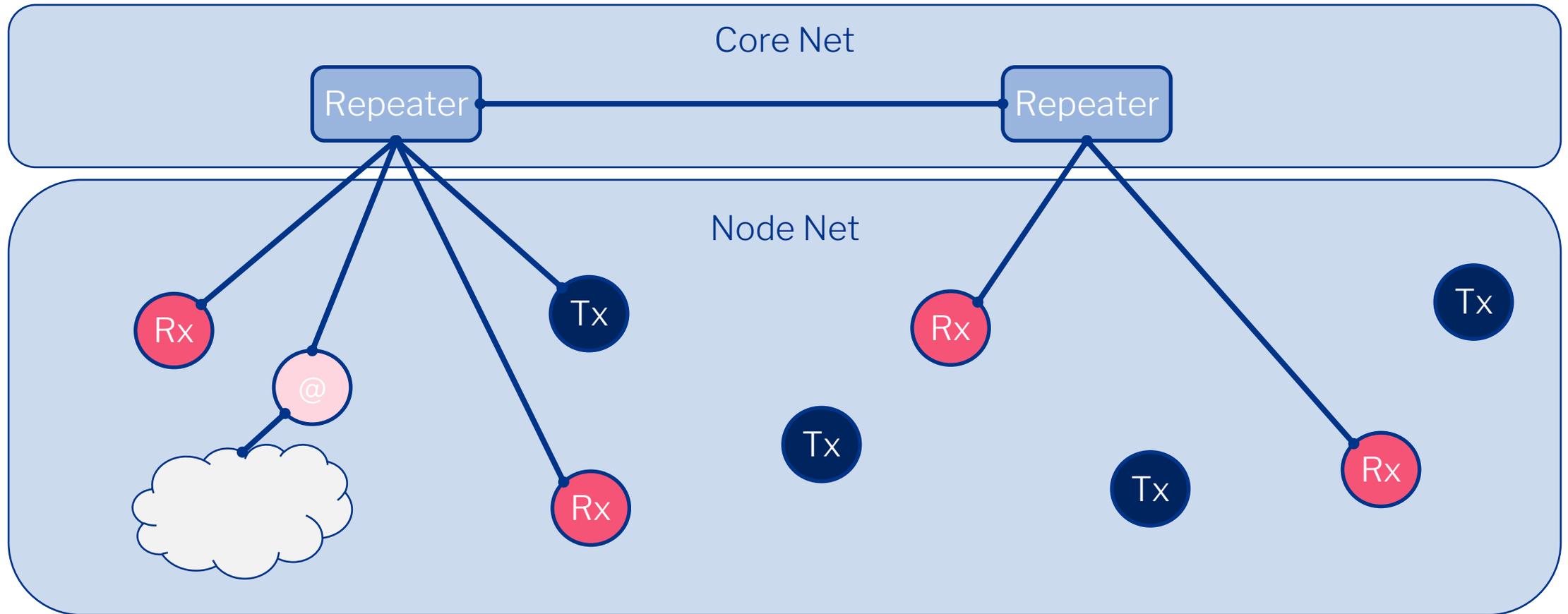


# Range example



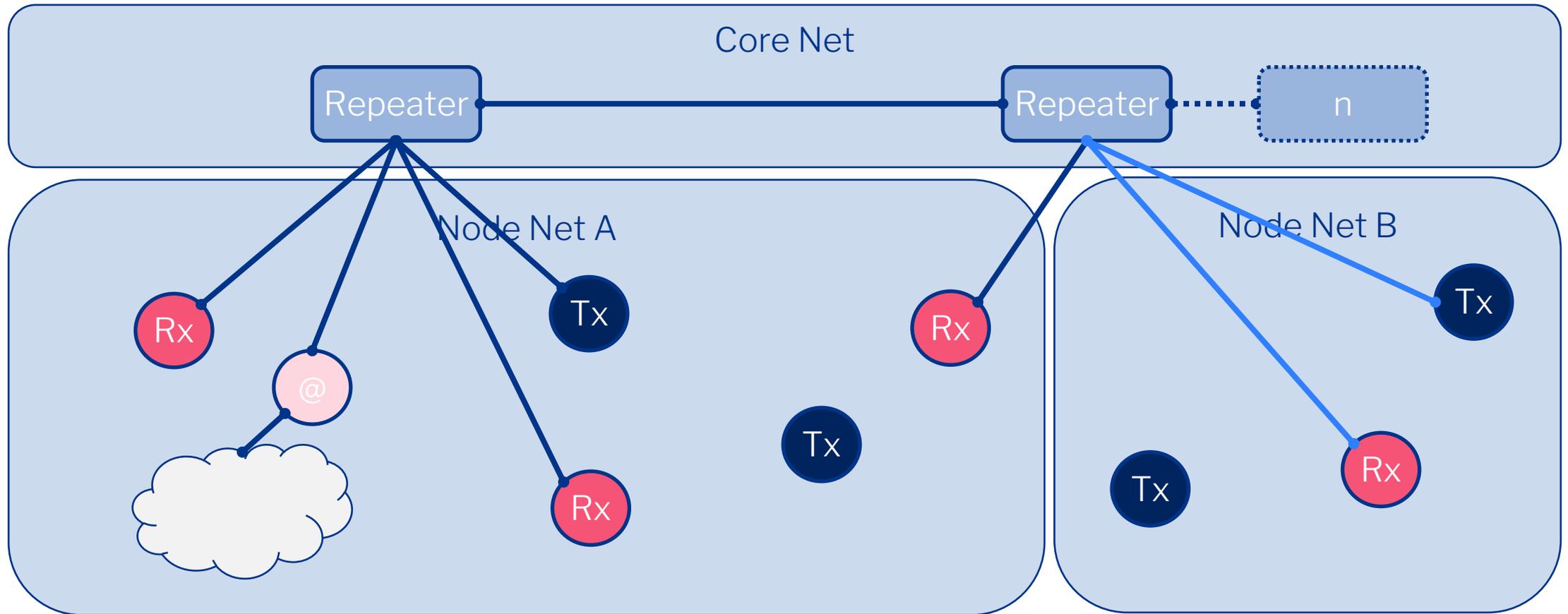


# Larger scale network





# Larger scale network



# Nerdy D7 details

- Extensive use of ALP Queries and commands to minimize network load
- Frequency agility – several independent channels
- Advertising protocol with three different scan periods
- Four different access profiles
  - Service net 1024 ms Ch. set A
  - Node net 64 ms Ch. set A
  - Fast node net 16 ms Ch. set A
  - Core net 16ms Ch. set B



# Experiences

- DASH7 is very versatile - it may be adopted to virtually any use case.
- The file-based approach (ALP) is essentially a very powerful distributed wireless database.
- Some 37.000 devices shipped since summer 2019 – not a single issue with regards to DASH7 itself.



Thank you  
for your attention!



Photo by [visitvestfold.com](http://visitvestfold.com)