



Fostering Research around DECT NR+: Create Trust, Adoption and Growth

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“Publish or Perish” – Technologies also Need Visibility



Academic Research: The Engine of Wireless Innovation

-  **Foundational Breakthroughs**
 - Pioneered core technologies such as MIMO, OFDM and mmWave, which are now used in modern standards.
-  **Visibility Through Publications**
 - Peer-reviewed papers and open SW-/datasets build trust and attract industry attention.
-  **Influence on Standards & Policy**
 - Academic input shapes 3GPP, IEEE, ETSI and spectrum regulations.
-  **Industry Collaboration** Joint projects accelerate transition from lab to market.
-  **Adoption Modelling**
 - Research informs deployment strategies and identifies barriers to adoption.



Research Activities around DECT: IEEE Xplore

349 Publications since 1989: **DECT Wireless**

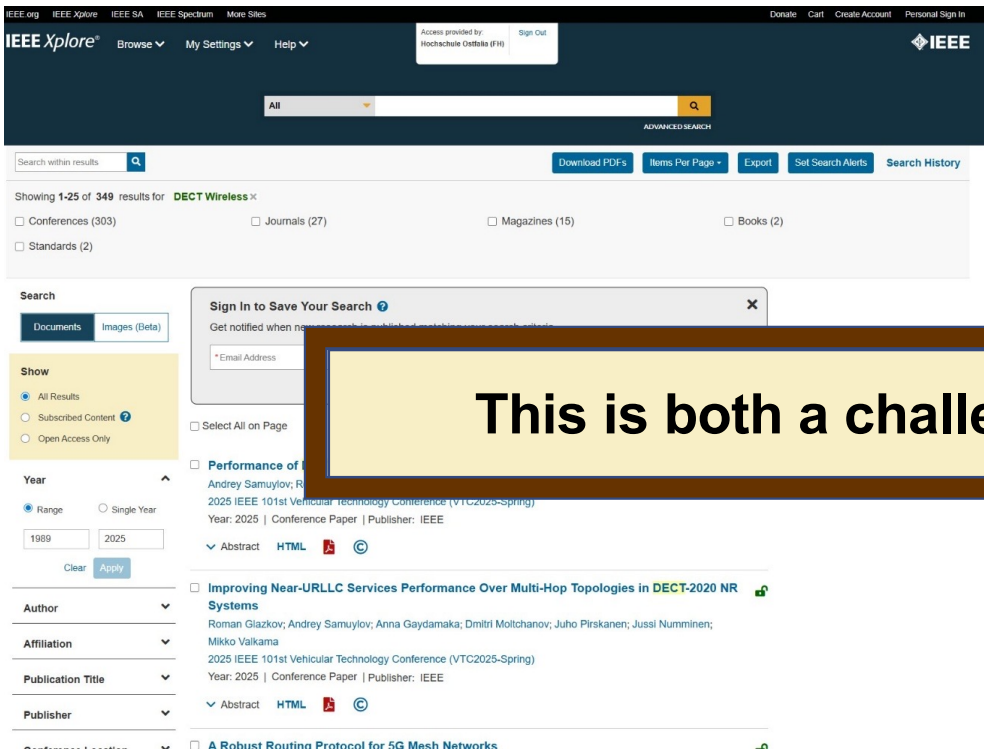
The screenshot shows the IEEE Xplore search results for the query "DECT Wireless". The interface includes a top navigation bar with links to IEEE.org, IEEE Xplore, IEEE SA, IEEE Spectrum, and More Sites. A search bar at the top right shows the query "DECT Wireless" and a "Sign Out" button. Below the search bar, the results are displayed as "Showing 1-25 of 349 results for DECT Wireless". The results are categorized by document type: Conferences (303), Journals (27), Magazines (15), and Books (2). A sidebar on the left contains filters for "Show" (All Results, Subscribed Content, Open Access Only) and "Year" (Range, Single Year). A "Sign In to Save Your Search" pop-up is visible, prompting the user to enter their email and password. The main list of results includes titles like "Performance of DECT-2020 NR and FCC-Based Mesh IoT Systems in DECT Bands" and "Improving Near-URLLC Services Performance Over Multi-Hop Topologies in DECT-2020 NR Systems".

32 Publications since 2020: **DECT-2020**

The screenshot shows the IEEE Xplore search results for the query "DECT-2020". The interface is similar to the previous one, but the search results are for "DECT-2020" or "DECT-NR". The results are categorized by document type: Conferences (27), Journals (3), and Magazines (2). A sidebar on the left contains filters for "Show" (All Results, Subscribed Content, Open Access Only) and "Year" (Range, Single Year). A "Sign In to Save Your Search" pop-up is visible, prompting the user to enter their email and password. The main list of results includes titles like "DECT-2020 New Radio: The Next Step toward 5G Massive Machine-Type Communications" and "Assessment of Candidate Technology ETSI: DECT-2020 New Radio".

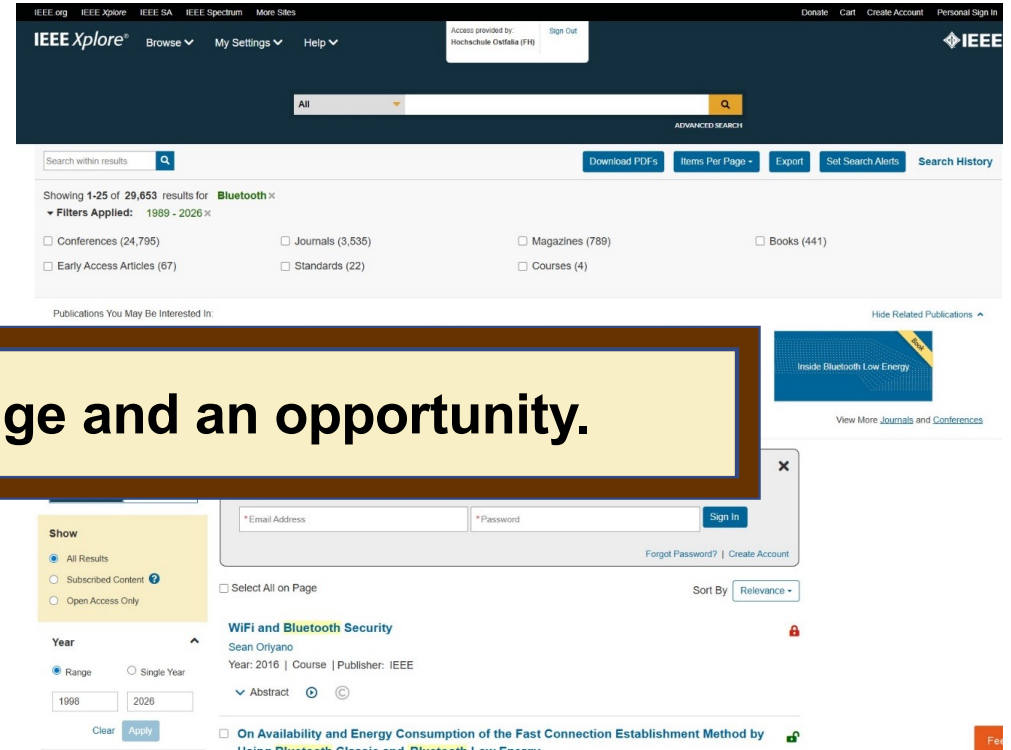
Research Activities around DECT: IEEE Xplore

349 Publications since 1989: DECT Wireless



The screenshot shows the IEEE Xplore search results for 'DECT Wireless'. The top navigation bar includes links for IEEE.org, IEEE Xplore, IEEE SA, IEEE Spectrum, and More Sites. The search bar shows 'All' and 'ADVANCED SEARCH'. The results section indicates 'Showing 1-25 of 349 results for DECT Wireless'. Below this, there are filters for Conferences (303), Journals (27), Magazines (15), and Books (2). A 'Sign In to Save Your Search' pop-up is visible. The left sidebar shows search filters for 'Show' (All Results, Subscribed Content, Open Access Only), 'Year' (Range, Single Year, 1989 to 2025), and 'Author' (Roman Glazkov, Andrey Samuylov, Anna Gaydamaka, Dmitri Moltchanov, Juho Pirskanen, Jussi Numminen). The main content area lists several publications, including 'Performance of ...' and 'Improving Near-URLLC Services Performance Over Multi-Hop Topologies in DECT-2020 NR Systems'.

....29,653 publications around BT



The screenshot shows the IEEE Xplore search results for 'Bluetooth'. The top navigation bar is similar to the DECT search. The search bar shows 'All' and 'ADVANCED SEARCH'. The results section indicates 'Showing 1-25 of 29,653 results for Bluetooth'. Below this, there are filters for Conferences (24,795), Journals (3,535), Magazines (789), and Books (441). A 'Sign In to Save Your Search' pop-up is visible. The left sidebar shows search filters for 'Show' (All Results, Subscribed Content, Open Access Only), 'Year' (Range, Single Year, 1989 to 2026), and 'Author' (Sean Oriyano). The main content area lists several publications, including 'WiFi and Bluetooth Security' and 'On Availability and Energy Consumption of the Fast Connection Establishment Method by Using Bluetooth Classic and Bluetooth Low Energy'.

This is both a challenge and an opportunity.

Benchmark: Academic Footprint of Other Technologies



~ 10K Pubs since 2020



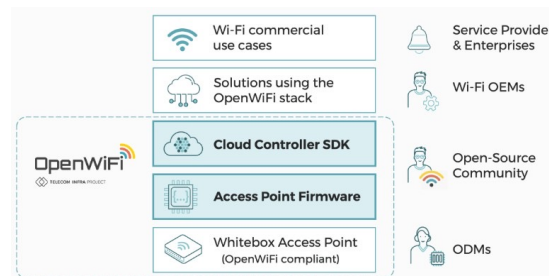
~ 5K Pubs since 2020



~ 200 Pubs since 2020



~ 100 Pubs since 2020



~80 Pubs since 2020



~ 60 Pubs since 2020

- Data collected for **illustrative comparison**; not based on a systematic literature review.

Flagship Projects around DECT NR+



Dec 2022 – Nov 2025
CELTIC-NEXT

DECT-2020 NR technology to enable scalable, autonomous wireless networks for **industrial** and **real-time applications**.

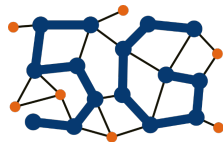


Nov 2022 – July 2025



FRANCO-GERMAN ECOSYSTEM
FOR PRIVATE 5G NETWORKS

Developing **private 5G networks** using DECT-2020 NR for professional audio, media production, and industrial IoT.



April 2024 – Sept 2025

HyprMesh

Building secure, resilient, and scalable communication infrastructure using **hybrid 5G mesh networks** for **critical applications** like healthcare, emergency response, and industrial automation.

**DEBUT
LOGO**

June 2025 – Dez 2026



on the basis of a decision
by the German Bundestag

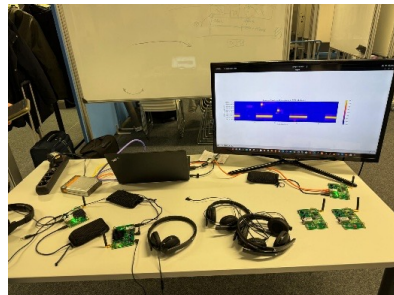


Develop a **base station** (fixed terminal, FT) for networks in star topology that can use **up to 5 parallel DECT NR+ channels**. Focus are Industrial communication profiles: reliable RT & Ultra Low Power.

Some Demos



Mobile Robot with
DECT NR+ control



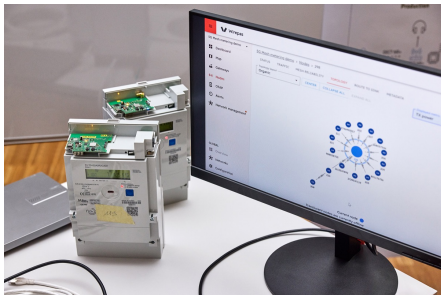
Spectrum analyzer with
eval. board



MESH IoT by Wirepas



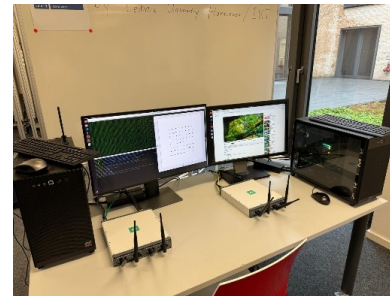
Low Latency Video by VITEC



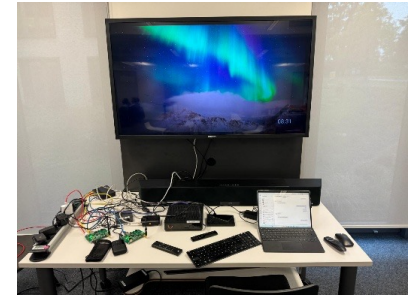
Mesh-based
Smart metering



Audio Loopback by RFM



SDR DECT NR+ by LUH IKT



Object audio distribution
chain by Ateme

USWA – Ultra Scalable Wireless Access

- Teleoperation for Robotics with Secure Communication – NXP Live Demonstrator
 - Secure communication, latency analysis
- Live low-latency audio transmission via DECT NR+ by RFmondial
 - DECT NR+ suitability for the delivery of media content in 6G
- Improving reliability in industrial environments – TU Dresden
 - Radio resource scheduling algorithms under realistic industrial channel conditions



DECT NR+ Base Station System for Ultra-Flexibel Transmission (DEBUT)

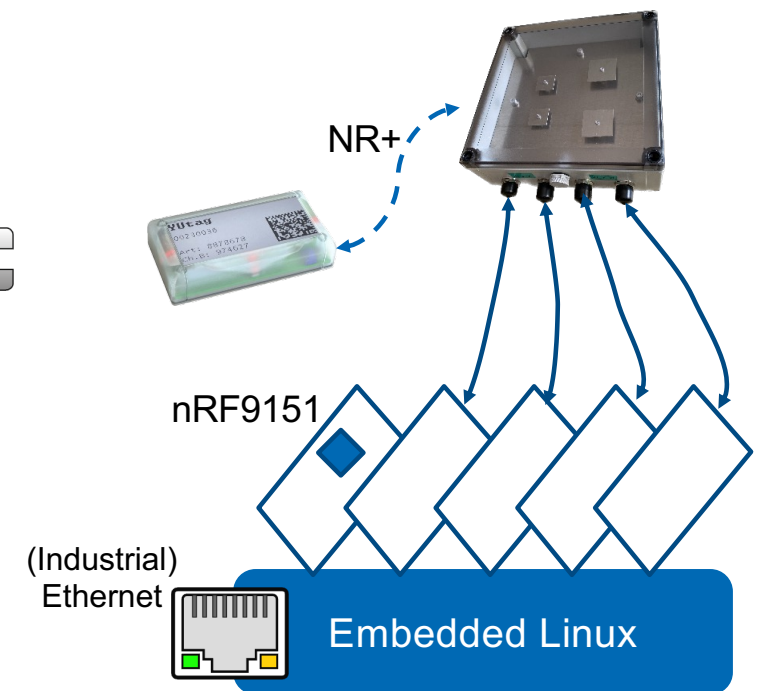
- Star Topology: Base station (FT) with up to 5 NR+ daughter cards, each serving a separate DECT channel
 - Industrial ultra-reliable low-latency communication
 - Industrial massive number of ultra-low power devices
 - and on synchronization between daughter cards
- Runs June 2025 until 12/2026
- Partners:
 - Hardware and operating system
 - Industrial real-time communication
 - Antennas and industrial ultra-low power communication for intralogistics
- Goal: Reference Implementation for FT & PT



Supported by:



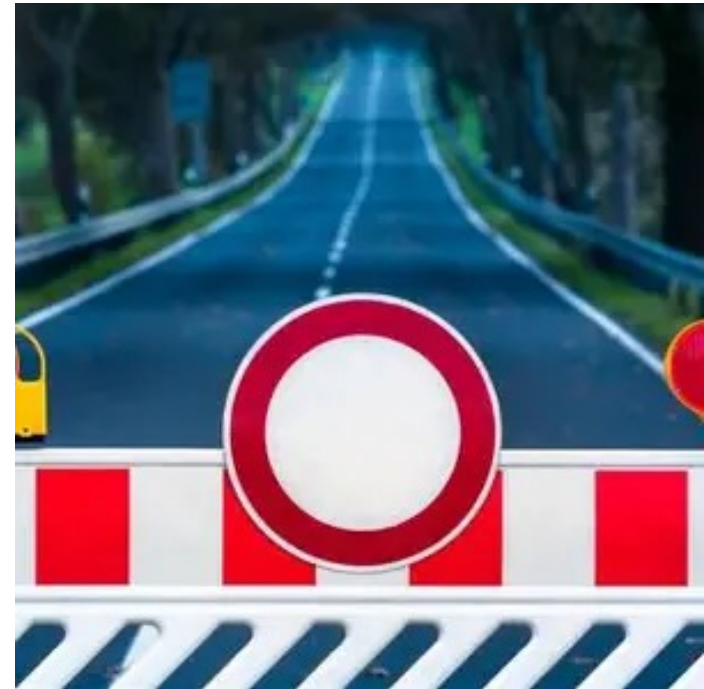
on the basis of a decision
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Challenges We Face

- Limited open research stacks
- Proprietary or fragmented implementations
- Few public simulation frameworks and testbeds
- Few academic teaching materials

These barriers prevent researchers, SMEs, startups, and students from contributing — and from discovering the full potential of DECT NR+.



OpenDECT-X: Open Reference Stack for NR+

► German BMW co-funding for innovation concept

- 1 February 2026 to 30 November 2026
- 18 PM, 18 PM, 9 PM (Ostfalia, LMS, Sennheiser) + commitment from Nordic Semiconductor.
- Volume: approx. 0.55 million, of which approx. 0.36 million is funding.

► Vision: An open ecosystem for research, industry and users

- promotes innovation, interoperability and further development of the DECT NR+ standard.

► Challenge

- No open reference implementation for DECT NR+
- Barriers to entry still too high for SMEs

► Objectives

- Framework for open, modular protocol stack development from MAC layer
- Audio, security & mesh functions
- Integration of standardisation & stakeholders

► Benefits

- Science: Platform for research & 6G impulses (Ostfalia)
- Industry: Integration into products, new hardware (Sennheiser, LMS, Nordic Semiconductor)



"Great things in business are never done by one person; they're done by a team of people." (Steve Jobs)



- **Feel enabled**
Bring ideas based on DECT NR+ to life.
- **Engage in DECT Forum AIR**
Let's make research visible, since visibility creates trust, adoption and growth
 - Apply for an academic membership
- **Collaborate with OpenDECT-X**
Openness turns users into contributors — and technologies into ecosystems

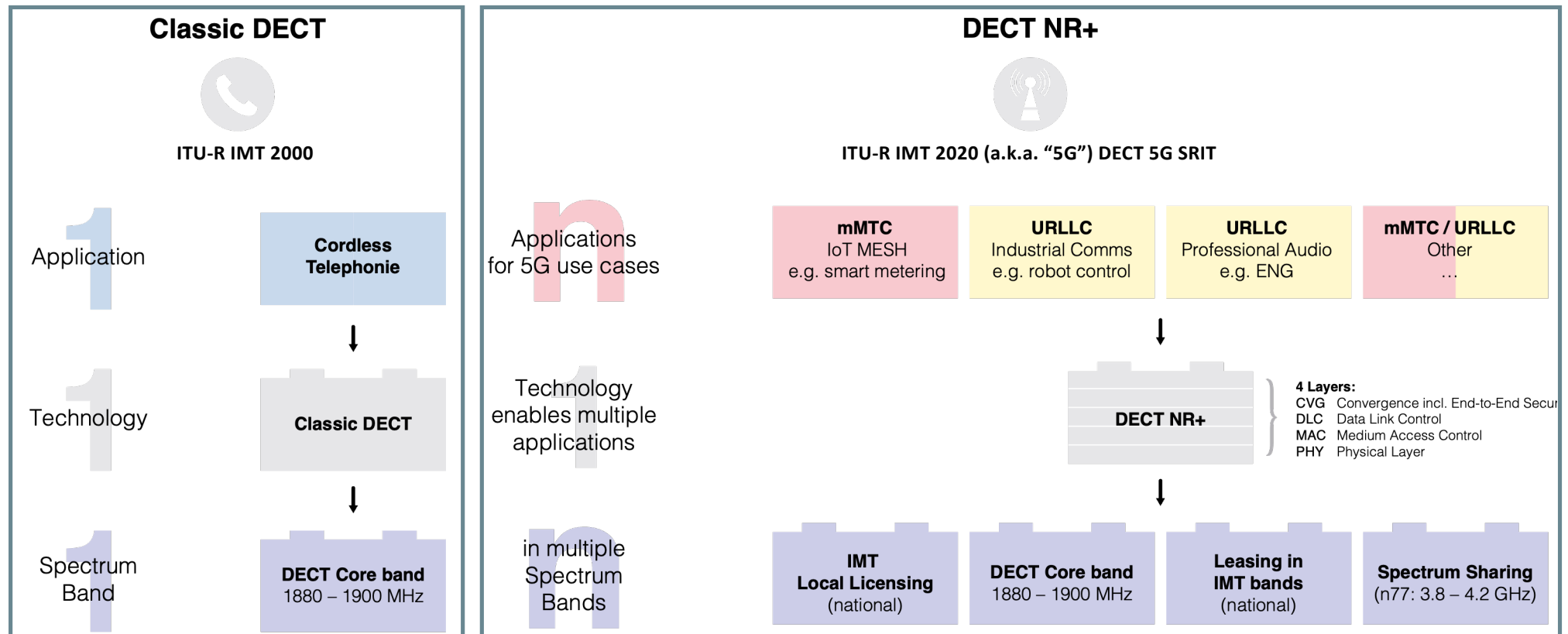


Thank you!

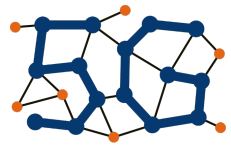
Contact:

m.perez@ostfalia.de

Evolution of DECT: from Cordless Telephony to Non-cellular 5G Technology



SRIT: Set of Radio Interface Technologies

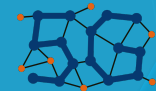


HyprMesh Project Results

- Implementation of the security and integrity NR+ specification
- Extension of the existing open-source NR+ MAC layer implementation to allow for multi-hop, bidirectional communication.
- Application layer implementation to enable communication between the 5G Core (AMF) and RAN over NR+ as a virtual wire.
- Design and simulation of NR+ compatible routing algorithms and physical-layer security components.
- Creation of an open 5G testbed with multi-operator core-network functionality and resource management.



Bundesamt
für Sicherheit in der
Informationstechnik



HyprMesh



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NR+ Security, System integration

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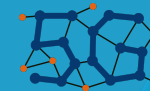
TECHNISCHE UNIVERSITÄT
CHEMNITZ

TU Chemnitz
5G Resilience und High-Availability

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Bundesamt
für Sicherheit in der
Informationstechnik



HyprMesh