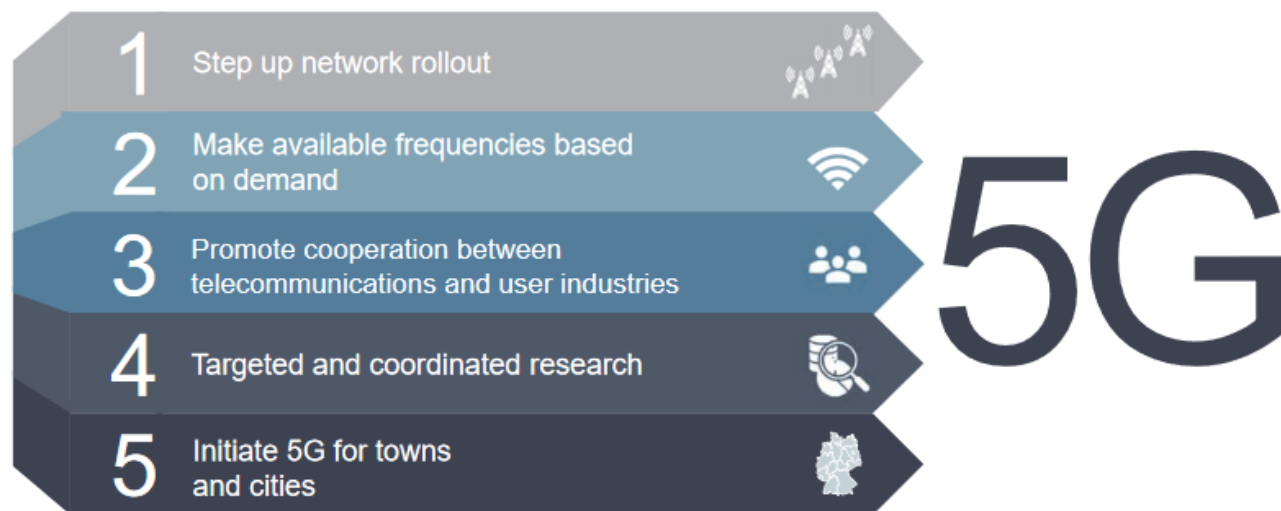


5G Implementation – Challenges

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5G Implementation – Challenges

Five fields of action for 5G



Source: The Federal Government, 5G Strategy for Germany, 2017

5G Initiative of the Federal Government for Germany

- ❖ Aims to support the deployment of 5G networks and the development of 5G applications at an early stage
- ❖ Germany is aspiring to have **5G connectivity by 2025**

5G Action Plan für Europe

- ❖ Start launching 5G services in all EU Member States by end 2020 at the latest
- ❖ Rapid build-up to ensure uninterrupted 5G coverage in urban areas and along main transport paths by 2025

National Mobile Strategy

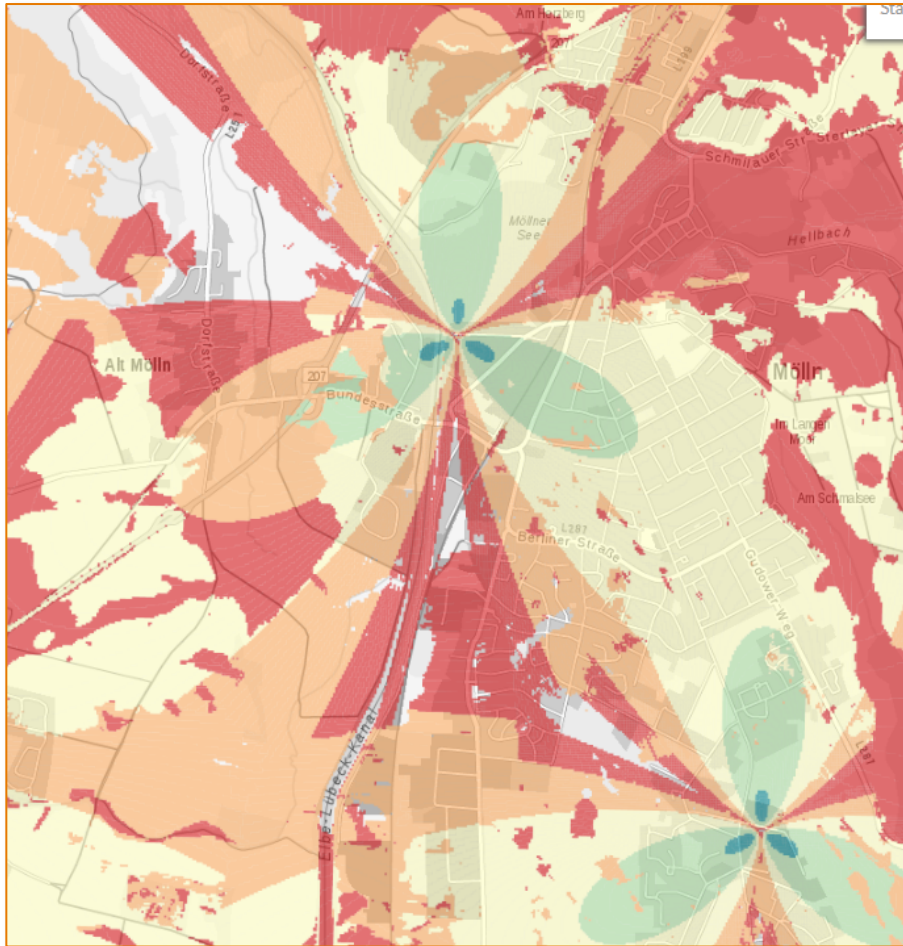


Source: Jens Büttner/dpa

Main targets

- ❖ Transparency regarding the actual coverage
- ❖ **1.1 billion euros for 5,000 new mobile masts** through a funding program (establishment of the mobile infrastructure agency)
- ❖ Relieve the municipalities in the implementation of the funding program and ensure an effective and cost-effective subsidized deployment
- ❖ Identification of infrastructures and properties that the federal government can provide to build cell phone masts
- ❖ Together with the federal states and municipalities, determine acceleration potential, e.g. in approval procedures or in building law

Mobile Network Coverage



Source: atene KOM, Coverage simulation through frequency scanner

Challenge

- ❖ Graphic overview of every mast and of the detailed mobile network coverage

Approach

Through a frequency scanner:

- ❖ Analysis of mobile network coverage through:
 - ❖ Representation of a dispersion simulation
 - ❖ Integration of measurement data e.g. dampening values from measurement runs
- ❖ Inclusion of public properties
 - ❖ Developing search radius
- ❖ Identification of:
 - ❖ Supply gaps (white spots)
 - ❖ Location potential for cell towers

Location search

	Expansion of macro locations	Establishment of new macro locations	Establishment of new small cell locations
Antenna masts	Very suitable	Very suitable	Not suitable
Contact line masts		Not suitable	Suitable
Lighting masts		Not suitable	Very suitable
Traffing light systems		Not suitable	Not suitable
Traffic sign carrier for (large) traffic and information signs		Not suitable	Suitable
Passenger information boards & signs ("U-Bahn")		Not suitable	Very suitable
Building roofs, roof edges	Very suitable	Very suitable	Suitable
Building facades		Suitable	Very suitable

Source: The Federal Ministry of Transport and digital infrastructure, Mitnutzungspotentiale kommunaler Trägerinfrastrukturen für den Ausbau der nächsten Mobilfunkgeneration 5G, 2020

Challenge

- ❖ Find appropriate public infrastructure for 5G deployment

Approach

Identify potential carrier infrastructure

- ❖ An inventory must first be made for the intended new use

Upgrade existing macro locations

- ❖ Legal framework conditions are to be created to enable the use of existing macro locations for 5G

Establish new macro locations

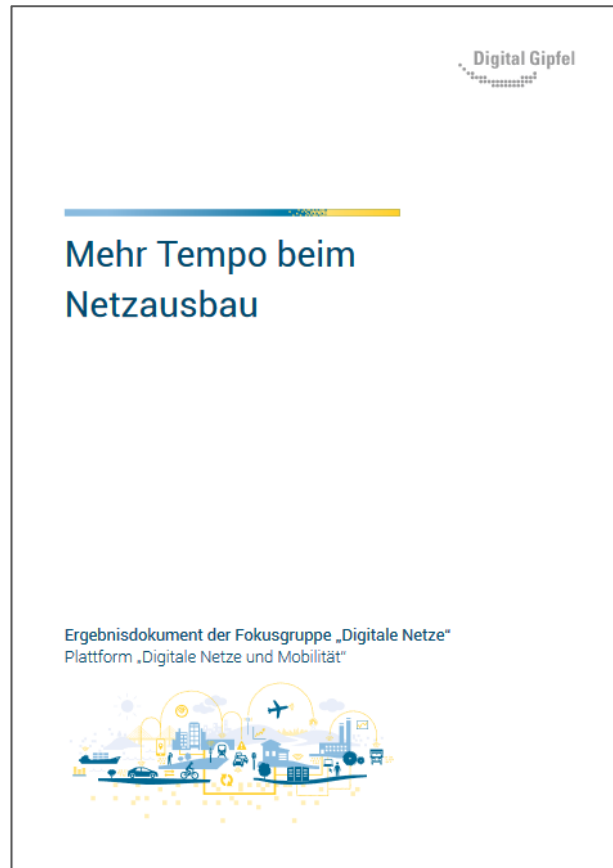
- ❖ When setting up new macro locations, new paths should be explored and new possible locations identified

Build small cells

- ❖ For small cells, which look more like WLAN access points than cell phone masts, the first step was to identify street lights, communal information signs and low-height mountings on or inside buildings

5G Implementation – Challenges

Approval procedures and construction planning & building law



Source: Digital Summit of the Federal Government, 2019

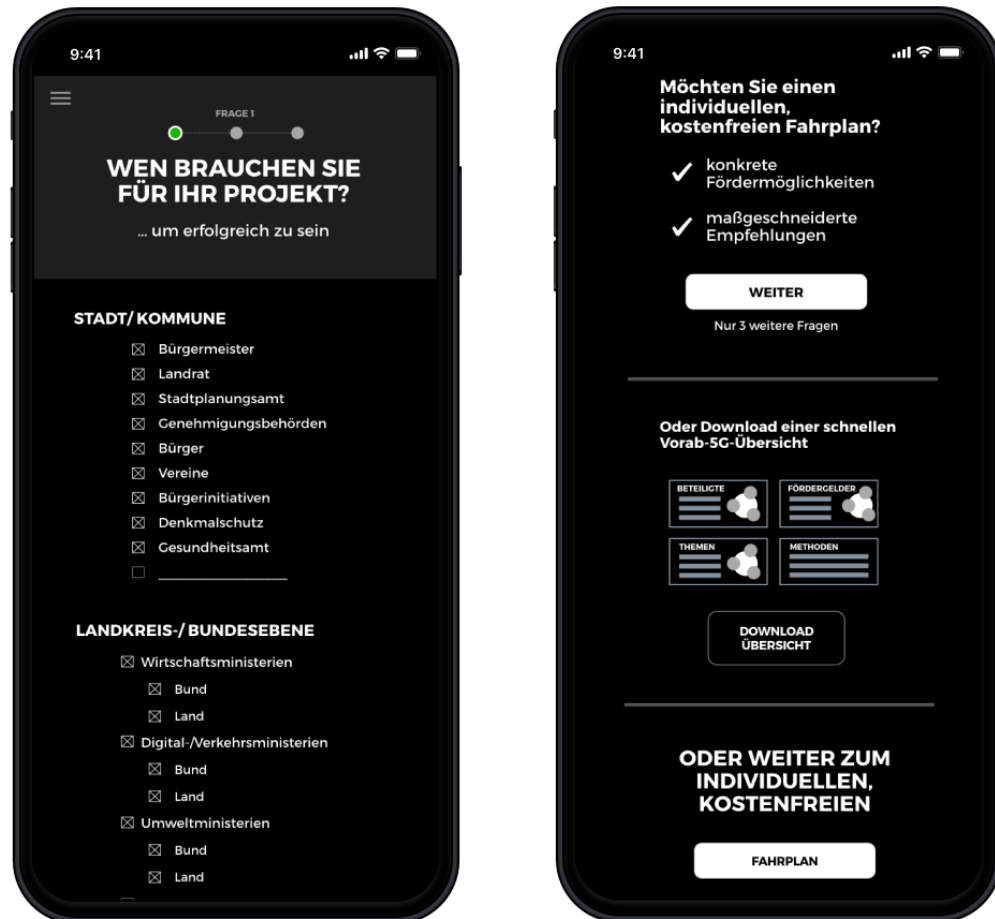
Challenge

- ❖ Various permits must be obtained before putting the mast into service, with which the specifications from various laws related to the project are ensured.
- ❖ Currently, with regard to mobile base stations high-rise buildings along highways must be kept at a distance of 40m in the case of a federal highway and 30m in the case of a federal road.

Approach

- ❖ Identification of acceleration & simplification potentials and adapting current legislation.

5G application for municipal decision-makers



Source: atene KOM, overview of the 5G app

Challenge

- ❖ Strategic planning for supporting 5G deployment due to the lack of specialist staff and financial resources

Approach

- ❖ Development of a 5G app to support the mobile network deployment and development of a timetable:
 - ❖ Identify stakeholders
 - ❖ Find funding
 - ❖ Plan communication with citizens' initiatives
 - ❖ Communicate information about health risks and electromagnetic compatibility



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