

ACTION GROUP 5



To connect people electronically and promote accessibility to public services

Alpine Think Tank on Services of general interest

Improving the accessibility to Services of General Interest through new digital opportunities, especially 5G - Collection of good practises

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January 2021

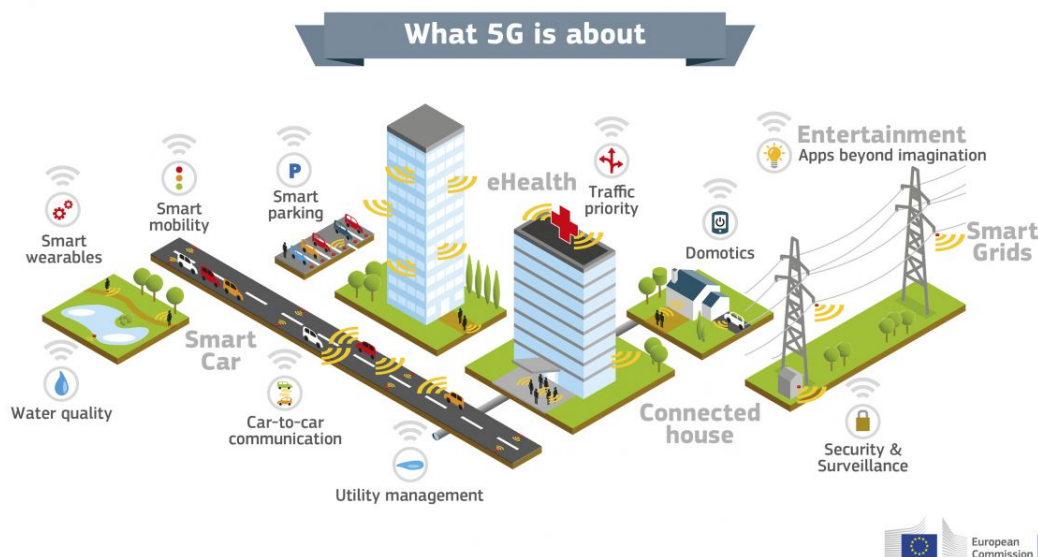
1. Aims of this good practice collection

Services of General Interest SGI and digital accessibility are an important topic within the Macroregional strategy for the Alpine area EUSALP. Action Group 5, which is one of nine AG's of EUSALP, is dealing with this topic. A Think Tank composed of several experts from all Alpine countries has been established to discuss these topics and give strategic orientation.

In 2020, the Think Tank carried out a Workshop on the topic of Improving the accessibility to Services of General Interest through new digital opportunities and has established the present compilation of some good practices. The good practices focus on technological solutions. Organizational innovations like e.g. integrated service delivery models are not tackled in this report.

The collection of good practices is intended as an inspiration for policy makers and key stakeholders in the Alpine area and as a very practical exchange of experiences. With the good practices collection, the members of the Think Tank want to contribute to the improvement of the accessibility to Services in the whole alpine territory. The collected cases focus on implementation. They do not tackle the legal framework, as this is varying from country to country.

5G is the new standard for mobile data transfer. 5G constitutes a quantum leap not only as regards the transfer rate, but also reaction times (latency). The latency is reduced by about 10 times in comparison to 4G. 5G therefore offers new potentials also for the delivery of Services of General Interest. This good practice collection focusses therefore mainly on 5G, but contains also some interesting other examples with other technologies.



A report¹ produced by Qualcomm Technologies, Inc. and Ericsson, in collaboration with Analysys Mason in 2020, has found that the potential economic value of full 5G as an 'open innovation platform' could add yearly 210€ billion in benefits to Europe. This compares to yearly investments of 46 € billion in Europe. The study, [5G action plan review](#)




¹ <https://www.ericsson.com/en/news/2020/11/5g-action-plan-for-europe>

for Europe, provides also a cost-benefit analysis by both country and market segment, and recommends targeted public sector investment and policy change to drive the most value. The [report](#) has found that Germany is forecast to see the highest overall net benefit (benefit minus cost) of 38.5€ billion, with an investment of 6€ billion giving a cost-benefit-ratio (CBR) of 7.5. Switzerland is set to see the highest CBR of 14.7, with roughly a 10€ billion net benefit on just a 700€ million investment. The study also identifies key areas that would require partial or full public funding in order for the benefits to be realized. These span healthcare and hospitals, municipal buildings, education, tourism, agriculture and urban hotspots including public transport. It found that over 50€ billion of benefit can be delivered for less than 20€ billion of public funding.

In many countries, there's a huge scepticism about the impact of 5G on health. This topic is dealt with in many publications and would outrange the scope of the present publication. Further information on this specific topic can be found e.g. on the Website of the World Health Organization WHO².

² <https://www.who.int/news-room/q-a-detail/radiation-5g-mobile-networks-and-health>

2. The good practises

<p>Badrutt's Palace, St. Moritz (CH)</p> <p>Badrutt's Palace is a 5-Star Hotel in the famous tourism resort St. Moritz. In order to keep its leading role and attractiveness to guests, the hotel decided to install 5G-connection in the whole complex of the hotel. This is an internal connection within the hotel compound. The installation was finished in December 2019. As many guests may not yet be equipped with appropriate mobile devices, the fixed lines were at the same time upgraded to fibre optics.</p> <p><u>Partners involved:</u> The installations were carried out by Swisscom as Telecom-Operator and Huber + Suhner for the fixed lines.</p>	 <p>Further information: www.badruttspalace.com</p>
<p>Tourism resort "Jolimont" in Champéry (CH)</p> <p>Jolimont is a small tourism, which addresses mainly young people. The owners of the resort are very well aware, that these young people are all digital natives and want to be connected always and with the best speed available. In order to create an USP, the resort decided therefore to install 5G-connections in the whole complex of the resort. This is an internal connection within the compound. The installation was finished in Winter 2019/20.</p> <p><u>Partners involved:</u> The installations were carried out by Swisscom as Telecom-Operator.</p>	 <p>Further information: http://www.jolimont-champery.ch</p>
<p>Tourism resort "Weisse Arena" in Flims-Laax (CH)</p> <p>The "Weisse Arena" is an integrated ski resort in the canton of Graubünden. The resort encompasses cablecars, skilifts, hotels, restaurants etc. 5G was installed in the whole resort in 2019. Added advantages are seen e.g. in ordering day passes and storing them on the smartphone, being able to see in real time which lifts have the shortest waiting times, navigating the runs, finding friends, watch holograms of famous sports professionals to teach the best tricks to more advanced skiers, quickly find lost items such as skis, poles, goggles, caps etc.</p> <p><u>Partners involved:</u> The installations were carried out by Sunrise as Telecom-Operator.</p>	 <p>Further information: https://www.sunrise.ch/en/medium-and-large-enterprises/home/sunrise-mit-5g-netz-in-laax.html</p>

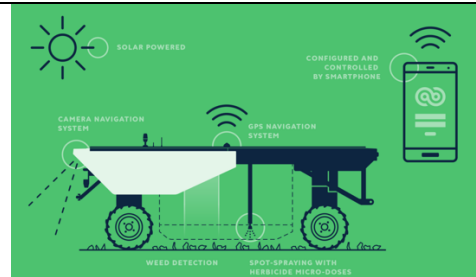
Smart Farming – Precision farming (CH)

The AVO weeding robot is the first ever completely autonomous robot for ecological and economical weeding of row crops, meadows, and intercropping cultures.

It is 100% autonomous thanks to solar power with rechargeable batteries and can treat up to 10 ha/day. It allows high precision spraying. No crops affected, no loss of yield. 95% less herbicides used. Key factor is the strongly reduced latency thanks to 5G.

Partners involved:

Private company, cooperating with Swisscom as Telecom-Operator.



Further information:

<https://www.ecorobotix.com/en/avo-autonomous-robot-weeder/>

Alp.Lab GmbH in Graz (AT)

ALP.Lab GmbH (Austrian Light Vehicle Proving Region for Automated Driving) has developed a sophisticated testing environment to meet the demands of automated driving. Along with public roads, proving grounds, and facilities for data recording and processing, ALP.Lab offers a comprehensive virtual testing environment and a unique test laboratory. Alp.Lab sets also on 5G to allow autonomous driving.

Partners involved:

Alp.Lab builds on an alliance of automotive supplier companies (AVL, Magna) and scientific partners (Joanneum Research, TU Graz, Virtual Vehicle).



Further information:

<https://www.alp-lab.at>

Autonomous Smart Shuttle in Sion (CH)

«SmartShuttle» is a 100 % electric and automated transport vehicle. The two innovative and intelligent driverless shuttles are operating in Sion since 2016 and can transport up to 11 passengers and drive up to 20 km/h.

The Shuttle is equipped with state of the art sensors capable of communicating between themselves and fusing their data to refine the decision making of the vehicle:



- LIDAR Sensors: 3D perception mapping the environment, allowing a precise positioning and ensure obstacle detection.
- GPS RTK: Communication between a GPS sensor and a base station in order to determine at any moment the precise position of the vehicle.
- Odometer: Measuring the displacement and the wheels speed in order to estimate the velocity of the vehicle and confirm its position.
- Camera stereovision: Obstacle detection and estimate their position in regards to the vehicle. Analysis of the environment (road signs, traffic lights) and information extraction.

Partners involved:
Postauto AG.

Further information:
<https://www.postauto.ch/de/projekt-smartshuttle>

Smart Street in Melk (AT)

The City of Melk in Lower Austria has installed in 2018 the first “Smart street” in Austria. Elements of this Smart street are e.g. a user-orientated management of street lamps, red lights are steered according to the actual flow of traffic. WLAN is provided on the street as well as charging stations for mobile phones, E-Bikes and E-Cars.

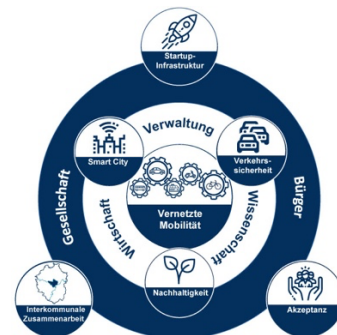


Partners involved:
Fonatsch AG.

Further information:
https://www.stadt-melk.at/de/Fonatsch_eroeffnete_Smart_Street

5GIng Ingolstadt (DE)

The City of Ingolstadt in Bavaria has elaborated an integrated mobility concept based on 5G. 5G is used to manage traffic flows on the roads by connecting red lights, cameras and cloud-infrastructures. Even cyclists and pedestrians are captured by the system. This way, a holistic picture of the traffic situation is generated in real time and allows not only to manage traffic flows but also to reduce the risk of accidents etc. The project follows a very much integrated approach, as it is also part of the Smart City, start-up promotion and dialogue with citizens.



Partners involved:
[Technischen Hochschule Ingolstadt](#), [Fraunhofer Anwendungszentrum VMI](#), [Car.Software](#), [Savari GmbH](#), [ZERO GmbH](#)

Further information:
<https://www.ingolstadt-ifg.de/5going>

RiposteCreative (FR)

Covid-19 and lockdown forced all territorial organisations and local authorities to adapt their link to inhabitants or users, to imagine new ways to deliver services.

RiposteCreative is here to offer a space of resources and experiences sharing among territorial organisations and local authorities, and a space of discussions and invention to struggle every difficulty linked to the Covid-19, with collaborative online methods.

RiposteCreative is also here to care about the “post-Covid19 world”, learning from the crisis, trying to propose more supportive solutions for every people, better shared initiatives. All the process works in a collaborative and common good way.

Partners involved:

RiposteCreativeTerritoriale has been launched by the lab of National Center for Territorial Public Function (CNFPT) working with all french local authorities.

The global RiposteCreative project has now different local implementations (an alpine one with Grenoble Riposte Creative) and also thematic ones mainly for education.



Further information:

<https://ripostecreativeterritoriale.xyz/?PagePrincipale>

5-Save in Landshut (DE)

The project "5-Save" aims at improving the security on the access to schools through the use of 5G. Real time information on traffic flow and the movement of pupils is amalgated into an overall picture. This overall picture is fed e.g. into the navigation systems of parents, when they bring their children to school and indicates them, where it is safest to drop off their children. "Angels" are placed at neuralgic traffic points and can warn pupils thanks to the information they get in real time on their smart phones.

Partners involved:

Stadt Landshut, Hochschule Landshut, Peregrine Technologies, T-Systems. Financially supported by the federal government.



Further information:

<http://5-safe.de>

5G-4Healthcare, Amberg-Weiden (DE)

The objective of the project 5G4Healthcare is to establish a platform based on 5G technology, that enables testing and evaluation of digital applications in scenarios of rural healthcare in living labs (real environments) and test beds. Two defined use cases are the starting point in which exemplary scenarios are used to determine which added value and effects can be realised through digital solutions in healthcare and which additional potential through 5G technology can be unlocked.

Use case *Integrated care*: In the frame of this use case, a comprehensive digital health-based integrated care approach - as well outpatient as inpatient sectors - for rural areas is to be implemented. In order to implement this, electronic health records and telemedical procedures are to be used, which enable location-independent availability of patient data and facilitate concrete measures of telemedical therapy and diagnostics (keyword tele-consultation). In the final stage the aim is to create a virtual care centre, which in addition to conventional care facilities, will enable permanently available, high-quality and efficient expert care.

Use case *Home care*: This use case aims towards implementation of a comprehensive digital health-based approach with the involvement of representatives of the outpatient sector, explicitly addressing home care and care in rural areas.. In order to optimize the entire logistics around the home care patient, a new communication platform will be established in the form of an innovative, mobile IT collaboration tool, in which GP - pharmacy - medical supply store - nursing service - patients are involved. The infrastructure for the actors involved is to be supplemented by the use of assistance solutions and smart devices for a self-determined life in daily situations, as well as by automated solutions in patient care.

Partners involved:

Technical University of Eastern Bavaria Amberg-Weiden, Financial Support of 8.5 Mio. € by the Federal Government.



Further information:

<https://www.oth-aw.de/eng/research-and-cooperation/latest-news-in-research/5g4healthcare/5g4healthcare/>

Rettungskette 5G in Aalen (DE)

The project "Rettungskette 5G" aims at searching innovative solutions for a better communication and exchange of data along all actors of medical intervention from the first medical persons on the spot up to the specialists in the hospitals. The project sets on the potentials of 5G to reduce time and speed up the processes. The project started in December 2019.

Partners involved:

Ostalbkreis, Kliniken Ostalb gkAöR, DRK-Kreisverband Aalen e.V. Hochschule Aalen-Technik und Wirtschaft, Telefónica Germany GmbH & Co. OHG, medDV GmbH, Convexis GmbH, ArtiMinds Robotics GmbH, E.Care BV, Visualix GmbH, pulsation IT GmbH, FirstAED ApS, SYSTEM Strobel GmbH & Co. KG



Further information:





<https://www.ztm.de/innovation/aktuelle-projekte/13-innovationsprojekte/513-rettungskette-5g>

In health care, 5G has a huge potential which is waiting to be unleashed. Here are some hints, in which direction these potentials could go³:

- Clinicians could soon use ultra-reliable connections to teleport to virtual environments and perform robotic surgeries.
- Augmented reality (AR) glasses would allow first responders to connect with faraway specialists and “show” them exactly what they are seeing, in order to receive better guidance.
- 5G could also support medical training, enabling students to use virtual reality headsets to practice at their own pace the steps of complex surgeries.
- 5G-enabled drones could deliver life-saving medicine or devices to patients in hard-to-reach rural areas. A university in Sweden is already testing these drones to deliver defibrillators to cardiac arrest victims.
- But it is in the wearable medical device market where 5G will cause the greatest disruption. Remote monitoring technology has yet to reach its full potential due slow network speeds and unreliable connections. With 5G, clinicians will be able to instantaneously collect medical data such as a vitals or physical activity levels from disparate sources and large groups of patients and make fast, reliable diagnoses.

Similar scenarios on the use of 5G in Telemedicine have also been elaborated by the Technical University of Eastern Bavaria Amden-Weiden:

³ <https://www.digitalauthority.me/resources/state-of-digital-transformation-healthcare/>

1		Wound Management • Technology: AR / VR • Category: Telecare • Application performance indicators for 5G: eMBB • Scenario: Live transfer of the imagery of the wound to the wound expert
2		Localization of devices / equipment • Technology: 3D localization in the 5G network • Category: Automation • Application performance indicators for 5G: mMTC • Scenario: Localization of devices / equipment in the building (beds, wheelchairs, medicine carts)
3		Transport with drones / AGVs • Technology: Robotics / Automation • Category: Transport / Logistics • Application performance indicators for 5G: uRLLC • Scenario: Transport of goods, medicines, health aids with AGVs and drones
4		Telecardiology / Monitoring • Technology: Data transmission / Real-time measurement • Category: Monitoring / preventive control • Application performance indicators for 5G: uRLLC • Scenario: Fully automatic data transmission and detection of medical abnormalities

Source: <https://www.oth-aw.de/eng/research-and-cooperation/latest-news-in-research/5g4healthcare/5g4healthcare/>

3. Strategies for the roll out of 5G

Most alpine countries have identified the potentials of 5G and developed national and/or regional strategies to ease and speed up the rollout of 5G.

The **EU-Commission** published on 18 September 2020 a recommendation⁴ to its member states calling upon them to boost investment in very high-capacity broadband connectivity infrastructure, including 5G. 5G is seen in this communication as a crucial asset for European competitiveness, sustainability and a major enabler for future digital services. The Commission invites the Member states to undertake measures which aim to:

- Reduce the cost and increase the speed of deployment of very high capacity networks, notably by removing unnecessary administrative hurdles;
- Provide timely access to 5G radio spectrum and encourage operators' investments in expanding network infrastructure;
- Establish more cross-border coordination for radio spectrum assignments, to support innovative 5G services, particularly in the industry and transport fields.

A toolbox shall be elaborated in the first semester of 2021 to showcase some good practices on how member states implement these regulatory approaches. A new Action plan for 5G and already also 6G is announced for the year 2021. All these activities shall contribute to the [Connectivity for a European Gigabit Society](#) objectives set by the EU. By 2025, all main socio-economic drivers (i.e. schools, hospitals, transport hubs) should have gigabit connectivity, all urban areas and major terrestrial transport paths should be connected with uninterrupted 5G coverage, and all European households should have access to connectivity offering at least 100 Mbps upgradable to Gigabit speeds.

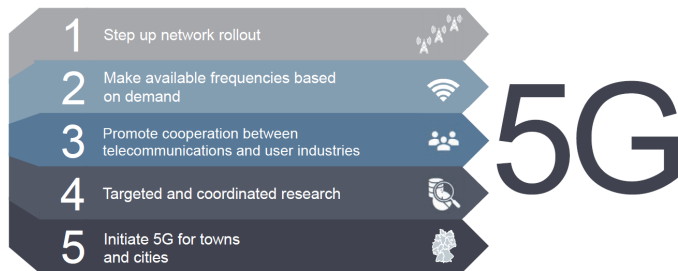
Austria published in 2018 its 5G Strategy⁵. In this strategy, Austria aimed at becoming a forerunner in 5G in Europe. The ultimate goal was to establish 5G coverage on the whole territory by 2025. In a first phase, the capitals of the Länder and in a second phase the main transport corridors shall be equipped with 5G. In the years 2018 and 2019 a lot of time has

⁴ https://ec.europa.eu/commission/presscorner/detail/en/ip_20_1603

⁵ <https://www.bmlrt.gv.at/telekommunikation-post/breitband/publikationen/strategie/5G-Strategie.html>

been invested in preparing the necessary regulatory framework and creating a sound basis for the rollout of 5G in Austria.

Germany published in 2017 a 5G Strategy⁶. The strategy was based on five fields of action:



To speed up the rollout and improve the knowledge on the potentials of 5G, the federal government launched in 2018 a program for encouraging innovation. Municipalities could request a contribution of up to 100'000 Euros for innovative projects on 5G. This measure was part of the strategy⁷ for mobile communication. This strategy aimed at positioning Germany as a guiding market (Leitmarkt) for 5G. Besides the financial support, the federal government made available the use of public buildings and infrastructure of the federal rail operator Deutsche Bahn for 5G infrastructure, promised to fasten the processes for authorization of constructions and to allow minor installations without prior authorization. To provide 5G in “white spots”, which would not be covered by the market, Germany is making available 1,1 billion € to install an estimated number of 5'000 masts.

France published in 2018 a Roadmap⁸ for 5G. The aim was to equip all major transport axes with 5G by 2025. France is in this respect less ambitious than e.g. Austria and Germany, which want to cover the whole territory by 2024. In the period 2018 – 2019, tests with 5G were carried out by telecom-operators mainly in the big cities and in airports and railway stations such as Lyon Part Dieu. In 2020 the rollout of 5G started at a larger scale. The first observatory⁹ on 5G published in France in December 2020 shows, that mainly the bigger cities are covered by 5G.

Italy's national ultra-broadband plan, the [Strategy for next generation access network](#) (Strategia Nazionale per la Banda Ultra-Larga), was approved in 2015. A 5G trial was launched in March 2017 to implement infrastructures and services in 5 cities: the metropolitan area of Milan, Prato, L'Aquila, Bari and Matera. National and regional funds have been made available to build a passive public infrastructure managed with a wholesale-only model and opened to all the operators in areas where a market failure is present. Auctions for 5G spectrums were carried out in 2018 and in 2019 the commercial rollout started. The attribution of the frequencies was bound with coverage-obligations which depend on the frequency. Highest priority for the rollout have the cities, transport corridors

⁶ <https://www.bundesregierung.de/breg-de/aktuelles/eine-5g-strategie-fuer-deutschland-389380>

⁷ <https://www.bmvi.de/DE/Themen/Digitales/Frequenzen-Mobilfunk-und-Digitalradio/Mobilfunkstrategie/mobilfunkstrategie.html>

⁸ <https://www.arcep.fr/actualites/les-communiques-de-presse/detail/n/la-france-se-dote-dune-feuille-de-route-pour-la-5g-et-lance- quatre-chantiers-prioritaires.html>

⁹ <https://www.arcep.fr/cartes-et-donnees/nos-cartes/deploiement-5g/observatoire-du-deploiement-5g-decembre-2020.html>

and touristic hotspots. 99,4% of the population shall be covered with the lowest frequency (700 MHz) until 2024¹⁰.

Switzerland was fast in tendering the frequencies for 5G in 2018. Telecom operators started the rollout of 5G in 2019. The rollout is slowed down due to sometimes critical public opinion with moratoriums which have been passed by some cantonal and municipal authorities and by a lack of a clear support by the federal government. Construction of new antennas has been contested in many places. In this situation, the telecom operators have put the priority on upscaling mainly the existing antennas. The full potential of 5G can not yet be unleashed. A financial support by the federal or cantonal level is not foreseen. To surmount these regulatory handicaps, one telecom operator was rolling out what they call “5G wide”, which improves the capacity of existing antennas by software upgrades.

Slovenia elaborated a first draft strategy for 5G in 2017. But further work on policy level was delayed due to concerns in the population about health aspects of 5G. The auctions for 5G frequencies could not be held in summer 2020 as initially foreseen and were postponed for spring 2021. In spite of this situation, Telekom Slovenije started in July 2020 the commercial rollout of 5G in Slovenia. The goal was to provide 33% of the population by the end of the year with 5G. 5G is in this case for the moment an upgrade of existing antennas and not yet the full potential of new antennas (see 5G wide in Switzerland).

4. Conclusions

The few examples presented in this publication show the huge potential of 5G to improve the delivery of Services of general interest, to develop new business models for all territories, and to improve living conditions and reduce negative impacts on the environment. 5G is a force enabler, which can bridge the digital divide between urban and rural areas and which can make rural areas much more attractive. New approaches like Smart villages are possible thanks to highspeed internet access. The natural handicaps of physical distances are earmarked to disappear. But this needs a lot of investment and also the political will to go into this direction. The EU and most alpine countries have developed strategies for the rollout of 5G and are actively supporting this either by the regulatory framework or by financial support mechanisms. The situation is somewhat different in Slovenia, which is lagging behind in the process of introducing 5G due to public scepticism and in Switzerland, where a clear national strategy is missing and no public funding are made available.

In most alpine countries, the commercial rollout of 5G has started in 2019. The examples presented in this publication show, that there are already quite a lot very interesting initiatives going on. They illustrate the variety of use cases. A lot of ideas are still waiting to be developed. Starting from the second part of 2020, new smartphones are able to communicate with the 5G standard. This will give another huge push to 5G in areas of personal and professional use. We are actually just at a starting point and the huge potentials of 5G are waiting to be discovered and unleashed. Meanwhile, the research sector and the industry are already exploring the way to 6G.

¹⁰ <http://5gobservatory.eu/public-initiatives/national-5g-plans-and-strategies/#1533565840021-480921bd-2bd9>