



DEDICAT 6G

THIS PROJECT IS PART OF THE 5G PUBLIC AND PRIVATE PARTNERSHIP

5G PPP WWW.5G-PPP.EU

DEDICAT 6G

Societal Needs and Value Creation
subgroup of 6G-IA

6G-IA KVI workshop
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Overview

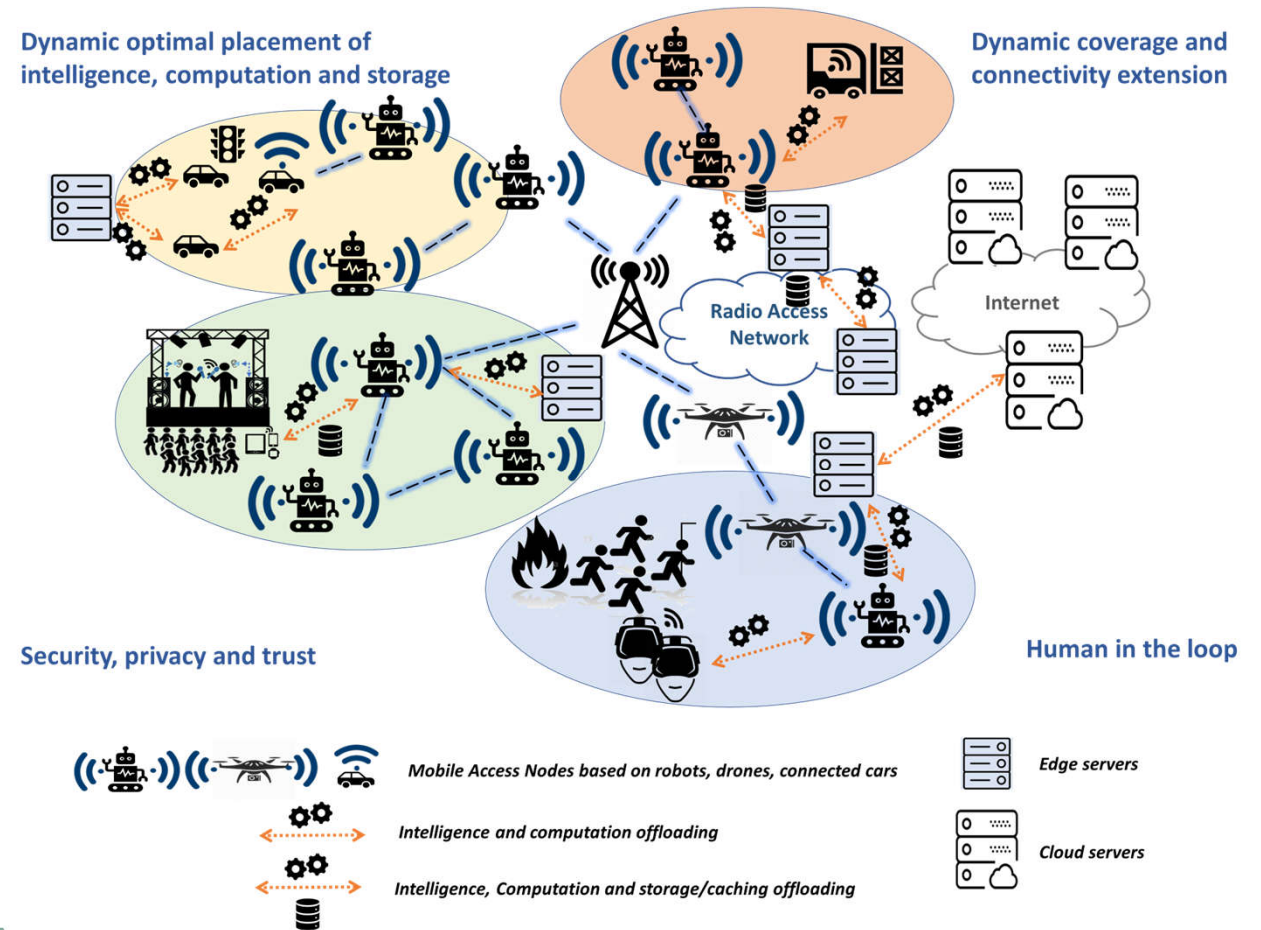
- Project overview
- Use cases
- Approach to KVs and KPIs mapping
- Identification of KVs
- Mapping of KVs with project enablers
- Mapping of Societal Challenges with project KPIs
- Conclusion



DEDICAT 6G - Challenges and vision

Transform Beyond 5G networks into a smart connectivity platform that is dependable/resilient, highly adaptive, ultra-fast, green for supporting securely innovative, human-centric applications.

- **Dynamic distribution of intelligence and computation** for reduced energy and resource consumption
- **Dynamic coverage and connectivity extension** in support of digital inclusion
 - *support service continuity also in more "remote" areas*
- **Enhanced security, privacy and trust**
- **Human in the loop**



Technical enablers



Mechanisms for dynamic distribution of intelligence and storage in conjunction with predictive caching



Mechanisms for dynamic coverage and connectivity extension



Security, privacy and trust assurance especially for mobile edge services

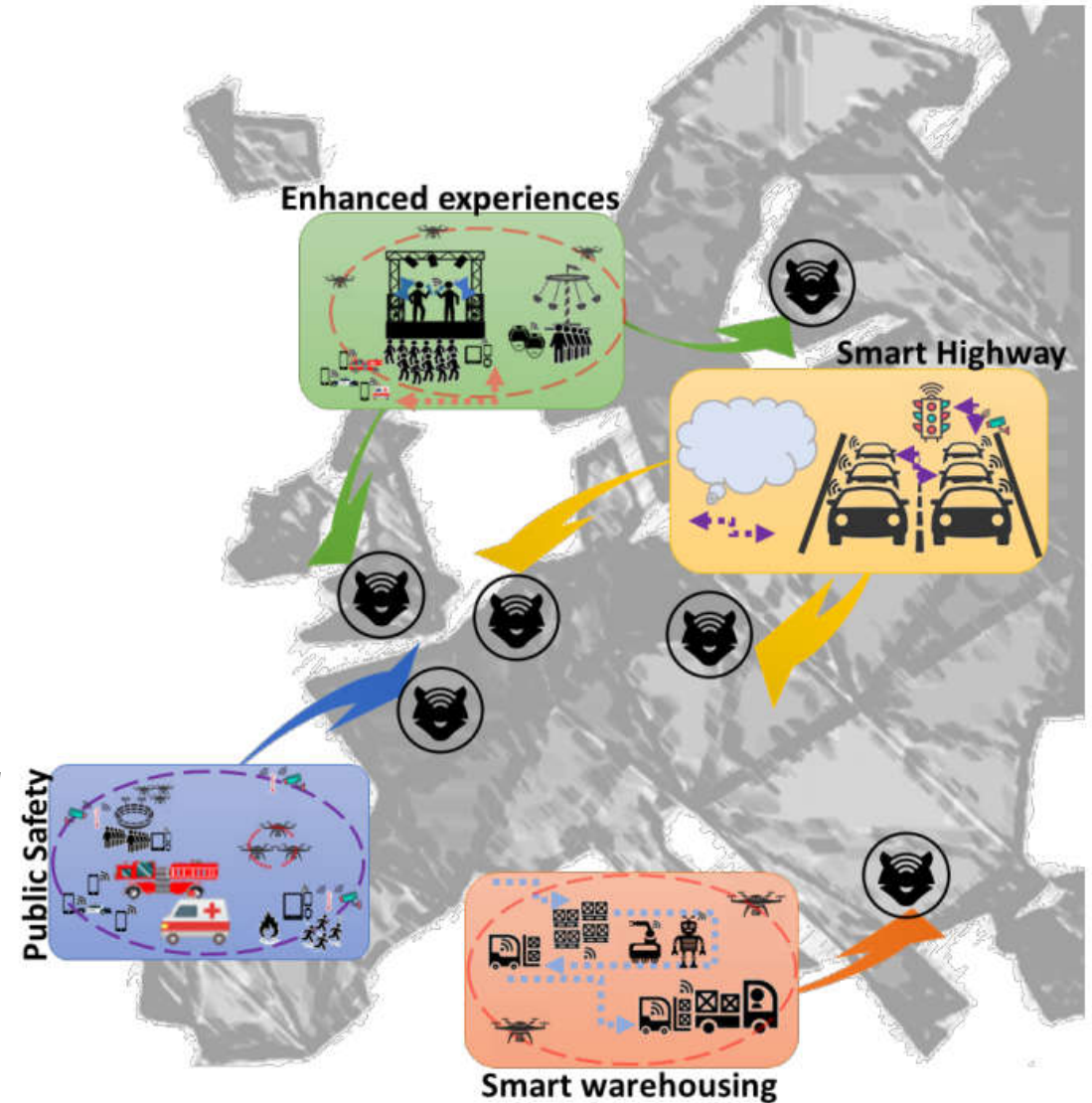


Applications with novel interaction between humans and digital systems through innovative interfaces and devices (AR, smart glasses, connected cars, robots, drones)



Use case pilots

- **Smart warehousing**
 - AI based optimization of warehousing operations
 - assisting training and maintenance through 3D augmented reality
 - enhancing safety of personnel and goods
 - remote inspection and diagnostics;
 - identification and tracking of goods throughout value chains
- **Enhanced Experiences**
 - *Live streaming with extremely low latency locally in public events and remotely (virtual participation)*
- **Public Safety**
 - *Reliable and efficient connectivity everywhere and anytime to drive the digital transformation plan for Augmented First Responders*
 - *demonstrated through natural disasters in non-urban settings and man-made in urban settings*
- **Smart Highway**
 - Connected and autonomous mobility with the smallest possible delay and ultra-reliability for live alerts

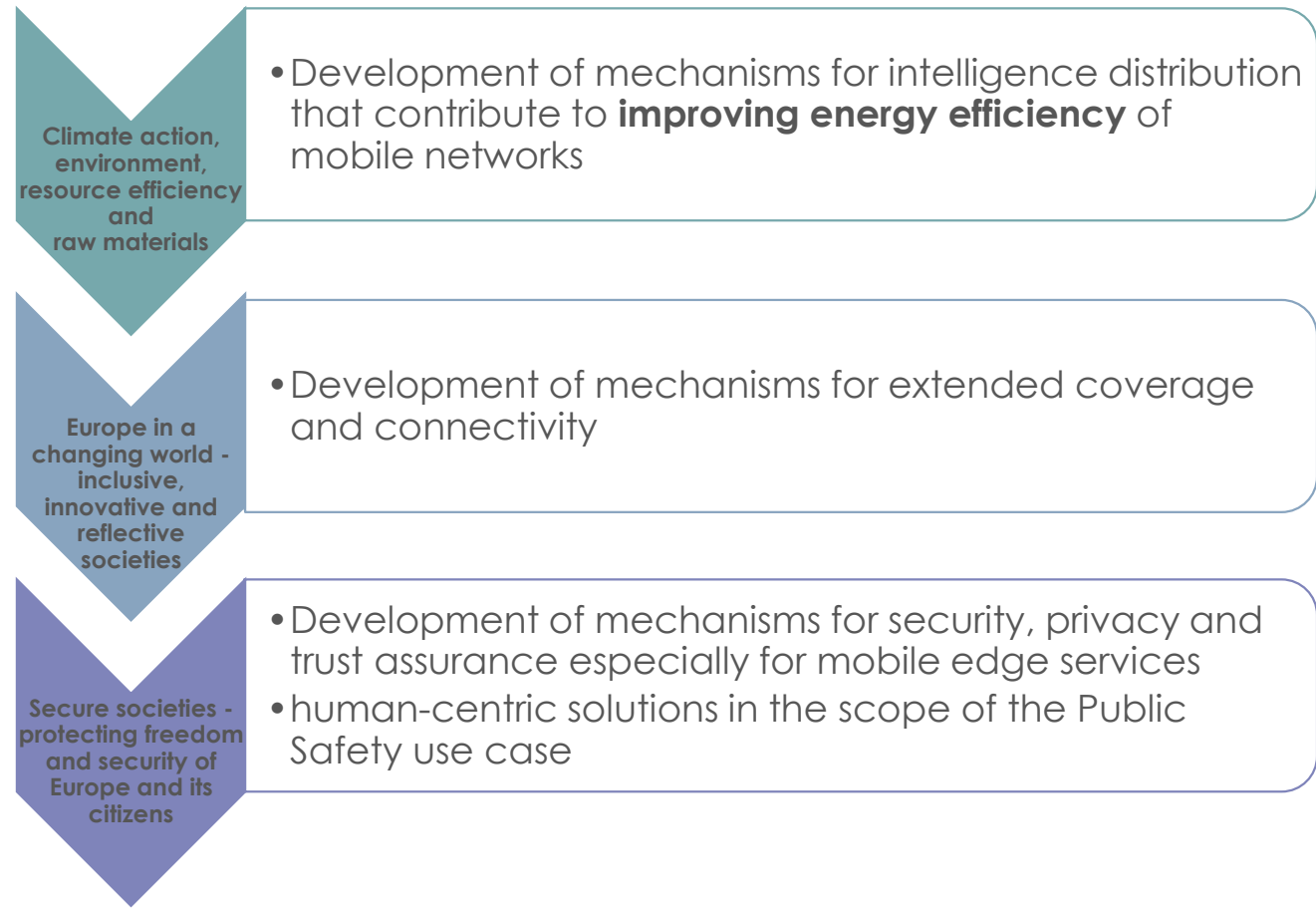
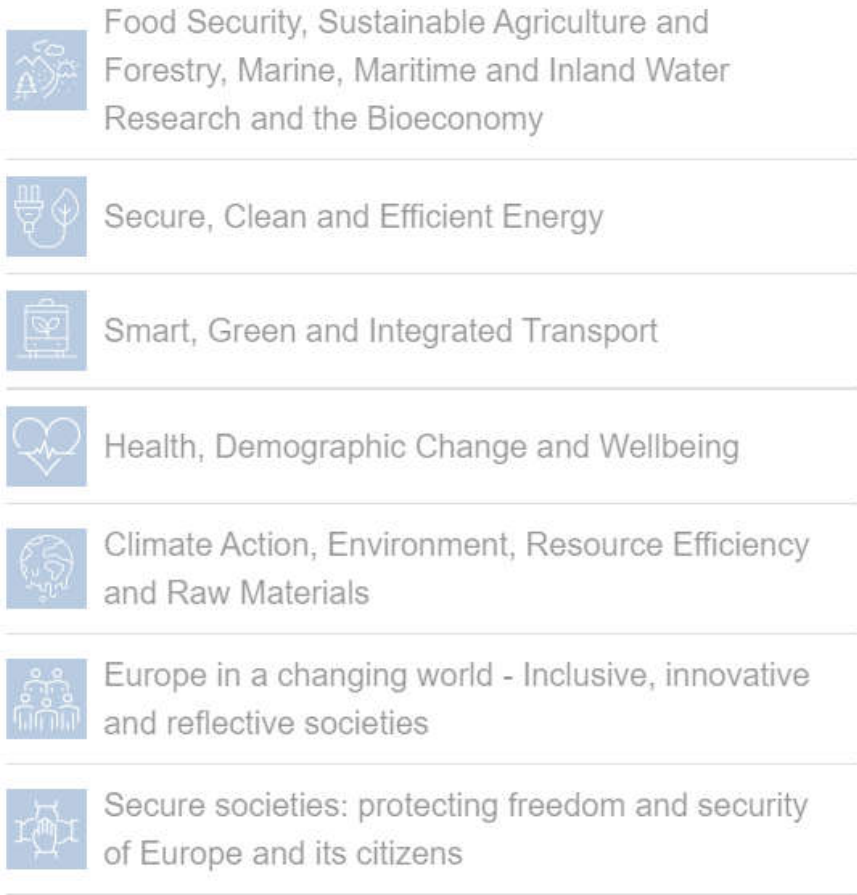


Approach to KVs and KPIs mapping

- 1) Identification of KVs: H2020 Societal Challenges
- 2) Mapping of Technical enablers to H2020 Societal Challenges
- 3) Identification of KVs: United Nations Sustainable development goals (UN SDG)
- 4) Mapping of Technical enablers to UN SDGs
- 5) Mapping of Industrial impact KPIs in DEDICAT 6G use cases to societal challenges and UN SDGs
- 6) Mapping of DEDICAT B5G/6G KPIs to societal challenges and UN SDGs



Identification of KVIs: H2020 Societal Challenges (Gateways) and Mapping of DEDICAT 6G Technical enablers



Identification of KVIs: United Nations Sustainable development goals (UN SDG) relevant to DEDICAT 6G



Mapping of DEDICAT 6G Technical enablers to UN SDGs



Mechanisms for dynamic distribution of intelligence and storage in conjunction with predictive caching



Mechanisms for dynamic coverage and connectivity extension



Security, privacy and trust assurance especially for mobile edge services



Applications with novel interaction between humans and digital systems through innovative interfaces and devices



Mapping of Industrial impact KPIs in DEDICAT 6G use cases to H2020 societal challenges














DEDICAT 6G UCs	KPIs and target value
Smart Warehousing	<ul style="list-style-type: none"> -Advanced warehouse automation. Reduction of time required to certain operations: 15% -Enhancing safety in warehouses. An incident reduction of more than 10% is envisioned when a high level of automation is deployed.
Enhanced Experience	<ul style="list-style-type: none"> -Offloading the computation into edges will decrease the power and processing costs for service providers in the content origin 20% and enable faster response time for video users. -Dynamic adaptation and video streaming will increase the overall user quality of experience, decrease the network costs 40%, and enable greener networking. -Smart guidance will increase the operational efficiency both for event personnel as well as for users and reduce the navigation time at least 30%.
Public Safety	<ul style="list-style-type: none"> - Increase of operational efficiency of public safety by 20% - Reduction of emergency response time by 30% - Increase of public safety user quality experience
Smart Highway	<p>The baseline is the current situation where car drivers are only warned about dangerous situations in front of them, based on a local sensor in the car. The DEDICAT 6G technology will be an enabler to go to a next level of automation:</p> <ul style="list-style-type: none"> - Increased road safety with a reduction in number of traffic deaths and injuries by 20%: - Catalyst to increase the level of automation from 4 (high automation) to 5 (full automation)

Europe in a changing world - inclusive, innovative and reflective societies

Secure societies - protecting freedom and security of Europe and its citizens

Climate action, environment, resource efficiency and raw materials

Mapping of Industrial impact KPIs in DEDICAT 6G use cases to UN SDGs

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Public Safety	<ul style="list-style-type: none"> - Increase of operational efficiency of public safety by 20% - Reduction of emergency response time by 30% - Increase of public safety user quality experience - Increase protection of First Responders or PPDR users during the response to the crisis 				
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Mapping of DEDICAT B5G/6G KPIs* to societal challenges and UN SDGs

KPI name	Use cases	Target value
E2E Service Latency	All	1 ms - 10ms
E2E Application Latency - for Video processing services	Enhanced Experience	E2E 200ms at application level
Mission critical QoS of services - latency related	Public Safety	<p>MC-PTT access time less than 300 ms for 95% of all requests;</p> <p>End-to-End MC-PTT access time less than 1000 ms for all MCX mobile application under the same network coverage;</p> <p>Mouth-to-ear latency less than 300 ms for 95% of all voice bursts</p> <p>Max late call entry time shall be 150 ms for 95% of all late call request.</p> <p>End-to-End Delay (time required for IP packets to be transmitted) shall be less than 10 ms;</p> <p>User Data Rate shall be 100 Mbps in downlink and 50 Mbps in uplink</p> <p>99.999% of success for the transmission of a packet of 32 bytes within 1ms</p>

Europe in a changing world - inclusive, innovative and reflective societies

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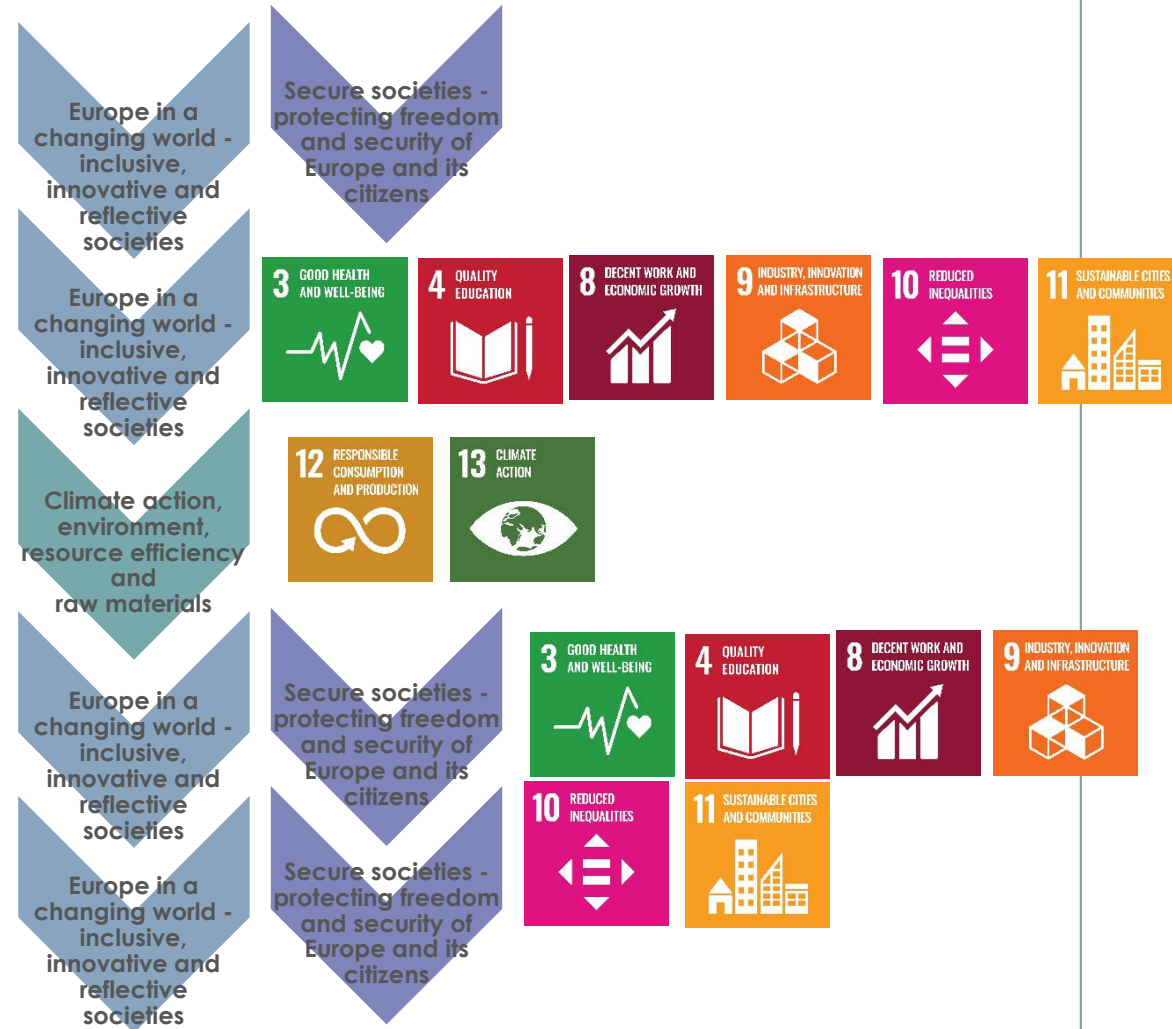
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* KPIs provided as input on Beyond 5G/6G KPIs and Target Values to the 5G PPP KPI Cartography ([link](#)) and the corresponding white paper of the 5G PPP Test, Measurements and KPIs validation working group ([link](#))

Mapping of DEDICAT B5G/6G KPIs to societal challenges and UN SDGs

KPI name	Use cases	Target value
User data rate	Smart warehousing, Enhanced experience	Minimum user data rate (5th percentile) in bit/s: 100 Mbit/s (DL); 50 Mbit/s (UL).
Network Capacity	Smart warehousing, Enhanced experience	Area traffic capacity in Mbit/s/m ² : 10 Mbit/s/m ² (DL) (Bandwidth: 100MHz)
Network energy efficiency and Device energy efficiency	All	Reduction of energy consumption by a factor of 10
Service reliability	All	Packet Loss Rate < 10 ⁻³ Public Safety: 99.999% of success for the transmission of a packet of 32 bytes within 1ms
Location accuracy	Smart Warehousing, Smart Highway	10 cm to 20 cm



DEDICAT 6G towards Societal Challenges

- Inclusivity:

- *Access to information from anywhere, anytime and when needed;*

- Safety:

- *Protection of users by sharing rich information and increase user experience;*

- Connectivity:

- *Maintain access to the network even network failure or overload;*

- Environment:

- *Contribute to energy saving and sustainability by efficient resources management based on needs or on demand*





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Thank you!



<https://decicat6g.eu/>

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