Key 5G Infrastructure PPP project platforms & demonstrated vertical use-cases

The voice of the European industry for the development, deployment and evolution of 6G Smart Networks and Services

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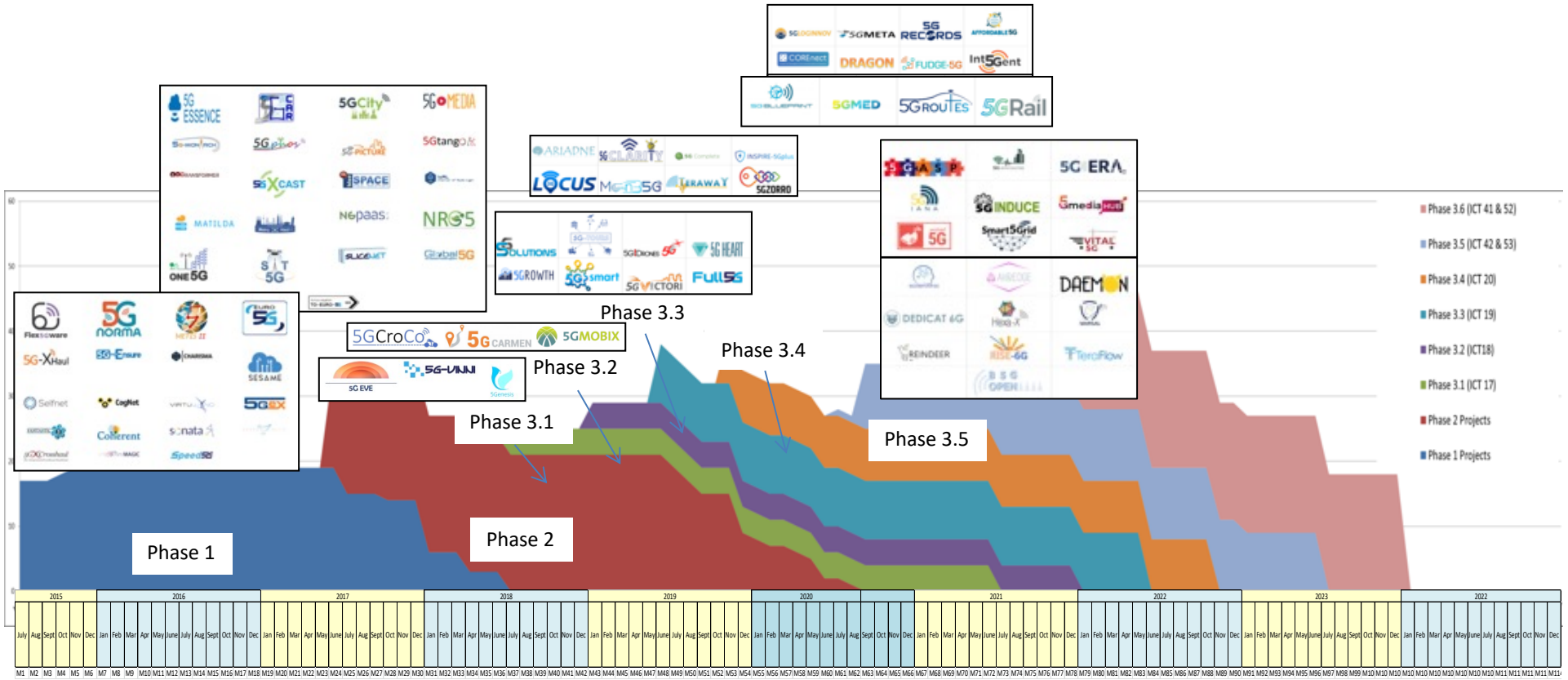
5G PPP - working on phases

(examples of projects dealing with verticals)



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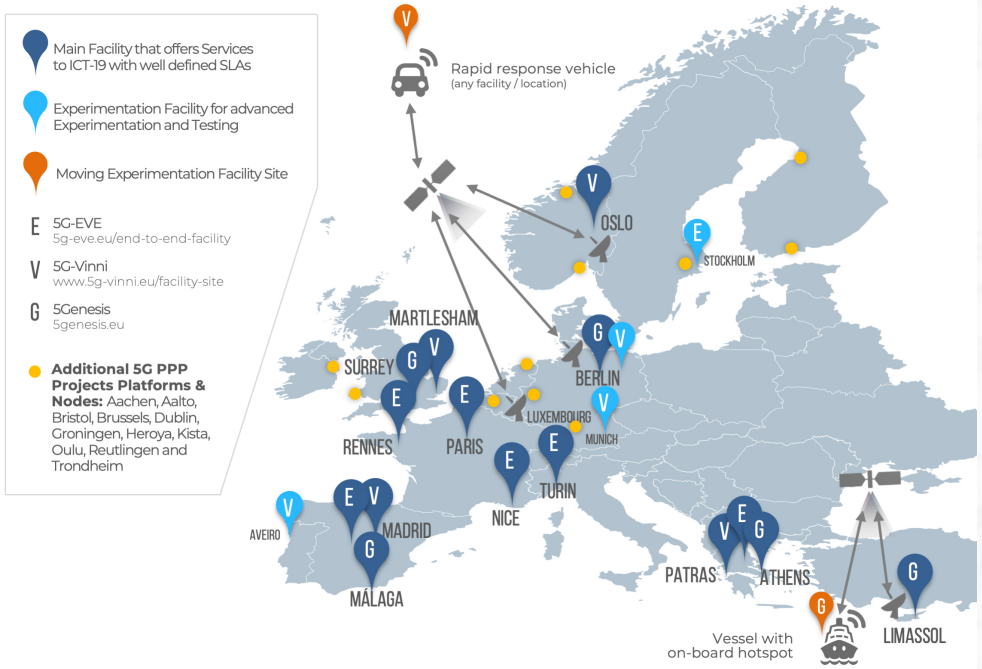
Pan-European platforms
Link to vertical projects



	5G EVE	5Genesis	5G-VINNI
5G!DRONES	√	√	
5G HEART	√	√	√
5GROWTH	√		√
5G smart	√		
5G Solutions for European Citizens	√		√
5G TOURS	√		
5G VICTORI	√	√	√

Examples of vertical areas

	Industry 4.0	Agriculture & agri-food	Automotive	Transport & logistics	Smart Cities & utilities	Public Safety	Smart (air)ports	EnergY	eHealth & wellness	Media & entertain.
5G EVE	√		√		√	√		√	√	√
5GENESIS				√	√	√				√
5G VINNI	√			√		√		√		
5G!DRONES				√		√				√
5G HEART		√	√	√					√	
5GROWTH	√			√				√		
5G SMART	√									
5G SOLUTIONS	√				√		√	√		√
5G TOURS				√	√		√		√	√
5G VICTORI	√			√				√		√

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5G PPP Platforms Cartography

https://5g-ppp.eu/5g-ppp-platforms-cartography/

Platforms Capabilities	5G-EVE	5G-VINNI	5GENESIS
Rel15-5GNR in Non Standalone Alone (NSA) mode	Turin, Madrid, Paris, Athens *January 2020*	Oslo, Martlesham, Patras, Madrid, *January 2020*	Athens, Berlin, Limassol, Malaga, Surrey *January 2020*
Rel15-5GNR with Rel15-5GCore in Standalone Alone (SA) mode[4]	Turin, Madrid, Paris, Athens *July 2020*	Oslo, Martlesham, Patras, Madrid, Aveiro. *After January 2020*	Athens, Berlin, Malaga, Surrey *January 2020*
Rel16-5GNR and 5GCore (NSA or SA)[4]	Turin, Madrid, Paris, Athens *January 2021*	Oslo, Martlesham, Madrid, Patras *After January 2020*	Berlin, Surrey *After January 2020*
Network Slicing as a service[3]	Turin, Madrid, Paris, Athens *January 2020*	Oslo, Martlesham, Patras, Madrid, Aveiro *January 2020*	Athens, Malaga, Surrey *January 2020*
Customized network slice (e.g. SFC, security, enhanced Cloud access) [3]	Turin, Madrid, Paris, Athens *July 2020*	Oslo, Martlesham, Patras, Madrid, Aveiro *After January 2020*	Athens, Berlin, Limassol, Malaga, Surrey *After January 2020*
Hosting of 3rd party VNFs[3]	Turin, Madrid, Paris, Athens. *January 2020*	Oslo, Martlesham, Patras, Madrid, Aveiro *After January 2020*	Athens, Berlin, Limassol, Malaga, Surrey *January 2020*
Interworking[2] with other ICT17 facilities[3]	Turin, Madrid, Paris, Athens *July 2020*	Oslo, Martlesham, Patras, Madrid *After January 2020*	Athens, Malaga, Surrey *After January 2020*
Integration of additional gNB to ICT-17 facility[3]	Turin, Madrid, Paris, Athens *January 2020*	Oslo, Martlesham, Patras, Madrid, Aveiro *After January 2020*	Athens, Berlin, Limassol, Malaga, Surrey *January 2020*
Edge Computing	Turin, Madrid, Paris, Athens *January 2020*	Oslo, Patras, Madrid, Aveiro, Martlesham (TBD). *After January 2020*	Athens, Berlin, Malaga, Surrey *January 2020*
Distributed Data fabric service for analytics	–	Oslo, Patras (TBD), Madrid. *After January 2020*	Athens *After January 2020*

5G PPP Verticals Cartography

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https://global5g.org/cartography

Verticals Cartography

Home » Verticals Cartography

Between 2021 and 2025, €145 billion will be invested in Europe on 5G rollouts (Source: *Mobile Economy Europe*, GSMA 2021). According to *The Impact of 5G on the European Economy* (Accenture 2021), 5G will drive €2 trillion of additional sales in Europe (EU27, plus UK), adding €1 trillion to European GDP, bringing or transforming up to 20 million jobs. This will trigger a multiplier effect, for example, for every €1 invested in 5G by the ICT industry, €1 of value will be created in the economy. Industry verticals are contributing significantly in terms of socio-economic benefits. For eample, from 2025, automotive, healthcare, transport and the utilities are forecast to generate €62.5 billion/year of direct economic benefits.

This Verticals Cartography tracks the progress of Europe's 5G Public Private Partnership (5G PPP) in developing 5G technology enablers and applications across diverse market segments through a large set of use cases, spanning proofs of concept, prototypes, demonstrations, trials and pilots to give consumers and vertical end-users tangible examples of 5G usage. Launched in September 2018, the Cartography is designed as a sustainable resource across Europe and globally with regular reports on updates and impacts of 5G use cases within the 5G PPP. These are available for June 2019, March 2020 and September 2020.

Annual showcase brochures of successful mature use cases stem from the competitions coordinated within the 5G-IA Trials Working Group. Three such brochures are available: *5G Infrastructure PPP - Trials and Pilots* published in September 2019; December 2020 and August 2021. Each year, the top ten trials and pilots are selected by WG Panel Members based on pre-defined evaluation criteria.

How to use the 5G PPP verticals cartography:

To view the many examples available, click on industry vertical, country locations, type of use case experiment and functionalities defined by the International Telecommunications Union (ITU): Enhanced Mobile Broadband (eMBB), Massive Machine Type Communications (mMTC), and Ultra Reliable Low Latency Communications (URLLC), as well as 5G technical Key Performance Indicators achieved within the 5G PPP.

Vertical Industries

- Agriculture and Farming
- Automotive across borders
- Automotive
- Broadcasting & Media
- Energy
- Health
- Industry
- Public Safety
- Satellite for Verticals
- Smart Cities - multiple verticals
- Smart Cities - indoor spaces
- Smart Cities
- Transport & Logistics

Countries

- Austria
- Denmark
- Finland
- France
- Germany
- Greece
- Ireland
- Italy
- Luxembourg

Trials and Pilots Brochures

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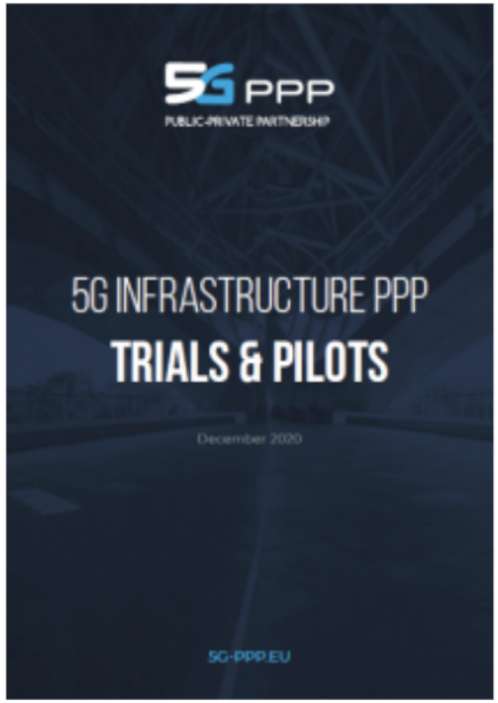
Trials and Pilots Brochures:

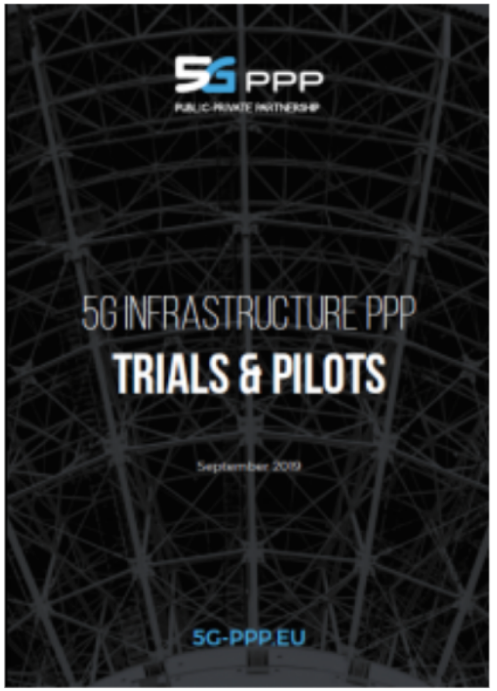
https://5g-ppp.eu/flayer-brochure/

Trials & Pilots 2021

Trials & Pilots 2020



Trials & Pilots 2019



Some considerations

Analyzing the work of 5G PPP on verticals

5G Features	Automotive	Transportation	Media	Smart City	Healthcare	Smart Factories	Energy	Public Safety	(Air)Ports	Tourism	Agrifood
Network Slicing	X	X	X	X	X	X	X	X	X	X	X
Mobile Edge Computing	X	X	X	X	X				X	X	X
Functional Split in RAN		X	X								
Advanced Security	X			X					X		
Smart network management			X	X	X		X	X			
Location services & Context Awareness	X	X	X		X	X		X	X		
5G NR capabilities	X	X	X	X	X	X	X	X	X	X	X
Softwarization	X		X		X				X		
Service chaining		X	X		X						
Traffic steering			X								
Spectrum and Coverage	X	X	X								
Guaranteed QoS	X	X		X	X	X	X				

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Source: https://5g-ppp.eu/wp-content/uploads/2020/09/5GPPP-VerticalsWhitePaper-2020-Final.pdf

Some considerations

Analyzing the work of 5G PPP on verticals

5G Features	Automotive	Transportation	Media	Smart City	Healthcare	Smart Factories	Energy	Public Safety	(Air)Ports	Tourism	Agrifood
Network Slicing	X	X	X	X	X	X	X	X	X	X	X
Mobile Edge Computing	X	X	X	X	X				X	X	X
Functional Split in RAN		X	X								
Advanced Security	X			X					X		
Smart network management			X	X	X		X	X			
Location services & Context Awareness	X	X	X		X	X		X	X		
5G NR capabilities	X	X	X	X	X	X	X	X	X	X	X
Softwarization	X		X		X				X		
Service chaining		X	X		X						
Traffic steering			X								
Spectrum and Coverage	X	X	X								
Guaranteed QoS	X	X		X	X	X	X				

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Source: https://5g-ppp.eu/wp-content/uploads/2020/09/5GPPP-VerticalsWhitePaper-2020-Final.pdf

Lessons learned

5G is not only about improving speed, delay, reliability

Modularization, dynamic chaining of virtual functions, allocation of computational and network resources i.e., flexibility is the main advantage for verticals

Work is still needed between several vertical industries and telecom solution providers to understand what is needed and what can be provided

Not all envisioned services can be supported to the fullest with 5G networks. Advanced features and new futuristic services will be addressed by 6G networks

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Source: https://5g-ppp.eu/wp-content/uploads/2020/09/5GPPP-VerticalsWhitePaper-2020-Final.pdf

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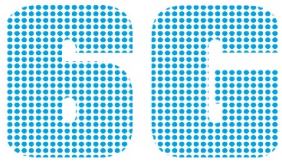
Planning for the 6G era
SNS R&I WP (1/2)

5G Evolution (40%) → evolutionary path

Stream A: Smart communication components, systems and networks for 5G mid-term Evolution systems

Stream D: Large Scale SNS Trials and Pilots with Verticals



6G (60%) → revolutionary path

Stream B: Research for revolutionary technology advancement towards 6G

Stream C: SNS experimental infrastructures

Planning for the 6G era
SNS R&I WP (2/2)

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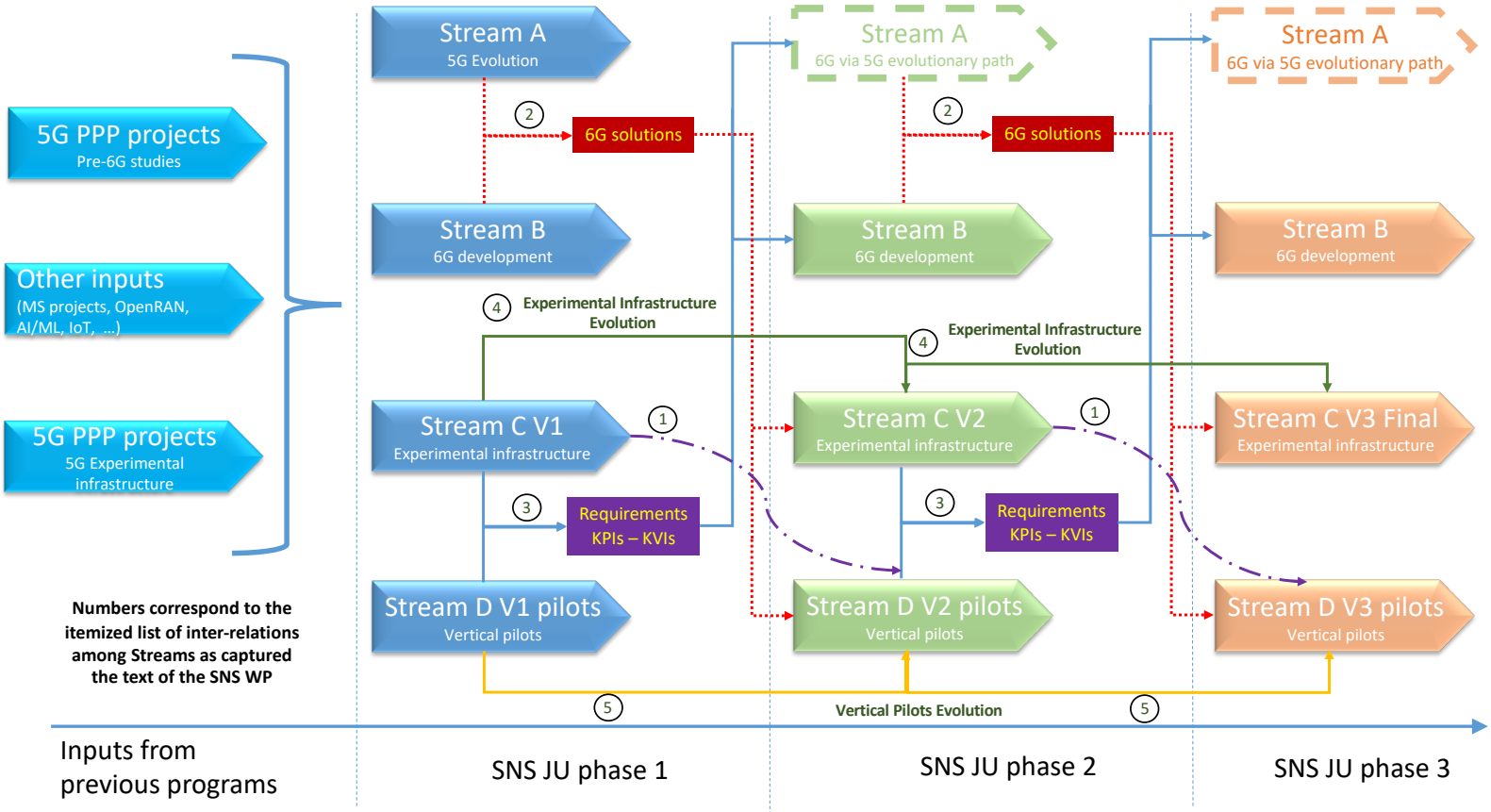

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6G SNS IA

www.6G-IA.eu

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5G PPP PUBLIC-PRIVATE PARTNERSHIP

6G SNS

The 5G PPP is co-funded by the Horizon 2020 programme of the European Union

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