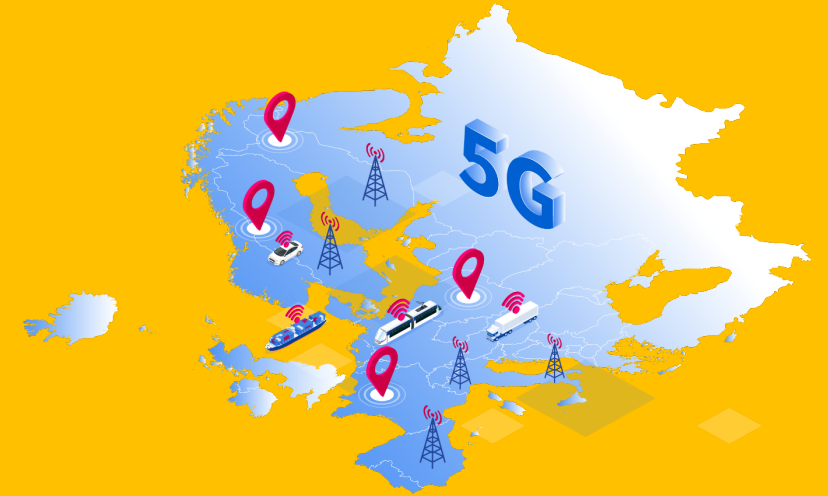


5G Coverage along Transport Corridors

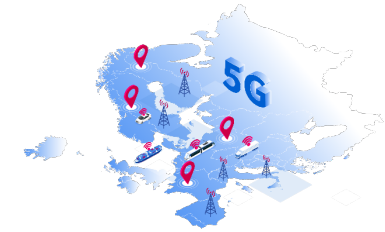


TEN-T Core Network Corridor Forum
Brussels, 13 November 2024

Bianca JITEA, Policy Officer

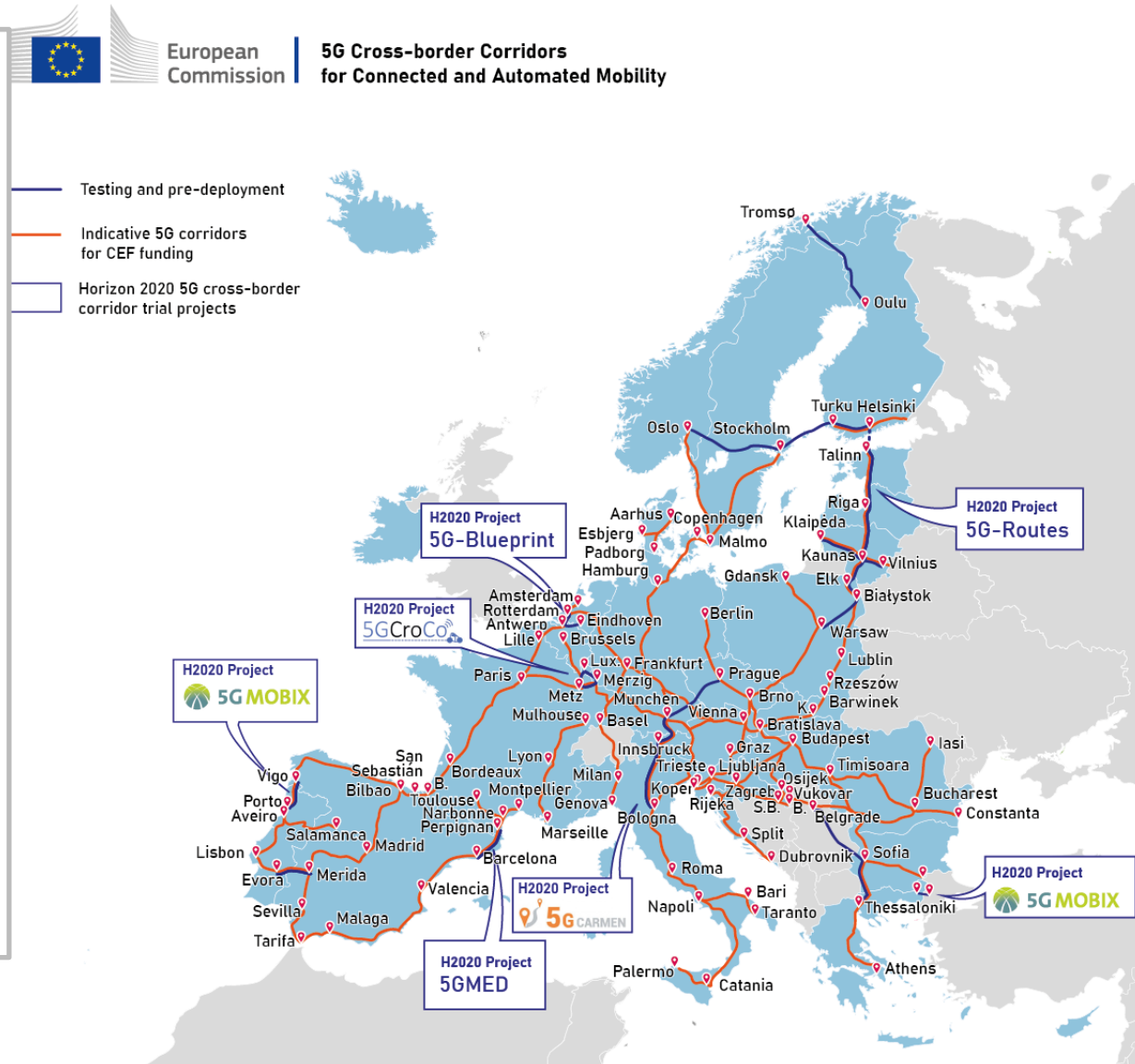
E1 Future Connectivity Systems
European Commission, DG CONNECT

5G Corridors: driving the EU Green and Digital Transition

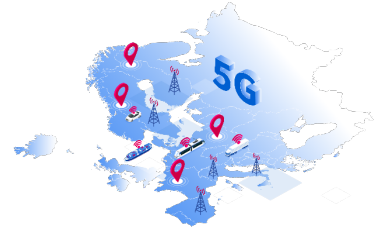


- Multi-country project (MCP) Vision: Pan-EU 5G corridors for Connected and Automated Mobility
- Private investment with public funding of cross-border and "challenge" areas
- CEF Digital
 - Objective: 26.000km transport paths along TEN-T intra-EU borders; Investment required: ~EUR 5,4 bn
 - Planned EC funding ~€800M for 5G Corridors
 - Call-1: projects launched in 2023
 - Call-2: closed, evaluation results in Q4 2023
 - **Call-3: 17 October 2023 - 20 February 2024**
- Blending or coordination with RRF, InvestEU and national programmes
- Smart Networks and Services Joint Undertaking formally tasked to coordinate Strategic Deployment Agendas(Road & Rail)

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5G Corridor Projects: CEF Digital Call 1 2022



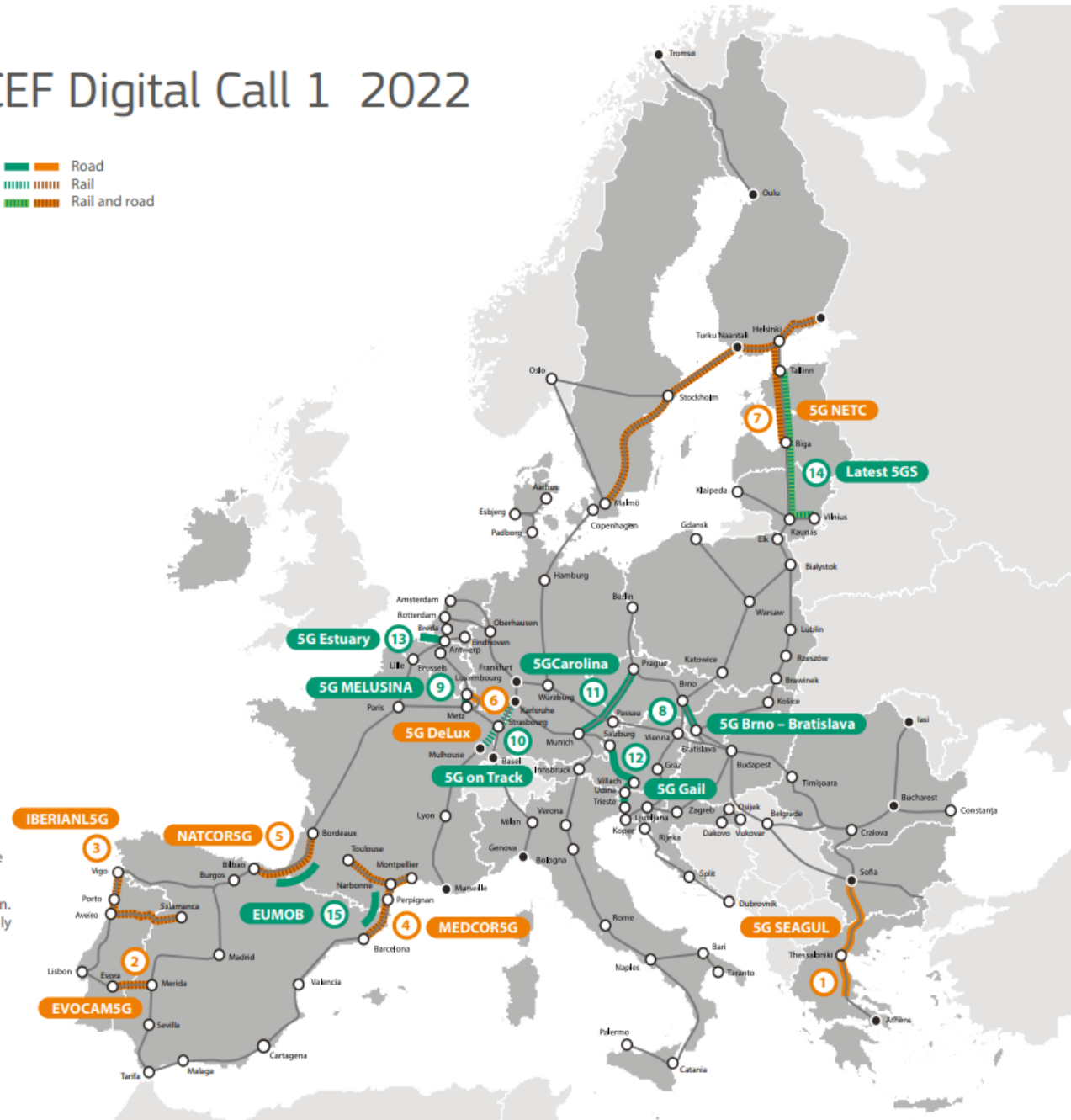
WORKS

- 1 5G SEAGUL**
Sofia (BG) to Velestino (EL)
~ 475 km
- 2 EVOCAM5G**
Evora (PT) to Merida (ES)
~ 155 km
- 3 IBERIAN5G**
Vigo (ES) to Aveiro (PT)
to Salamanca (ES)
~ 600 km
- 4 MEDCOR5G**
Barcelona (ES) to Montpellier (FR)
~ 550 km
- 5 NATCOR5G**
Bilbao (ES) to Bordeaux (FR)
~ 515 km
- 6 5G DeLux**
Frisange (LU) to GÜdingen (DE)
~ 100 km
- 7 5G NETC**
Malmö (SE) to Helsinki (FI)
to Riga (LV)
~ 2000 km

STUDIES

- 8 5G Brno – Bratislava**
Brno (CZ) to Bratislava (SK)
~ 140 km
- 9 5G MELUSINA**
Luxembourg (LU) to Metz (FR)
~ 70 km
- 10 5G on Track**
Mulhouse (FR) to Karlsruhe (DE)
~ 200 km
- 11 5GCarolina**
Prague (CZ) to Munich (DE)
~ 70 km
- 12 5G Gail**
Udine (IT) to Salzburg (AT)
~ 200 km
- 13 5G Estuary**
Antwerp (BE) to Vlissingen (NL)
~ 260 km
- 14 Latest 5GS**
Tallin (EE) to Vilnius (LT)
~ 670 km
- 15 EUMOB**
Bordeaux (FR) to Bilbao (ES)
Perpignan (FR) to Barcelona (ES)
~ 500 km

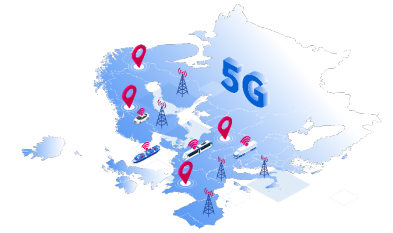
- Road
- Rail
- Rail and road



Road and rail network based on the list of 5G corridors and cross-border backbone connections identified in Part V of the Annex of CEF Regulation (EU) 2021/1153.

The GUIDE project is a Coordination Support Action funded by the European Union. Views and opinions expressed are those of the author(s) only and do not necessarily reflect those of the European Union or HADEA. Neither the European Union nor the granting authority can be held responsible for them.

5G Corridor Planning

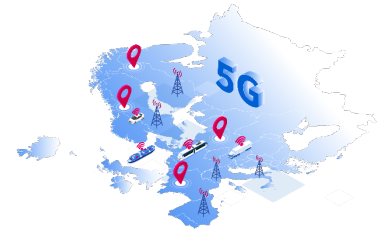


CEF Digital 5G corridor deployment calendar & planning											
Year	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	EU Budget
Early Wave	Call 1	Call Q4-Q1	Studies								42 MM €
	Call 2	Call Q4-Q1	Deployment (CEF/RRF)								
			Call Q4-Q1	Studies							28 MM €
		Call Q4-Q1	Deployment (CEF/RRF)								
1st big Wave (Call-3)			Call Q4-Q1	Studies							100 MM €
			Call Q4-Q1	Deployment (CEF/RRF)							
2nd big Wave (TBC)				Call Q1-Q2	Studies						TBC
				Call Q1-Q2	Deployment (tbc)						
Last Wave (TBC)											TBC

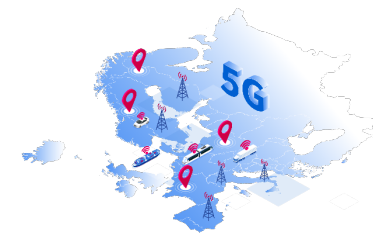
5G Corridor CEF Budget: 170 MM € for 2021-23

- Call-1 Studies and Projects launched in 2023 (8 studies & 7 works)
- Call-2 Studies & Projects will launch in 2024: winning projects to be announced in November 2023
- Call-3 : Published on 17/10/23, EU budget 100 MM € (50% co-financing)

Call 3 Objectives



- ✓ **Leverage the needed private investment** to establish a full pan-European network of 5G corridors, for road, rail and waterways, **with a focus on cross-border sections**
- ✓ **Deploy paths** following the TEN-T corridors (indicative list in Part V of CEF Regulation Annex), but not limited to
- ✓ **Attain uninterrupted coverage across borders** and along national sections of transport paths, thus enabling **service continuity** for vehicles, trains, barges etc., **on the move**
- ✓ **Provide 5G connectivity that meets stringent QoS** requirements for CAM, FRMCS, RIS and multi-service application of 5G services, including non-safety related services
- ✓ Transport modes covered: **rail, road, inland waterways and/or a multimodal** combination thereof (i.e., smart logistics use cases in multimodal logistics platforms and ports, etc.)



Call 3: What to expect?

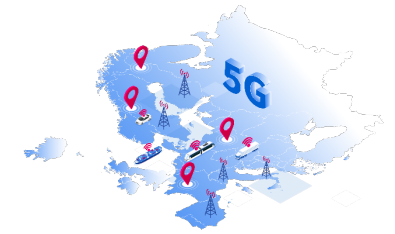
- Proposals for **deployment works** based on the 8 CEF-funded inception studies conducted as part of Call 1
- **New deployment work** proposals based on preparatory work done outside of the CEF-Digital Work Programme
- **Inception studies** to prepare the groundwork for deployment projects to be submitted in upcoming calls under the 2nd big wave in 2025

CEF Digital Budget EUR 100 million
Up to 50% co-financing for Works & Studies

Scope – 5G deployment works

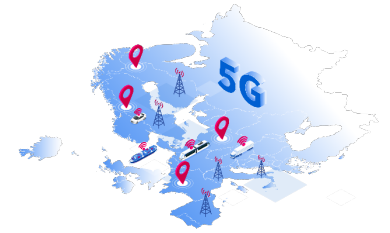
- ✓ **Investing in challenging areas** where market forces alone will not deliver needed quality of service
- ✓ Deployment/ installation of
 - ✓ **Passive network elements** including civil works: dark fibre, 5G radio stations, towers, masts and/or pylons, etc.
 - ✓ **Active network elements:** antennae, storage and computing capabilities such as network controllers, routers, switches, exchanges, edge MEC/node etc.
 - ✓ **Specific track side devices** (road, rail) for CAM use cases, such as sensors, cameras to monitor traffic, including connected road-side units
- ✓ **Studies for preparatory works**, such as network planning, to be deployed as part of proposed works **within the same application**

Consortium Composition



- ✓ Minimum 2 applicants (beneficiaries; not affiliated entities) from at least 2 Member States or a Member State & an associated/ 3rd country
- ✓ Exception: minimum 2 applicants (beneficiaries, not affiliated entities) from **at least one Member State** - when there is no terrestrial border with another Member State - 5G corridor deployment projects crossing the border into a 3rd country or terminating at a port with maritime connections to other EU Member States

Possible Consortium Members



- ✓ 5G spectrum band owners / telecom operators
- ✓ Tower companies
- ✓ Public authorities/agencies in charge of traffic and infrastructure management
- ✓ Road operators
- ✓ Rail infrastructure managers
- ✓ Original equipment manufacturers (OEM)
- ✓ Mobility service providers (such as innovative solutions providers for traffic management and intelligent transport systems)

➤ **A broad range of cooperation models**

Call requirements: deployment works

- ✓ Cross border areas – Threshold 15%, more if market failure
- ✓ Use of 5G pioneer bands
- ✓ FRMCS 900MHz and 1900MHz also in scope
- ✓ If C-ITS using 5.9 GHz is covered by the project, compatibility/analysis to be addressed
- ✓ Go beyond coverage obligations (self-declaration MNO required)
- ✓ Digital security requirements ! declarations and guarantees
- ✓ “Market failure declaration” from coordinator – no other 5G infrastructure present or credibly planned

Efficiencies and Synergies

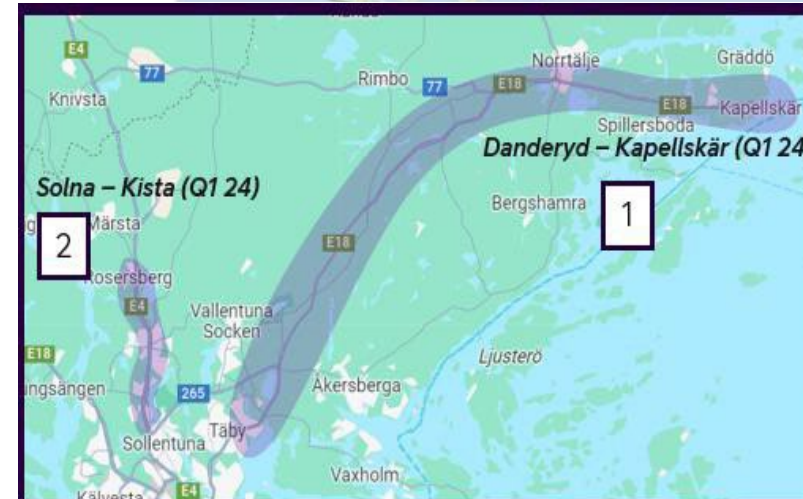
- Sharing Network infrastructure (passive/active) is encouraged to reduce costs and speed-up deployment, e.g., where road and rail transport paths run in parallel
 - Passive: Civil works, backhauling, mast, pylons, co-location
 - Active: Secure Radio Access Network (RAN) slicing for different use cases
- Integrating 5G corridors with Edge nodes and Cloud infrastructure to develop innovative mobility ecosystems and to also meet the needs of local communities on the way
- Synergies with CEF Transport could be foreseen
- Complementarity with national deployment projects covered by different instruments, such as the RRF, ESIF, or Invest EU

5G NETC: Northern European Transport Corridor

Largest 5G Corridor deployment project of ~2000km): road & rail

- Lead by Mobile Network Operators (MNOs to facilitate enabling applications and services for CAM and for Future Railway Mobile Communication Systems (FRMCS) use case solutions
- Improve cross-border network service continuity for already established services & deploy 5G infrastructure along the Northern European part of the Scandinavian- Mediterranean & North Sea-Baltic corridors to support new 5G services and applications
- Ensure dedicated capacity through High Value Connectivity for CAM and FRMCS/ Future Railway Mobile Communication Systems services & other industrial or public services with special quality requirements
- Drive 5G service and application development as an enabler of CAM and FRMCS Services to close the gap between the two layers

Consortium: **Telia** Sweden & Finland & Latvia's **Mobilais Telefons**



5G Corridors beneficial to TEN-T Development

- Deploy paths along the 9 TEN-T Corridors
- Enable seamless cross-border service interoperability and ensure business continuity (i.e., FRMCS/)Future Railway Mobile Communication System
- Serve as an innovation platform for the development of mobility ecosystems
- Deploy 5G related infrastructure in a timely fashion and a relatively low cost vs. traditional infrastructure
- Forward planning of new transport infrastructure projects is key, such as plans to install 5G passive network elements (backhauling, ducts, radio station buildings, masts, pylons)

Questions & Answers

Questions on current Call 3 to be submitted at least 10 days before call closing to: HADEA-CEF-DIGITAL-CALLS@ec.europa.eu

Questions on CEF Digital/5G Corridors: Bianca Jitea, DG CONNECT
bianca.jitea@ec.europa.eu