5G BLUEPRINT

A Roadmap for the Deployment and Governance of Teleoperated Transport

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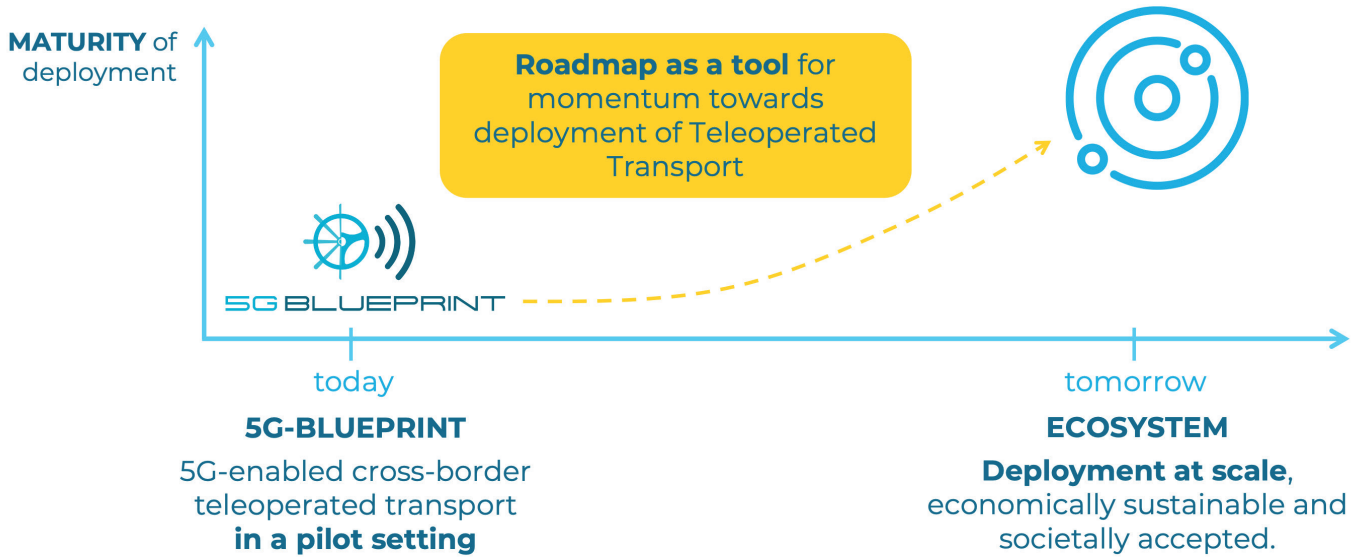
WHY A ROADMAP?

To identify the steps required to **keep the momentum** towards a healthy Teleoperated Transport Ecosystem. A healthy ecosystem will not emerge organically, but will require **coordinated action.**



WHAT IS THE DOT ON THE HORIZON?

Where do we see a healthy Teleoperated Transport Ecosystem evolve to, in the short run and the longer run?

SHORT RUN

Niche applications with a **limited geographic scope**

For example in port terminals or logistic hubs, controlled environments where robust connectivity can be put in place.

LONG RUN

Teleoperation in **symbiosis** with Automated Driving

Automated Driving as fallback for teleoperation and vice versa. Teleoperation over a more extended geographic range, though with large parts of the trajectory being driven autonomously. Direct teleoperation where connectivity is robust and where the Automated Driving system is not up to the task.

MAIN CHALLENGES

How to deal with **stringent 5G connectivity requirements?**

Network saturation issues may hamper the potential of teleoperation (TO), as it makes TO service providers reluctant to roll-out in the face of degraded service levels and spotty coverage.

How do we **ensure the operational safety** of the teleoperation setup (vehicle, control centre, operators)?

On the vehicle side, it is difficult today to commercially deploy or even pilot TO vehicles on public roads as regulation is lagging. At the same time, oversight of TO service providers is needed to keep them accountable for safety and to ultimately ensure that TO is as safe, if not safer, than on-board operation.

KEY ACTIONS ON THE ROADMAP

Make 5G networks smarter for teleoperation

Besides the expansion and densification of the 5G network, work needs to be undertaken on a smart interaction between connectivity supply and connectivity demand from TO. We also need regulatory oversight on where network conditions are good enough for deployment of TO. Finally, new customer-focused business models are needed for sophisticated TO customers of 5G services.

Introduce a standardized teleoperation licensing framework

A standardized and harmonized licensing procedure should be put in place to verify that a prospective TO service provider meets all the requirements for safe TO, related to the vehicle, control room, operator and connectivity. In that framework, service providers will be given a license to operate a particular trajectory, with a particular vehicle type and with a particular control room setup.

GOVERNANCE RECOMMENDATIONS

Avoid a teleoperation big bang

Instead make gradual changes to the current logistics ecosystem, focusing on applications where TO benefits are clear without disrupting the logistics chain.

Involve all stakeholders

TO also affects other parties such as insurers or providers of fuelling facilities so it's best to also involve them from an early stage of piloting and deployment.

TO follows connectivity

It is unlikely that TO-specific investments in 5G will be made. The potential of a TO deployment should therefore be assessed with the network as a given.

Tag along with AD

TO and Automated Driving (AD) face similar challenges. To speed up progress, put TO on the agenda of the ongoing regulatory initiatives on AD.

MORE DETAILS ARE AVAILABLE IN DELIVERABLE D3.5 ---------->

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