

# SMART CYCLING REVOLUTION

WRITTEN BY  
WIM DIJKSTRA

Europe's new **Smart Cycling Roadmap** turns bikes into a digital-first mobility solution.

From safer streets to smarter city planning, it shows how connected cycling can transform urban life and make sustainable, people-centred transport a reality.

*People cycling in  
Utrecht, The Netherlands*  
[luci.design](#), Shutterstock

The recently released [European Roadmap for Smart Cycling](#) outlines a clear and compelling strategy for integrating digital tools into cycling infrastructure and policy across Europe. It is more than a wishlist of tech upgrades—it is a blueprint for transforming how cities approach cycling as a serious, data-driven part of the transport mix.

What makes this roadmap significant is not just the technology it describes, but the way it reframes cycling in the context of connected mobility. For too long, cycling has been treated as low-tech and low-priority: this roadmap shifts the narrative, positioning bikes not as an afterthought in mobility planning, but as fully integrated components of smart transport networks.

This roadmap reflects the insights, ideas, and strategic vision generated through two European-funded projects in cycling and intelligent transport systems (ITS): [MegaBITS](#) and [Meridian](#). Contributions from project partners and external stakeholders ensured a broad representation, diverse perspectives, and practical guidance for the proposed next steps.

## A missing link

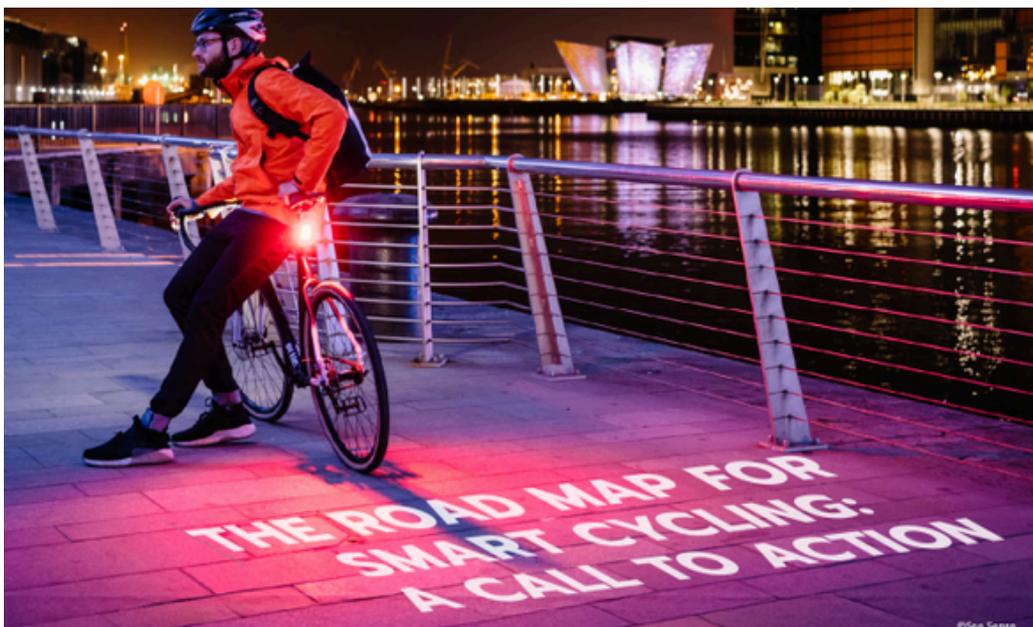
At its core, smart cycling refers to the use of intelligent systems—like real-time traffic data, connected devices, and cooperative safety alerts—to improve the experience, safety, and practicality of cycling. It is the cycling equivalent of the digital infrastructure already commonplace for motor vehicles. That means things like apps that adjust traffic lights in favour of cyclists, digital incentives for commuting by bike, and warning systems for hazardous road conditions. It also means using floating bike data and infrastructure sensors to build more responsive, evidence-based policy at the city level.

## The impact on cycling

The [roadmap](#) arrives at a critical moment. Cities are under pressure to reduce emissions, cut congestion, and reclaim public space from cars. E-bikes adoption continues to grow, cycling is rising in political relevance, and climate targets must be adhered to.



*Cycling in a city*  
[VTT Studio](#), Shutterstock



*The roadmap for smart cycling*  
See.Sense

Yet, while cars get connected systems and real-time data flows, cycling has largely been left out of the digital conversation.

This roadmap changes that: it sets out a path for integrating smart cycling into existing transport frameworks, making sure that cycling is not just safer or more convenient, but fully connected. If successful, it could help rebalance urban transport systems by making the bike not just viable, but the preferred mobility option.

What is more, the roadmap does not overpromise: it acknowledges barriers, such as fragmented data, funding gaps, privacy concerns, and the slow pace of regulatory change. If that was not enough, it also makes a persuasive case that none of these are deal-breakers: with coordinated effort, smart cycling can truly unlock major gains in safety, sustainability, and urban quality of life.

## Next steps

At a time when cities are rethinking how people move, this roadmap makes a simple but overdue point: cycling deserves the same digital investment and strategic attention as any other mode of transport. If cities want healthier, safer, and more efficient mobility systems, making cycling smarter is not a ‘nice to have’—it’s a ‘must have’.

## Roadmap breakdown

### Make smart cycling a policy priority

Smart Cycling should be embedded prominently in both active mobility and smart mobility policies at all government levels. The European Commission (EC) can lead by requiring smart cycling as a mandatory part of Sustainable Urban Mobility Plans (SUMP) for urban nodes and as part of the program for the 100 climate-neutral cities. Additionally, smart cycling should be integrated into revisions of relevant Directives and Delegated Regulations, such as the [ITS Directive](#), and the regulations on [Safety-Related Traffic Information \(SRTI\)](#), [Real-Time Traffic Information \(RTTI\)](#), and [Multimodal Travel Information Services \(MMTIS\)](#). National cycling plans should include smart cycling sections, and regional and local cycling plans should consider opportunities offered by these solutions.

### Foster innovation and digitalisation in cycling

European and national smart mobility funding schemes should allocate dedicated budgets for the research, development, piloting, and deployment of smart cycling solutions (ITS and C-ITS), with minimum technical requirements to ensure seamless cross-European services. These solutions can target cyclists directly or indirectly benefit them through public authorities.

They may enhance cyclists' safety, reduce congestion, improve health, or boost urban liveability. Special attention should be given to developing guidelines for safe product and service design (HMI) to prevent cyclist distraction in traffic.

### **Enable smart cycling through data collection and standardisation**

The EC should require Member States to submit national cycling data action plans. Authorities should collect more and better cycling data—including floating bike data—by using smart counting and other measurement tools and make it widely accessible, preferably free, via National Access Points and the European Mobility Data Space. Current standards for cycling data (such as infrastructure, counting, parking, real-time data and more) remain limited. Initiatives like [NAPCORE](#) have begun standardisation, but these efforts should be intensified. Attention must also be paid to data quality, privacy, and security related to collecting and sharing cycling data.

### **Raise awareness and build a smart cycling ecosystem**

The EC should support the creation of a European Smart Cycling organisation or platform to act as a catalyst for research, innovation, deployment, and knowledge-sharing. This smart cycling ecosystem should bring together small cycling and ITS companies, research institutes, universities, cyclist organisations, and local, regional, and national authorities. Cooperation with other relevant existing platforms, such as [NAPCORE](#) (data standardisation) and [C-ROADS](#) (C-ITS specifications), is essential. Additionally, regular high-level political dialogues on smart cycling should be organised to drive uptake and integration at administrative levels.

## Putting the 'road' in roadmap

The [BITS \(Bicycles and Intelligent Transport Systems\) project](#) was a four-year Interreg North Sea Region initiative (2019–2022) aimed at promoting cycling

through Intelligent Transport Systems (ITS). It delivered over 30 projects across five countries, developed digital tools such as the [CycleDataHub](#) and [BITS Directory](#), and built a community of more than 1,000+ stakeholders. These innovations supported better infrastructure planning and informed policy development, with the ultimate goal of increasing cycling uptake and reducing emissions. In October 2024, [BITS was awarded the prestigious European REGIOSTARS award in the 'Connected' category.](#)

Building on BITS, the MegaBITS project takes a more strategic and standardised approach. The [province of Overijssel](#), the Netherlands, continues as lead partner, while new partners, including the cities of Copenhagen and Hamburg, have joined. MegaBITS expands core tools such as the Cycle Data Hub and BITS Directory, aligning data practices with NAPCORE and the EMDS. It also incorporates new data types—floating bike data, radar, GPS, and camera data—and collaborates with the CEF-funded Meridian project, establishing a Smart Cycling Task Force and co-developing a roadmap for smart cycling across Europe.

MegaBITS will conclude in 2026, but the work is far from complete. Cycling data is increasingly integrated into ITS and cycling policies, including the ['European Declaration on Cycling'](#) (2024). However, the value of digital ITS solutions for cyclists themselves—enhancing the infrastructure they use daily—is still not fully recognised. Indeed, smart cycling has yet to reach the same level of visibility and integration as smart vehicles. The roadmap for smart cycling, alongside [the other outputs of BITS and MegaBITS](#), aims to bridge this gap and take the next step toward a fully connected cycling ecosystem.

*Cycling traffic signal shows green light, indicating safe passage for cyclists along the designated bike lane on city street*

*Lana P, Shutterstock*

