

### Confederation of the European Bicycle Industry

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## CONEBI White Paper on the Role of C-ITS/CCAM for the Road Safety of Cyclists

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## Acronyms used

- B2I Bicycle to Infrastructure
- B2V Bicycle to Vehicle
- **CIE** Cycling Industries Europe
- **C-ITS** Cooperative Intelligent Transport Systems
- **CONEBI** Confederation of the European Bicycle Industry
- CCAM Connected, Cooperative and Automated Mobility
- EPAC Electrically Power Assisted Cycle
- ERTRAC European Road Transport Research Advisory Council
- ECF European Cyclists' Federation
- ETSC European Transport Safety Council
- ETSI European Telecommunications Standards Institute
- EU European Union
- **GSR** General Safety Regulation
- ITS Intelligent Transport Systems
- SAE Society of Automotive Engineers
- SRIA Strategic Research and Innovation Agenda
- **UN** United Nations
- **UNECE** United Nations Economic Commission for Europe
- VRUs Vulnerable Road Users
- WBIA World Bicycle Industry Association

## What is C-ITS and CCAM

Intelligent Transport System (ITS) is a term used to describe a wide range of initiatives in the mobility sector, mostly featuring some aspect of connectivity, digitalization or data management. C-ITS stands for Cooperative Intelligent Transport Systems. These systems utilize various communication technologies to enable vehicles to communicate with each other and with roadside infrastructure. The goal is to improve road safety, traffic efficiency, and overall transportation effectiveness by sharing real-time information among vehicles and infrastructure. C-ITS technologies can include vehicle-to-vehicle (V2V), vehicle-to-infrastructure (V2I), and vehicle-to-everything (V2X) communication. Connected, Cooperative and Autonomous Mobility (CCAM) is a crucial part of the Intelligent Transport Systems' ecosystem.

The EU says "Intelligent Transport Systems (ITS) are vital to increase safety and tackle Europe's growing emission and congestion problems. They can make transport safer, more efficient and more sustainable by applying various information and communication technologies to all modes of passenger and freight transport. Moreover, the integration of existing technologies can create new services. ITS are key to support jobs and growth in the transport sector."<sup>1</sup>

Such developments have high potential to form transformation and disruption of mobility and they have attracted very significant political and institutional support, in terms of funding, research and investment. It is very important for the cycling sector to be active in these fields because the emerging policy frameworks, standards and infrastructure can have a big impact on whether people cycle more or less, and on the climate for cycling businesses in the future.

Importantly, C-ITS and CCAM can lead to increased road safety for cyclists and other Vulnerable Road Users (VRUs) by creating more user-centred and inclusive mobility systems. The CCAM technological developments could also significantly contribute to reducing traffic congestion and improve the environmental impact of everyday mobility. The bicycle industry has been actively involved in the CCAM work, contributing its expertise and collaborating with both the industry and European as well as international institutions on a pre-competitive level. CONEBI recognizes that new technologies facilitated by the C-ITS and CCAM developments pose a unique opportunity for the bicycle industry, reinforcing emerging Mobility as a Service, multimodal and shared mobility solutions as well as potentially revolutionizing road safety for all.

<sup>&</sup>lt;sup>1</sup> https://ec.europa.eu/transport/themes/its\_en

In particular, it is essential that rider-oriented product developments (services and devices) that have the potential to integrate with CCAM, for example in detection and behavioural analysis, are synergised. Similarly, there are multiple needs for consistency in data use and exploitation. A typical example is that digital tools developed for automated vehicle navigation will depend on the same mapping that is used to route cyclists. Also, the map material used by cyclists and cars needs to become more consistent; as of today, many maps used by cars do not yet include cycle paths in an adequate manner that would be needed to be the basis to manage interactive scenarios.

At the moment, the first bike CCAM use cases are being established, like several "green wave" installations (in which approaching cyclists equipped with corresponding smartphone apps trigger green light for cyclists<sup>2</sup>), and other companies announced to deploy V2X devices for bicycles, aiming to enable first interactive use cases with cars (like mutual awareness notifications) based on direct communication<sup>34</sup>. Still, more research, testing and demonstrations are needed in order to reach the technology readiness levels necessary for the wide implementation of additional C-ITS and CCAM solutions. It is crucial that the voice of the bicycle industry is represented and helps shape future mobility technologies and services.

<sup>&</sup>lt;sup>2</sup> https://schwung.nu

<sup>&</sup>lt;sup>3</sup> https://www.commsignia.com/products/obu-lite

<sup>&</sup>lt;sup>4</sup> https://www.spokesafety.com

# **Bicycle Industry and CCAM**

The Bicycle Industry, represented by CONEBI – Confederation of the European Bicycle Industry, has been involved in the CCAM work at the EU level, bringing forward its knowledge and positions within the EU CCAM Single Platform followed by the EU CCAM Partnership, 5GAA as well as via WBIA – World Bicycle Industry Association at the UNECE. This White Paper focuses on the safety aspects; exploring how the connectivity technologies, communication between the vehicles and vehicles and infrastructure can play a crucial role in making the roads safer.

In order to provide advice and support in the field of CCAM, the European Commission set up a group of experts called the <u>EU CCAM Single Platform</u>. At the first plenary meeting of the EU CCAM Single Platform in June 2019, CONEBI was appointed an expert member of the Platform, representing the bicycle industry. This single EU-wide platform grouped relevant public and private stakeholders to coordinate open road testing of CCAM and focus on a range of pre-deployment activities such as validation.

In 2021, the <u>EU CCAM Partnership</u> emerged out of the EU CCAM Single Platform, again co-Programmed with the European Commission in the Horizon Europe Framework. The EU CCAM Partnership followed up with the Strategic Research and Innovation Agenda (SRIA), a comprehensive roadmap for the implementation of the strategic objectives developed within the EU CCAM Single Platform. The SRIA is the result of a process in which all partners collaborated to link the vision of the Partnership to a portfolio of R&I actions, reflecting major technological advancements, emerging opportunities, and challenges.

Furthermore, CONEBI signed a memorandum of understanding with <u>5GAA</u> in the spring of 2020, a cross-industry organisation of companies from the automotive, technology, and telecommunications industries, working together to develop end-to-end solutions for future mobility and transportation services. CONEBI was particularly active in the work related to VRUs, one of the key priorities of 5GAA.

CONEBI also works within WBIA and has been actively engaged in regulatory work at the UNECE level. This includes work within committees such as the Working Party on General Safety Provisions (GRSG), the Working Party on Automated/Autonomous and Connected Vehicles (GRVA) and other platforms such as the Global Forum for Road Traffic Safety. It is crucial that the bicycle industry is involved in the technical discussions, as increasingly, the regulations adopted at the UNECE level often find their way into the EU legislation. For example, this has been the case for the UN regulations on Blind Spot Information System to detect bicycles as well as for the one on Advanced Emergency Braking Systems – we see the results of the C-ITS/CCAM discussions saving cyclist lives.

The main priority of the bicycle industry is enhanced road safety for cyclists everywhere. Achieving this goal involves a multifaceted approach:

- Advocating within the EU CCAM Partnership for cyclist-centric topics and proposals in funding streams like Horizon Europe.
- Making use of the industry's expertise in C-ITS/CCAM research and solutions to influence project outcomes, ensuring future-proof results aligning with road safety and broader shifts towards greener transport.
- Engaging with policymakers to lay the legislative groundwork, advocating for cyclist-friendly legislation within initiatives such as the EU ITS Directive revision and UNECE regulatory work.
- Actively promoting cycling and the bicycle industry's role, advocating for their inclusion in discussions surrounding C-ITS/CCAM.
- Supporting efforts aiming to promote a cross-industry standardization and deployment of ICCAM technologies, which is required to enable interactive use cases with bicycles and other traffic participants such as cars or intelligent infrastructure.

CONEBI closely collaborates with partners from the cycling ecosystem in Europe like CIE and ECF, coordinating work and advocacy activities linked to ITS. CIE and ECF have extensively focused on topics like development of cycling data hubs, further promotion of Mobility as a Service and bike sharing solutions, using ITS to advance the benefits for cycling and accelerating the modal shift. The CONEBI White Paper on the Role of C-ITS/CCAM for More Road Safety also greatly benefits from their expertise and feedback provided in the development process.

# **Safety of Cyclists**

According to an ETSC study<sup>5</sup>, in 2018, approximately 2160 cyclists were killed in the EU, accounting for 8% of all road deaths. While the percentage seems relatively low, the risk that a cyclist will be seriously injured or killed per kilometre travelled is estimated to be approximately 23 times higher than for a car driver.<sup>6</sup> In addition to this, we know that there is a huge number of less serious accidents involving cyclists, many of them go unrecorded, as police is often not called in.<sup>7</sup>

It is especially alarming that while there have been significant reductions in casualties among pedestrians (-19%) and drivers (-24%) since 2010, cyclist deaths have not decreased at all.<sup>8</sup> This trend can be explained by combination of several factors. Most importantly, there has been an increase in cycling and more kilometres travelled thanks to the embrace of EPACs. The dissemination of EPACs also enabled comparatively older and therefore more vulnerable cyclists to start or continue riding. Statistics show that almost half of all the cyclists killed on European roads are 65 years old or older, pointing to the necessity of providing more safety for all.<sup>9</sup>

Alarmingly, 83% of all cyclist deaths in the EU are linked to an impact with a motor vehicle<sup>10</sup>; and yet, most CC-ITS/CCAM solutions have focused on the safety of the motor vehicles – often disregarding other road users.

New developments within C-ITS/CCAM must therefore contribute to more road safety as well as more confidence for cyclists – it is a well-known fact that many people are deterred from cycling by safety concerns<sup>1112</sup>. C-ITS/CCAM can also play a crucial role in enhancing the riders' safety by supplementing safe cycling infrastructure by technological solutions.

As mentioned above, the numbers of active cyclists have nevertheless been rising, with an extra boost during the pandemic lockdowns, when many

<sup>&</sup>lt;sup>5</sup> https://etsc.eu/how-safe-is-walking-and-cycling-in-europe-pin-flash-38/

<sup>&</sup>lt;sup>6</sup> https://ieexplore.ieee.org/document/9304621/reference#references

<sup>7</sup> https://etsc.eu/an-overview-of-road-death-data-collection-in-the-eu-pin-flash-35/

<sup>&</sup>lt;sup>8</sup> https://etsc.eu/how-safe-is-walking-and-cycling-in-europe-pin-flash-38/

<sup>&</sup>lt;sup>9</sup> https://road-safety.transport.ec.europa.eu/system/files/2022-03/FF\_cyclists\_20220209.pdf

<sup>&</sup>lt;sup>10</sup> https://etsc.eu/urgent-action-needed-to-tackle-deaths-of-pedestrians-and-cyclists/

<sup>&</sup>lt;sup>11</sup> https://ecf.com/files/wp-content/uploads/2011/10/ECF\_Road\_safety\_charter.pdf

<sup>&</sup>lt;sup>12</sup> https://ec.europa.eu/regional\_policy/sources/docgener/work/012020\_low\_carbon\_urban.pdf

discovered the benefits of riding for the first time. Cycling is an excellent activity contributing to people's health, alleviating traffic pollution in cities as well as providing substantial gains in the field of sustainability and CO2 reductions and bringing considerable financial benefits to our society; and by putting emphasis on road safety, it is becoming more accessible to everyone.

## **Priorities for the Industry**

In addressing the critical issue of road safety for cyclists, the bicycle industry faces several key priorities and technical constraints. The advancement of technology offers promising solutions, yet the expectation for Vulnerable Road Users (VRUs) to adopt connectivity tools poses inherent challenges. As technology evolves, the industry advocates for the freedom of choice for VRUs in utilising technological advancements, emphasising that any imposed requirements risk attributing blame to unequipped VRUs and compromising overall road safety. However, embracing technological innovations holds potential to significantly enhance safety for those who opt to utilise them. The industry seeks to harness the increasing connectivity of VRUs through smartphones and specialised solutions. Moreover, our industry is exploring C-ITS/CCAM solutions aimed at safeguarding VRUs, complementing efforts for mandatory bicycle detection technologies in motor vehicles. Alongside these pursuits, ensuring access to comprehensive and accessible datasets remains a priority, essential for the development of effective C-ITS/CCAM applications.

### Technical restrictions that cyclists face

VRUs cannot be mandated nor expected to be equipped with connectivity tools.

As the technology is progressing and bicycle-to-vehicle as well as bicycle-toinfrastructure connectivity options become more and more advanced it should be noted that VRUs should always be free to decide whether they want to use any technological devices, in a similar way as they have the freedom to wear reflective clothing or a helmet or drive with day-light on.

Any other arrangement has the potential to lead to victim-blaming of the unequipped VRUs. The inclusion of extra technological features in motor vehicles might also result in drivers relying excessively on safety features and being less attentive to Vulnerable Road Users (VRUs), posing an elevated risk to the safety of VRUs. Experiences with similar introductions of safety features such as AEB, ABS, ESP etc showed that the overall benefits of such safety systems far exceed the related risk of driving less carefully due to too much trust in technical systems.

Cyclists who choose so should be able to benefit from the technological developments that can enhance their safety. The opportunities of more and more VRUs being connected (e.g., via smartphone or dedicated connectivity solutions on e.g. bikes) should be seized.

Especially since some information about the VRUs can easily or better be determined by the VRU device, but not that easy or not with high confidence from entities only observing the VRUs, such as the type of rider, path prediction, acceleration, speed and rider actions like braking. The technologies in this field are swiftly developing and the bicycle industry is always ready to explore new ways of protecting VRUs with the help of C-ITS/CCAM solutions. These technologies will complement and potentially support technologies on the motor vehicle that can detect bicycles, which should become mandatory as soon as possible. For example, regulatory work on Blind Spot Information Systems for trucks has already become mandatory. Similarly, Advanced Emergency Braking Systems will become a mandatory built-in feature for road vehicles as of July 2024.

### Availability of datasets

For long, detailed data on cycling infrastructure and movement has been either incomplete or missing. This is a major gap, as high-quality and accessible data on cycling and other VRUs is key to the development of C-ITS/CCAM applications.

The datasets used in C-ITS/CCAM research should include information about the dedicated infrastructure and places to get on/off it as well as use patterns on the roads, especially at critical points such as junctions. For example, if a cycling lane is present on the road, the connectivity solutions should not only take it into consideration, but also account for cyclists that might merge into traffic to overtake an obstacle (typically a car blocking the bicycle lane) or to make a turn.

Additional data can be collected through collection campaigns among volunteering cyclists<sup>13</sup>.Information can also be gathered from fleets and infrastructural solutions such as bicycle counters and traffic cameras.

Data recording via new technologies or data arising from road accidents (and near-misses) should be available to public bodies for the purposes of accident investigation and be legally admissible. For example, the growth in camera data is proving valuable information in defending cyclists from dangerous close passes and assaults in some countries. Access to motor vehicle data from CCAM technology can be a valuable resource for these situations in the future, along with voluntary data from VRUs.

<sup>13</sup> https://www.bikedataproject.org/about

### Include relevant use cases involving cyclists in research and solutions

In general terms, accidents often happen at intersections. The common ones include a cyclist crossing from the nearside or a cyclist crossing from the far side at intersections and mid-block accidents that often prove to be more severe. Further use cases that have been identified as especially high-risk for cyclists are linked to driver blind spots when leaving a parking space and doing right turns as well as to door openings in case of parallel parking. Dangerous overtaking can also lead to accidents involving cyclists.

In a lot of the cases, a motor vehicle is involved that detects the cyclist too late. Among the reasons for bicycle-to-vehicle accidents are obstructions blocking the view. These obstructions are especially prevalent when a cyclist is crossing from the near or far side. Other major causes are distracted driving or one of the participants of the crash not adhering to the local traffic rules.

It is important to note that the use cases differ geographically. For example, countries with a less developed infrastructure have more accidents at midblock locations (e.g. Italy, US). Those types of accidents were less prevalent in the Netherlands where segregated cycle paths, that have proven to reduce severity of injury, are more common. Instead, Dutch people experience bicycle accidents primarily with cyclists crossing from the near or far side.

These and other considerations should be covered in the demonstrations and research in order to account for the full range of traffic situations; the bicycle industry is confident that CCAM technologies could soon contribute to making roads a safer place for cyclists.

### Take into account different characteristics of urban and suburban/rural safety considerations.

57% of cyclist casualties in the EU occur in urban environments. However, there are significant variations among different countries, with 75% of cycling deaths in urban areas in Romania vs. only 33% in Latvia<sup>14</sup>. C-ITS/CCAM solutions should be able to differentiate between the urban, suburban/rural environments and their different specifications. Especially the urban environments are characterized by a great complexity of mobility infrastructure as well as diversity of road users. Municipalities have been increasingly embracing new approaches to mobility and embedding them in the urban space.

<sup>&</sup>lt;sup>14</sup> https://etsc.eu/how-safe-.is-walking-and-cycling-in-europe-pin-flash-38/

There is a growing tendency to reduce speed to 30 km/h in built areas; a recent successful example is the city of Brussels. Furthermore, the concept of cycle streets is growing in popularity, with priority of cycling over cars; spaces with shared mobility are becoming a norm. Such innovations lead to reduced risk of accidents thanks to slower speeds and more stops; but from a C-ITS/CCAM perspective, also lead to less predictable movement of people in urban space. On the contrary, the suburban and rural areas are often characterized by higher vehicle speeds and less complexity; with higher speeds leading to more serious cyclist accidents<sup>15</sup>. Such differences and new trends need to be accounted for in C-ITS/CCAM research and applications to make them correspond to future mobility trends.

### Specificities of cyclist movement and position must be considered

According to relevant research, various technologies could predict cyclist movement within 1-2.5 seconds in advance.<sup>16,17</sup> To become applicable, it is crucial that all the modalities of cyclists movement are factored in the calculations of their possible trajectories. Compared to pedestrians, cyclists' movement is faster, but also less flexible – changing direction takes longer and the movement dynamic can thus be predicted with greater accuracy. However, cyclists can nevertheless make sudden movements to the sides when avoiding obstacles on the ground or on the roads. Compared to motorbikes, bicycles are slower and typically cannot match the speed of cars and trucks; unlike motorbikes, they can also use dedicated cycling infrastructure. Movement patterns and user behaviour might furthermore be influenced by weather conditions and other factors.

The technological solutions should also account for position of cyclists on the road. Cyclists, unlike pedestrians, often share the same space with cars and switch from infrastructure dedicated to cyclists to roads and back. Cyclists can also often change their 'status'; they can walk their bikes and become pedestrians and switch back at any moment. Infrastructure use is only mandatory in a limited number of countries and even then cyclists are allowed to leave the infrastructure due to obstacles, safety issues or to ride in groups. Simulations and research must take such different characteristics into account, treating cyclists as a distinct object class.

<sup>&</sup>lt;sup>15</sup> Isaksson-Hellman I. (2012). A study of bicycle and passenger car collisions based on insurance claims data. Annals of advances in automotive medicine. Association for the Advancement of Automotive Medicine. Annual Scientific Conference, 56, 3–12.

<sup>&</sup>lt;sup>16</sup> https://pure.tue.nl/ws/portalfiles/portal/90073596

<sup>&</sup>lt;sup>17</sup> https://www.kidatatooling.de/fileadmin/KI\_DataTooling/Downloads/Cyclist\_Motion\_State\_Forec asting.pdf

### C-ITS/CCAM cannot replace safe cycling infrastructure

CCAM solutions and research cannot replace the development of safe physical cycling infrastructure. Similarly, road safety legislation and efforts to make mobility safer for everyone cannot rely on connectivity solutions only. Technological developments should be a complementary tool in increasing road safety; lower speeds, better enforcement of legislation, awareness-raising and better infrastructure should remain the priority for the policymakers.

## **Relevant legislation and standards**

### **European Legislation**

#### ITS Directive

 The ITS Directive has been the key piece of European legislation on ITS since 2010. In 2023 it underwent a revision that was finally adopted in October 2023. CONEBI welcomed the proposal, as the ITS Directive revision includes some of the important postulates advocated for by the bicycle industry regarding the VRUs and emphasizes the crucial role of Mobility as a Service (Maas) and CCAM in the future.

#### General Safety Regulation (GSR)

• The General Safety Regulation (Regulation (EC) No 661/2009)) sets out safety technologies and design features that must become standard for all new vehicles sold by defined dates (dates vary depending on vehicle type and technology). The purpose is to ensure that all new vehicles sold exploit the full potential of safety features on the market and to prevent such technologies from being reserved only for a few luxury models. GSR paved way for CCAM strategies, focusing on accident avoidance, pedestrian and cyclist protection and improving road safety. It is especially important to note that the Regulation heavily relies on international regulations negotiated at the UNECE level, with CONEBI presence. For example, the GSR includes provisions on Intelligent Speed Assistance, Advanced Emergency Braking, Direct Vision and Blind Spot Information System all of which are based on UN regulations. Finally, we already know that GSR will be reviewed in 2027 and we will make sure to use the opportunity to improve it even further.

#### The New Urban Mobility Framework

 On 14 December 2021, the European Commission presented its new Urban Mobility Framework. The bicycle industry welcomed the document, as active mobility plays a prominent role, and a full chapter is dedicated to cycling which is further elaborated in the more detailed staff working document. The chapter on cycling in particular highlights the multitude of benefits of cycling and mentions the adoption of the first-ever Pan European Masterplan for Cycling Promotion to which CONEBI also contributed. Importantly, the Urban Mobility Framework paves the way for further deployment of ITS solutions in European cities, recognizing the need to accelerate integration between modes of transport and collection of urban mobility data, including on modal share.

### **International Legislation**

- UN Regulation No. 151 on Blind Spot Information System for the Detection of Bicycles
- UN Regulation No. 152 on Advanced Emergency Braking System (AEBS)
- UN Regulation No. 158 on Devices for means of rear visibility or detection
- UN Regulation No. 159 on Moving Off Information System (MOIS)
- <u>UNECE ITS Roadmap</u> (only framework and not binding)

#### Standards

- ETSI Cooperative Awareness (CA) framework:
  - ETSI TS 103 900 V2.1.1 (2023-11): Intelligent Transport Systems (ITS); Vehicular Communications; Basic Set of Applications; Cooperative Awareness Service; Release 2
  - ETSI EN 302 637-2 VI.4.1 (2019-04): Intelligent Transport Systems (ITS);
    Vehicular Communications; Basic Set of Applications; Part 2:
    Specification of Cooperative Awareness Basic Service
- ETSI VRU Awareness framework:
  - <u>ETSI TR 103 300-1 V2.3.1 (2022-11)</u>: Intelligent Transport Systems (ITS); Vulnerable Road Users (VRU) awareness; Part 1: Use Cases definition
  - ETSI TS 103 300-2 V2.2.1 (2021-04): Intelligent Transport Systems (ITS); Vulnerable Road Users (VRU) awareness; Part 2: Functional Architecture and Requirements definition
  - ETSI TS 103 300-3 V2.1.2 (2021-04): Intelligent Transport Systems (ITS);
    Vulnerable Road Users (VRU) awareness; Part 3: Specification of VRU awareness basic service
- <u>ETSI TR 103 562 V2.1.1 (2019-12)</u>: Intelligent Transport Systems (ITS); Vehicular Communications; Basic Set of Applications; Analysis of the Collective Perception Service (CPS)
- SAE Personal Safety Message (PSM) Minimum Performance Requirements: J2945/9

#### **Relevant Actors**

ETSI ITS Committee

<u>SAE</u>

5GAA

Car2Car

<u>ERTRAC</u>

### Platforms within UNECE that CONEBI engages in:

Inland Transport Committee (ITC)

World Forum for the Harmonization of Vehicle Regulations (WP.29)

Working Party on Automated/Autonomous and Connected Vehicles (GRVA)

Working Party on General Safety Provisions (GRSG)

Global Forum for Road Traffic Safety (WP.1)

Working Party on Transport Trends and Economics (WP.5)

## **Goals of the Industry**

With the road safety of cyclists in mind, CONEBI is a voice of the bicycle industry in the C-ITS/CCAM ecosystem. The aim is to use the CONEBI involvement within the EU CCAM Partnership to open more funding opportunities within the Horizon Europe projects and beyond for the bicycle industry and wider community and to make sure that research, standardization and solutions reflect the cyclists' needs. Another goal is to support a coordinated deployment of C-ITS/CCAM use cases, including adequate standardization. It is necessary to strive for more attention for the bicycle industry and cycling in the context of CCAM; be it at the legislative or at a policy point of view. Implementation of the GSR, regulatory work at the UNECE level, advocating for the best possible outcome within the revision of the ITS Directive or better infrastructure are just some of the important topics in which the bicycle industry needs to be heard.

The bicycle industry understands the role of the automotive and automotive suppliers' industry in the C-ITS/CCAM developments. However, it is crucial to strive for inclusiveness of all modes of mobility and all road users, particularly the vulnerable ones like cyclists in all future work. Furthermore, it is just as important to follow the ongoing developments on B2V and B2I communication – and make sure that, on the one hand, cyclists are never required to be equipped with the new technological tools, but on the other hand hand, allow cyclists willing to adopt to new technologies to profit from the benefits. CONEBI is a relevant partner that is always ready to discuss the best possible outcome for all the stakeholders, while advocating for cycling and cyclists everywhere.



### Confederation of the European Bicycle Industry

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We would like to extend our thanks to all the members of the CONEBI C-ITS & CCAM working group and our advocacy partners, Cycling Industries Europe (CIE) and the European Cyclists' Federation (ECF), for their valuable dialogue and contributions to this document.

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