

Policy embraces connected and automated vehicles as a tool to solve transport problems. But are people on board?

Headlines

- The views of European citizens, worldwide media and EU policymakers on connected and automated vehicles differ significantly.
- There is a predominance of negative sentiments from media and a majority of citizens wary of automated vehicles, while the political narrative mostly carries a positive tone.
- The benefits of adopting automated vehicles will only come to surface if all actors are engaged and see the advantages they can bring to people's daily lives.
- Policymakers are encouraged to promote citizen engagement initiatives in the transformation of road transport and industry to be more realistic in advertising automated vehicles.

Do citizens, media and policymakers share the same view on automated vehicles?

Mobility is one of the main pillars of modern society. The possibility, for people and goods, to quickly reach almost any place in the world has fuelled globalisation and unprecedented economic growth in the 20th century. Yet transport has had wider effects beyond providing seamless and effective mobility: the advent of the car has

given birth to automotive cities, transformed public space and has become symbolic of social status. At the same time, the sector generates significant negative externalities for our society. Road accidents, pollutant and greenhouse gas emissions and productivity losses due to delays and congestion are just the most well-known among them¹. Attempts to address negative transport impacts usually advocate innovative technological solutions. As one such solution, automated vehicles are in the spotlight for policymakers as a means to make road transport more efficient and to tackle transport safety and emission issues.

In the 2018 European Commission communication "On the road to automated mobility"², the vision of connected and automated mobility is presented with the ambition "to make Europe a world leader in the deployment of connected and automated mobility, making a step-change in Europe in bringing down the number of road fatalities, reducing harmful emissions from transport and reducing congestion". In the European Commission 2018 Automated Mobility Strategy, which was published as part of the mobility package in May 2018, the European Commission sets the policy framework for the take-up of connected and automated mobility³, and states that it will keep providing financial support to stimulate private investment in the development of technologies and infrastructure linked to connected and automated mobility. More recently, at the

¹ Alonso Raposo, M. et al., "The future of road transport - Implications of automated, connected, low-carbon and shared mobility" (2019), EUR 29748 EN, doi:10.2760/9247

² European Commission, "Europe on the move - On the road to automated mobility: An EU strategy for mobility of the future (Communication from the Commission to the European Parliament, the Council, the European Economic and Social

Committee and the Committee of the Regions)" COM/2018/283 final (2018)

³ European Commission, "Europe on the move - Sustainable Mobility for Europe: safe, connected, and clean. An EU strategy for mobility of the future (Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions)" COM(2018) 293 (2018)

end of 2019, within the European Green Deal⁴, Europe includes “Automated and connected multimodal mobility” among the six main tools to accelerate the transition to sustainable and smart mobility. In the EU Green Deal, the European Commission commits itself to develop a new strategy for the transport sector by the end of 2020 and connected and automated mobility will certainly play an important role within it.

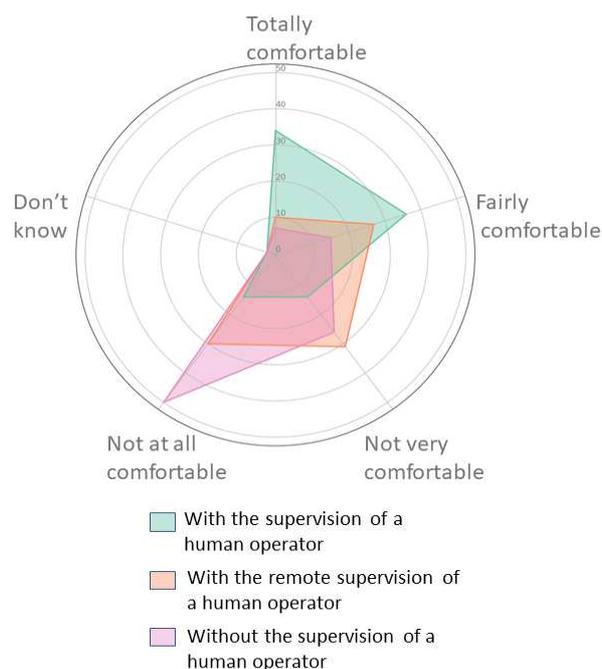
While policymakers stress the benefits and advantages of a connected and automated mobility, the actual benefits that automated vehicles can provide, as well as their acceptance by the general public, are debatable. In this context, we want to understand to what extent the opinions of the people and the media towards automated vehicles match with the efforts from policymakers towards the deployment of such vehicles.

Societal and media acceptance

Academic studies and surveys have shown that the acceptance of automated vehicle technologies declines as the level of automation increases and most people are not yet ready to use automated vehicles⁵. However, a series of studies from the American Automobile Association⁶ demonstrate that despite the strong negative feeling towards the use of automated vehicles, acceptance is slowly increasing over time, with efforts to increase it also from the private industry⁷. Nevertheless, particular events related to automated vehicle crashes and incidents tend to call into question the benefits, to stress the drawbacks or immaturity of this new technology and generate a debate on liability and safety^{8,9}. In a recent Eurobarometer survey by the European Commission¹⁰, more than 27 000 European citizens were interviewed in person to give their opinions on their expectations and concerns towards connected and automated driving. While a majority of the respondents of the survey declared to have heard, read or seen something about automated vehicles in the previous twelve months, most of them said they would not feel comfortable travelling in an automated vehicle without any human supervision (Figure 1), nor being in the presence of

automated vehicles on the roads, regardless of how they are travelling (i.e. as pedestrians, cyclists, scooter riders, motorcyclists, travellers in conventional cars or passengers of automated vehicles). Less than half of the participants said to be in favour of the deployment of automated vehicles and half of them would never buy an automated vehicle. Only a small minority of people stated to be ready to purchase an automated vehicle, even if it

Figure 1 Answers to the question “To what extent would you feel comfortable or not travelling in a fully automated vehicle under the following conditions?” (%-EU)



becomes affordable. Diverse opinions were expressed in relation to the possible impacts that connected and automated driving could have. Among the expected impacts, there was the feeling that automated vehicles would reduce the need for professional drivers and take

⁴ European Commission, “The European Green Deal (Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions)” COM/2019/640 final (2019)

⁵ H. Abraham, C. Lee, B. Mehler, B. Reimer, Transp. Res. Board 96th Annu. Meet., 1–16 (2017)

⁶ AAA: American Trust in Autonomous Vehicles Slips. Am. Automob. Assoc., (available at <https://newsroom.aaa.com/2018/05/aaa-american-trust-autonomous-vehicles-slips>)

⁷ Waymo and AAA are trying to ease anxiety about self-driving vehicles. Bus. Insid., (available at <https://www.businessinsider.com/waymo-aaa-self-driving-vehicles-school-curriculum-2019-9>)

⁸ E. Awad et al., Nat. Hum. Behav. 4, 134–143 (2020)

⁹ Who Is Responsible In A Crash With A Self-Driving Car? Forbes, (available at <https://www.forbes.com/sites/fernandezelizabeth/2020/02/06/who-is-responsible-in-a-crash-with-a-self-driving-car>)

¹⁰ European Commission, “Special Eurobarometer 496: Expectations and Concerns from a Connected and Automated Mobility” (2020)

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over their jobs, while acknowledging that they could also reduce accidents and travel stress.

With the support of the Europe Media Monitor¹¹, we have looked over 45 000 worldwide media articles from 2019, which mention automated vehicles. Making use of a sentiment analysis system¹², we categorized the sentiment of each article as positive, neutral or negative, considering their title and text. Based on the numbers shown in Figure 2, we understand that the predominant sentiment in the media is negative, with articles displaying positive sentiments being much less prevalent, and with a lower growth over time.

Discussion

Present policy approaches to transport automation and connectivity have been largely based on the assumption that their benefits in many dimensions are certain and thus taken for granted. The optimism about connected and automated vehicles, which permeates the political strategies on road transport in Europe, is not presently shared by the majority of respondents in the Eurobarometer study, nor by the overall perception in the media analysed. The reasons behind such attitudes are not so straight forward to be explained. They could derive from a general scepticism towards new technologies, including a lack of trust, or towards the possibility that they will soon become accessible to the entire population rather than remaining a gadget for high-income users. It could be related to the passion for driving and the cars representing a symbol of status¹³. They might also derive from human fears of loss of control over artificial intelligence, which has been a long-standing subject of popular science fiction literature, films and philosophy¹⁴. They might be based on a negative perception of automation of industrial processes (e.g. warehouses, logistics, docks) presently threatening jobs. They might also be fuelled by difficulties in imagining

how all the claimed benefits of transport automation and connectivity might possibly materialize at the same time. How can automation increase transport supply and fulfil mobility needs while at the same time decreasing the environmental burden? How can it reduce the need for parking space without creating extra mileage and thus resource consumption? How can it reduce transport costs while offering new opportunities?

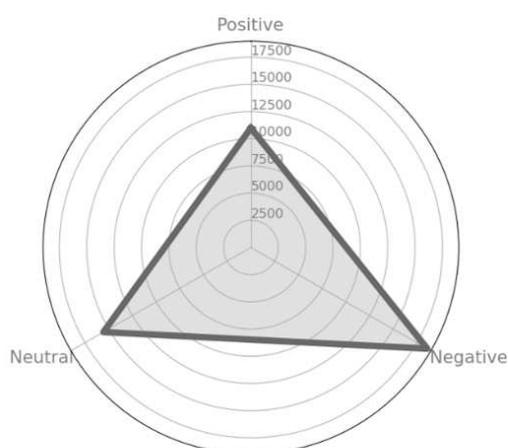
The way forward

While the deeper reasons behind the scepticism in population and media remain to be fully understood, the list of claimed benefits assigned to connected and automated vehicles clearly shows its disruptive potential and significance. However, a transition would require much more than solving exclusively technological problems. A shift of this magnitude can only be overcome successfully on the basis of a societal consensus of its desirability, and the willingness to provide support to those otherwise left behind. In this light it would be highly advisable to endorse a participatory approach to policy development: encouraging public discussion and opportunities for different users to experience, co-develop and evaluate new mobility concepts, in order to understand what potential benefits and drawbacks they may bring in practice and ensure that they efficiently address actual citizens' mobility needs and preferences. Furthermore, citizen engagement is also needed to ensure quality in policy formulation processes that face complexity and uncertainty and move towards more deliberative forms of policymaking.

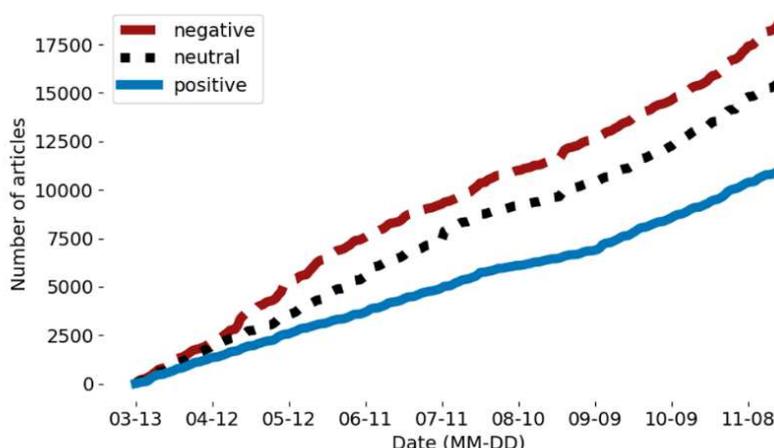
Such an evaluation cannot be carried out in a static context either, which is most avidly demonstrated by the drastic changes in mobility patterns we presently experience due to the COVID-19 crisis. Connected and automated vehicles may have indeed a lasting impact on digital services and

Figure 2 Sentiments division for news articles (left) and cumulative sum for the whole media collection period (right)

News articles sentiments division



News articles sentiments cumulative sum



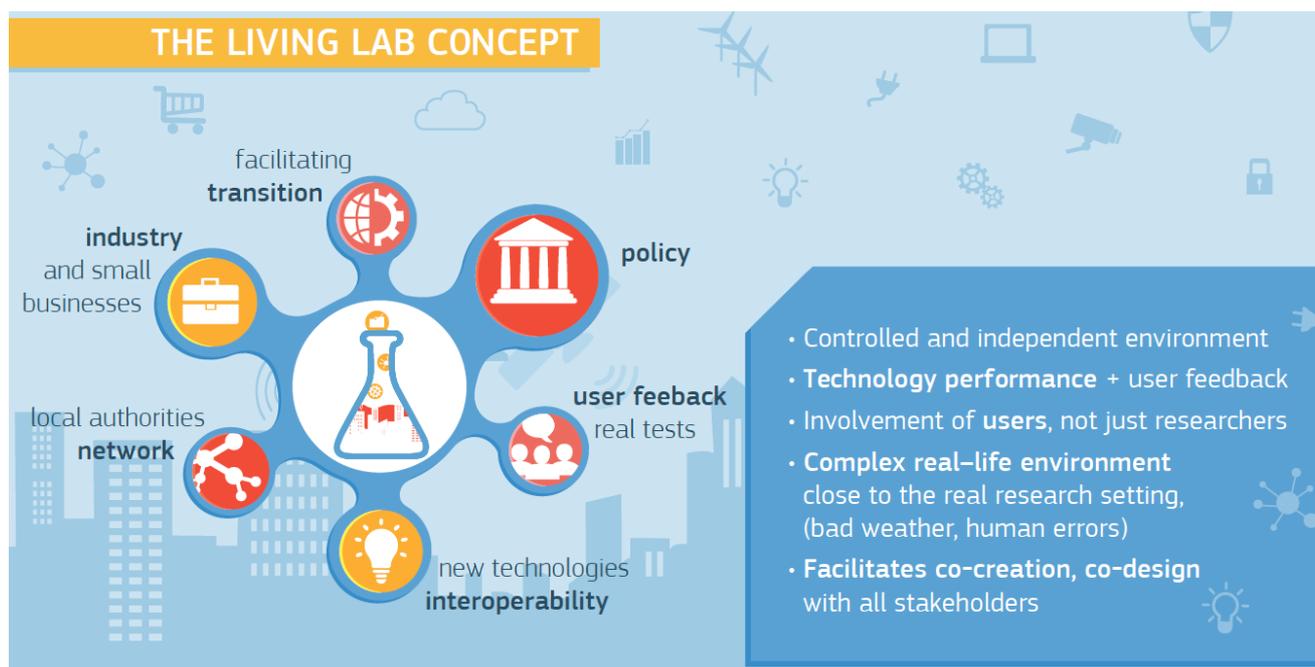
¹¹ Europe Media Monitor. Eur. Comm., (available at <https://emm.newsbrief.eu>)

¹² A. Balahur, in SemEval 2016 - 10th International Workshop on Semantic Evaluation, Proceedings (2016), pp. 262–265

¹³ F. Kröger, Auton. Driv. Tech. Leg. Soc. Asp., 41–68 (2016)

¹⁴ R. Braun, in Mobilities, Literature, Culture (2019), pp. 259–280

Figure 3 The Living Lab concept



skills, commuting and travelling habits, travel risk perception, the willingness to share transport means, and even on the use of public spaces in cities and rural areas.

It is therefore of key importance to apply a methodology able to guarantee that citizens and other societal actors are truly engaged in the on-going deliberations, and their voices accounted for. Among others, living labs represent a powerful approach in fostering open collaborative innovation among citizens, researchers, companies and public organisations¹⁵ (Figure 3). They sustain a participatory governance model among multiple actors and rely on active user involvement as co-producers since the early stages of the innovation process. Living labs offer real-life environments that are characterised by the uncontrollable dynamics of the everyday life. Users are placed at the centre of the innovation, and, rather than

staying passive, they undertake an active co-creator role, at the same time acting as explorers, designers, testers and feedback-givers. User-driven open innovation together with co-creation can significantly improve the efficiency of the innovation process by increasing the value creation during the stages of prototyping and development. In the connected and automated mobility field, living labs could support the conceptualization and development of future mobility solutions and contribute to the assessment of their effectiveness and societal implications. The insights gained from field tests and demonstration activities with citizens can be used to support the formulation of efficient mobility policies.

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¹⁵ What are Living Labs. Eur. Netw. Living Labs, (available at <https://enoll.org/about-us/>)

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