Access to Data in Connected Cars and the Recent Reform of the Motor Vehicle Type Approval Regulation

by **Wolfgang Kerber and Daniel Gill***

Abstract: The need for regulatory solutions for access to in-vehicle data and resources of connected cars is one of the most controversial and unresolved policy issues. Last year the EU revised the Motor Vehicle Type Approval Regulation which already entailed a FRAND-like (fair, reasonable, and non-discriminatory) solution for the access to repair and maintenance information (RMI) to protect competition on the automotive aftermarkets. However, the transition to connected cars changes the technological conditions for this regulatory solution significantly. This paper analyzes the reform of the type approval regulation and shows that the regulatory solutions for access to RMI are thus far only very insufficiently capable of dealing with the challenges that come along with increased connectivity; e.g. with regard to the new remote diagnostic, repair and maintenance services. Therefore, an important finding of the paper is that the transition to connected cars will require further reform of the rules for the regulated access to RMI (especially with regard to data access, interoperability, and safety/security issues). However, our analysis also suggests that the basic approach of the current regulated access regime for RMI in the type approval regulation can also be a model for developing general solutions for the currently unsolved problems of access to in-vehicle data and resources in the ecosystem of connected driving.

JEL classification: K23, K24, L62, L86, O33

Keywords: Data access; Internet of Things; connected cars; aftermarkets; digital economy

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A. Introduction

1 The current transition to connected and increasingly automated cars has led to a policy discussion regarding the problem of access to in-vehicle data and resources for independent service providers in the ecosystem of connected driving. In Europe, car manufacturers (OEMs: original equipment manufacturers) have exclusive control over this access through the application of the "extended vehicle concept", which implies that all in-vehicle data are directly transmitted to a proprietary server of the respective OEM. There are wide-spread concerns that the OEMs can use this exclusive ("monopolistic") position to impede and distort competition on all markets in the ecosystem of connected driving that require access to these input factors. Therefore, independent service providers demand regulatory solutions that ensure fair and undistorted competition on the markets for aftermarket and other complementary services, based on a level playing field regarding access to in-vehicle data and resources. Otherwise, impeded access might lead to less competition and innovation, as well as higher prices and less choice for consumers.[1]

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1 See FIGIEFA, Commission Communication on "Free Flow

2 The problem of foreclosure strategies of OEMs in the automotive industry, especially on the aftermarkets for repair and maintenance services (including spare parts), is a well-known competition problem. European competition policy has long established sector-specific regulations in order to ensure fair and undistorted competition on the aftermarkets.[2] This includes provisions about access to technical repair and maintenance information (RMI). Since 2007 the obligation of OEMs to make RMI accessible for independent service providers has been included in the EU type approval regulation for motor vehicles.[3] Triggered by the emission scandal, the type approval regulation, including the rules on access to RMI, were reformed. After controversial discussions within the trilogue process, the new Regulation (EU) 2018/858 was enacted on 30 May 2018 and will enter into force on 1 September 2020.[4] Even though the main objective was emission related, also the rules about access to RMI were subject to this reform process.

3 The objective of this article is to analyze and assess the reform of the motor vehicle type approval regulation regarding access to RMI. A particularly interesting question is how this specific reform fits into the new and much more general policy discussion about "access to in-vehicle data and resources" for independent service providers in the ecosystem of connected driving.[5] Therefore, a key focus of the analysis will be on whether the new rules can deal properly with the transition from traditional cars to connected cars. This current technological evolution offers new innovative services in the automotive aftermarkets, especially remote services, but also enables new strategic options for foreclosing competition. Important results of our analysis demonstrate that on the one hand, the new rules regarding access to RMI entail a number of minor improvements of the current (rather well-functioning) access regime, but on the other hand, they encompass only first, very preliminary and insufficient steps to tackle the recent and upcoming challenges, particularly with regard to access to in-vehicle data and resources. Therefore, the regulated access regime to RMI has to be further developed (especially with regard to data access and interoperability, as well as safety and security issues) in close connection with future solutions to the thus far unresolved problems of the governance of in-vehicle data and resources in the ecosystem of connected driving.

4 The article is structured as follows. Section B offers a brief overview of the current RMI access regulation, its rationale from a competition economics perspective, and the experiences with this system. In section C, the challenges of the technological transition to connected cars are analyzed in the context of the general controversial new policy discussion regarding access to in-vehicle data. Section D encompasses an overview of the changes to the rules for access to RMI in the Regulation and an in-depth assessment of these changes, especially with regards to the technological development. It concludes with highlighting the unresolved problems and providing recommendations for the necessary evolution of the regulated access regime for protecting competition and innovation in the automotive aftermarkets. Section E summarizes the above and offers further perspectives on the potential role of this access regime for RMI in the general policy discussion on "access to in-vehicle data and resources" of connected cars.

of Data" – Input from the Independent Automotive Aftermarket, 2016, available at <https://www.figiefa.eu/wp-content/uploads/Free-Flow-of-Data-FIGIEFA-Input-2016_12_23.pdf> last accessed 22.03.19, and AFCAR, Manifesto for fair digitalization opportunities, 2018, available at <https://www.direct-access.eu/policy-event-2018> last accessed 22.03.2019.

2 For the first sector-specific block exemption regulation see Regulation (EEC) No 123/85 on the application of Article 85 (3) of the Treaty to certain categories of motor vehicle distribution and servicing agreements, Official Journal of the European Union No L 15/16, 18.1.85.

3 Regulation (EU) 715/2007 of 20 June 2007 of the European Parliament and of the Council on type approval of motor vehicles with respect to emissions from light passenger and commercial vehicles (Euro 5 and Euro 6) and on access to vehicle repair and maintenance information, Official Journal of the European Union, L 171/1, 29.06.2007.

4 Regulation (EU) 2018/858 of the European Parliament and of the Council of 30 May 2018 on the approval and market surveillance of motor vehicles and their trailers, and of systems, components and separate technical units intended for such vehicles, amending Regulations (EC) No 715/2007 and (EC) No 595/2009 and repealing Directive 2007/46/EC, Official Journal of the European Union, L 151/1, 14.06.2018.

5 See for this policy discussion C-ITS Platform, Final Report, 2016, available at <https://ec.europa.eu/transport/sites/transport/files/themes/its/doc/c-its-platform-final-report-january-2016.pdf> last accessed 22.03.2019, TRL, Access to In-vehicle Data and Resources – Final Report, 2017, available at <https://ec.europa.eu/transport/sites/transport/files/2017-05-access-to-in-vehicle-data-and-resources.pdf> last accessed 22.03.2019, the position papers of important stakeholders ACEA, ACEA Position Paper – Access to vehicle data for third-party services, 2016, available at <https://www.acea.be/publications/article/position-paper-access-to-vehicle-data-for-third-party-services> last accessed 22.03.2019, VDA, Position – Access to the vehicle and vehicle generated data, 2016, available at <https://www.vda.de/en/topics/innovation-and-technology/network/access-to-the-vehicle.html> last accessed 22.03.2019, FIGIEFA (n 1), AFCAR (n 1), and in the academic debate Martens/Mueller-Langer, Access to digital car data and competition in aftersales services, Digital Economy Working Paper 2018-06, JRC Technical Reports, 2018, 7-10, and Kerber, Data Governance in Connected Cars: The Problem of Access to In-Vehicle Data, JIPITEC 9, 2018, 310-330.

B. Access to Repair and Maintenance Information: Background and Experiences

5 After purchasing a durable product, such as a car from a specific brand, the consumer will need repair and maintenance services (including car-specific spare parts) for the entire lifespan of the vehicle. Since the provision of these aftermarket services through authorized service providers in the distribution systems of the OEMs have proved to be very profitable, the car manufacturers have tried, for a long time, to impede competition from independent service providers through different kinds of business practices.[6] Due to the increasing technical complexity of cars (e.g. software, telematics) independent service providers, as well as spare part producers, can only offer their services and products if they have access to the necessary technical information. This information can refer to technical specifications, identification of spare parts, blueprints, diagnostic data, repair instructions, and training materials. Refusing access to this information would allow the OEMs to exclude independent service providers from the ability to offer their services, impede competition and innovation, and might even monopolize large parts of the brand-specific aftermarkets. The existing rules concerning access to RMI in the old type approval regulation (2007) oblige the OEMs to make necessary technical information available to independent service providers.[7]

6 The problem of competition on aftermarkets emerges in many markets with durable products and is well-known in competition economics.[8] From an economic perspective it is clear that refusing access to information that is exclusively held by the OEM and which is essential for providing independent services, would foreclose independent firms from these markets and could allow the OEMs to control these aftermarkets with potentially negative effects on consumer welfare in the form of higher prices, lower quality of services, less innovation, and less choice for consumers.[9] Foreclosing independent service providers through exclusionary strategies can be seen as a de facto bundling strategy, i.e. that the purchasers of cars have no choice but to buy the entire bundle of car and aftermarket services from the OEMs, without the possibility to choose other, independent firms to provide repair and maintenance services. The economic theory of aftermarkets, however, would also ask whether looking only directly at the aftermarkets is the right approach, or whether we have to analyze the problem as competition between the systems of the OEMs, i.e. the entire bundles of cars and aftermarket services.[10] If systems competition works very well, then OEMs would have no incentives for offering inefficient bundles of cars and services with too high prices. It is however very doubtful whether systems competition in the automotive sector is effective enough to solve the competition problems on the aftermarkets.[11] Therefore, from an economic perspective, a regulatory solution for the non-discriminatory access to necessary information for providing repair and maintenance services (under FRAND [fair, reasonable, and non-discriminatory] conditions) can be an appropriate solution for protecting competition on the markets for these aftermarket services.

7 The current regulation (before the reform) stipulates that OEMs "shall provide unrestricted and standardized access to vehicle repair and maintenance information to independent operators..."[12] It is important that this access is always available in a standardized format and that it is non-discriminatory compared to the access of authorized dealers and repairers. In Art. 6 and Annex XIV of the regulation, the information that should be made available is specified in greater detail. It also encompasses rules for the access to security-relevant

6 See, e.g., DaimlerChrysler (COMP/E-2/39.140), 14.12.2007, Opel (COMP/E-2/39.143), 15.12.2007.

7 Regulation (EC) No 715/2007 (n 3), implemented and amended by Regulation (EC) No 692/2008, Official Journal of the European Union, L 199/1, 28.07.2008.

8 For the economic theory of aftermarkets and its discussion in competition law, see Shapiro/Teece, Systems Competition and Aftermarkets: An Economic Analysis of Kodak, The Antitrust Bulletin, 1994, 135-162, Shapiro, Aftermarkets and Consumer Welfare: Making Sense of Kodak, Antitrust Law Journal, 1995, 482-511, Borenstein/MacKie-Mason/Netz, Exercising Market Power in Proprietary Aftermarkets, Journal of Economics & Management Strategy, 2000, 57-188, Bauer, Antitrust Implications of Aftermarkets, The Antitrust Bulletin 52, 2007, 31-51, Bechtold, Die Kontrolle von Sekundärmärkten: Eine juristische und ökonomische Untersuchung im Kartell- und Immaterialgüterrecht, 2007, Hawker, Automotive aftermarkets: A case study in systems competition, The Antitrust Bulletin 56, 2011, 57-79, and OECD, Competition Issues in Aftermarkets – Background note by the Secretariat, 2017, available at <https://www.oecd.org/competition/aftermarkets-competition-issues.htm> last accessed 19.08.2019.

9 In addition to the direct refusal to give access, foreclosure strategies could also include discriminatory access, too high fees or impeding access through uncommon formats.

10 See Shapiro/Teece (n 8) and Shapiro (n 8), as well as Hawker (n 8) for applications to the automotive industry.

11 See Hawker (n 8) 74; OECD (n 8) 22; Kerber (n 5) 321. This question emerges in competition law also in respect to market definition, i.e. whether a "systems market" should be defined or whether there are brand-specific markets for aftermarket services. Both in European and German competition law, the courts are reluctant to accept systems markets, especially if there are independent service providers on these aftermarkets (Schweitzer/Haucap/Kerber/Welker, Modernisierung der Missbrauchsaufsicht für marktmächtige Unternehmen, 2018, 174-177).

12 See Regulation (EC) No 715/2007 (n 3) Art. 6 (1).

information, with specific rules for approval and certification of independent operators. An important part of this access regime is the OBD (on-board diagnostic) port,[13] which allows the direct retrieval of (diagnostic) data from the car via a physical or WLAN connection (e.g. in a repair shop). Other information is made available through websites of the OEMs. Much emphasis is laid on standardization of technical specifications for facilitating exchange of information between OEMs and service providers. A particularly important feature of this access regime is that the entire supply-chain of the car repair shops, such as part distributors, wholesalers, manufacturers of (diagnostic) tools (especially also multi-brand tools), and publishers of technical information, have access to it. Without the necessary inputs of these firms, independent repair and maintenance services could not be offered. OEMs do not need to make this information available for free, but can charge "reasonable and proportionate fees" for the access provided on their websites. In that respect the already existing regulated access regime to RMI also entails important features of a FRAND solution.

8 What were the experiences with the old regulation for access to repair and maintenance information? To what extent did it succeed in protecting competition between authorized and independent service providers? An extensive evaluation by the EU Commission confirmed that overall, the system of access to vehicle RMI succeeds in preserving competition and consumer benefits.[14] Although the study identified a number of specific problems and made recommendations to solve them, the authors of the study saw no reasons to question the basic regulatory approach. The problems refer primarily to the need for further clarifications and guidance, e.g. about standards of interfaces for OEM websites, the definition of security-related data, the size of "reasonable" fees, "best practice" guidelines for contracting between OEMs and independent operators, and procedural issues with regard to compliance and enforcement. There are also still problems with the interpretation of the principle of non-discriminatory access.[15] Despite these issues, there is, however, a broad consensus among main stakeholders (vehicle manufacturers and independent service providers) as well as experts in competition law and economics that this regulated access regime to RMI is a suitable and overall rather well-functioning regulatory solution.[16] This is also confirmed by the thus far stable market share of independent providers on the markets for aftermarket services, in comparison to the market share of the authorized dealers and repairers of the OEMs.[17]

C. Technological Change to Connected Cars: New Challenges for the Aftermarkets

9 The current transition to connected, automated (and later autonomous) cars will revolutionize the entire automobile industry. In connected cars a huge amount of data is generated (especially through sensors) that can be processed in the car and exchanged via mobile communication with other actors, e.g., the OEMs, other vehicles, or the infrastructure. The produced data can be technical data about manifold vehicle functions, data about the weather, road and traffic conditions, data about driving behavior or the health status of drivers, as well as data about the use of entertainment and online shopping behavior of the car passengers.

13 The OBD system was introduced in 1988 for the purpose of monitoring vehicle emissions during operation. Over time an increasing number of additional important electronic control units were added to the system. The system recognizes malfunctions, reports them to the driver and stores them. These diagnostic trouble codes are standardized in ISO norm 15031-6 since the further development of the system to OBD-2.

14 See Ricardo-AEA, Study on the operation of the system of access to vehicle repair and maintenance information - Final Report, 2014, 133-134, available at <https://publications.europa.eu/en/publication-detail/-/publication/c2c172a5-3f49-4644-b5bb-c508d7532e4a> last accessed 22.03.2019.

15 See Ricardo-AEA (n 14), European Commission, Report from the Commission to the European Parliament and the Council on the operation of the system of access to vehicle repair and maintenance information established by Regulation (EC) No 715/2007 on type approval of motor vehicles with respect to emissions from light passenger and commercial vehicles (Euro 5 and Euro 6) and on access to vehicle repair and maintenance information, 2016, available at <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52016DC0782> last accessed 22.03.2019.

16 See European Commission (n 15).

17 See Quantalyse Belgium/Schönenberger Advisory Services, The automotive digital transformation and the economic impact of existing data access models, Technical Report, 2019, available at <https://www.fiaregion1.com/wp-content/uploads/2019/03/The-Automotive-Digital-Transformation_Full-study.pdf>, last accessed 15.04.2019: On the European level, between 2012 and 2016, OEMs and independent service providers share the market by ca. 50% each (revenue), with significant deviations on individual country level (from 70%-30%, to 40%-60%) and regarding the age of vehicles (from ~75% OEM market share for vehicles of up to 3 years age, to ~5% OEM market share for vehicles of 12 years age and older). Assuming an average price difference of 50% between OEM and independent service providers (which is confirmed by several empirical studies) the study finds that, despite having approximately the same revenues, independent service providers service about 2/3 of the total vehicle park. This market share has been stable over the past few years and corresponds also to the 'rule of thumb' that OEMs predominantly service vehicles during the first 3 to 4 years (warranty period) of the average 11 years lifespan of a vehicle in Europe.

Therefore, the connected car is an example for the "Internet of Things", in which smart and connected devices produce, process and exchange data. These data can be valuable for a large number of firms within this ecosystem of connected driving that would like to offer services to the users of the car (aftermarket services, navigation, insurance, online shopping, etc.), but they can also be valuable for public authorities (traffic regulation etc.) and for the data economy in general. There is a broad consensus that this technology will offer many benefits for the users, the environment, and public policy, but will also lead to new risks (e.g. cybersecurity, privacy). It is expected that the entire structure of the automobile industry will deeply change, particularly the relationships between OEMs, component suppliers, and independent providers of repair and maintenance services. Moreover, new players (like Google) will enter the ecosystem of connected driving.[18] The current controversial policy discussion in the EU about access to in-vehicle data and resources should be seen in this context.

10 With regard to the automotive aftermarkets, the new technology of connected cars allows for a broad spectrum of new innovative services that can be developed and offered to the users. Particular important regarding vehicle repair and maintenance is remote monitoring of the operation of vehicles with remote and even predictive maintenance and repair services for the prevention of defects or in case of a breakdown on the road.[19] In order to be capable of offering these and other innovative services, the service providers must get access to the relevant in-vehicle data and the vehicle IT system for performance directly in the car. This might also encompass not only "reading", but also "writing" data, e.g. in the case of updating or reconfiguring of software.[20] For many of these services it is crucial that the service providers can get direct real-time access to the data and the car during driving in comparison to the traditional access in the premises of a repair shop via OBD.[21] Besides these emerging new services, there might also be some kinds of repair and maintenance services that may not be necessary any more. From a theoretical perspective, this implies a huge technological challenge for the regulated access to RMI for independent service providers, because (1) the relevant set of repair and maintenance services, and (2) the set of information and resources to whom access is necessary, are changing.

11 The independent service providers are very concerned that the OEMs can utilize the technological possibilities to deploy new foreclosure strategies.[22] Since the OEMs apply the "extended vehicle" concept in their connected cars, which implies that the OEMs have the exclusive technical control over access to in-vehicle data and the car IT-system, the independent service providers cannot offer such innovative services directly to the drivers without the permission of the OEMs. Even if the OEMs offered the necessary in-vehicle data via their proprietary servers to the independent service providers, the technically inevitable time-lag would jeopardize such real-time services to the connected car.[23] Another problem is that the OEMs would always have privileged immediate access to all in-vehicle data, whereas the independent service providers would get access only to data in a filtered and aggregated form.[24] Other concerns refer to the problem that OEMs can observe what kind of data are accessed by whom on their proprietary servers, which allows a monitoring of business transactions between independent service providers and car users.[25] An additional concern is that the new

18 See generally about connected cars and the related policy discussions OECD, Data-Driven Innovation: Big Data for Growth and Well-Being, 2015, OECD Publishing, Paris, available at <http://dx.doi.org/10.1787/9789264229358-en> last accessed 15.04.2019, Alonso Raposo et al., The r-evolution of driving: from Connected Vehicles to Coordinated Automated Road Transport (C-ART), 2017, available at <doi:10.2760/225671> last accessed 15.04.2019, Federal Ministry of Transport and Digital Infrastructure, Strategy for Automated and Connected Driving: Remain a lead provider, become a lead market, introduce regular operations, 2015, available at <https://www.bmvi.de/SharedDocs/EN/publications/strategy-for-automated-and-connected-driving.pdf?__blob=publicationFile> last accessed 22.05.19, McKinsey, Automotive revolution – perspective towards 2030: How the convergence of disruptive technology-driven trends could transform the auto industry, 2016, available at <https://www.mckinsey.com/~/media/mckinsey/industries/high%20tech/our%20insights/disruptive%20trends%20that%20will%20transform%20the%20auto%20industry/auto%202030%20report%20jan%202016.ashx> last accessed 22.05.2019, European Commission, Communication from the Commission to the European Parliament, the Council, the European Economics and Social Committee, the Committee of the Regions On the road to automated mobility: An EU strategy for mobility of the future, 2018, COM(2018) 283 final, Brussels, 17.5.2018.

19 See e.g. FIGIEFA (n 1) 3.

20 Therefore, it is important to also get access to certain "resources" of the car, which encompass the vehicle IT system, including the different sensors, the telematics system, and the human-machine-interface (dashboard).

21 See FIGIEFA (n 1) 8.

22 See FIGIEFA (n 1), as the association representing the interests of European national trade associations of automotive aftermarket distributors, and AFCAR (n 1), which represents a broad coalition of independent service providers far beyond the traditional aftermarket service providers (as automotive data publishers, motor vehicle inspectors, garage equipment producers and mobility services operators, insurers and leasing companies).

23 See AFCAR (n 1) 1; TRL (n 5) 48.

24 For innovation of new services, it is very important to also get access to the raw data, because access to processed and aggregated data might lead to less information.

25 See C-ITS Platform (n 5), 79.

technology – through the HMI (human-machine-interface) – can lead to a much closer and direct customer relationship of the OEMs with the car users, endangering the access of independent service providers to their potential customers.[26] A further important consequence of the new technology is that the current technological solution of access to data in the car, the OBD interface, is technically not necessary anymore, because all in-vehicle data can be transmitted more easily directly through the telematics system of the car. Therefore, the entire OBD interface as a technically independent gateway can be eliminated and replaced through online access to the servers of the OEMs.[27]

12 Despite these challenges there is a broad consensus in the current general discussion about "access to in-vehicle data and resources", that the regulated access to RMI for independent service providers should also exist in the future ecosystem of connected driving.[28] However, the OEMs insist on defining the scope of the data that is made available to independent service providers as narrowly as possible, i.e. only those data should be made available under the terms of this regulation that are necessary for clearly defined "use cases" in respect to repair and maintenance services.[29] Vice versa, in this general discussion a broad coalition of independent service providers in the ecosystem of connected driving demands far-reaching regulatory access solutions beyond RMI.[30] One short-term proposal is the "shared server" concept, which would eliminate the privileged position of the OEMs through the governance of the external data server by a neutral entity, which then could provide non-discriminatory access. In the long run, the preferred technical architecture for the independent service providers would be an open, interoperable telematics system, the "on-board application platform". This system would technically enable drivers to decide directly who is getting access to in-vehicle data and the IT system of the car. The basic idea of both solutions is the elimination of the exclusive "monopolistic" control of the OEMs regarding access to in-vehicle data and resources. Without this control, foreclosure options of the OEMs on the markets for aftermarket and complementary services would be significantly reduced. It is claimed that such a regulated solution will lead to more competition, innovation, and consumer choice than the currently applied "extended vehicle concept".[31]

13 Although research regarding the question of regulatory solutions for access to in-vehicle data and resources is still in its infancy, the few existing studies come to the preliminary conclusion that the extended vehicle concept is not a suitable concept, suggesting the need for a regulatory solution.[32] A market failure analysis with regard to this access problem comes to the result that the extended vehicle concept can indeed impede competition and innovation on the markets for aftermarket and other complementary services in the ecosystem of connected driving. Additionally, the OEMs might not have proper incentives for choosing an optimal level of interoperability and standardization, i.e. their choice of closed proprietary ecosystems instead of developing open interoperable telematics systems, might be a wrong technological choice (based upon misaligned incentives).[33] However, so far no clear comprehensive proposal for such regulatory solutions for the access problems in the ecosystem of connected driving has been developed. But, in any case, the specific question of the regulated access to RMI will be closely linked to this general regulatory

26 See AFCAR (n 1) 1; TRL (n 5) 83.

27 There are already complaints that the OEMs are shifting available data points away from the OBD system to their own proprietary system and are limiting the available data from the OBD to the legal minimum of necessary RMI. See Quantalyse Belgium/Schönenberger Advisory Services (n 17) 40, and Martens/Mueller-Langer (n 5) 12.

28 See ACEA (n 5) 8; AFCAR, Vehicle Type Approval Framework Regulation COM (2016) 31 Automotive Repair and Maintenance Information (RMI) AFCAR Position Paper – Final, 2016, available at <https://www.figiefa.eu/wp-content/uploads/Reg-201631-AFCAR-Position-on-RMI-2016-07-04-WA.pdf> last accessed 22.03.2019, 1; C-ITS Platform (n 5) 88.

29 See VDA (n 5) 2-3; C-ITS Platform (n 5) 86.

30 For a broad overview of the position of stakeholders in this discussion, see Specht/Kerber, Datenrechte – Eine rechts- und sozialwissenschaftliche Analyse im Vergleich Deutschland – USA, 2018, 169-192, available at <http://www.abida.de/de/blogitem/gutachten-datenrechte-eine-rechts-und-sozialwissenschaftliche-analyse-im-vergleich> last accessed 03.06.2019.

31 See for this policy discussion generally TRL (n 5) 11-16.

32 See e.g. TRL (n 5), Kerber/Frank, Data Governance Regimes in the Digital Economy: The Example of Connected Cars, 2017, available at <https://ssrn.com/abstract=3064794>, Kerber (n 5), Martens/Mueller-Langer (n 5); for an overview about various studies on different aspects of the extended vehicle see Quantalyse Belgium/Schönenberger Advisory Services (n 17) 53-55.

33 See Kerber (n 5) for a detailed analysis of these market failure problems (and an additional potential market failure about the problems of consent to contractual terms about data between OEMs and car owners) as well as why the exclusive control of the in-vehicle data by OEMs cannot be justified through safety and security concerns. For the current discussion in competition policy about the importance of interoperability and data access/portability with regard to digital ecosystems see Crémer/de Montjoye/Schweitzer, Competition policy for the digital era – Final Report, 2019, 76-91, available at <http://ec.europa.eu/competition/publications/reports/kd0419345enn.pdf> last accessed 15.04.2019, Furman et al., Unlocking digital competition – Report of the Digital Competition Expert Panel, 2019, 64-74, available at <www.gov.uk/governemnt/publications> last accessed 03.06.2019, and with specific regard to the example of connected cars Kerber, Data-sharing in IoT Ecosystems from a Competition Law Perspective: The Example of Connected Cars, 2019, available at: <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3445422>.

problem in the transition to connected driving.

D. The New Type Approval Regulation: The Rules on Access to RMI

14 Since the main reason for the reform of the type approval regulation was the urgent need to strengthen the compliance of the rules for emissions of vehicles, the revision of the rules of regulated access to RMI were not in the main focus of the EU Commission, when it published its proposal in January 2016. Therefore, only very limited changes to the current rules were proposed, especially with regard to the challenges through telematics technologies. However, the European Parliament proposed a number of amendments, which picked up the concerns of the independent service providers with regard to access problems.[34] In particular, a controversial discussion concerning remote services developed, which highlighted the conflict between OEMs and independent service providers regarding the adaption of the rules for this regulated access to RMI to the new technology. After several compromises in the trilogue procedure between the EU Commission, European Parliament, and EU Council, the new Regulation was passed in May 2018. The following section D.I. offers a brief overview of the new and modified rules of the regulated access regime, which will be followed by an analysis and assessment of these rules with respect to past experiences and the current and future challenges in section D.II. Section D.III. discusses the necessity to further develop the rules and provides some recommendations.

I. The New Rules: An Overview

15 The new Regulation offers a number of adapted and new rules that can be relevant for the access problem on the aftermarkets. Still rather similar to the old regulation, Recital 50 states that "unrestricted access to vehicle repair and maintenance information via a standardized format that can be used to retrieve the technical information, and effective competition in the market for services providing such information, are necessary for the functioning of the internal market...".[35] This is followed by Recital 51 which emphasizes that "technical progress introducing new methods or techniques for vehicle diagnostics and repair, such as remote access to vehicle information and software, should not weaken the objectives of this Regulation with respect to access to repair and maintenance information for independent operators."[36] Especially important is also the new Recital 52 (proposed by the European Parliament): It clarifies (1) that the independent vehicle repair and maintenance market as a whole should be capable of competing with the respective services of the OEMs, and emphasizes (2) that it is no more important whether the OEMs have given this information to their authorized dealers or whether they are using it only for themselves. Next, Recital 54 focuses on the common structured process for the exchange of vehicle component data between OEMs and independent service providers. Such a process should be developed by the European Committee for Standardization (CEN) and should reflect the interests and needs of OEMs and independent service providers alike. As long as this standard does not exist, principles for the exchange of data should be developed.[37]

16 With regard to the articles of the Regulation the following changes are important: Art. 3 (definitions) entails slightly updated definitions of "independent operators", "authorized repairers", and "independent repairers", but also new definitions of "vehicle repair and maintenance information" (Art. 3 (48)) and "vehicle on-board diagnostic (OBD) information" (Art. 3 (49)). The latter now explicitly mentions remote diagnostic support of a vehicle. The main rules about the obligations of the OEMs to provide RMI can be found in Art. 61. The already existing obligation to provide unrestricted and standardized access to vehicle OBD information etc. has been clarified

34 See for the proposal of the EU Commission: EU Commission, Proposal for a Regulation of the European Parliament and of the Council on the approval and market surveillance of motor vehicles and their trailers, and of systems, components and separate technical units intended for such vehicles 2016/0014 (COD) (2016), and for the proposed amendments of the European Parliament, ***I Report on the proposal for a regulation of the European Parliament and of the Council on the approval and market surveillance of motor vehicles and their trailers, and of systems, components and separate technical units intended for such vehicles, 2017.

35 See Regulation (EU) 2018/858 (n 4), Recital 50. The second part states that all rules concerning regulated access to RMI are now consolidated in this Regulation.

36 Ibid. Recital 51. This is combined with Art. 65 para.3 and para.10, which gives the Commission the task of establishing clearer rules about the technical specifications and empowering it to amend and supplement Annex X for doing this.

37 See in this context also European Commission, Commission Staff Working Document Guidance on sharing private sector data in the European data economy Accompanying the document Communication from the Commission to the European Parliament, the Council, the European economic and social Committee and the Committee of the Regions "Towards a common European data space" SWD(2018) 125 final, Brussels, 25.4.2018, Guidance on sharing private sector data in the European data economy SWD (2018) 125 fin.

further through the explicit additional requirement of "non-discriminatory" access, and expanded in the way that independent service providers should also have access to remote diagnostic services used by OEMs and their authorized dealers and repairers. These clarifications have been initiated through the European Parliament (amendment 246).[38] Moreover, Art. 61 provides a number of specific rules about these obligations, e.g. that the information should be always and easily accessible, in a machine readable format, and updated. Additionally, access should be guaranteed to repair and maintenance records of vehicles in a central database of the OEMs. The details of the technical requirements for access are laid down in Annex X. Most importantly, the Commission is explicitly empowered to amend this Annex to take account of technical and regulatory developments and prevent misuse by updating these requirements. In that respect, the Commission should also consider "repair and maintenance activities supported by wireless wide area networks", the future CEN standards for data exchange, ISO standards, and developments in information and vehicle technology (para. 11).

17 The other articles on access to RMI are either dealing with aspects of compliance, or do not entail significant changes. For example, Art. 63 on the fees for access to vehicle RMI has not been changed; it still states that the fees have to be reasonable and proportionate, and should be structured in a way that is not discouraging access.[39] Art. 66 refers to the Forum on Access to Vehicle Information that deals with security-related issues of access to RMI. This forum should help to reduce the risk of misuse of vehicle security features. The tasks of this forum have been clarified by limiting it to access to vehicle OBD information and RMI, through explicitly connecting it to vehicle theft, and giving advice to the Commission regarding the approval of independent operators to access vehicle security information by accredited organizations.[40] The important Annex X encompasses the detailed technical requirements for access to OBD information and RMI, among others, a list of information included in this obligation, provisions on the accessibility of the vehicle data stream over the OBD port, and requirements for the availability of information through websites and access to vehicle security features.

38 Furthermore, manufacturers shall provide a standardized, secure, and remote facility to enable independent repairers to complete operations that involve access to the vehicle security system (Art. 61, para.1).

39 In particular, access shall be granted on an hourly, daily, monthly, and yearly basis with accordingly gradual fees. National authorities, the Commission and technical services can get access to RMI free of charge.

40 Regulation (EU) 2018/858 (n 4), Annex X, 6.2.

II. Analysis and Assessment

1. Compliance and Clarifications

18 The reform is, to some extent, a clear step forward with respect to the enforcement of the rules for regulated access, because new articles regarding compliance and remedies in case of compliance problems have been included.[41] Also the specific rules about the kinds of information that should be made available have been further clarified. Other helpful clarifications (also in the form of updating) can be found in the definitions of article 3. Unfortunately, the suggestions of the evaluation studies have only been partly considered. Especially the recommendations about better clarifying what reasonable fee structures are and giving guidance on practical and mutually acceptable contract negotiation practices about access to technical information[42] have not been considered in the new regulation. This is a significant problem, because in any mandatory access regulation the lack of clear rules concerning the contractual provisions of a negotiated access (including the fees) can raise considerable problems for the effective implementation of the non-discriminatory character of the access and the objective of a reasonable and proportionate fee level. The next two sub-sections will show that there still is need for more clarification. The experiences and problems of the current access regime – as described in the evaluation studies – will also be very relevant for any future access regime under the new technological conditions.

2. Non-Discriminatory Access to RMI

19 A very important change of the rules to the access regime to RMI can be found in recital 52.[43] Whereas the current rules about obligatory access to RMI use the criterion that the independent service providers should have the same access to RMI as the

41 See Art. 64 and 65, which stipulate that the manufacturers have to provide proof of compliance with these rules as part of their application for type approval, and lay down rules about appropriate measures to the approval authority in the case of non-compliance of manufacturers.

42 This also includes the assessment of cancellation and territorial clauses, appropriate fee levels and metrics on which to base these fees. The Commission considers these recommendations as not falling under the scope of RMI regulation. See European Commission (n 15) 11.

43 It was initiated by the European Parliament and also proposed by the Council.

authorized service providers, the new rules clarify that independent service providers have a right to access RMI also in cases where the OEMs do not make this information available to their authorized dealers but use this information themselves for repair and maintenance purposes. This is a huge step with regard to the access regulation. First, it closes a possible loophole for strategic behavior of OEMs, because shifting certain kinds of repair and maintenance services from their authorized dealers back to the OEM would not allow them to deny access to the necessary information anymore. This is crucial, because especially the new remote services might be performed at least as easily by the OEMs themselves than by their authorized dealers.[44] Still more important, is that this changes the entire character of the access regulation, because now the set of RMI that has to be made available is based upon an objective definition by the regulator regarding what the necessary set of RMI is, making it independent from decisions of the OEMs concerning the information they provide to their authorized dealers.

20 One question is to what extent the regulated access solution to RMI already has the characteristics of a genuine FRAND access solution. Despite the above-mentioned remaining problems regarding fees and contractual provisions, the provision of "fair and reasonable" access did already exist in the old regulation. However, the important criterion of non-discrimination has been strengthened further by the explicit introduction of "non-discriminatory" access in the key provision of Art. 61 (1), and by the extension of the meaning of non-discrimination to repair and maintenance services directly provided by the OEMs (as described in the last paragraph). A clear FRAND solution certainly does not only require an objective definition of the RMI that has to be made available, but also a precise definition of the range of services that should be enabled through the regulated access solution. Although the term "repair and maintenance services" seems to offer a clear notion of this scope, the huge technological change to connected and automated cars with the possibility of new (and also thus far unknown future) innovative services render the definition of the set of these services an open question. Therefore, in the next section we will discuss as an example the inclusion of the new possibilities of remote repair and maintenance services in this regulated access regime.

44 Especially software updates or purely diagnostic tasks can now be done "over-the-air" directly by the OEM. There is no need for drivers to go to the authorized repairer for such services anymore. This shows that the new technology might also change the relationship between the OEMs and their authorized dealers.

3. Remote Services and the Problem of Remote Access

21 Through the initiative of the European Parliament, the issue of how to deal with the new possibilities of remote repair and maintenance services has entered into the legislative discussion. From an innovation economics perspective it is very important to understand that in the ecosystem of connected driving very different kinds of firms (and especially also start-ups) can develop new innovative repair and maintenance services, and not only the OEMs with their system of component suppliers and authorized dealers. In the policy discussion, the independent service providers, in particular, emphasized the possibility to develop new and innovative services themselves, as well as the need for adapting the access solutions in the type approval regulation for enabling this kind of innovation.[45] The Commission's initial approach to the new technological opportunities was purely defensive: the OEMs should not be able to use the new technologies to weaken the competitive position of the independent operators. However, the explicit inclusion of remote services in the type approval regulation acknowledges that these new services can be part of the set of repair and maintenance services that fall under the regulated access solutions. The following analysis will show that decisive problems about the access to necessary resources for innovating and offering these kinds of remote services are still without a satisfactory solution.

22 What exactly has been decided in the new type approval regulation regarding remote repair and maintenance services? Besides the inclusion of "remote diagnostic support" into the definition of "vehicle repair and maintenance information" (Art. 3 (48)), the main change is that "independent operators shall have access to the remote diagnosis services used by manufacturers and authorized dealers and repairers" (Art. 61 (1)). This could be interpreted as the right of independent operators to use the remote diagnosis service of the OEMs under the terms of this Regulation, but this does not imply that independent repair and maintenance service providers can develop and apply their own diagnostic tools for discovering malfunctions and predict defects (e.g. for predictive maintenance). For carrying out their own remote diagnostic services,

45 See FIGIEFA (n 1) 8-11; ADAC, Stellungnahme des ADAC e.V. zum Vorschlag für eine Verordnung über die Genehmigung und die Marktüberwachung von Kraftfahrzeugen und Kraftfahrzeuganhängern sowie von Systemen, Bauteilen und selbständigen technischen Einheiten für diese Fahrzeuge vom 27.01.2016 (2016/0014(COD)), 3; AFCAR (n 1) 3; FIA Region I, Policy Position on car connectivity, 2016, 2, available at <https://www.fiaregion1.com/policy-position-on-car-connectivity/> last accessed 22.05.2019.

they would need direct remote access to the in-vehicle data and to the IT-system of the car, which is not possible with the "extended vehicle" concept. Therefore, the remote diagnosis service itself can only be performed by the OEMs and their authorized dealers, whereas the independent operators only have an access right to the results of the diagnostic services (trouble codes, via the OEM's website). Without the option of direct access to the IT system of the car, which also allows write-function under certain conditions, the remote performance of repair and maintenance services by independent operators is not possible. Thus, independent service providers cannot offer to perform their own remote diagnostic repair and maintenance services to the car users, especially also in the case of a breakdown of the car on the road. As a result, under the new Regulation, no competition between independent and authorized providers of remote services is possible, and car users have no choice in that respect.

23 In the general policy discussion about "access to in-vehicle data and resources" the OEMs defend their "extended vehicle" concept with safety and security reasons.[46] Their claim that direct access to the car is not possible for security reasons is controversially discussed and rejected by many participants in this discussion.[47] Defending foreclosure of independent operators due to safety and security reasons is an old argument in competition policy debates about automotive aftermarkets. For a long time these problems have been solved through the regulatory introduction of a certification system that ensures that the independent operators fulfill quality and security requirements of the OEMs. Already under the old Regulation, a regulatory solution in the form of a certification process was implemented, which allowed approved and certified independent operators to access the vehicle security features for performing repair and maintenance services, e.g. software updates, on the premises of the car repair workshop without compromising the security of the vehicles.[48] The problem is that the new Regulation does not offer a comparable solution for remote access to the connected car, which would allow the direct performance of remote repair and maintenance services in the vehicle. From that perspective it is one of the important tasks to develop similar security solutions (including the approval and security certification of independent operators) to enable remote repair and maintenance services for independent service providers. Additionally, such a direct remote access would allow access to real-time data (without latency), which is crucial for parts of these services. This would also allow independent service providers to compete with the OEMs for these new innovative repair and maintenance services.[49]

4. Monitoring of Access and the Advantages of Data Analytics

24 The technological transition to connected cars with online access to in-vehicle data stored in proprietary servers, and the access to diagnostic services of the OEMs for independent operators can also lead to additional problems for competition in the aftermarkets. In contrast to the access to diagnostic data from the traditional OBD system in the car, any access of independent service providers via a website of OEMs with regard to the diagnostic data of a specific vehicle can be monitored by the OEMs. The same is true for the access to repair and maintenance records of a vehicle in a central database of the OEM (Art. 61 (9)). The observed data can be analyzed by the OEMs, which would offer them (so far non-existent) transparency regarding the provision of services through their competitors on the downstream markets for repair and maintenance services. These data concerning the competitors and their market transactions, which are not available to the independent operators, can enable them to develop specific strategies for their own repair and maintenance services, which might lead to a further distortion of competition on these markets. This problem is comparable to the now much discussed concerns that hybrid platforms (e.g. Amazon) can potentially use their data on transactions between consumers and retailers (on Amazon market place) to develop better strategies with regard to the products Amazon is selling to consumers in competition with the market place retailers.[50] Independent from these

46 See ACEA (n 5) 2; VDA (n 5) 1.

47 According to TRL (n 5) 77, the safety and security problems of the on-board application platform, which relies entirely on such a direct access, can be solved. Any future V2V and V2I communication between connected and later autonomous cars would require a secure direct access anyway. See also Determann/Perens, Open Cars, Berkeley Technology Law Journal, 2017, 915-988, 939; Martens/Mueller-Langer (n 5) 12, and Kerber (n 5) 318.

48 See Regulation 2018/858 (n 4) Annex X. A similar certification solution regarding the quality of spare parts has existed for a long time for protecting competition between OEMs and independent spare part producers on the markets for spare parts.

49 An important (but in the trilogue proceedings rejected) amendment has been proposed by the European Parliament. It entailed a new Recital encompassing that "access to in-vehicle data, should remain directly and independently accessible to independent operators". Such a direct access to the in-vehicle data that are relevant for RMI and the connected car might have been a huge step towards the demands of the independent service providers in the general policy discussion about access to in-vehicle data and resources. See European Parliament (n 34), Amendment 44.

50 For the investigation of Amazon by the EU Commission, see: CPI, EU: Vestager opens probe into Amazon, 2018, available at <https://www.competitionpolicyinternational.com/

specific data about the activities of their competitors in the downstream market, OEMs can also secure considerable advantages through the analysis of the huge amount of data that is collected in the cars, and which is not available to the independent operators. These competition concerns, which have garnered much attention in the general discussion about the role of data in competition law, especially on platform markets, are not dealt with in the new type approval regulation.

III. Technical Progress and Recommendations for the Evolution of the Regulated Access Regime for Protecting Competition on the Automotive Aftermarkets

25 The last sections demonstrated that the new regulation does not offer clear and satisfactory answers to the new challenges despite a more explicit acknowledgement of the relevance of the technological change to connected cars. Considering the timeline of the legislative process, however, this is not surprising. The legislative process for the type approval regulation was driven by the urgent need to respond to the huge compliance problems with the emission standards and not by the emerging discussion about access to in-vehicle data and resources. In fact, when the EU Commission published their proposal in January 2016, the general discussion concerning access to in-vehicle data was still in its infancy. Very important in this respect was the C-ITS platform report (published in January 2016) with the first clear analysis of the new conflicts between OEMs and independent service providers.[51] Although the ensuing TRL report (published in May 2017) clearly states that the "extended vehicle" concept is not the best solution for the "access to in-vehicle data and resources", and the EU Commission has acknowledged the competition problems through this concept, the policy question regarding the need and design of a regulatory solution for this problem still awaits clarification. It is therefore not surprising that the EU legislator made only very preliminary and insufficient decisions in response to the new technological developments in the new motor vehicle type approval regulation.

26 This is why the delegation of powers to the Commission (Art. 61 (11)) for amending the specific rules of Annex X is so important, because it allows the Commission to make far-reaching policy decisions concerning the regulated access to RMI in the future. What scope has the Commission for the development of this regulatory regime?[52] What criteria are important and what might be recommended for the evolution of the rules of this access regime? Art. 61 (11) states clearly that the Commission should take into account technical and regulatory developments for amending the rules about access. The explicit but also very general reference to the developments of information and vehicle technology opens up a broad scope for the further development of these rules to the access regime for RMI depending on the technological possibilities. Regarding the rule-making in this evolution of the access regime, the type approval regulation emphasizes the key role of standard-setting processes for "a common structured process for the exchange of vehicle component data between vehicle manufacturers and independent operators."[53] In that respect, in recital 54 the European Committee for Standardisation (CEN) is assigned the explicit task that this standard should "reflect the interests and needs of vehicle manufacturers and independent operators alike ...".[54] This implies a clear normative statement that under the new technological conditions the interests of the independent operators also have to be considered very seriously in any future regulated access regime to RMI. However, from an economic, as well as a general competition law perspective, it would have been very important if a clear statement could be found in the type approval regulation, that the objective of this regulated access regime is the protection of effective competition in the automotive aftermarkets of repair and maintenance services. Although the type approval regulation can be interpreted in that way, an explicit statement of this objective is missing, both in the old and the new type approval regulation.[55]

eu-vestager-opens-probe-into-amazon-use-of-data-about-merchants/> last accessed 22.03.2019; see with regard to this monitoring problem already C-ITS Platform (n 5) 79-82 and, generally, Schweitzer/Haucap/Kerber/Welker (n 11) 142-145.

51 See especially the discussions in the working group 6 (C-ITS Platform [n 5]).

52 Since Art. 61 (11) entails the delegation of the power of the Commission to change these specific rules for regulated access to RMI, Art. 82 about the general rules for the delegated powers of the Commission in this Regulation is also relevant. Although Art. 82 gives the Commission the power to change, e.g. the rules for access to RMI, both the EP and the Council can revoke this delegation of power at any time, and the Commission has to always consult experts from the Member States before changing these rules.

53 Regulation (EU) 2018/858 (n 4), Recital 54.

54 ..."and should also investigate solutions such as open data formats described by well-defined meta-data to accommodate existing information technology infrastructures." (Ibid.)

55 The importance of protecting competition on the automotive aftermarkets is currently emphasized by a proposal of the German government of a German law for the strengthening of fair competition that also entails a specific provision to limit the "design" protection of vehicle

27 In which direction should the rules of the type approval regulation be developed? There is a broad consensus that the crucial challenge for competition on the markets for repair and maintenance services in the ecosystem of connected driving is the exclusive control of the OEMs of the access to in-vehicle data and the connected car (closed ecosystems of connected driving). Therefore, it is important to understand that the future rules of this regulated access to RMI depend also on the policy decisions regarding the general problem of "access to in-vehicle data and resources". If, for example, the proposed "shared server" concept would be implemented, which would put the external server with all the in-vehicle data under the governance of a neutral entity that grants non-discriminatory access to all stakeholders (including the OEMs), then the regulated access solution of the type approval regulation would not also need to encompass access to in-vehicle data for repair and maintenance services. Since such a "shared server" would not solve the problem of direct access to the connected car for getting real-time access to data and/or for performing remote diagnostic and repair services directly in the car, this can only solve a part of the competition problems. The more far-reaching solution of a transition to an interoperable open telematics platform (on-board application platform), as recommended by the TRL report (2017), could however solve the competition problems in aftermarkets in the future ecosystem of connected driving to a much larger extent. Here the car users would have the technical possibility to directly give independent service providers access to the in-vehicle data and the connected car. This would lead to an open ecosystem of connected driving, in which the car users can freely choose between the providers of repair and maintenance services.[56]

28 But what kind of regulated access might be necessary for protecting effective competition (including innovation competition) on the markets for repair and maintenance services, if we assume that the current "extended vehicle" concept prevails, and no (or no effective) regulatory solution for this "access to in-vehicle data and resources" problem is found and implemented?[57] Our analysis and discussion in this section suggests that it might be appropriate to establish a more broadly defined access regime with proper (and more refined) FRAND conditions. Although more research has to be done, such an access regime might additionally encompass access to a much wider set of in-vehicle data, especially raw data and real-time data, for enabling independent service providers to develop new innovative diagnostic, repair and maintenance services (e.g. remote services) themselves, and offer these services to the car users. Since the set of repair and maintenance services, for which competition and innovation should be protected, is not a closed but an open set, the scope of available data should be broadly defined to ensure that innovation through independent service providers is not restricted.[58]

29 The most difficult problem might be to develop solutions for a secure and direct access to the connected car for independent service providers, both for access to real-time data and for performing services directly in the connected car. For solving this problem, the future standardization process – which was already emphasized in the new type approval regulation – for the exchange of vehicle component data between vehicle manufacturers and independent operators can play a key role. The problems to be solved refer both to interoperability and security issues.[59] However, the protection of effective competition also has to be a crucial objective in these standardization processes, i.e. that standard-setting is not misused for restricting competition.[60] The well-established approach of

spare parts in order to open the markets for such spare parts for repair services, and to prevent the OEMs to use "design" law for foreclosing independent service providers in the automotive aftermarkets. See: <https://www.bmjv.de/SharedDocs/Gesetzgebungsverfahren/DE/Staerkung_fairen_Wettbewerbs.html>.

56 This does not imply that under such a technological regime no more competition problems between OEMs and independent service providers would exist. Access to certain kinds of technical information and other resources will still be necessary for enabling the independent operators to provide their services.

57 In the general discussion about data access, other solutions are also discussed; e.g. using the data portability right (Art. 20 GDPR) or general competition law (Art. 102 TFEU, e.g. essential facility doctrine). See for a brief discussion Kerber (n 5) 328.

58 It is however necessary to also take into account the legitimate interests of OEMs and component suppliers in terms of protecting their business secrets; thus, a differentiated approach with a distinction between different types of data might be necessary. Also, the new discussion surrounding mandated data-sharing for access to a large set of anonymized data for training algorithms and AI applications can be relevant in this context. See e.g. Schweitzer/Haucap/Kerber/Welker (n 11) 160, and Crémer/de Montjoye/Schweitzer (n 33) 13.

59 For the simultaneous importance of access to data and interoperability, see for connected cars Kerber (n 5) 317 and, generally for digital ecosystems, Crémer/de Montjoye/Schweitzer (n 33) 84, who introduce in that respect the concept of "data interoperability", as well as Furman et al. (n 33) 65 and Kerber (n 33). For the current state of the technology of the OEMs with regard to interoperability and security, see Knobloch & Gröhn, OEM 3rd Party Telematics – General Analysis, 2018, available at <https://www.figiefa.eu/wp-content/uploads/Knobloch-Gröhn-OEM-3rd-Party-Telematics-General-Analysis-Report.pdf> last accessed 22.05.2019.

60 Since standard-setting processes are often opaque and not transparent, there is always the danger that the agreements between the firms go beyond what is necessary for reaping the benefits of standardization. The "extended vehicle" concept is itself subject of an ISO standardization process (ISO 20077, 20078). See TRL (n 5) 46.

using procedures for approval and certification of independent service providers for solving security issues might also be a very suitable approach in this context. Additionally, also other still existing or new problems of the regulated access regime under the new type approval regulation should be solved. This refers to: (1) a further clarification of fair and reasonable fees and business practices for negotiations and contracts with regard to access; (2) solving the problem of monitoring the data access and repair and maintenance services of independent operators through the OEMs; and (3) finding remedies for protecting an equal access of OEMs and independent service providers to the customers. This implies that OEMs should not impede the choice of consumers regarding independent service providers on the Human-Machine Interface of the connected cars or use sophisticated bundling strategies that make it unattractive to use independent service providers for repair and maintenance services.

E. Conclusions

30 Although the analysis of the reform of the regulated access regime to RMI in the new motor vehicle type approval regulation has shown some improvements with regard to the compliance and effectiveness of access to RMI for independent service providers, it can only be seen as a small intermediate step. So far, it does not sufficiently address the challenges of the transition to connected cars for the regulated access regime for protecting effective competition in the automotive aftermarkets. Besides still unsolved problems with regard to clarifying rules for reasonable and proportionate fees and contractual arrangements, the new type approval regulation has not solved the problem of protecting competition for performing and innovating new repair and maintenance services that need direct access to in-vehicle data and the IT-system of the car. Due to the delegation of rule-making powers to the Commission and standardization bodies, the new type approval regulation can however, offer a sufficient framework for an evolution of the regulated access regime to RMI that might also be capable of protecting effective competition on the automotive aftermarkets in the future ecosystem of connected driving. The most important issue in that respect is the solution of the direct access problem of the independent service providers to the connected cars, which requires sophisticated solutions for ensuring the safety and security of the car.

31 The evolution of the regulated access regime to RMI under the new technology will also depend crucially on the future policy solutions about the general regulatory framework of connected and automated mobility. We have seen that regulatory decisions in favor of a "shared server" solution or the "on-board application platform" would change the requirements and conditions of this regulated access regime significantly. But also other general solutions about access to in-vehicle data for independent service providers, such as using the data portability right of EU data protection law (Art. 20 GDPR)[61] or applying the existing (or new) provisions of general competition law,[62] can considerably change the need and proper extent of this access regime.

32 However, this established regulated access regime to RMI in the type approval regulation can also be seen as a regulatory model for a broad regulatory solution for "access to in-vehicle data and resources" in order to protect competition and innovation by independent operators within the entire ecosystem of connected driving. If under the current "extended vehicle concept" of the OEMs other solutions for providing access are not implemented or not effective enough, then the set of services by independent operators, for which competition and innovation is protected through regulated access, could be extended to all services within the ecosystem of connected driving that need access to in-vehicle data and/or the connected car. From an economic perspective the effects on competition, innovation and consumer welfare do not differ between repair and maintenance services and other services that are complementary to the car users during connected driving. An extension beyond repair and maintenance services would allow the establishment of a comprehensive FRAND solution to all necessary in-vehicle data and resources in offering all kinds of services within the ecosystem of connected driving. Therefore, the current regulated access regime to RMI could also be seen as a nucleus, from which a broad sector-specific regulatory solution for the general problem of access to in-vehicle data and resources in the ecosystem of connected driving could be developed.

61 For the proposal to use the data portability right (Art. 20 GDPR) to solve the problems of access to in-vehicle data for independent service providers, see e.g. Martens/Mueller-Langer (n 5) 18.

62 In competition law the refusal to grant access to in-vehicle data could also be seen as an abusive behavior according to Art. 102 TFEU (or according to § 20 (1) GWB in German competition law, "relative market power"). See generally for IoT and aftermarket contexts, Schweitzer/Haucap/Kerber/Welker (n 11) 139-144; Crémer/de Montjoye/Schweitzer (n 33) 98-108, and also with specific regard to in-vehicle data Kerber (n 33).