

Submitted by the expert from Germany

**Kraftfahrt-
Bundesamt**



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Provisional agenda item 11



/ Automated Valet Parking (AVP)

Legal Framework and National Approval

Agenda

- **Legal Framework**
- **National Approval**
 - **General Information**
 - **Details and Scope**
 - **Drop-Off / Pick-Up Process**
 - **Internal Preparation**
 - **Assessment Process**

Legal Framework

- **July 2021:** Entry into force of the legislation amending the existing **Road Traffic** and Compulsory Insurance Acts (Act on Autonomous Driving)

- **July 2022:** Entry into force of the **Ordinance** regarding the Act on Autonomous Driving, enabling the ...
 - ... operation of automated/autonomous vehicles,
 - ... ***subsequent activation of automated/autonomous driving functions in dual-mode vehicles post-registration,***
 - ... testing of automated/autonomous driving functions.

Legal Framework

Section 1h Road Traffic Act

(Subsequent activation of automated and autonomous driving functions)

(1) If (...) autonomous driving functions (...) are installed in a motor vehicle, the issuance of an approval for the operation of this motor vehicle (...) **shall only be permitted if it can be ruled out that the deactivated (...) autonomous driving functions will interfere with the approved systems.**

Legal Framework

Section 1h Road Traffic Act

(Subsequent activation of automated and autonomous driving functions)

(2) The activation of an (...) autonomous driving function (...) **shall only be permitted on the basis of a special approval** issued by the Federal Motor Transport Authority. (...) The Federal Motor Transport Authority **shall publish the technical requirements that have to be complied with in this respect.**

Federal Motor Transport Authority = KBA

Legal Framework

Section 4 para. 6 Ordinance

(6) The national operating permit for the **subsequent activation** of automated or autonomous driving functions is issued by the Federal Motor Transport Authority **provided that the technical requirements** laid down by the Federal Motor Transport Authority **are met**.

- Enables the KBA to approve an AVP system if it complies with the technical requirements published by the KBA.

Kraftfahrt-Bundesamt / Type-Approval

National Approval / General Information

The Technical Requirements Catalogue (TRC) for **AVP** has been released on **October 17, 2022** by the KBA.



Source: https://www.kba.de/DE/Themen/Typgenehmigung/Zum_Herunterladen/dl_anforderungskatalog_AVP.pdf

Kraftfahrt-Bundesamt / Type-Approval

National Approval / General Information

On the **November 18, 2022** the KBA granted the **first national approval** for the **autonomous** driving function **Automated Valet Parking (AVP)** in **dual-mode** and **already registered** vehicles.



Kraftfahrt-Bundesamt
DE-24932 Flensburg

Genehmigung der nachträglichen Aktivierung einer automatisierten oder autonomen Fahrfunktion
Approval of a subsequent activation of an automated or fully automated driving function

ausgestellt von:
Kraftfahrt-Bundesamt (KBA)

nach § 1h des „Straßenverkehrsgesetzes (StVG)“ in Verbindung mit § 4 (6) der „Verordnung zur Genehmigung und zum Betrieb von Kraftfahrzeugen mit autonomer Fahrfunktion in festgelegten Betriebsbereichen (Autonome-Fahrzeuge-Genehmigungs- und -Betriebs-Verordnung – AFGBV)“

Automatisiertes / autonomes fahrerloses Park- und Manövriersystem (AVP)

issued by:
Kraftfahrt-Bundesamt (KBA)

according to § 1h of „Straßenverkehrsgesetz (StVG)“ in conjunction with § 4 (6) of „Verordnung zur Genehmigung und zum Betrieb von Kraftfahrzeugen mit autonomer Fahrfunktion in festgelegten Betriebsbereichen (Autonome-Fahrzeuge-Genehmigungs- und -Betriebs-Verordnung – AFGBV)“

Automated Valet Parking (AVP)

Stand des KBA-Anforderungskataloges: **11.10.2022**
Status of KBA catalogue of requirements:

Genehmigungsnummer: **NAF00001*00**
Approval number:

Kraftfahrt-Bundesamt / Type-Approval

National Approval / Details & Scope

- **Market:** Germany only
- **Parking area(s):** currently limited to the parking garage P6 at Stuttgart Airport
 - Further roll-out for other car lines and parking facilities requires extension of the national approval.
- **Type:** infrastructure based AVP
- **Max. speed:** 4 km/h
 - max. allowed by TRC: 10 km/h + 2 km/h tolerance

National Approval / Details & Scope

- ODD:
 - Drop-Off / Pick-Up zone within the approved parking facility
 - Technical personal (AVP Operator) available
 - Mixed traffic in one direction
 - Weather conditions (e.g. no icy road or air temp. lower than - 20 °C)

- Multi-lateral concept between vehicle manufacturer, AVP infrastructure provider, parking facility owner, parking facility operator

Kraftfahrt-Bundesamt / Type-Approval

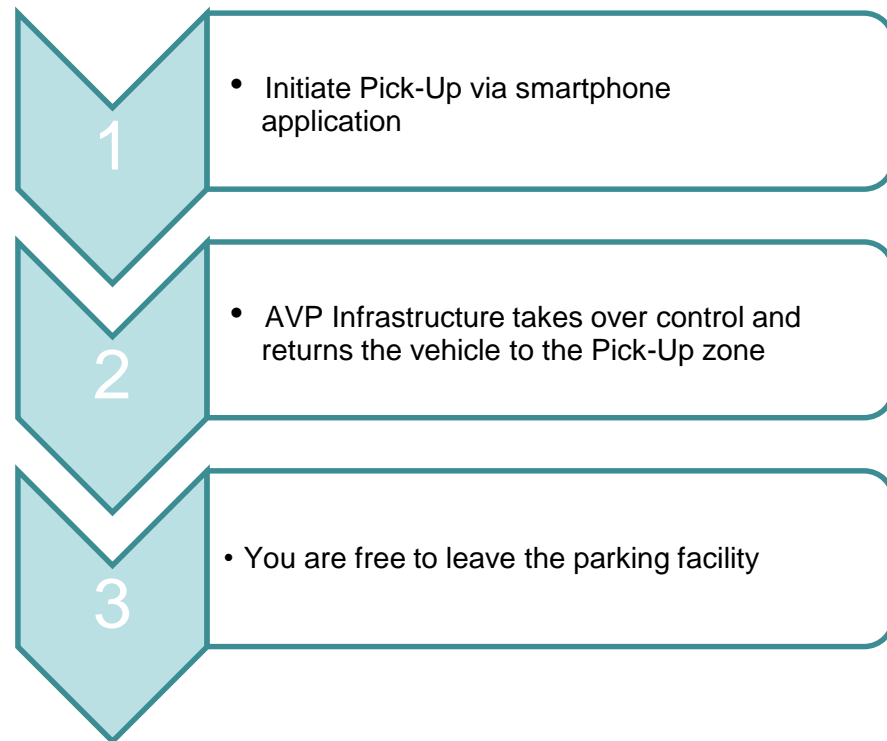
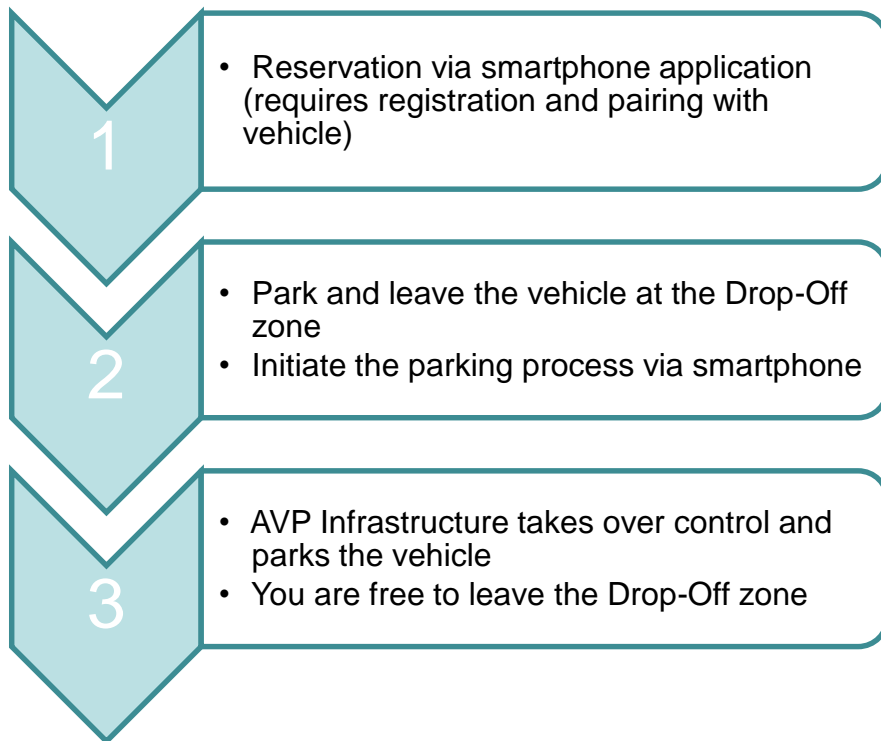
National Approval / Details & Scope

- Reporting provisions on a weekly basis with cumulative statistics about:
 - Ratio and total number of succeeded/aborted AVP drives
 - Number of Minimum-Risk-Maneuvers
 - Distance driven autonomously
 - ...

- Ad-hoc reporting, e.g. in case of accidents with VRUs

Krafftahrt-Bundesamt / Type-Approval

National Approval / Drop-Off & Pick-Up Processes



Kraftfahrt-Bundesamt / Type-Approval

National Approval / Internal Preparation

- **04/2018:** First discussions with Vehicle Manufacturers about AVP
- **10/2019:** First workshop with BMDV, KBA, Technical Service and a Vehicle Manufacturer seeking for approval
- **02/2021:** Start of drafting process for a TRC lead by KBA based on Industry input/feedback and intensive discussions with the BMDV and the BSI (German national Cyber-Security agency)

Kraftfahrt-Bundesamt / Type-Approval

National Approval / Internal Preparation

- **06/2022:** Presenting the draft version of the TRC within the German national working group on Level 4 systems for registered vehicles (including Authorities, Industry, Technical Services) and call for review
- **10/2022:** Official release of the TRC
- **11/2022:** First national approval

Kraftfahrt-Bundesamt / Type-Approval

National Approval / Assessment Process

- **Practical tests** witnessed and performed by a Technical Service.
- **Additional tests** conducted **by KBA** with the focus on:
 - Collision Avoidance
 - Object and Event Detection & Response (OEDR)
 - Minimum-Risk-Maneuver (MRM)

Kraftfahrt-Bundesamt / Type-Approval

National Approval / Assessment Process

- **Audits** have been performed by the
 - **Technical Service**, e.g. in regards to
 - Software-Update and Cyber-Security
 - Functional Safety

 - **KBA** in regards to
 - Cyber-Security together with the BSI
 - the initial assessment for Vehicle Manufacturers of Level 4 systems

Thank you very much
for your attention!

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Legal notice

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