Terms of Use aixzellent-EMaaS

1. General Provisions

1.1. These Terms of Use apply to the access and use of aixzellent-EMaaS, a digital service offering for emission calculation, which is controlled from the PTV software PTV Vissim.

1.2. PTV grants the Customer access to and use of the Service solely on the basis of these Terms of Use, the Agreement and the applicable additional documents referred to herein, which form part of the Agreement.

1.3. Theis Consult GmbH is included in the protective effects of these conditions, who are involved in the provision of services. The Customer or partner of PTV shall indemnify Theis Consult GmbH against claims by third parties resulting from a breach of these conditions.

2. Definitions

2.1. **"Service"** means the provision of modelled emissions data as DaaS (Data as a Service) provided by PTV under a contract, in particular as further defined in sec. 3 and 5.

2.2. "**Availability**" defines the levels of performance applicable to the Service, in particular its agreed availability and certain related aspects.

2.3. "**Usage data**" is automatically generated system data (e. log files, information about the use or availability of the Service).

2.4. **"Reference data"** means data to be provided to the Service from a microscopic traffic flow simulation (1Hz resolution, per individual vehicle defined in more detail according to the interface definition with speed, gradient, vehicle class; for more details, see the interface definition in the PTV Vissim manual as amended from time to time), generated from PTV Vissim by the Customer.

3. Subject matter

3.1. The subject of these Terms of Use is the provision of the aixzellent-EMaaS Service as an "Emissions Model as a Service" ("**EMaaS**").

3.2. aixzellent-EMaaS is a Service for use against payment as agreed by the Parties upon conclusion of the contract for the term of the contract. The Service is a data service which may be used by the Customer to couple with a Customer's own microscopic traffic flow simulation to create models of traffic-related environmental and air pollution. The Service calculates among others the following values (modelled) from the reference data to be provided by the Customer (speed, gradient and vehicle class of a set of vehicles):

- NOx emissions (tailpipe)
- PM from combustion gases
- CO_2 emissions (tailpipe).

A complete overview of the modeled emissions is given in the product description. The modelled values do not have an absolute temporal and geographical reference but are assigned in each case to the reference data provided by the Customer. The quality of the modelled emissions is determined by the quality of the reference data.

The Customer is solely responsible for the quality/suitability of their reference data. PTV assumes no liability for the quality/suitability of the reference data with regard to the processing within the scope of the Service.

When using the service in different regions, the vehicles provided are:

- Europe (EU)

  - EU vehicle models

- USA (USA)

  - US vehicle models

The customer is responsible for an appropriate selection of the vehicles provided and is advised that if vehicles are selected outside of their region, discrepancies with the actual vehicles in the region may occur.

If the service is used outside the regions listed, it customer is hereby informed, that no regional adaptations of the vehicle models are available here and no regional validation has been performed. Therefore, the modeled emissions will differ from those of the real vehicles in the region.

No specific result is owed with the Service, only the application of the emission model described in key points to the reference data and the provision of the result data in PTV Vissim.

3.3. Emission calculation

The Service applies an emission model from Theis Consult GmbH with key points to the reference data described below and then provides calculated data from this. There is no entitlement to disclosure of the exact details of the emission model methodology.

- The Service uses a physical vehicle model to determine emissions, which has been developed, calibrated and validated using real engine and vehicle measurements.

- In the validations for the individual vehicle, the emission model showed the following average accuracy in comparison with the real measurements carried out on behalf of Theis Consult GmbH (several dozen test drives of more than 30 minutes each in real urban traffic in the Stuttgart region, for an example of a vehicle see appendix):
  - NOx > 85%
  - CO_2 > 98%.
- The Service uses a mean representative physical vehicle model per vehicle class, drive type and emission standard. In europe this corresponds to the definition in HBEFA (www.HBEFA.net), in the US to the definition of MOVES (www.epa.gov/moves).
- With the help of the physical vehicle model, the reference data are checked for plausibility and moderately corrected accordingly or also rejected for calculation. The requirements are specified in detail in the interface description in the PTV Vissim manual as amended from time to time.
- The physical vehicle model is used to determine a quality criterion for the reference data.

To initiate and execute a model calculation, simulated individual trajectories of a simulation run of the Customer are sent to the interface of the Service in a defined format. Each call is assigned a unique customer-specific identifier, which is anonymised when transferred to the Service, to identify the authorised Customer ("**User ID**"). This identifier can be used to implement security mechanisms to protect the Service against misuse and incorrect use.

3.4.   Interface specification
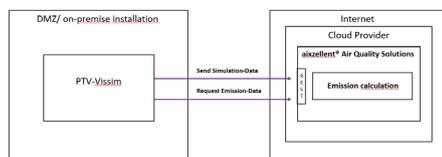
The interface represents an asynchronous communication in which the request contents (simulation data) are transmitted in the first call and the result data are fetched in the second call. The provision does not take place in real time but takes longer or less depending on the amount and size of the request data (trajectories). E.g. 100 trajectories can be answered in 5 minutes, whereas 30,000 trajectories are answered in about 60 minutes.

The content and structure of the request from PTV Vissim is divided into two data categories:

Metadata:
- Authentication parameters
- Unique User ID (which is only recognisable to Theis Consult GmbH in anonymised form and therefore cannot be used to identify the Customer)
- Software information (e.g. SW version).

Simulation data (list of trajectories):
- Vehicle configuration:
  - Vehicle ID set by Customer
  - Configuration:
    - Vehicle class
    - Drive type
    - Emission standard.
- Trajectory (1Hz resolution):
  - Speed
  - Route gradient.

The unique User ID is used to technically prevent misuse of the Service and to be able to recognise the frequency of use.

Contents and structure of result data:

List of trajectories:
- Identifier
- Quality identifier
- Model result:
  - Driving distance
  - Emissions.

The reference data in the Customer's request as well as the Service's response are transmitted in a binary format in order to reduce the data size during transmission.

The documentation of the interfaces on a technical level can be found in the PTV Vissim manual as amended from time to time.

3.5.   The M2M data exchange between the Service and the Customer is realised as a state-of-the-art web interface with appropriate security measures to protect the systems and the transmitted data. The contractual data is collected in PTV Vissim.

3   Provision of services

4.1   PTV shall provide the Service from the contractually agreed point in time in accordance with the provisions of these Terms of Use.

4.2   PTV provides the Service for collection via API data interface in PTV Vissim.

4.3   PTV involves the subcontractor Theis Consult GmbH in the provision of the Service.

5   Technical availability of Service, support

5.1   PTV undertakes to ensure the availability of the Service in accordance with this sec. 5.

5.2   This sec. 5 applies exclusively to Services

provided to the Customer for productive use and not to non-productive, free and/or trial versions of the Service and integration or test systems with unpublished functions.

5.3 For support requests concerning the Service, the Customer may use the communication channels in accordance with the Maintenance and Support Terms for PTV Software, as amended from time to time, available at https://www.ptvgroup.com/en/maintenance_and_support_terms_ptv_software_en.pdf?inline.

5.4 PTV can only provide the Service in compliance with the availability agreed in sec. 5.6 in accordance with the contract if the Customer operates a fair use of the Service. The Service is subject to certain technical limitations due to the way it is provided over the internet, especially when posting requests and retrieving data. Within the framework of fair usage, access to the Service shall be available to all Customers to the same extent. Unfair use means that individual Customers make excessive use of the Service to the detriment of other Customers. The Customer shall refrain from such unfair use. In order to ensure optimal performance for all Customers and to prevent unfair use, PTV is entitled to take restrictive measures, for example by limiting the use of the Service. PTV is entitled to temporarily or permanently block the Service from the Customer if its unfair use seriously impairs the performance of the Service.

In the event of unfair use of the Service by the Customer, lower availability up to a total failure of the Service is to be expected, for which PTV is not responsible.

5.5 The availability of the Service is calculated using the following formula as a percentage of the time during a calendar month during the system runtime with the exception of time slots reserved for planned maintenance:

$$\text{Availability in percent} = \frac{\text{System runtime (Min.)downtime (min)}}{\text{System runtime (min)}} \ x \ 100$$

System runtime	24x7 / 365 days
Actual availability	**97.00%**

When calculating the actual availability, downtimes not attributable to PTV are considered available times. These harmless downtimes are:

a) Downtimes due to planned or unplanned maintenance work in accordance with sec. 5.6 and 5.7;

b) Downtimes due to maintenance work agreed in advance with the Customer;

c) Downtimes due to operational disruptions caused by an event of force majeure or other unavoidable events beyond the control of PTV and which could not be averted with reasonable effort and could not have been foreseen even with careful application, which make PTV's obligations under this sec. 5 considerably more difficult or impossible in whole or in part, such as strikes, lockouts, extraordinary weather conditions, power failures, operational or traffic disruptions and transport obstructions, and which release PTV from its obligations under this sec. 5 for the duration of such an event;

d) Downtimes due to virus or hacker attacks, insofar as PTV has taken the usual protective measures in the absence of an agreement;

e) Downtimes due to a fault caused by the Customer;

f) Downtimes due to software errors in Customer applications or due to errors in system and system-related software triggered by Customer applications or Customer data;

g) Downtimes caused by third parties (persons not attributable to PTV).

PTV is not obliged to make the application available to the Customer for use during the planned maintenance work in accordance with sec. 5.6. If the Service is available during planned maintenance work in accordance with sec. 5.6, use of the Service shall be at the Customer's own risk. The Customer acknowledges that the use of the Service may be limited in terms of functionality or performance during planned maintenance and/or that the Service may be shut down or restarted without notice. If the Service is made available during planned maintenance work and there is a restriction in the functionality of the Service or a restriction in availability, the Customer shall not be entitled to any warranty or compensation.

5.6 Maintenance work is planned in such a way that the Customer's use of the Service is affected as little as possible.

Customer-relevant planned maintenance work shall be notified to the Customer at least three (3) working days in advance.

PTV is also entitled to perform unscheduled maintenance of the Service for good cause, e.g. if the Service operation is endangered. This includes, in particular, emergency changes, e.g. the installation of security

patches, which are necessary to secure and maintain operations and require immediate implementation. The Customer must be notified immediately of such unscheduled maintenance work and it must be carried out in such a way that disruptions to the operating process are kept to a minimum.

All time information corresponds to the time in Germany (Central European Time (CET) or Central European Summer Time (CEST).

5.7 All obligations under this sec. 5 apply only to the Service provided to the Customer at the internet nodes of PTV's data centre ("**Transfer Point**"). PTV is not responsible for the data transmission from the transfer point to the Customer and/or in the area of the Customer's IT system.

6 Rights of use

6.1 PTV grants the Customer a time-limited, non-exclusive, revocable, non-sublicensable and non-transferable right, subject to the terms of these Terms of Use and the Agreement, to access and use the Service in accordance with the service description and the documentation for the term of the Agreement.

6.2 Any open-source software components used in the Service will be represented within the Service itself where there is a legal obligation to do so based on the licence terms of the relevant open-source software.

6.3 If PTV updates, modifies or extends the Service during the term of the Agreement or makes other changes in relation to the Service, the provisions of this sec. 6 shall also apply to that Service.

6.4 The Customer has no rights to which it is not expressly entitled under these Terms of Use. In particular, it shall not be entitled to:

a) to use the Service beyond the scope of use agreed in these Terms of Use or to permit third parties to use the Service beyond the scope of use agreed in these Terms of Use;

b) make the Service accessible to third parties;

c) reproduce the Service in any form.

6.5 PTV is entitled, after prior written warning, to interrupt the Customer's access to the Service if the Customer violates the provisions of this sec. 6. The interruption shall be lifted as soon as the reason for the interruption no longer exists. If the Customer continues to violate the provisions of this sec. 6 despite a corresponding written warning from PTV, PTV is entitled to terminate the Agreement with respect to the Service without notice, unless the Customer is not responsible for such violation.

6.6 PTV or its licensors are the sole owners of the usage data and may use and exploit it in anonymised form for any purpose in accordance with the applicable legal provisions.

7 Intellectual property

All content included in the Service, such as text, graphics, logos, button icons, images and audio clips, is the property of PTV or its licensors and protected by copyright or other intellectual property laws.

8 Obligations of the Customer

8.1 The Customer is obliged to cooperate in accordance with these Terms of Use so that PTV can fulfil its contractual and statutory obligations in relation to the subject matter of the contract. In particular, the Customer is obliged to:

a) comply with the restrictions/obligations in respect of the rights of use pursuant to sec. 6;

b) obtain the necessary consent from data subjects, insofar as personal data is collected, processed or used when using the Service and no legal or other permission exists;

c) to notify PTV of incidents in accordance with the Maintenance and Support Terms as amended from time to time and to notify PTV of defects in contractual services by e-mail immediately (at the latest on the following working day) after becoming aware of them.

8.2 The Customer undertakes to refrain from:

a) intentional access, manipulation or use of non-public parts of the Service or the underlying technical delivery systems;

b) using robots, spiders, scrapers, crawlers or other similar automated data collection or extraction tools, programs, algorithms or methods to search, access, obtain, copy or monitor any part of the Service, except through documented API endpoints;

c) publishing or transmitting any file(s) that contains viruses, worms, Trojan horses or other contaminating or destructive features or otherwise interferes with the proper functioning of the Service;

d) attempting to decipher, decompile, disassemble or reverse engineer or otherwise attempting to discover the source code of any software or proprietary algorithm used that comprises or in any way consists of

any part of the Service;

e) testing, scanning or investigating the vulnerability of the Service;

f) using any device, software or routine that interferes with any application, function or use of the Service or is designed to damage a system, cause undue stress, cause harmful interference, surreptitiously intercept or expropriate; data or communications stored or transmitted therewith.

8.3 The Customer's access to and use of the Service shall be subject to all applicable laws, including copyright or trademark laws, antitrust and competition laws, export control laws, sanctions regulations, data protection laws, or other laws in any applicable jurisdiction, and shall not conflict with any agreement the Customer has entered into with a third party. The Customer is responsible for ensuring that its access and use of the Services comply with applicable laws and regulations.

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