

ACJA – Aerial Connectivity Joint Activity

Interface between MNOs and UAS EcoSystem

Thomas Neubauer – responsible Work Task Lead



Initiated 2018. Launched 2019

Aerial Connectivity Joint Activity

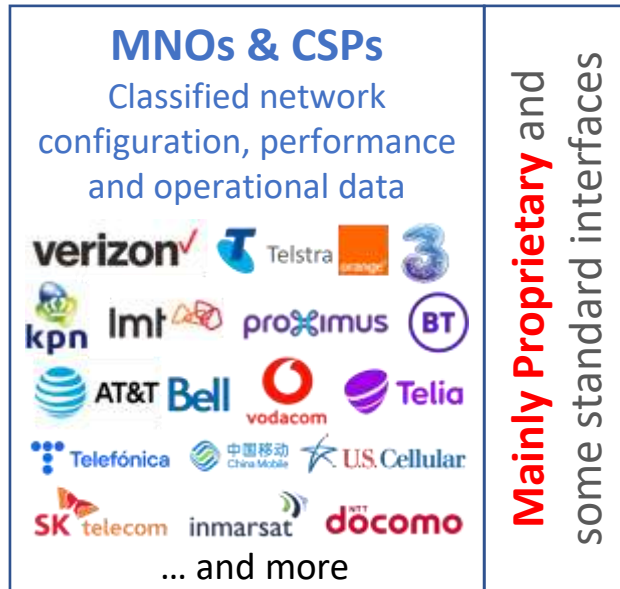
The GSMA and the GUTMA (Global Unmanned Traffic Management Association) have set up the Aerial Connectivity Joint Activity (ACJA) initiative to build communication and cooperation between the aviation and mobile industries. The main aim of the ACJA is to facilitate engagement between the two sectors, build a mutual understanding, advocate and explain how mobile services will benefit UAS and UTM service providers, as well as ANSPs (air navigation service providers) and regulators. The community identifies current challenges and works together to tackle them. The intent is to bring cohesive proposals, supported by GSMA and GUTMA members, to the relevant standards development organisations of each community.

Currently the work is carried out by four work tasks with the following focus:

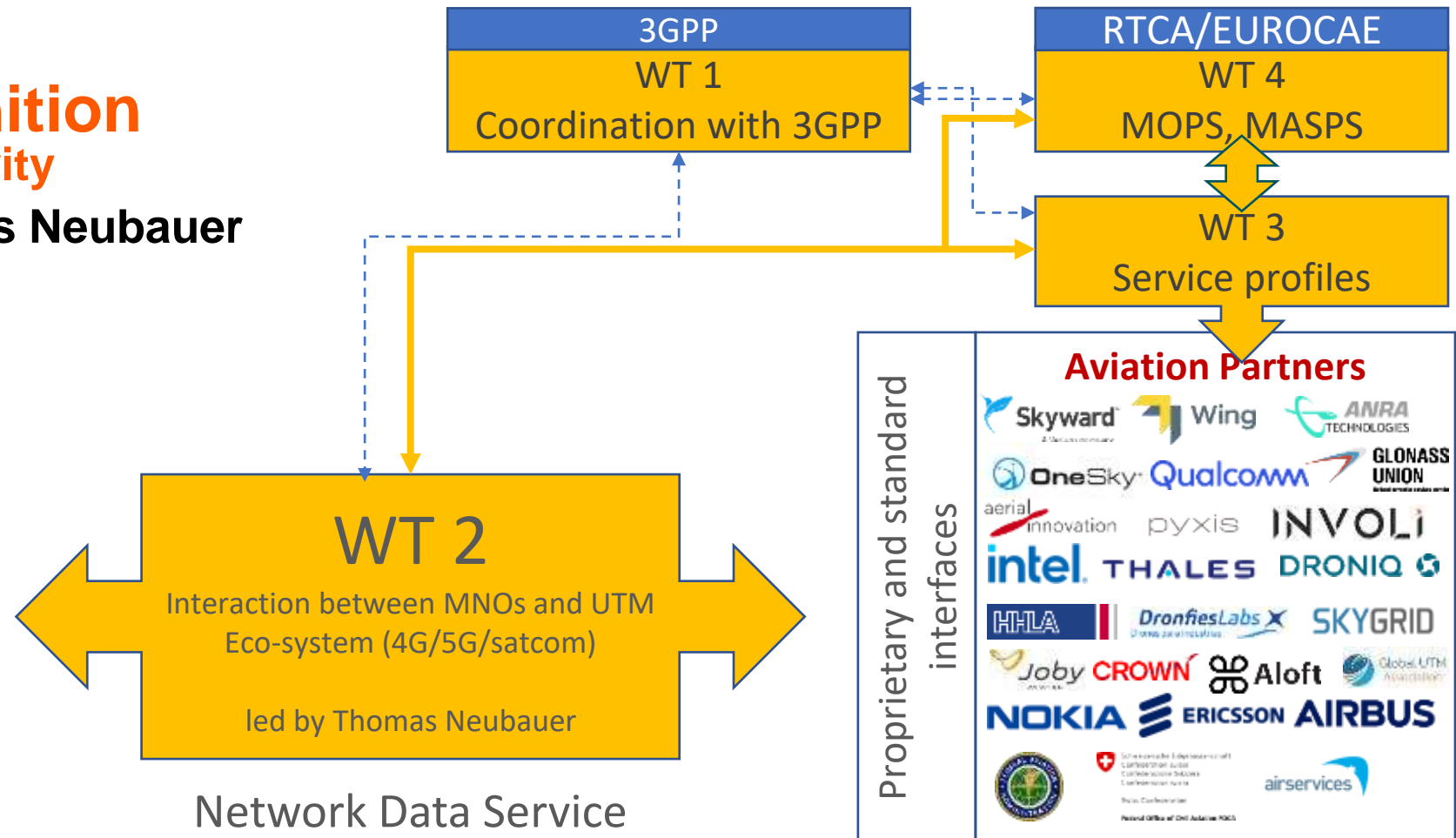
Global Interface Definition

Aerial Connectivity Joint Activity

Interfaces WT2: led by Thomas Neubauer



GSMA™ >1000 MNOs



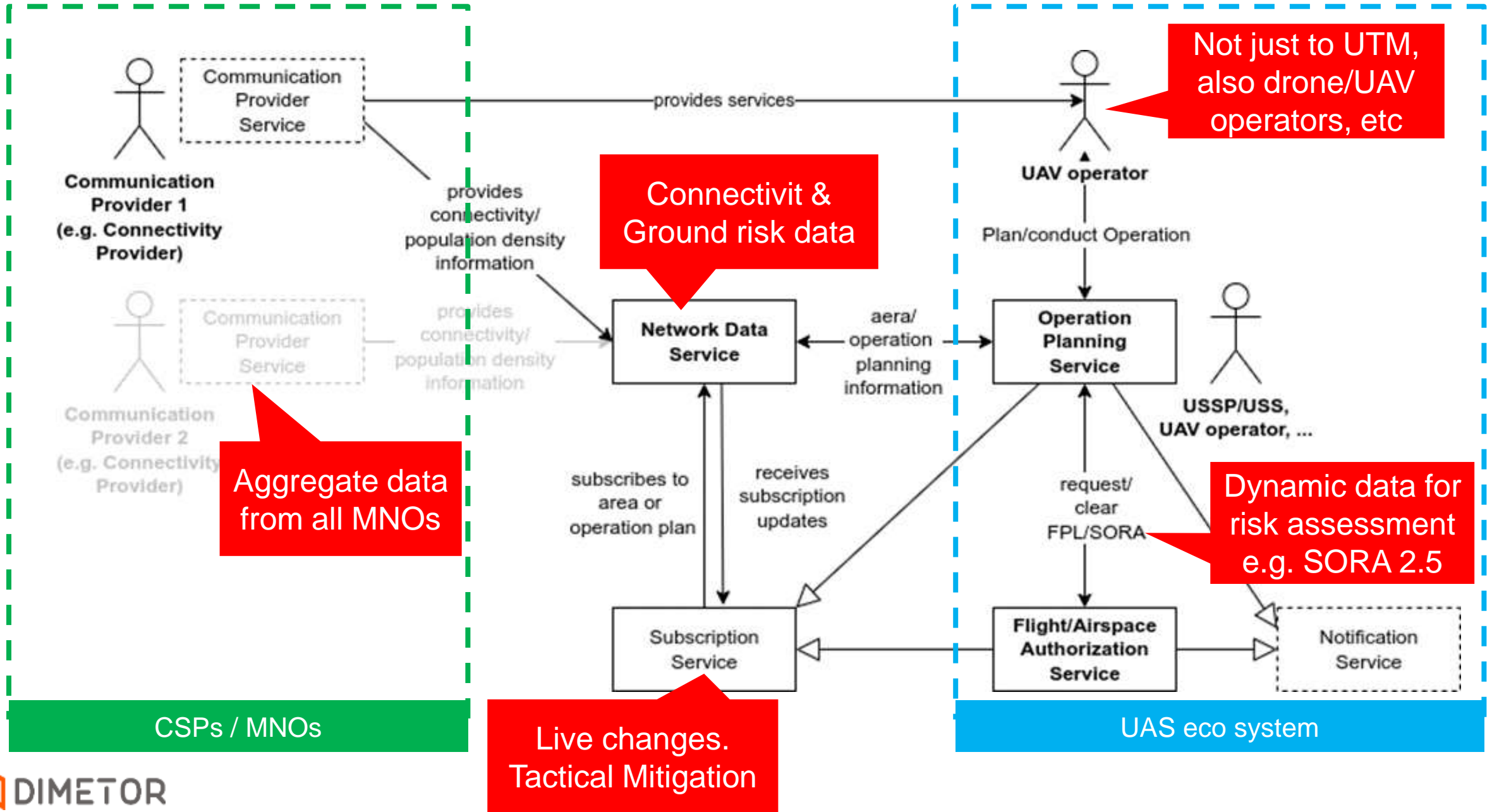
Global UTM Association >80 aviation comp.

Interfaces approved by the key industry bodies

- ACJA Interface for Data Exchange between MNOs and UAS EcoSystem approved by GSMA & GUTMA
- 1st Edition published in Q1/21
- Field deployments, validations, enhancement, operational use
- 2nd Edition published in Q1/23



Network Data Service 2.0 - Overview



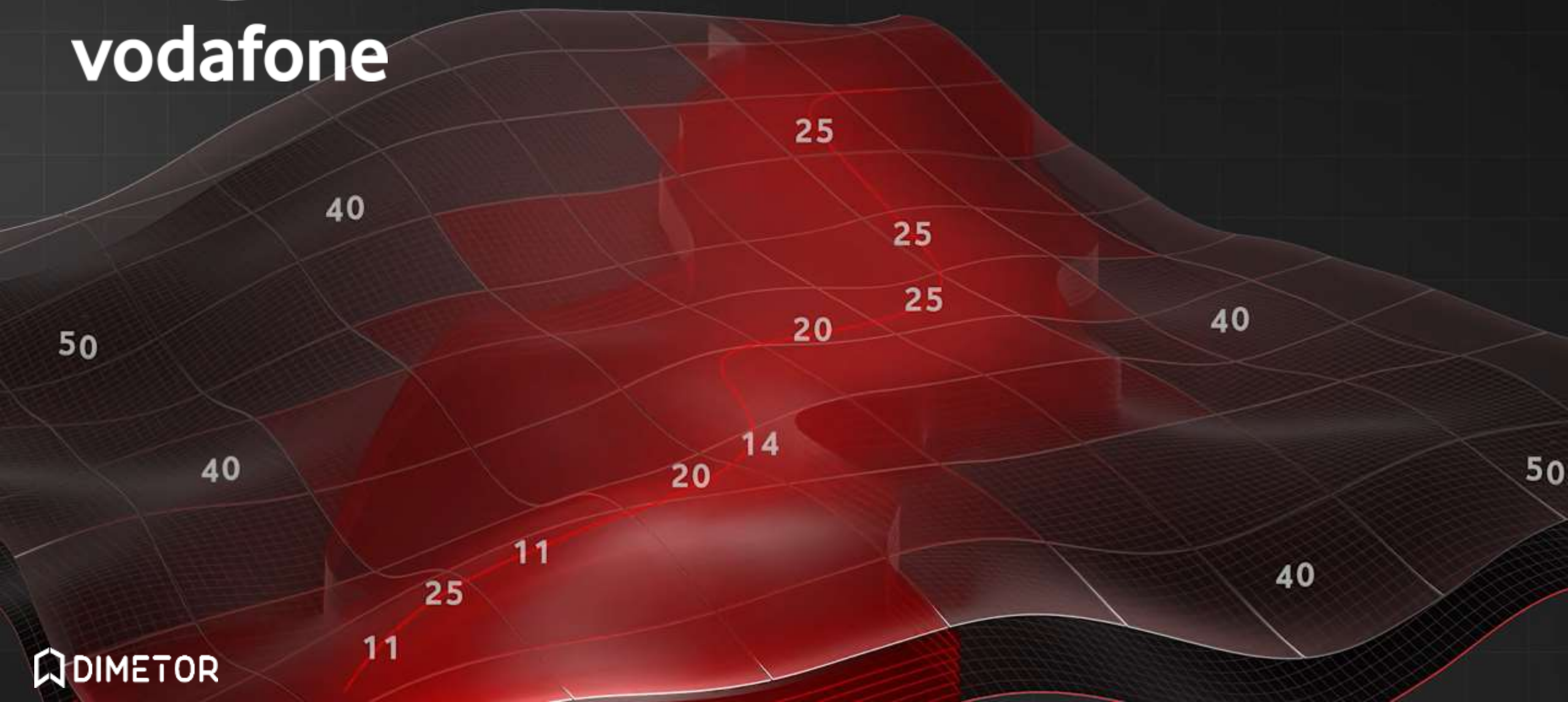
Path towards Open Interface Standard in the Telecom Industry

- **Step 1** → Part of Open Gateway, Universal mobile network open APIs
- **Step 2** → Part of CAMARA, Telco Global API Alliance





vodafone





①

 DIMETOR

300

270

240

210

180

Height

Answers to the questions raised (1/2)

- ❑ Under which conditions real-time/historical population density data are needed to assess reliably the ground risk of an operation (when static data are not enough)?
 - **For flight planning:** historical data and future projection for day, time of day
 - **For flight clearing:** the latest information
 - **For operation:** live

- ❑ Which KPIs may be used to evaluate the reliability of population density data?
 - The confidence (and hence reliability) is a function of $1/\text{SQRT}(N)$ → so the sample size (# and time) is key
 - Representation of the majority of the people, e.g. more difficult for a small MNO with 10% market share

- ❑ Which is the minimum dimension of a cell in populated vs. sparsely populated area?
 - The possible granularity of the resolution is subject to the physical network layout (inter-site-distance)
 - Typically, 50x50m in densely built out areas (populated), and 150x150m in less densely built out areas

Answers to the questions raised (2/2)

- ❑ What are the restrictions imposed today by the privacy requirements?
 - Which is the minimum number of person's data that should be in a group of aggregated data to ensure privacy?
 - There are some legal restrictions per country – e.g. not less than 10 or 15
 - How long may those information be stored for making forecasts?
 - There are legal restrictions again
 - The data can not be stored for longer, but the with the data used to train algorithms, older data is then not needed anymore.
 - For day and time of day: 4-8 weeks is sufficient (sliding window) – for handling seasonality, up to 1year.
- ❑ many data providers have access to a fraction of the real population density, is there a minimum threshold to ensure that the information are reliable?
 - A lot of scientific research has been done on that. E.g. about 80% reliability with 1 telco, >95% with 2 telcos
- ❑ Referring to historical dynamic data, how long back in time you need to accumulate data in order to get a good forecast?
 - 4-8 weeks is a good “sliding window” for the algorithms to learn.
 - “the more the better” – results and analysis show that 30 days history is a good way to project the next 30 days
- ❑ Which methodology we may use to assess the declared level of confidence of the data?
 - Market share or percentage of population may be a proper threshold.



Thank you.
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