



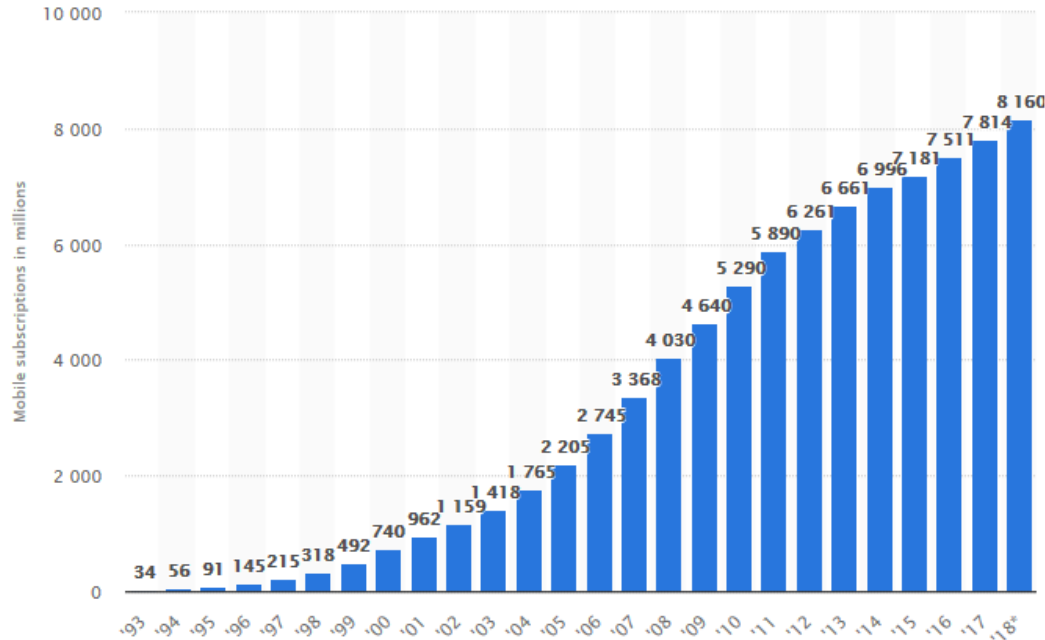
› **CREATING VALUE BY COLLABORATION**

Herman Pals

COIN conference, Oct 31st 2019, The Hague

TNO innovation
for life

TELCOS SUCCESSFULLY CREATED LARGEST WORLDWIDE INTEROPERABLE ECOSYSTEM



<https://www.statista.com/statistics/262950/global-mobile-subscriptions-since-1993/>

Key enablers for this success:

- › Standardised interfaces and ecosystem
- › Retail competition, but back-end / wholesale collaboration
- › No winner takes all

COLLABORATION IS KEY TO FURTHER EXPLOIT THIS ECOSYSTEM AND TO ACHIEVE GROWTH



create cake before
dividing the cake

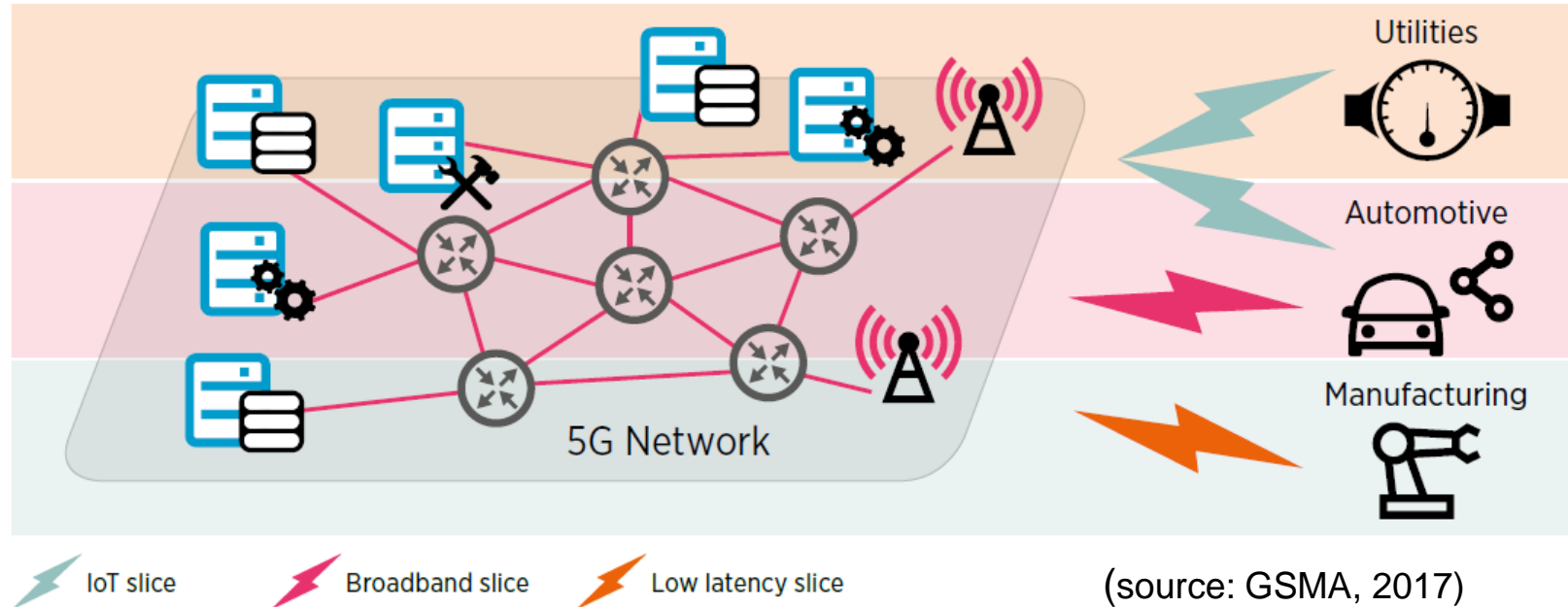


› Some examples:

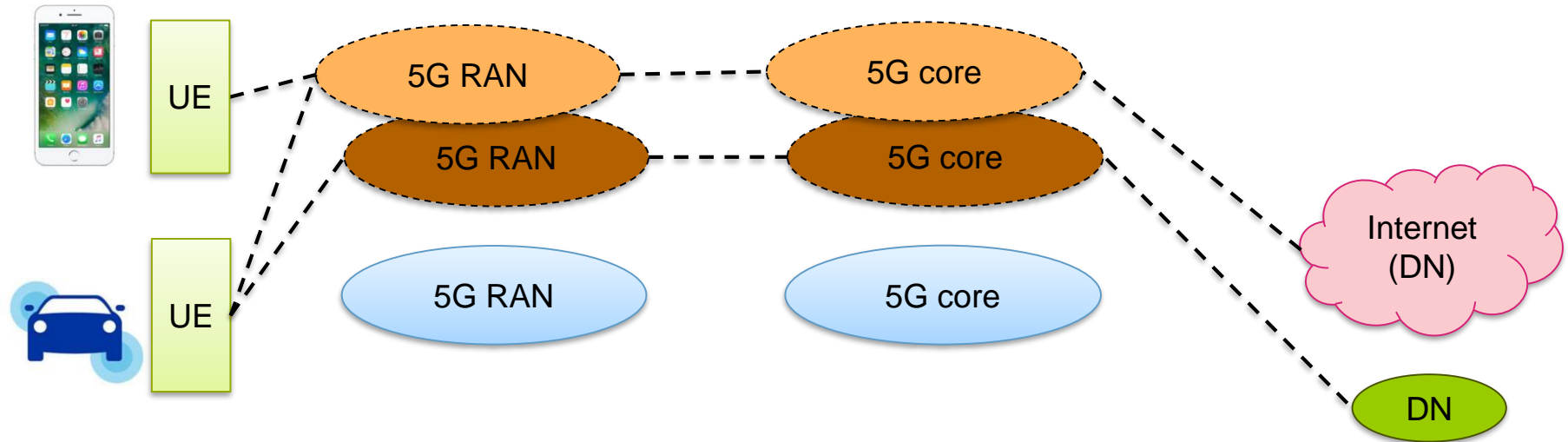
1. 5G Differentiated services
2. Exploiting data, MobileConnect & Self Sovereign Identity
3. Enabling secure data sharing: IDS

5G AIMS TO PROVIDE TAILORED CONNECTIVITY TO A VARIETY OF APPLICATION AREAS

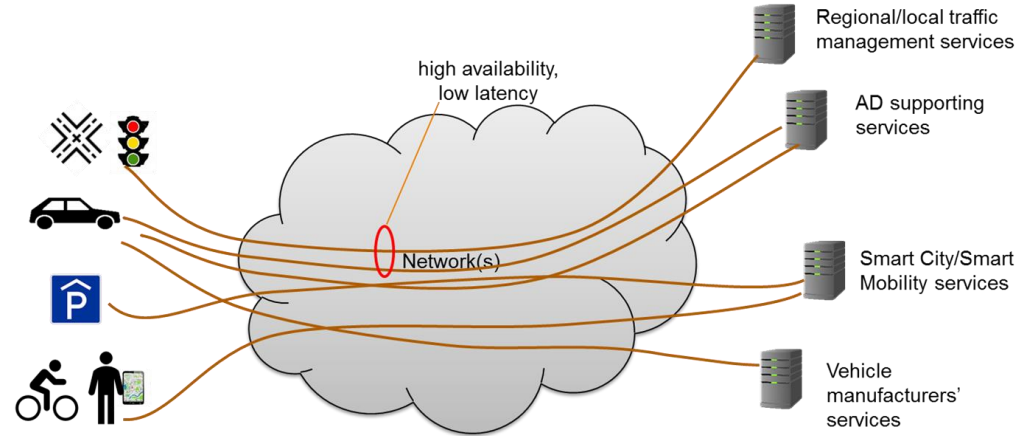
5G networks subdivided into virtual networks each optimised for one business case



SLICING GIVES SEPARATED VIRTUAL NETWORKS ON TOP OF ONE PHYSICAL NETWORK INFRASTRUCTURE

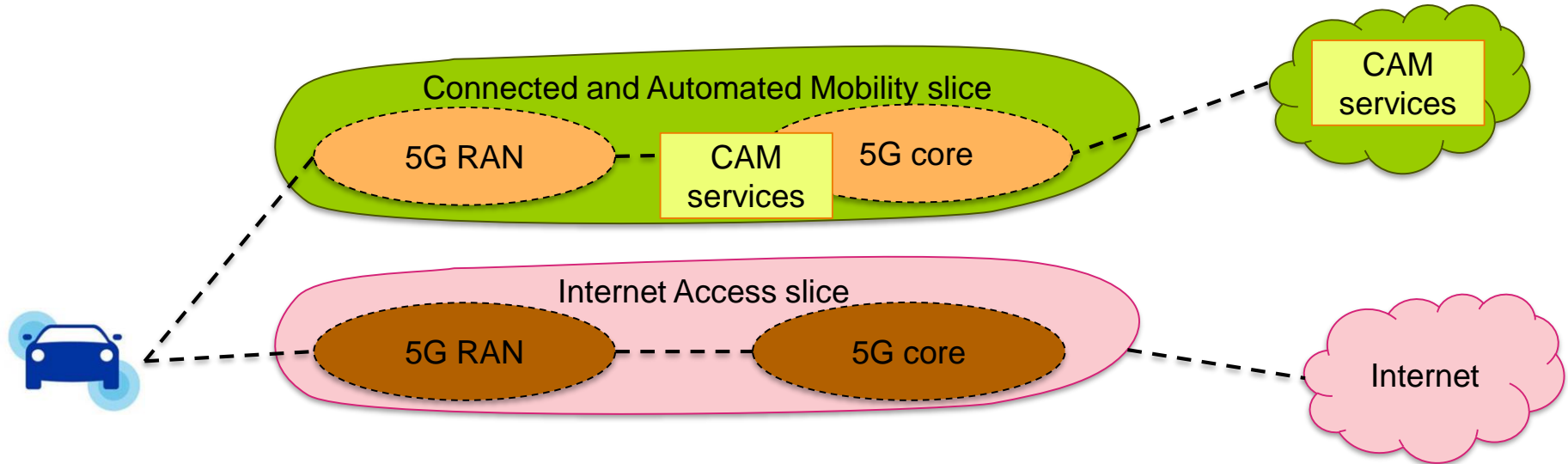


EXAMPLE USE CASE FOR 5G: CONNECTED AND AUTOMATED MOBILITY (CAM)

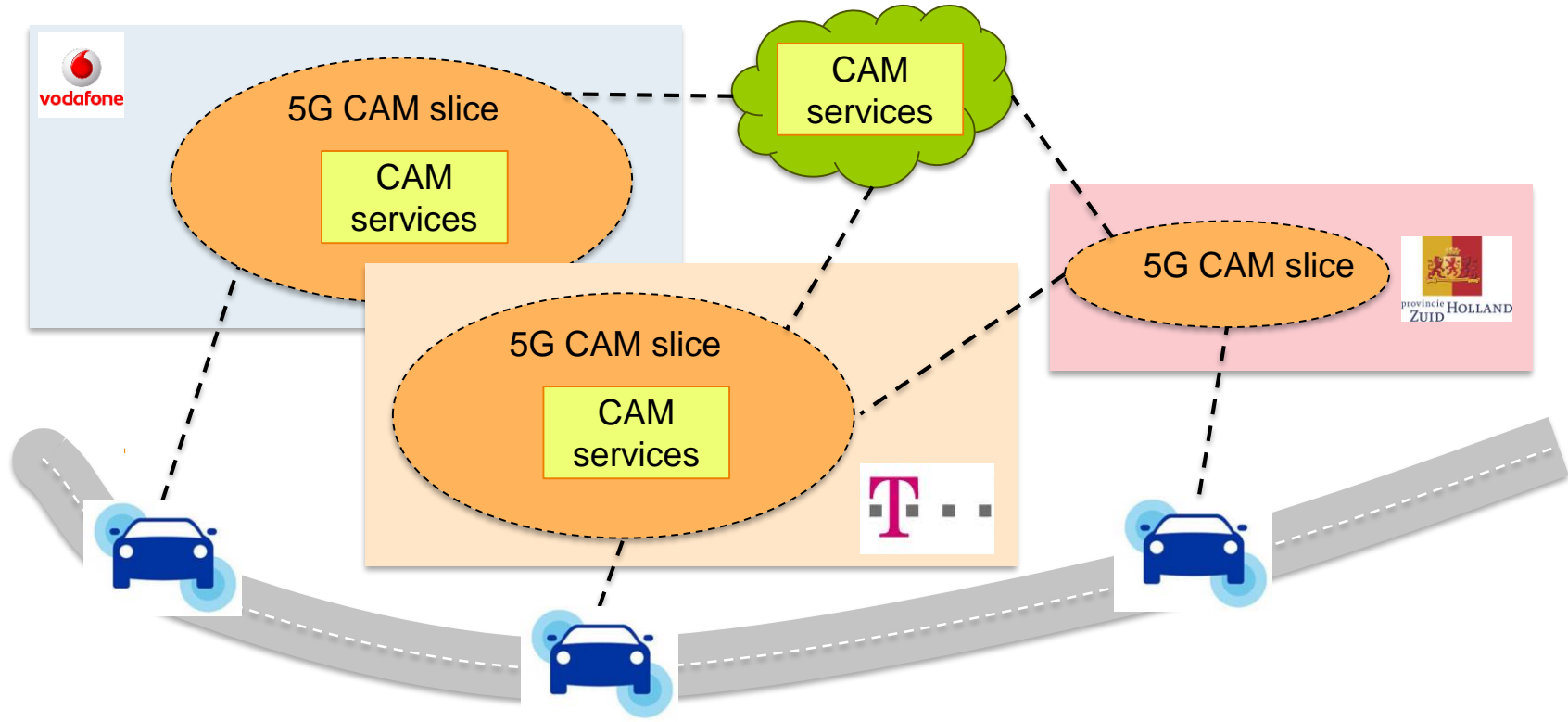


- ▶ Low latency, depending on application
- ▶ High reliability of connectivity

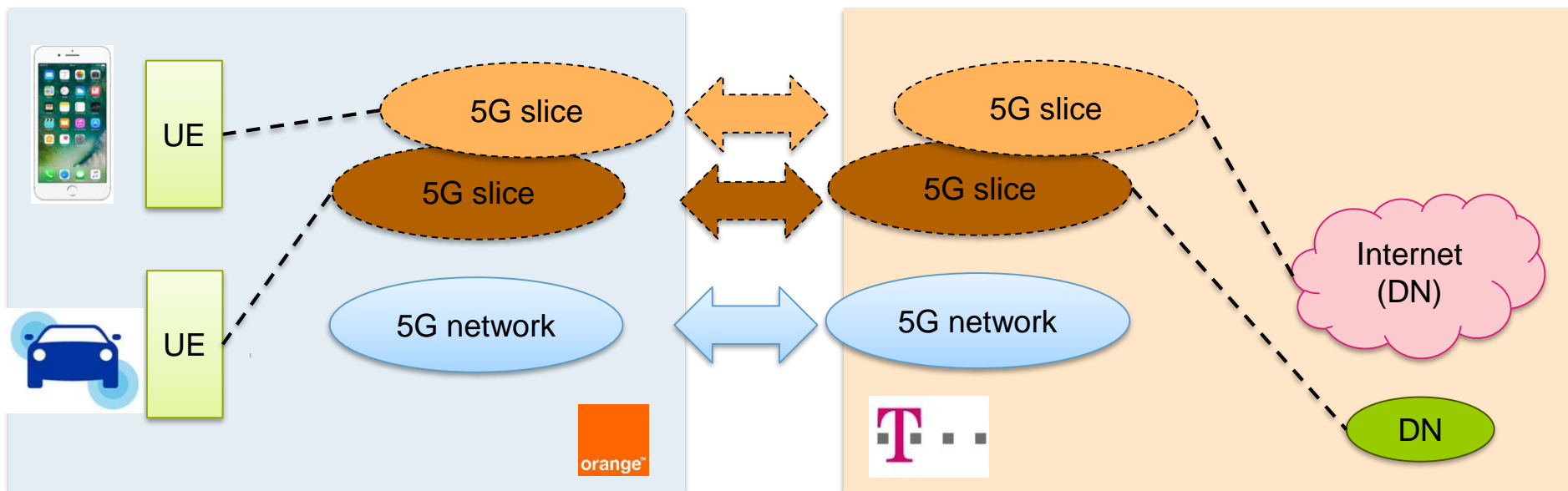
EXAMPLE IMPLEMENTATION OF CONNECTED AND AUTOMATED MOBILITY IN A ***SINGLE*** 5G NETWORK



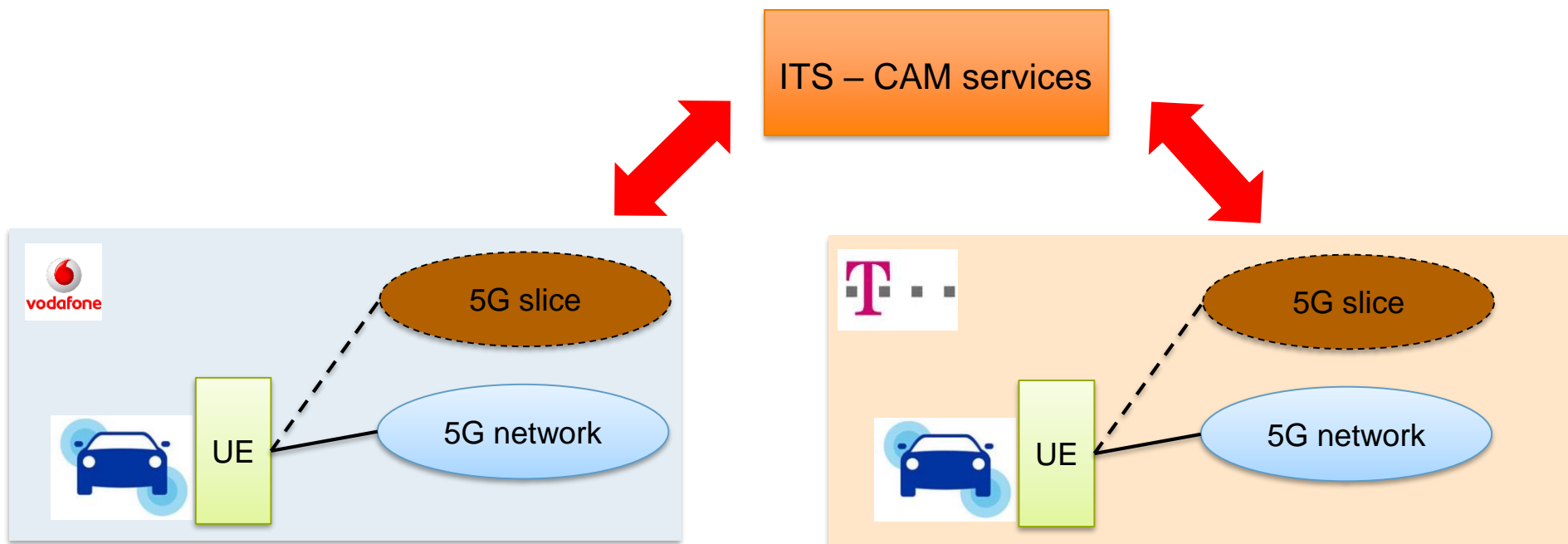
IN PRACTICE, CAM SERVICES WILL NEED TO WORK ACROSS MULTIPLE 5G NETWORKS



THERE IS A NEED FOR INTERCONNECTION OF SLICES ON TOP OF INTERCONNECTION OF NETWORKS



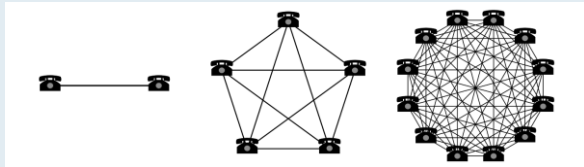
DIGITAL SOCIETY DOMAINS NEED INTEROPERABLE ACCESS TO MULTIPLE 5G INFRASTRUCTURES (1)



THE GROWTH OF THE 5G ECOSYSTEM DEPENDS ON OLD AND NEW TYPES OF INTEROPERABILITY

Strong network effects in mobile networking are achieved through interoperability

- For individual users and verticals/sectors
- Value for network providers and investors



MEMORANDUM OF UNDERSTANDING

ON

THE IMPLEMENTATION OF A PAN EUROPEAN 900 MHz DIGITAL
CELLULAR MOBILE TELECOMMUNICATIONS SERVICE BY 1991



1987

5G interop

4G interop

- Across countries
- For voice and Internet data
- Across network providers of different sizes

- Across slices carrying various applications

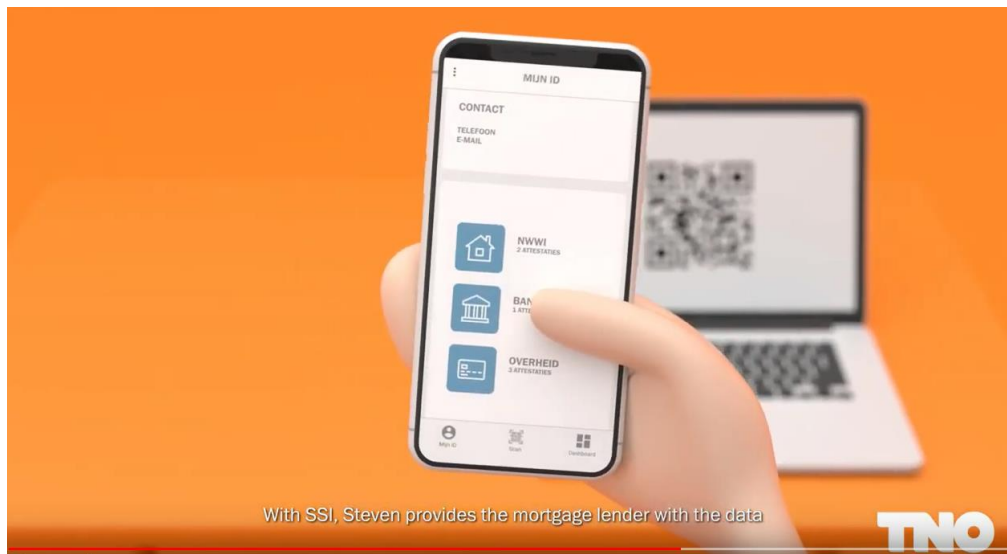


- Across vertical users and sectors



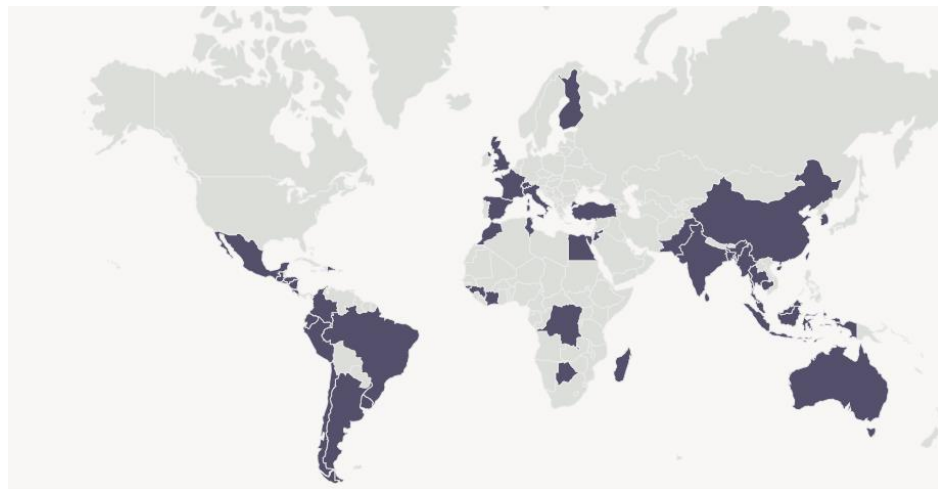
- Across classical operator networks and local “non-operator” networks

SELF SOVEREIGN IDENTITY AND MOBILECONNECT: A WAY TO EXPLOIT DATA



<https://www.youtube.com/watch?v=RVMVyLARr-4>

MOBILE CONNECT IS A SET OF GLOBAL ID DEFINED BY GSM-A



Easy to sign up

- ✿ You can set up your Mobile Connect account in one of two ways:
- ✿ Just click on the Mobile Connect logo when it appears as an option on a website or application
- ✿ Sign up directly with your mobile provider. You may receive an invitation via a text message or an email, or through their customer care portal.



Easy to use

- ✿ Once registered, simply click on the Mobile Connect logo whenever you see it as a log-in option.
- ✿ A message will then pop up on your mobile phone. It may ask you to click a simple OK or, if the site or app requires a higher level of security, it will ask you to enter a personal code such as a PIN.
- ✿ As soon as you respond to this prompt, Mobile Connect will verify you and you will be logged in to the website or application.

FOR TELCOS SSI CAN DELIVER VARIOUS OPPORTUNITIES

Telco as verifier:

- Telco needs to check creditworthiness and other identity information of new subscribers, but also for their employees
- Cost and time for obtaining and verifying this privacy-sensitive information
- SSI enables subscribers and employees to provide attestations (verified credentials) in a user-friendly and GDPR friendly way, with implicit or explicit insurance from issuers
- Cost reduction and process improving by digitizing paper processes

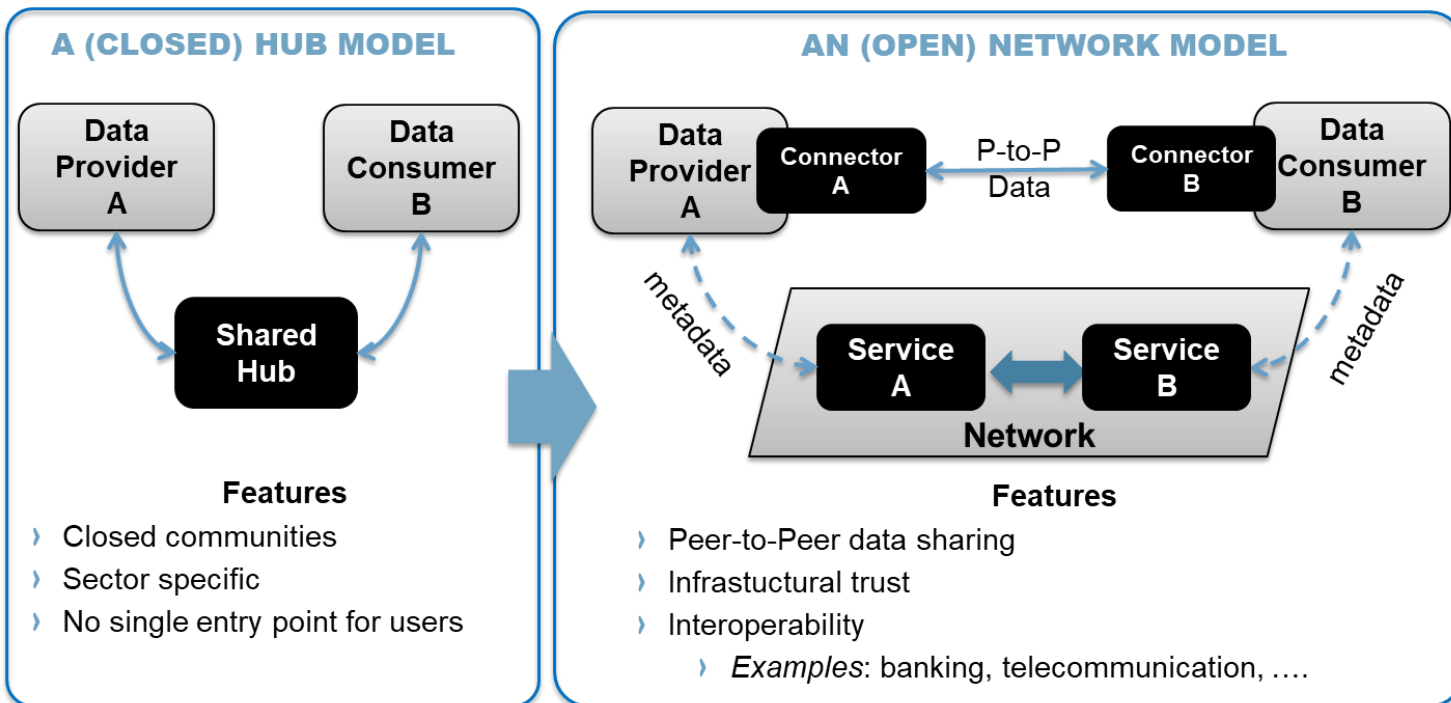
Telco as issuer:

- Telco has long-term relationship with customers, both individuals and organisations,
- Has valuable information as phone numbers, IMSI, payment history,
- Higher certainty of identity of the other side with incoming/outgoing communications
- Issuer as additional telco business

Storage on SIM:

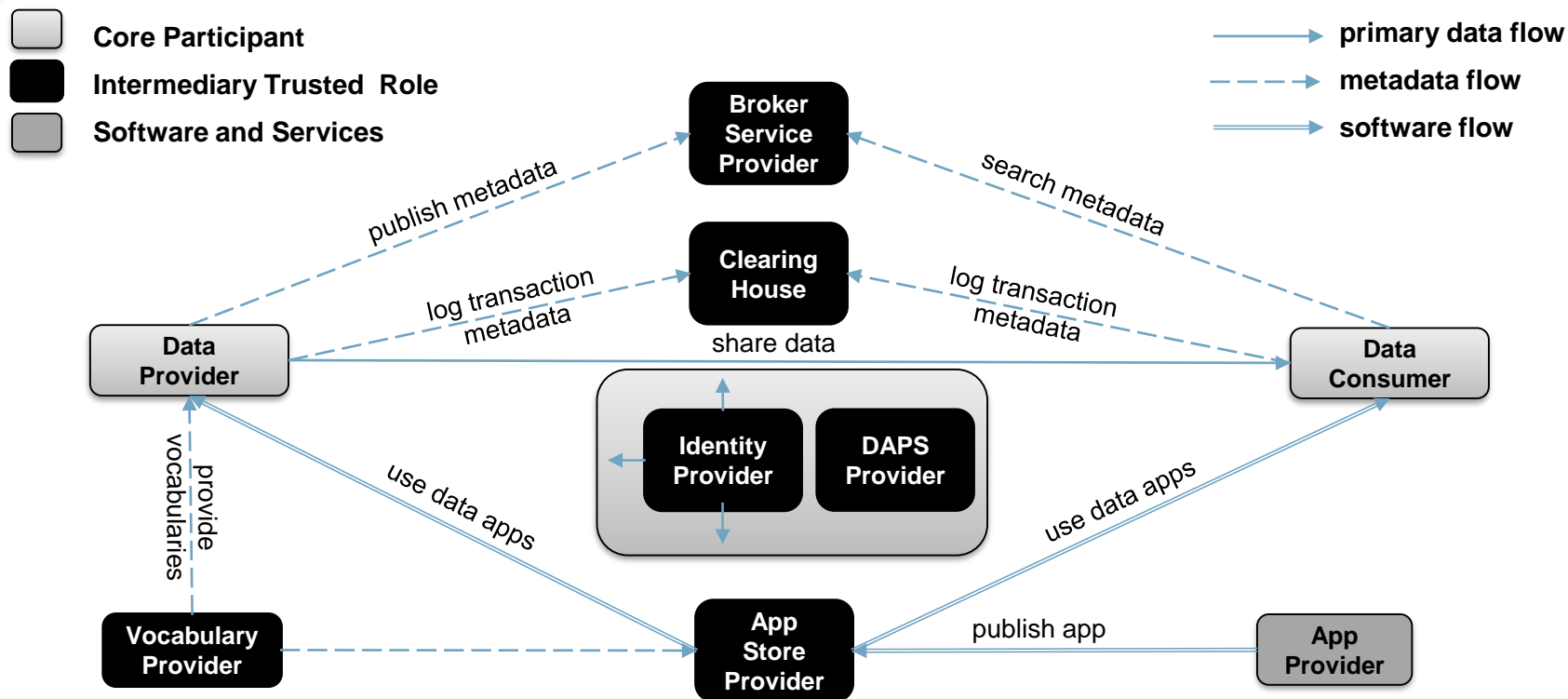
- SSI transactions involve sensitive information like Private keys, Identity information
- Telco's SIM can provide secure storage and access to such sensitive information
- Telco's can provide trusted wallets, i.e. encrypted stores that individuals can use to store attestations), and associated apps for customers and employees to use.

INTERNATIONAL DATA SPACE PROVIDES SECURE DATA EXCHANGE BASED ON DATA SOVEREIGNTY



IDS – REFERENCE ARCHITECTURE

OPEN NETWORK MODEL OF TRUSTED INTERMEDIARY ROLES



CONCLUSIONS

- › Create cake before dividing the cake:
 - › Ensure 5G slicing interoperability
 - › Build out Mobile Connect / SSI eco system
 - › Adopt IDS to enhance business portfolio



A nighttime photograph of a city street. On the left is a brick building with many windows. On the right is a modern building with a curved facade and many lit windows. A curved pedestrian bridge or walkway runs across the middle of the frame. Long exposure light trails in green and yellow are visible, suggesting moving vehicles or lights. The text 'THANK YOU FOR YOUR ATTENTION' is overlaid in large white letters on the left side.

› **THANK YOU FOR YOUR
ATTENTION**

herman.pals@tno.nl
+31 6 203 98 638

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