Benefits of Remote SIM Provisioning

MWC Shanghai 2015

Dr. Klaus Vedder

Giesecke & Devrient

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G&D, Securing Mobile Life

GLOBAL

400+ TELECOM CUSTOMERS

2500 + BANK CUSTOMERS

INNOVATION LEADER

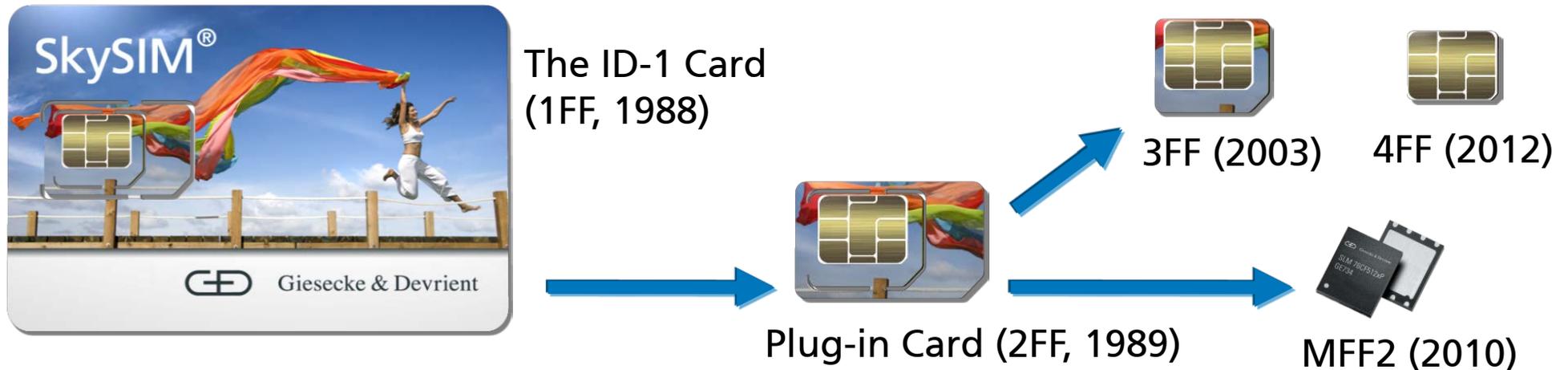**BANKNOTE MOBILE SECURITY GOVERNMENT**

TRUST

Giesecke & Devrient

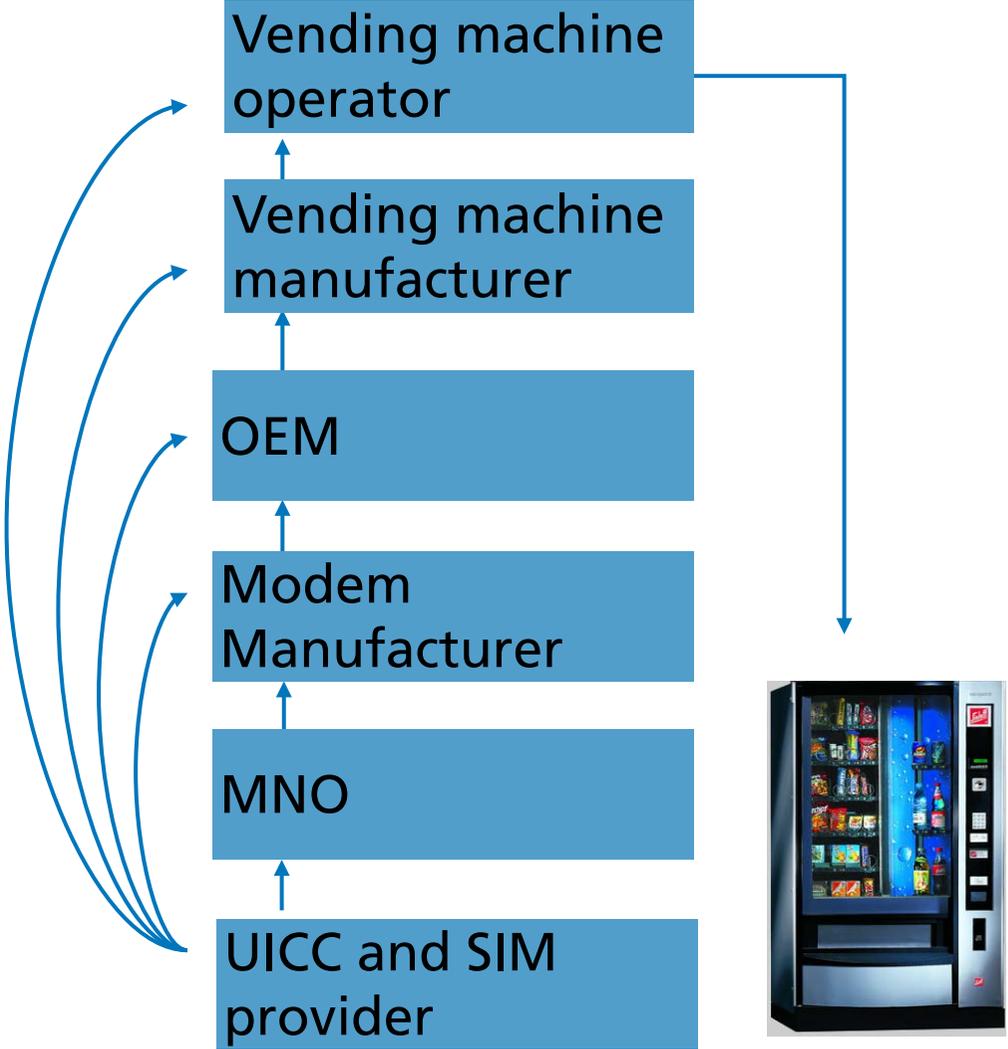# The road to embedded UICCs and Subscription Management

"Today's SIM <u>card</u> is the most **expensive** piece of real estate on a PCB"
(OEM manufacturer in 2012)

The ID-1 Card
(1FF, 1988)

3FF (2003)   4FF (2012)

Plug-in Card (2FF, 1989)

MFF2 (2010)

- The SIM has evolved to meet market requirements
  - Strongly driven by size requirements, and to meet portability regulations
  - 3FF intended for M2M use (cameras to transmit pictures taken)
  - Move to the embedded UICC* (specifically the soldered MFF2) triggered by requirements to address the M2M market; benefits in size, space, robustness, …

* An embedded UICC is a "UICC which is not easily accessible or replaceable, is not intended to be removed or replaced in the terminal, and enables the secure changing of subscriptions" (ETSI TS 103 383)

The Challenge of M2M

M2M enabled device

M2M terminal

M2M module

M2M UICC

Vending machine operator

Vending machine manufacturer

OEM

Modem Manufacturer

MNO

UICC and SIM provider

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"Messages from the market…"

All my vehicles need to be connected and able to select subscriptions OTA in the country of deployment

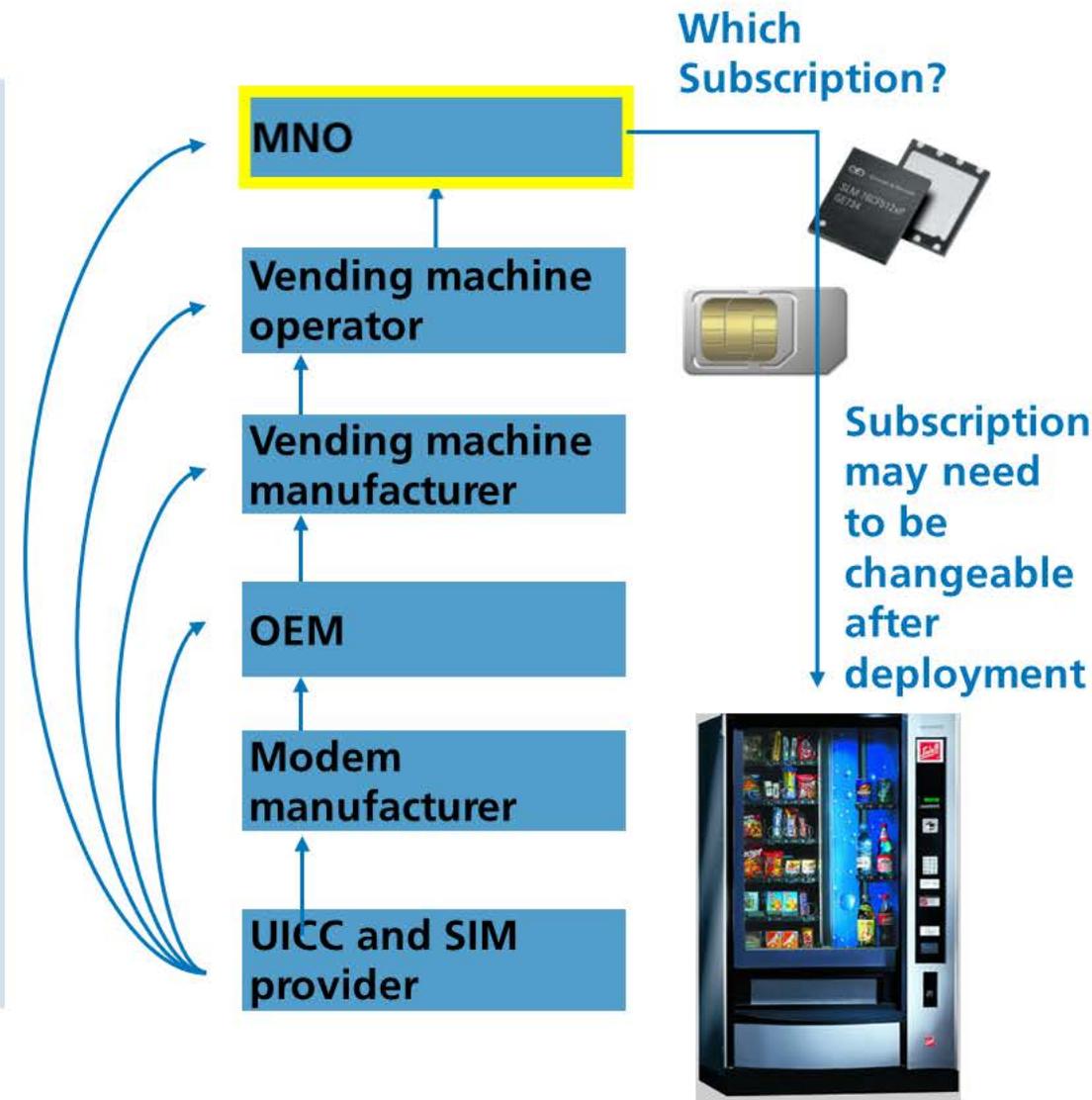My M2M devices need to select the available network at the deployment location

I need to be able to ensure that the gadgets I build can be assigned to an operator regardless of the country delivered
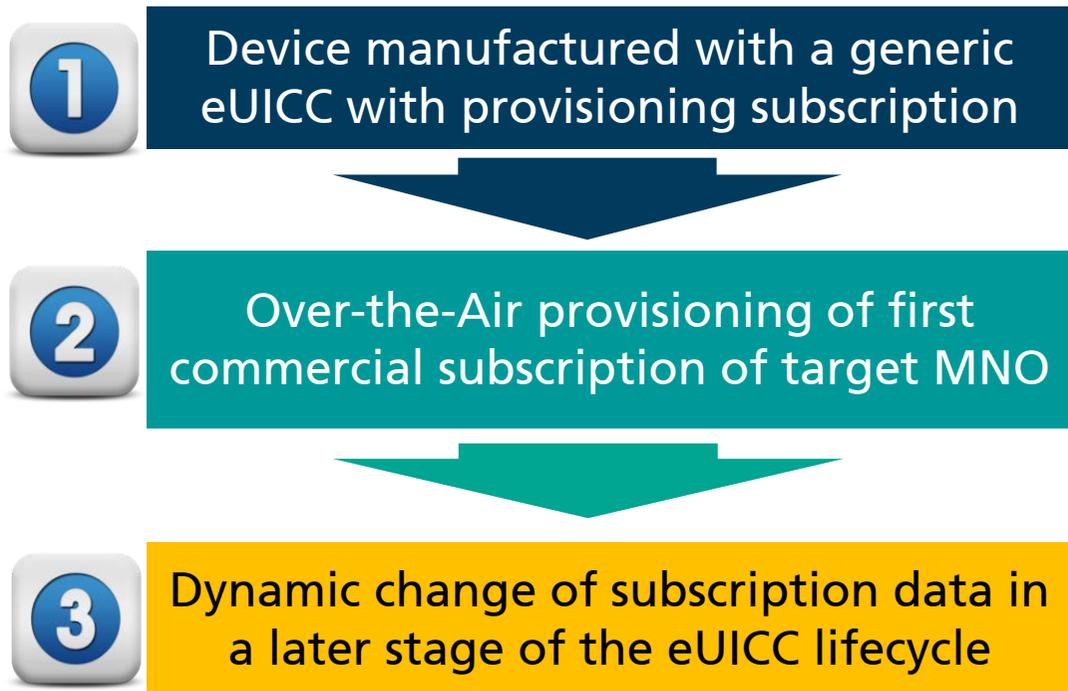
Could there be a Change in the Supply Chain ?

M2M enabled device

M2M terminal

M2M module

M2M UICC

Which Subscription?

Vending machine operator

Vending machine manufacturer

OEM

Modem manufacturer

MNO

UICC and SIM provider

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Could there be a Change in the Supply Chain ?

M2M enabled device

M2M terminal

M2M module

M2M UICC

MNO

Vending machine operator

Vending machine manufacturer

OEM

Modem manufacturer

UICC and SIM provider

Which Subscription?

**Subscription may need to be changeable after deployment**

Connecting Global Devices with Subscription Management

Global devices are assembled and shipped anywhere in the world
Device is "provisioned" Over The Air with a local subscription

1 Device manufactured with a generic eUICC with provisioning subscription

2 Over-the-Air provisioning of first commercial subscription of target MNO

3 Dynamic change of subscription data in a later stage of the eUICC lifecycle

Personalization of automotive and other devices

Needed: Provisioning of subscriptions over-the-air or over-the-wire after production, outside of factory
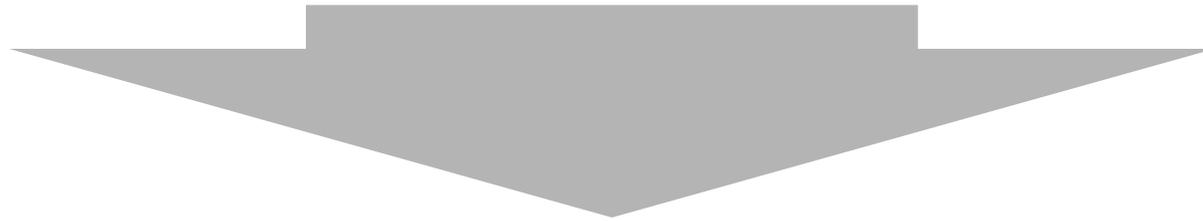
Needed: New ecosystem with **dynamic subscription management** (provisioning and changing of subscriptions and profiles)

Building a Scalable Cellular Solution for Subscription Management

Building confidence in the emerging ecosystem

Proprietary solutions to meet early market requirements – gain experience to optimise products and services

European Telecommunications Standards Institute

Developing specifications for the embedded UICC based on input from all sectors

GSM Association

M2M specifications for embedded SIM published December 2013

Technical Specification V3.0 published July 2015

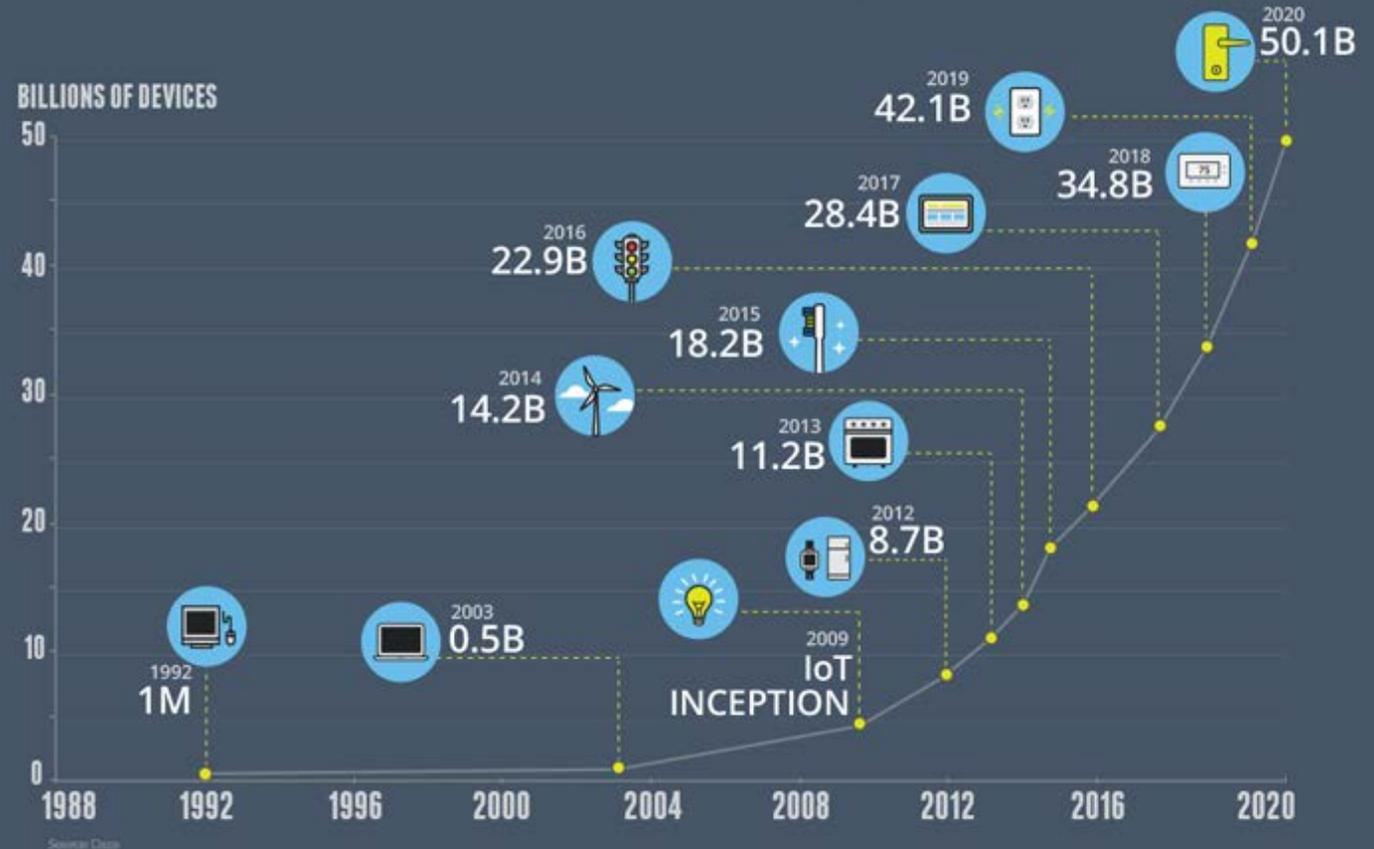# THE INTERNET OF THINGS
MARKET OPPORTUNITY

The Internet of Things: When everything and everyone is connected

M2M to revolutionize the mobile communication industry

- eUICC and Subscription Management are key components for the development of IoT

- Subscription Management is to become a natural standardized function - one solution for all devices

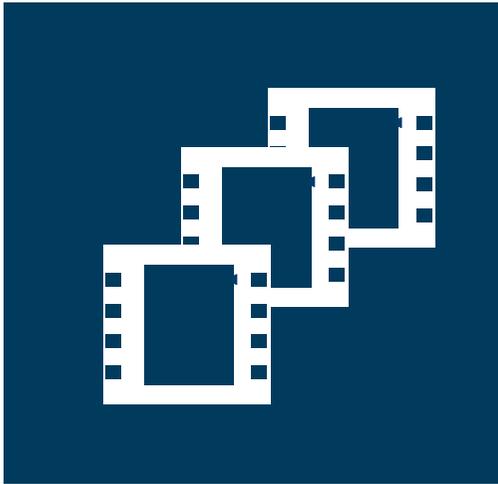- Create flexibility for both end users and service providers

GROWTH IN THE INTERNET OF THINGS
THE NUMBER OF CONNECTED DEVICES WILL EXCEED **50 BILLION** BY 2020

BILLIONS OF DEVICES

- 2020 50.1B
- 2019 42.1B
- 2018 34.8B
- 2017 28.4B
- 2016 22.9B
- 2015 18.2B
- 2014 14.2B
- 2013 11.2B
- 2012 8.7B
- 2003 0.5B
- 1992 1M
- 2009 IoT INCEPTION

Source: www.ncta.com

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Connecting Cars - Challenges for Automotive Vendors

Multiple Hardware Variants

- High logistics effort and cost to handle variants and regional changes
- High device certification effort (time + cost)
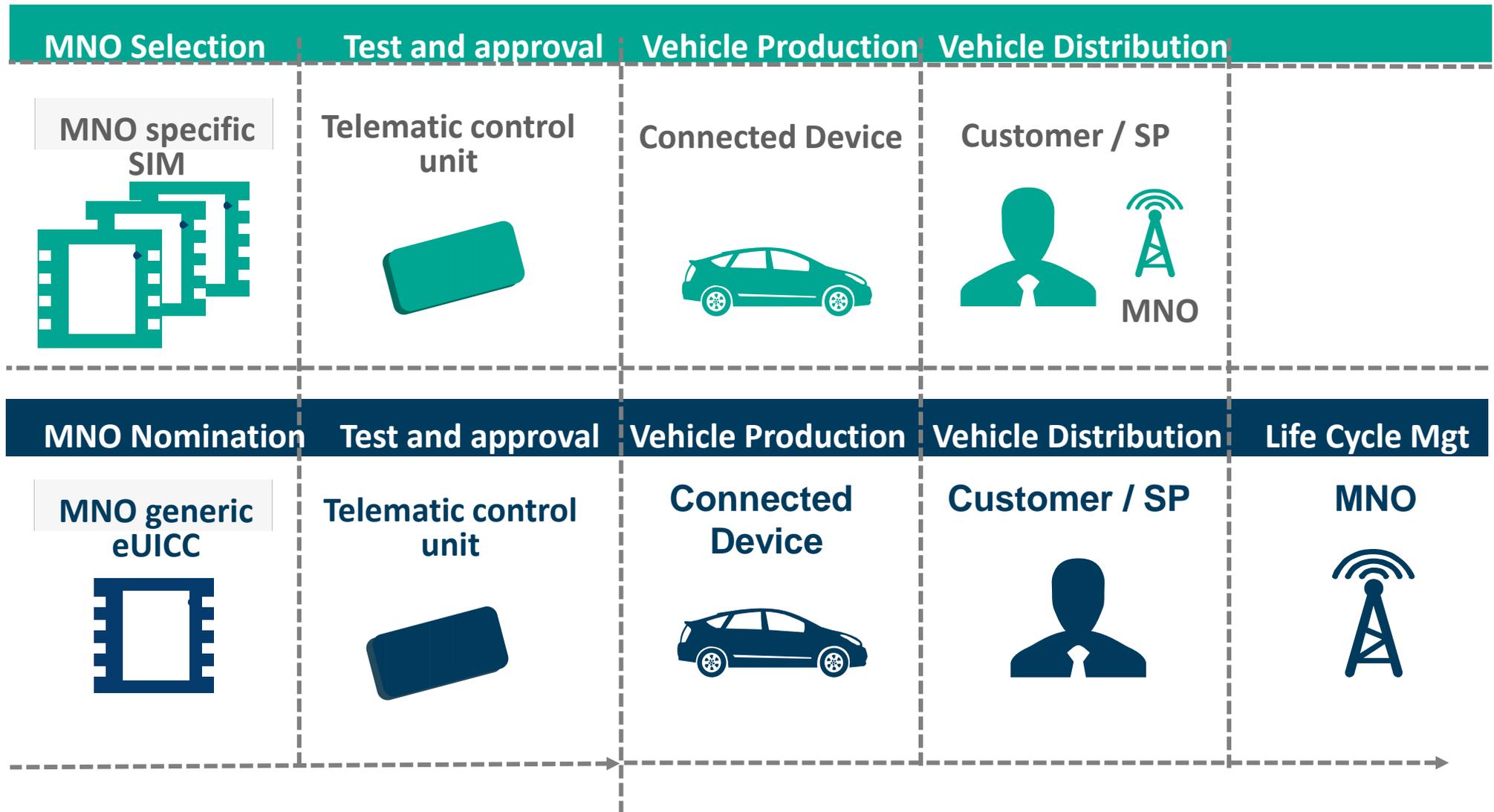
SIM Change

- Soldered eUICC - environmental performance
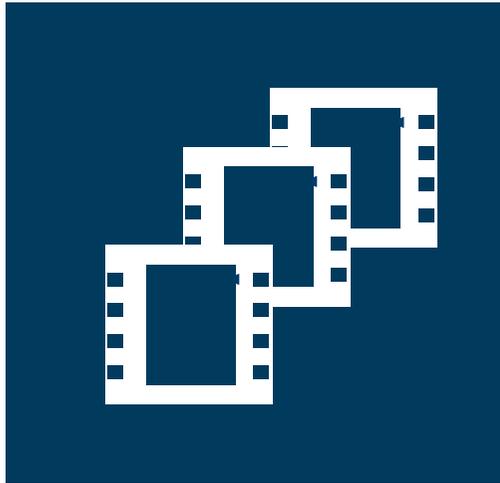- Uneconomic effort and customer inconvenience for vehicles in the field

International Roaming

- Regulatory restrictions on permanent roaming
- Increasing demand for high volume data services

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Current and Future Production Processes

MNO Selection	Test and approval	Vehicle Production	Vehicle Distribution	
MNO specific SIM	**Telematic control unit**	**Connected Device**	**Customer / SP** MNO	

MNO Nomination	Test and approval	Vehicle Production	Vehicle Distribution	Life Cycle Mgt
MNO generic eUICC	**Telematic control unit**	**Connected Device**	**Customer / SP**	**MNO**

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Connecting Consumer Devices – Challenges for Device Vendors

Global / Regional Products

- High logistics cost to handle multiple SKUs
- Personalize subscription when delivered to the customer

Good Customer Proposition

- Soldered eUICC necessary to fit within small devices
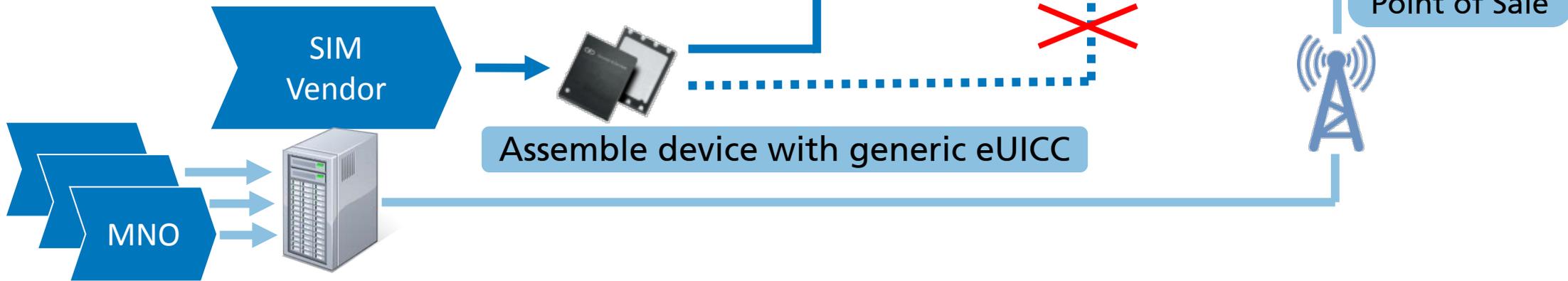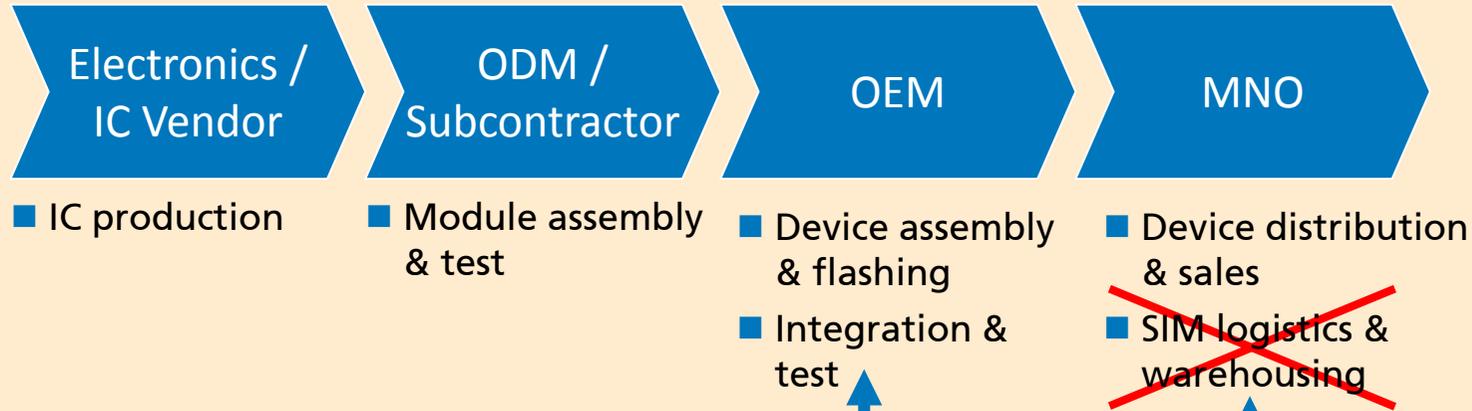- Easy customer experience to enjoy connected device services

International Roaming

- Regulatory restrictions on permanent roaming
- Increasing demand for high volume data services

# Connecting Consumer Devices – Making the Business Case

Device Value Chain

Electronics / IC Vendor → ODM / Subcontractor → OEM → MNO

- IC production
- Module assembly & test
- Device assembly & flashing
- Integration & test
- Device distribution & sales
- SIM logistics & warehousing

Provision MNO subscription at Point of Sale

SIM Vendor

Assemble device with generic eUICC

MNO

Savings for Device Vendor & MNO: no socket, fewer returns, no MNO SIM logistics, …

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SubMan Scenarios seen in the Market: MNO Club
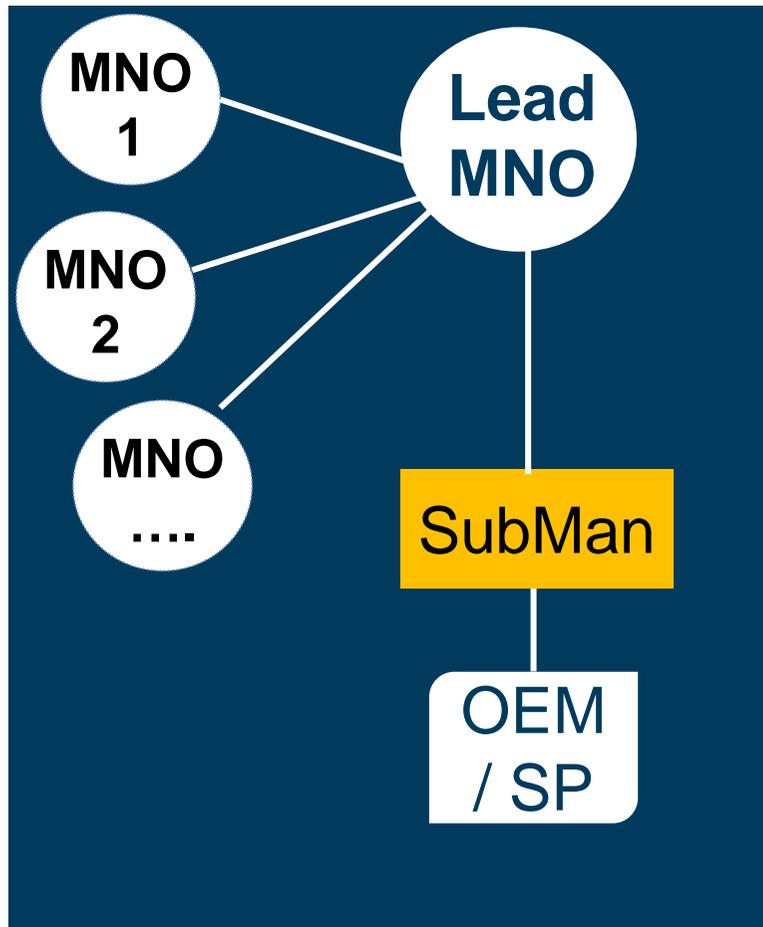
- Club of <u>independent</u> MNOs to use Subscription Management to deliver **global connectivity**

- Control lies with Lead-MNO

- Achieve regional or global coverage for an application

SubMan Scenarios seen in the Market: MNO Group
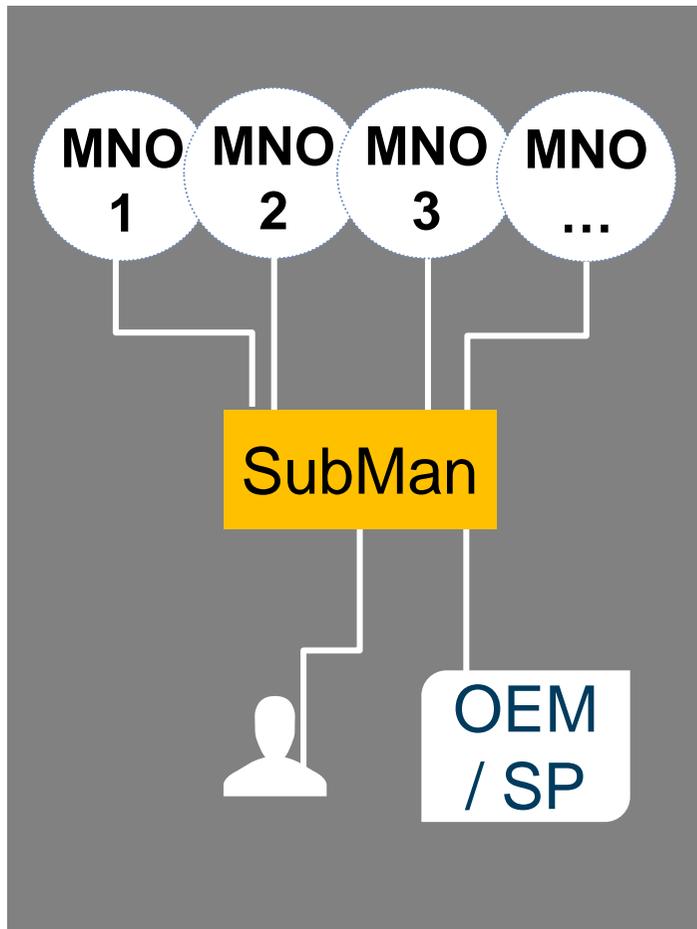
- **MNOs of one operator group use SubMan to optimize their connectivity offerings to their end customers and SPs**
- **Control lies within the Group**
- **Distribute devices with "generic" subscription of one of the group members within the group and then download member specific subscription**

SubMan Scenarios seen in the Market: Domestic

MNO

SubMan

- **Single** MNO uses SubMan for its own logistical enhancement of SIM delivery in a domestic environment

- Reduce number of products in the field and download details such as subscription plan over the air

An embedded UICC Enables a New Device Lock

Use of a "SIM Lock" to prevent unauthorised use of a mobile phone

A secure embedded UICC which is <u>soldered</u> into the Device can enable a new form of Device Lock to protect a subsidy

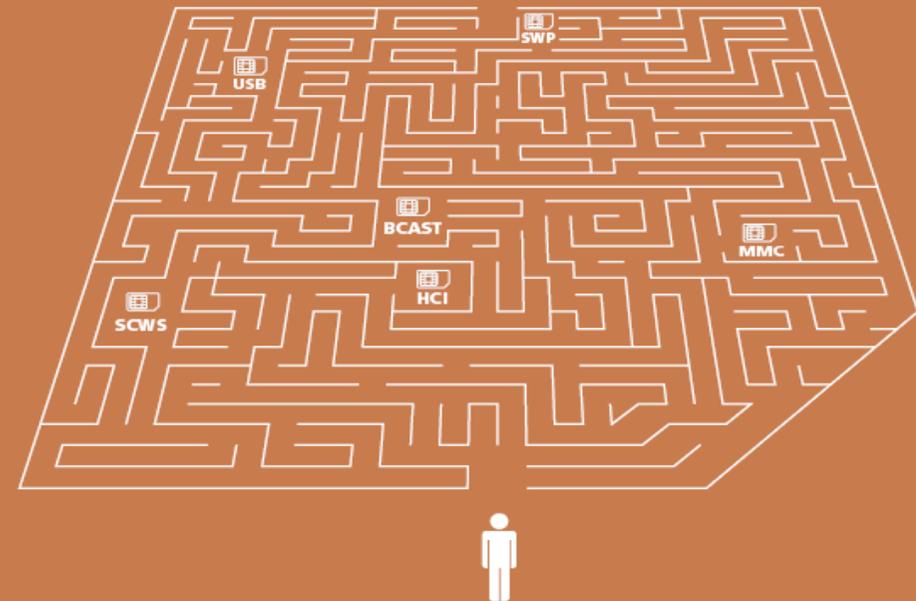An embedded (soldered) UICC will reduce device theft

Dr. Klaus Vedder
Chairman ETSI TC SCP

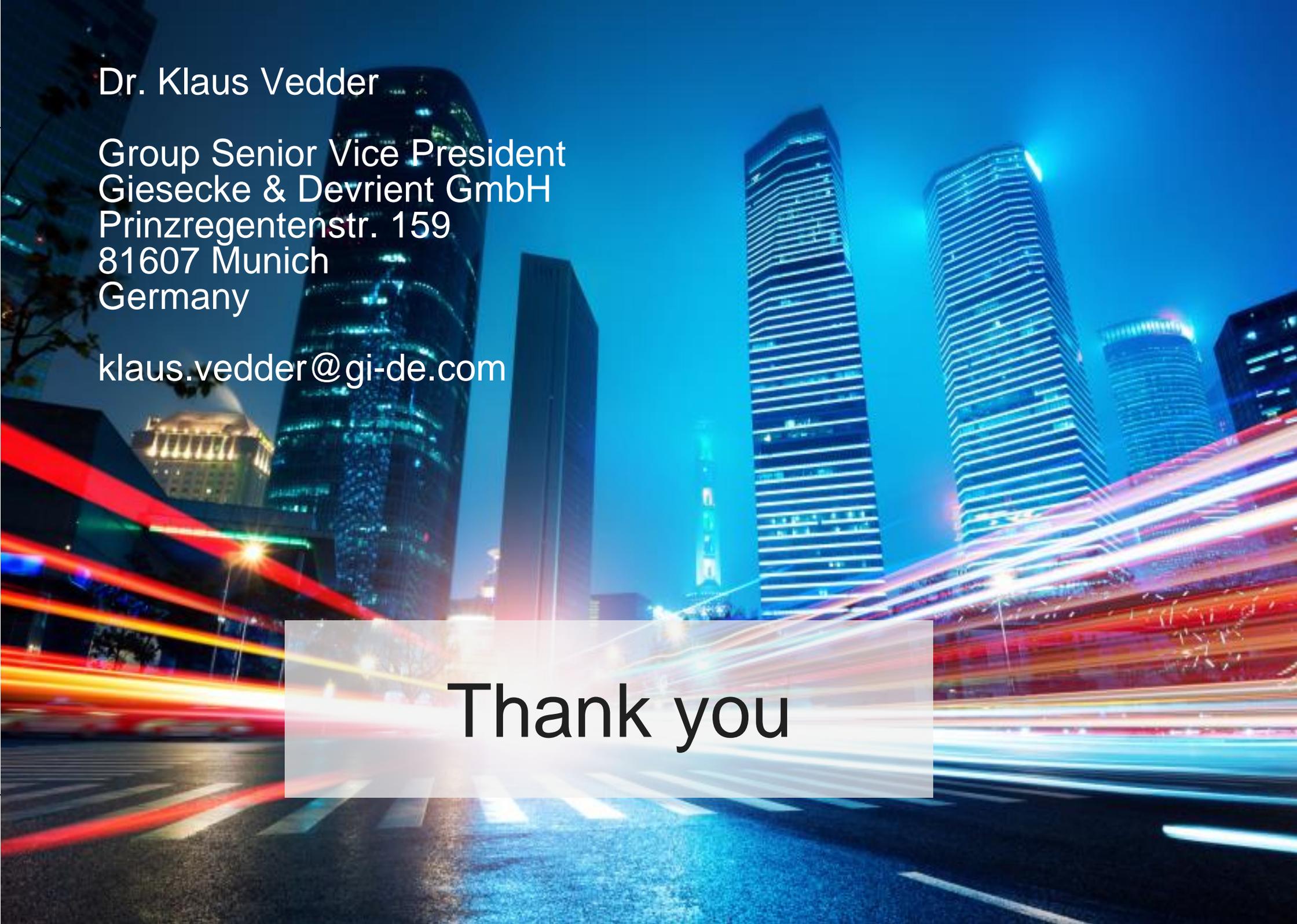**ETSI TC *Smart Card Platform***
The people specifying the UICC

Next ETSI TC SCP Plenary Meeting
USA, 15-16 October 2015
see: www.etsi.org

nearly

Standardization has always been fun!

SWP
USB
BCAST
MMC
HCI
SCWS

Find your way through the standardization maze:
Collect the technologies you need to take
mobile telecommunications to the next level.

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Thank you