



**TÜViT**

**Automotive Plattform**

*Ein Lösungsansatz für Datensicherheit und Datenschutz im Fahrzeug*

Markus Bartsch

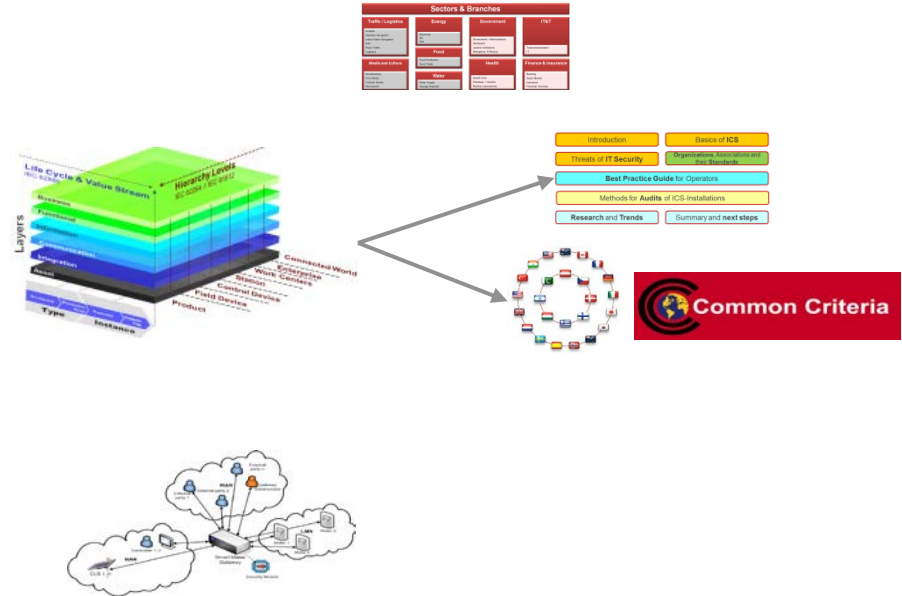


# Activities

➤ Legal Framework / CIP

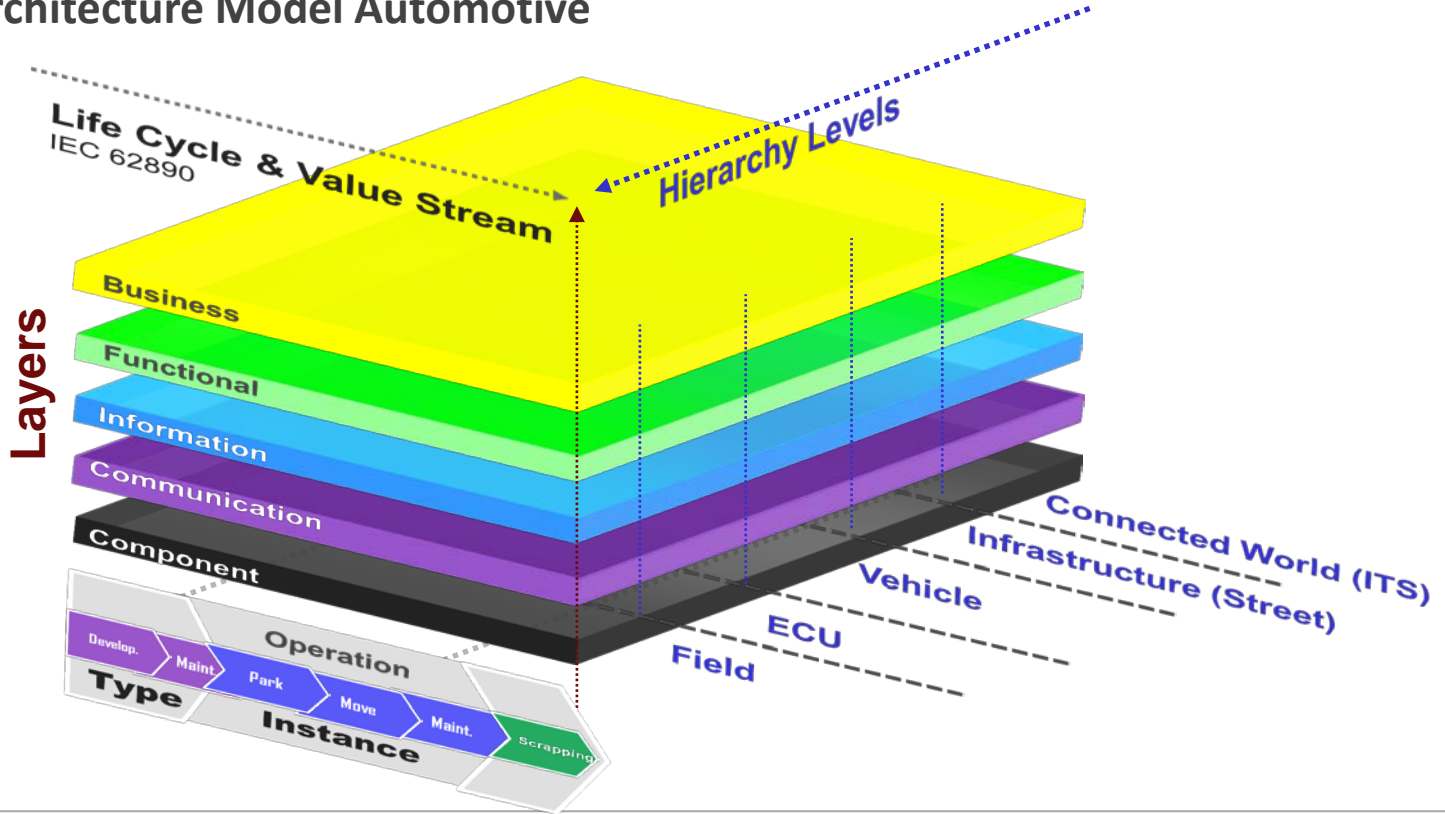
➤ Models & Methods

➤ Technologies



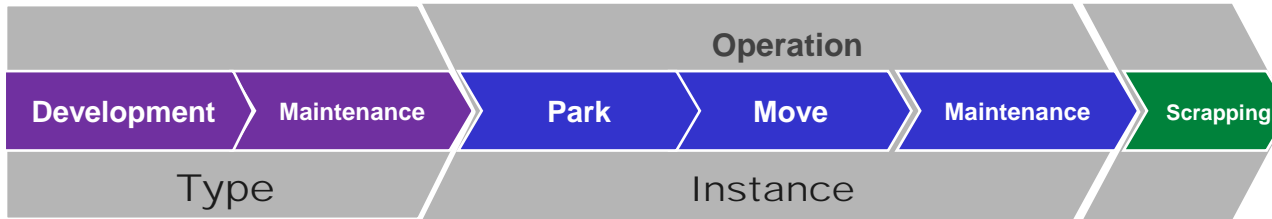
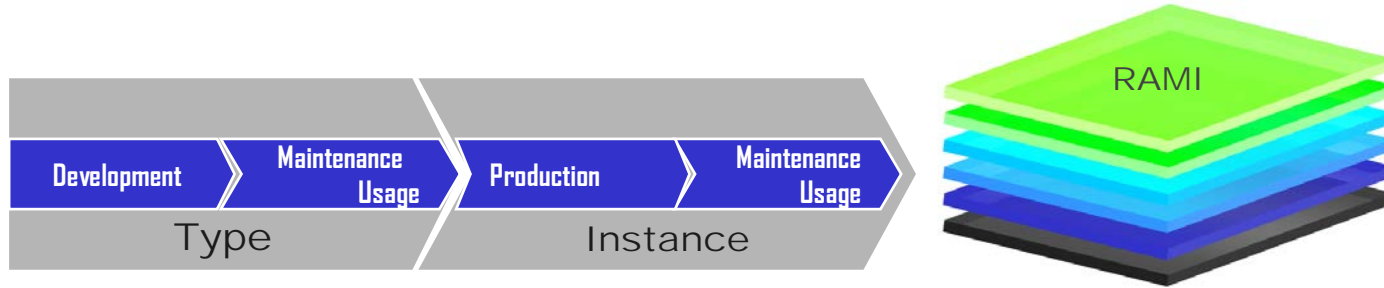
# RAMA

## Reference Architecture Model Automotive



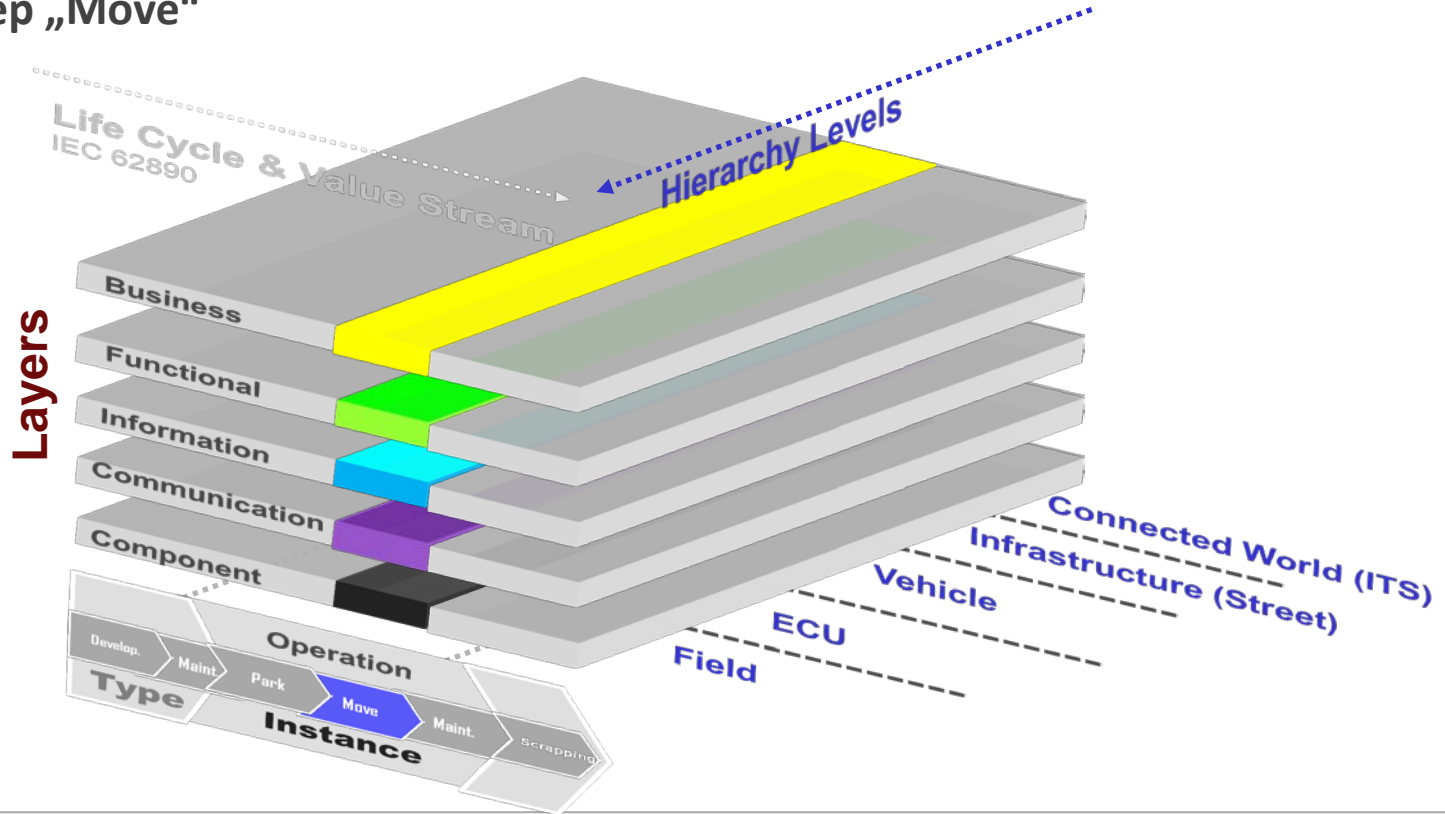
# RAMA

## Reference Architecture Model Automotive – Life Cycle & Value Stream



# RAMA

## Life Cycle Step „Move“

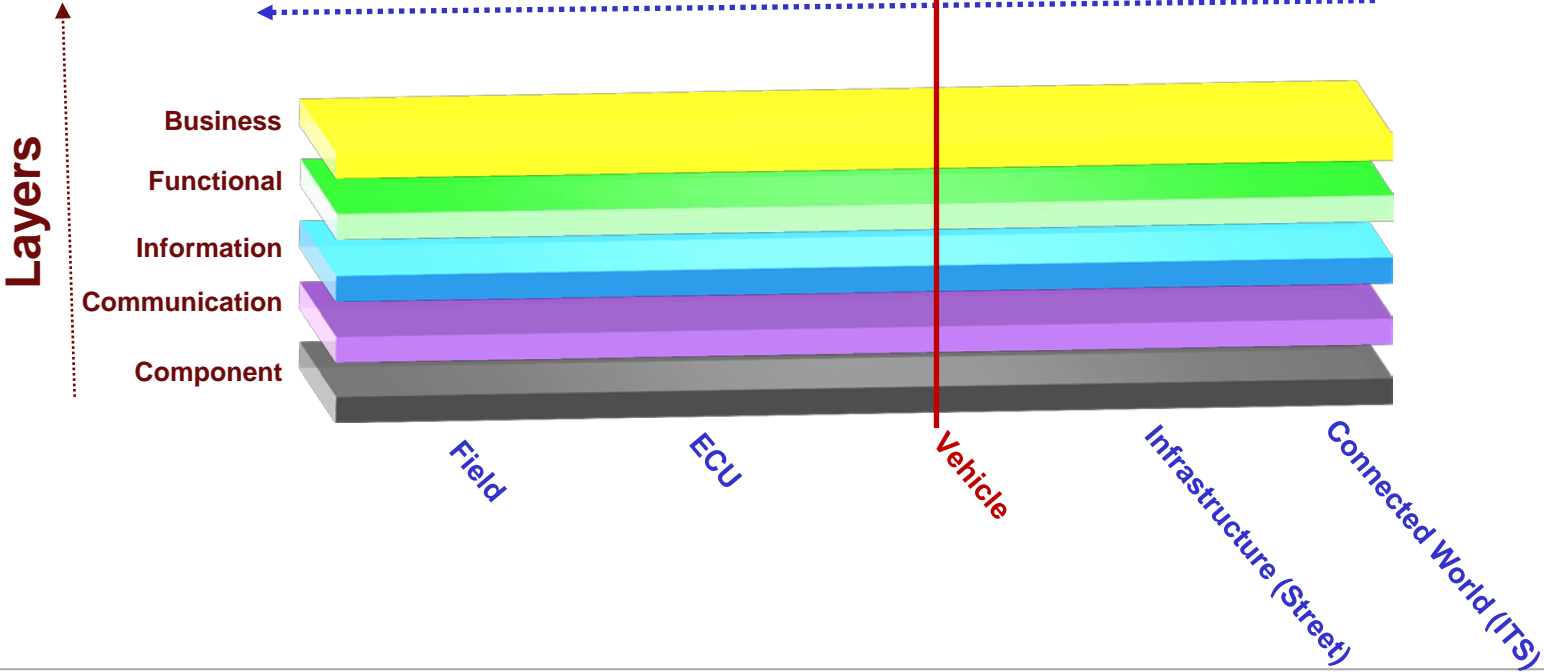


# RAMA - Move

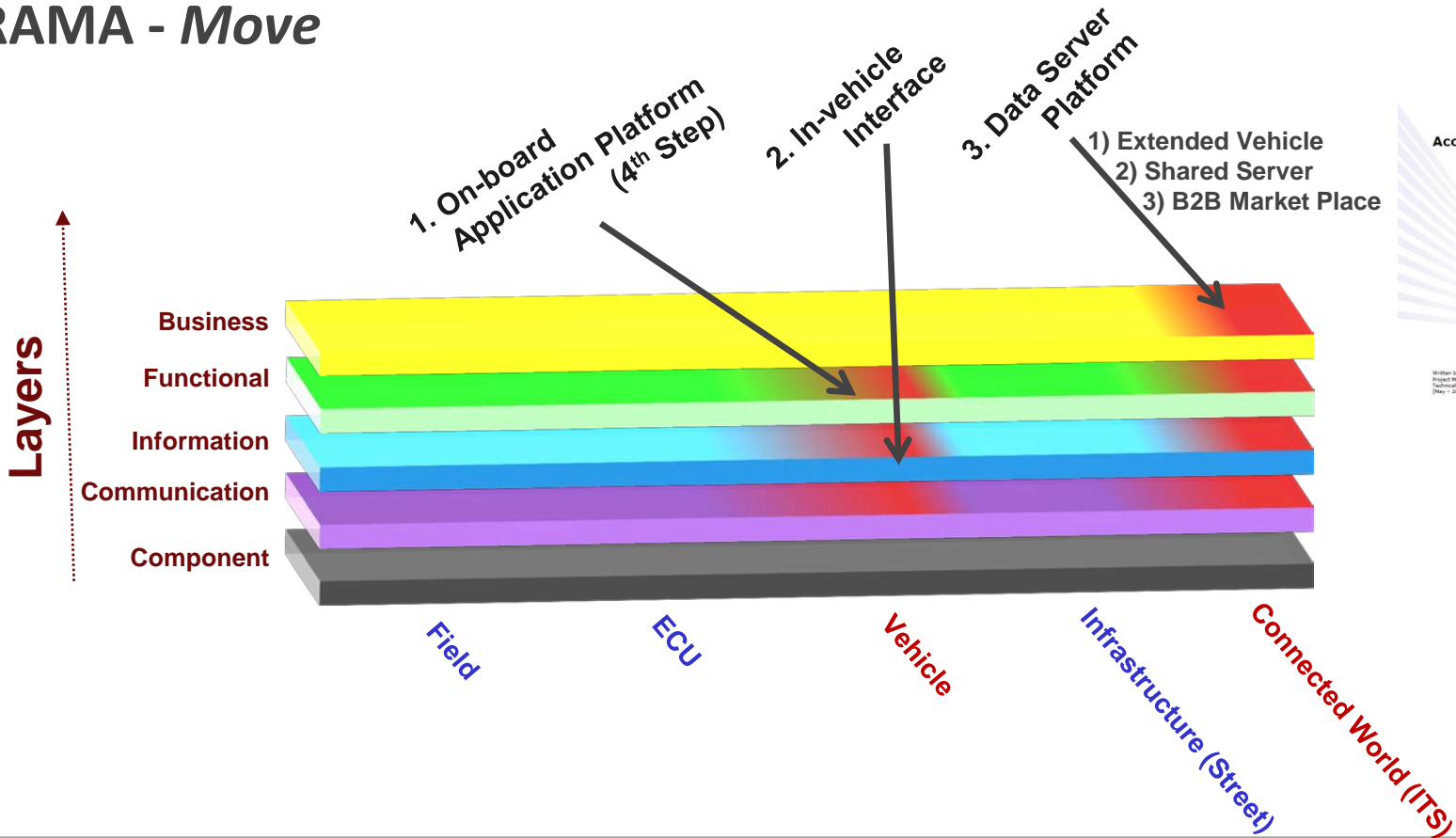
In-Car

External IT

Hierarchy Levels



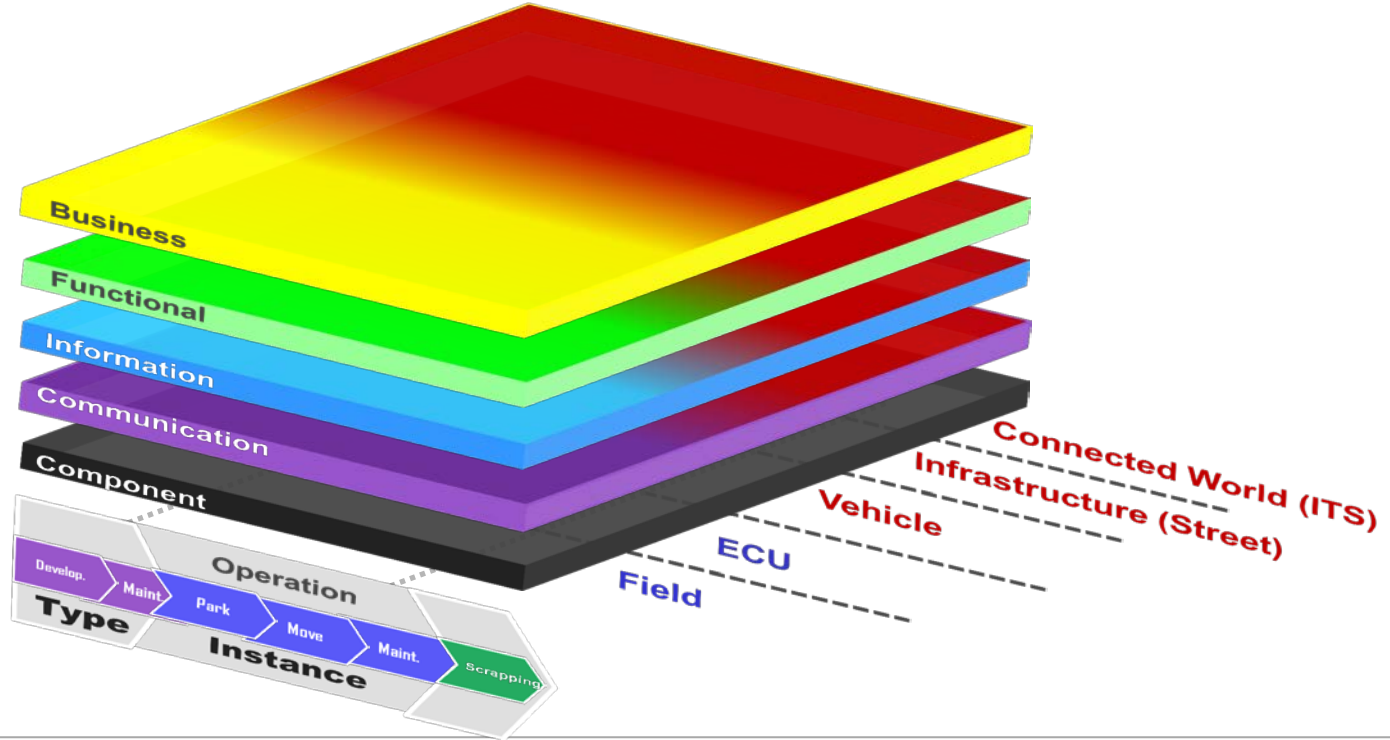
# RAMA - Move



Written by Authors: M McCarthy, M Seidl, S Mahan, J Haglin, A Stevens, F Oppasanto  
Project Manager: M Kuhlme  
Technical Review: R Coenen  
(May - 2017)

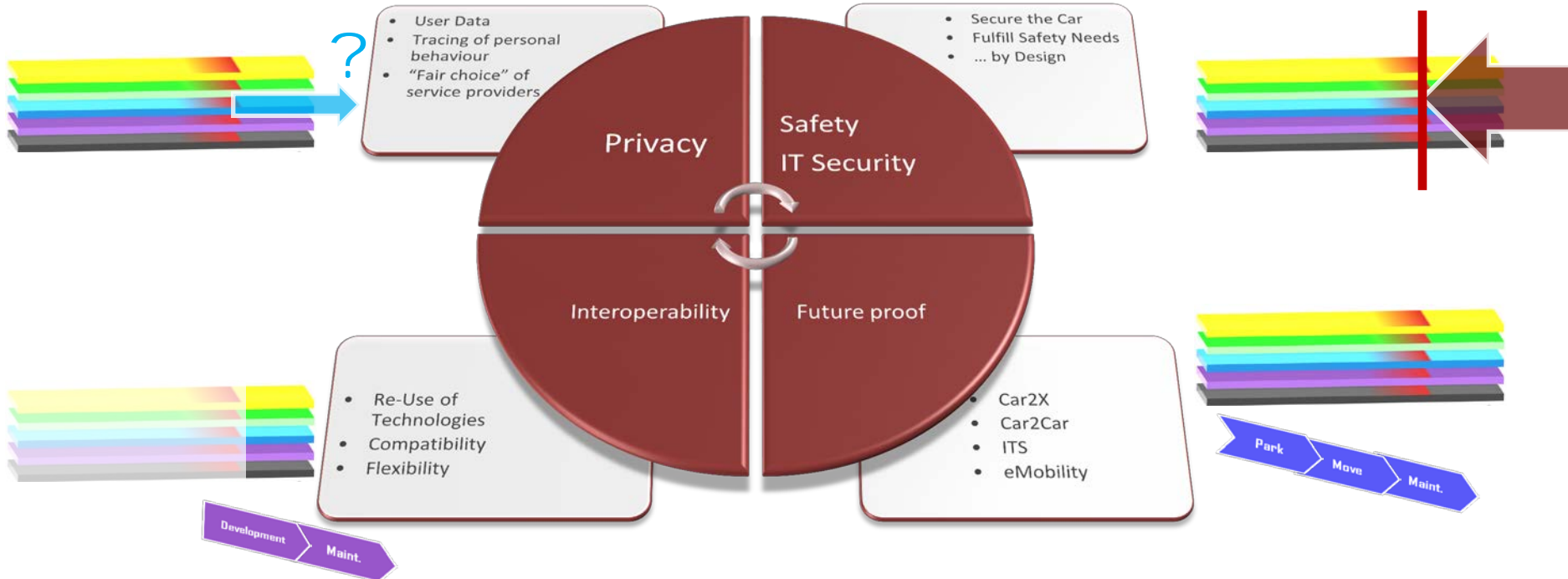


# Automotive Security in any external Hierarchy



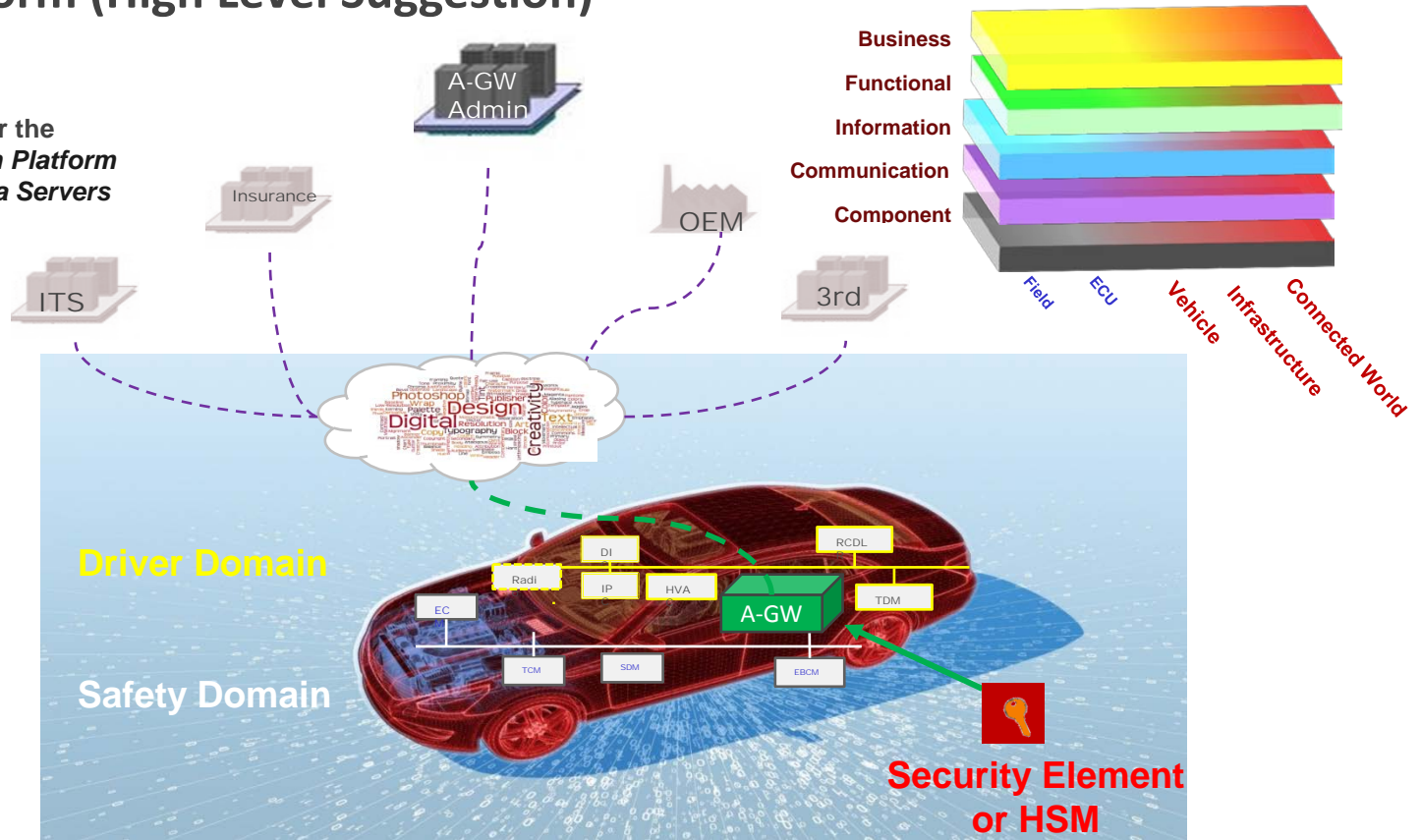


# Automotive Platform - The Technical Solution



# Automotive Platform (High Level Suggestion)

Possible (and faster) Solution for the *embedded On-board Application Platform (4<sup>th</sup> Step)* with integration of *Data Servers*



Access to In-vehicle Data and Resources

Final Report

Written by Authors: M. McCarthy, M. Seiff, S. Mohan, J. Hopkins, A. Stevens, F. Ogrisotto  
 Project Manager: M. Kalthur  
 Technical Review: R. Coakley  
 (May - 2017)

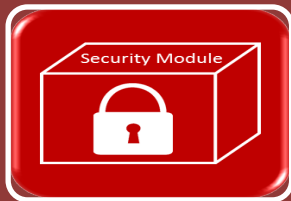


# Automotive Platform - The System Approach



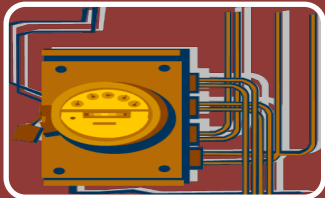
## Gateway

- Central communication component of the Car
- Rich in functionality
- Evaluated in depth



## Security Element / Module

- Implementation of cryptographic primitives
- Secure Handling of key material
- Facilitate a fast rollout by re-use of existing technologies



## Automotive Platform

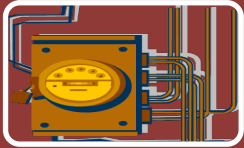
- Comprising a Gateway and two different In-Car domains:
  - Driver Domain
  - Safety Domain

# Automotive Platform - The main functionality of the Gateway



## Firewalling

- The Gateway has control over all information flows



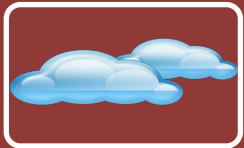
## Automotive Policies

- The Gateway receives data from the Domains
- The Gateway processes the data according to installed profiles (data usage categories)
- The Gateway submits the processed data to external parties in the Backend



## Privacy Protection

- All information flows are transparent for the user
- The Gateway only allows encrypted and authenticated information flows



## Communication for ECUs

- The Gateway allows to contact parties in the WAN
- The ECUs have to follow the policies for information flow of the Gateway

# Automotive Platform - The functionality of the Security Element / Module



## Cryptography

- Key Negotiation for TLS
- Key Transport for content data
- Signature Generation and Verification



## Storage of Key Material

- Asymmetric key material as the identity of the Gateway
- Symmetric keys to be used by the Gateway



## Random Number Generation

- For internal use
- For various purposes to be used by the Gateway

# Automotive Platform – possible Data Usage Categories



## 1. Data for the improvement of road traffic safety

- Inspection Log (Traffic Safety relevant Data)
- eCall



## 2. Data for cross brand services

- Traffic Flow
- Navigation Support



## 3. Data for brand specific services / Component Analysis

- IP relevant
- OEM & 3<sup>rd</sup> Party services

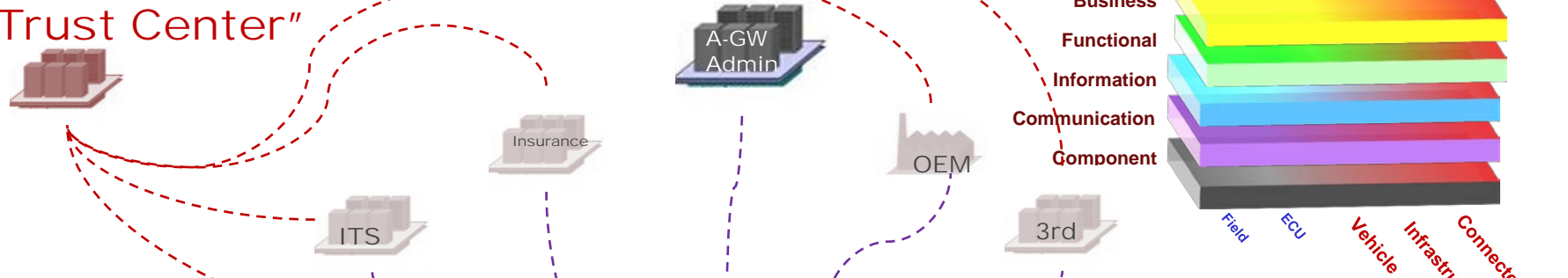


## 4. Personal Data

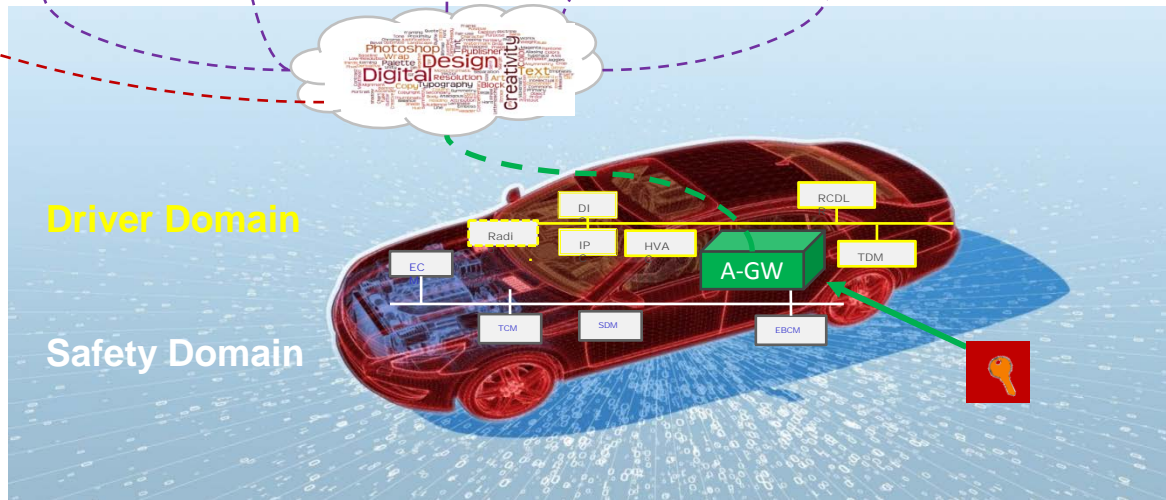
- Driver Data
- Owner Data

# Automotive Platform

## „Trust Center“



- „Trust Provider“
- neutrale Plattform
- Value Added Services
- Black Box Support
- Car2X:  
Clearing zwischen  
Car und „X“
- Basis für PAI  
(statt PTI)



Let it look like an accident





# Thank you very much for your attention!

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<http://www.vdtuev.de/news/automotive-platform-video>

