

## "Türöffner für die Connected Car Revolution".

### The five challenges

#### **Volume (Huge amount of data):**

- 130TB per year per car
- example: connected car telematics : 12 million miles of driving data every collected hour

#### **Variety (Different formats of data from various sources):**

- Data from Electronic Control Units, Location Data, Safety Data, Viacle to Viacle and V2Infrastructure, Video
- Streaming (Real-Time), Batch Loads (gebündelt)
- Geoinformation, dealer data, ....

#### **Value (Extract useful data):**

- Identify Dangerous situations
- Risky behaviour
- Many video material – no high value
- Combine data to make id valueable

#### **Velocity (High speed of accumulation of data):**

- Real time data, identify dangerous situations, warn driver, give information to driver..
- Security?

#### **Veracity (Inconsistencies and uncertainty in data):**

- Hard to analyze video material

### The four levels

#### **Data Source Layer**

Types: structured, semi-structured, unstructured

- Data from Electronic Control Units, Location Data, Safety Data, Vehicle to Vehicle and V2Infrastructure, Video, Geoinformation, dealer data
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#### **Data Storage Layer (Messaging and Store Layer)**

what is actually important? - CAP theorem: – consistency – availability – partition tolerance

messaging protocol (e.g. MQTT) e.g. with messaging bus like kafka to platform.

Store: HDFS, HBASE, Kudu,

### **Processing Layer (Analysis)**

generate meaningful information

e.g. insurances: cluster of risk

Edge processing that needs to be acted upon immediately, human response times

Cloud Analytics: Time series, Trend Analysis, Machine Learning, Context Enrichment (Value of sensor data is multiplied when you can add context to it.

360° View (where are breaks, where buy things,...)

### **Data Output Layer**

Making results visible ▪ What is the target audience?

Serving Layer, Crash Analysen, Dashboards (e.g. Arcadia Data),..