RUC and Tolling use cases for data collected by native OEM vehicle telematics and their relevant risks and opportunities

June 10, 2024

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Introduction

- **This presentation delves into Connected Vehicle data gathered by native OEM telematics, exploring:**
  - Use cases
  - Architectural concepts
  - Risks & opportunities
  - Extensions
  - Business models
  - Challenges & next steps

Enhanced Connected Vehicle Data Via Native OEM Telematics

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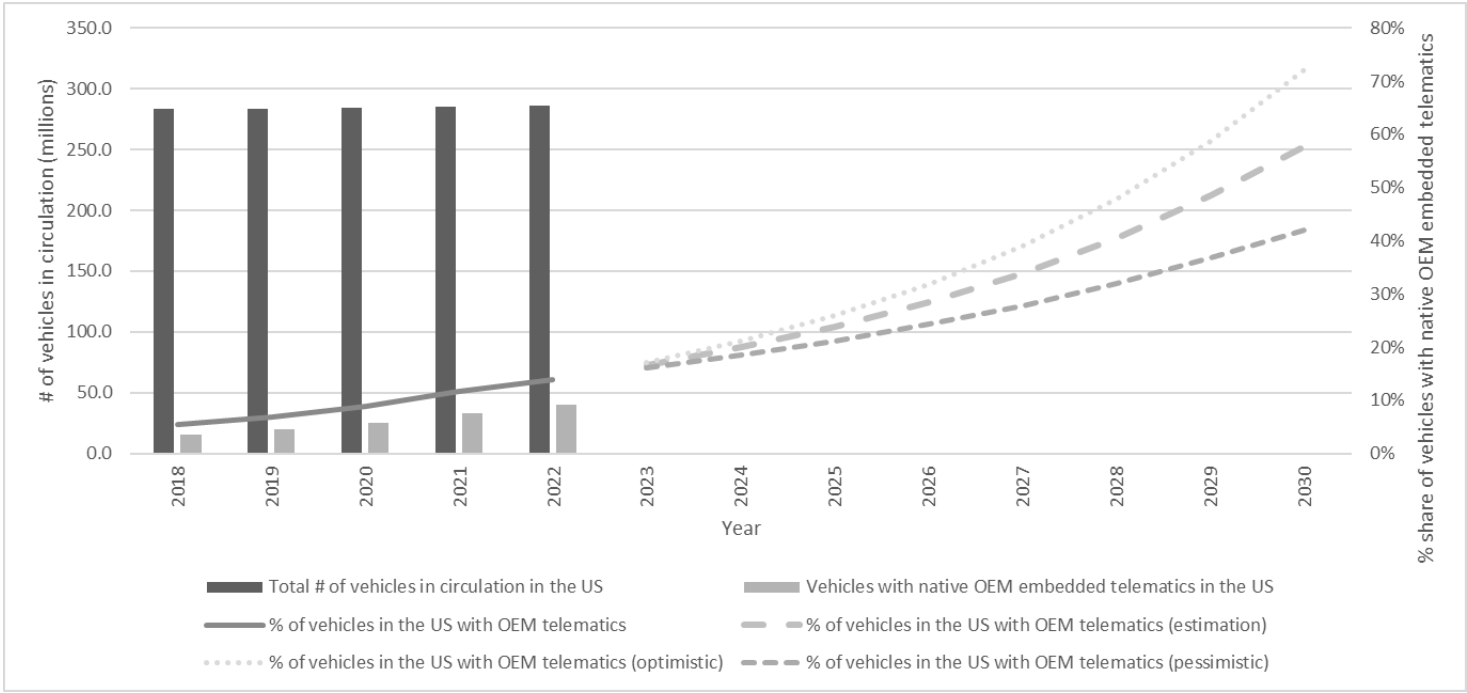
- The majority of new vehicles sold now come equipped with native OEM telematics (>80%)
- While currently constituting a modest portion of registered vehicles, they're rapidly growing at a CAGR of 20%, compared to the <1% growth rate for vehicle fleets
- Adoption is poised for acceleration, especially if rapid fleet decarbonization becomes a reality
- Data can be acquired directly from OEMs or through data platforms



Source: Statista, Arcadis Analysis

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Use cases

- **Current main use cases of CV Data that need vehicle identification**
  - Usage Based Insurance
  - Fleet Management
- **Utilization of anonymized Connected Vehicle (CV) data**
  - Complementary role alongside other data sources (e.g., traffic counts/floating data) for diverse studies
    - Temporal comparative analysis
    - Bottleneck/Congestion scan
    - Before/After studies
    - Safety analysis
    - Corridor Performance Reporting
  - As the CV share in the vehicle fleet expands, it will surpass and excel beyond other sources (e.g. probes or roadside sensors)

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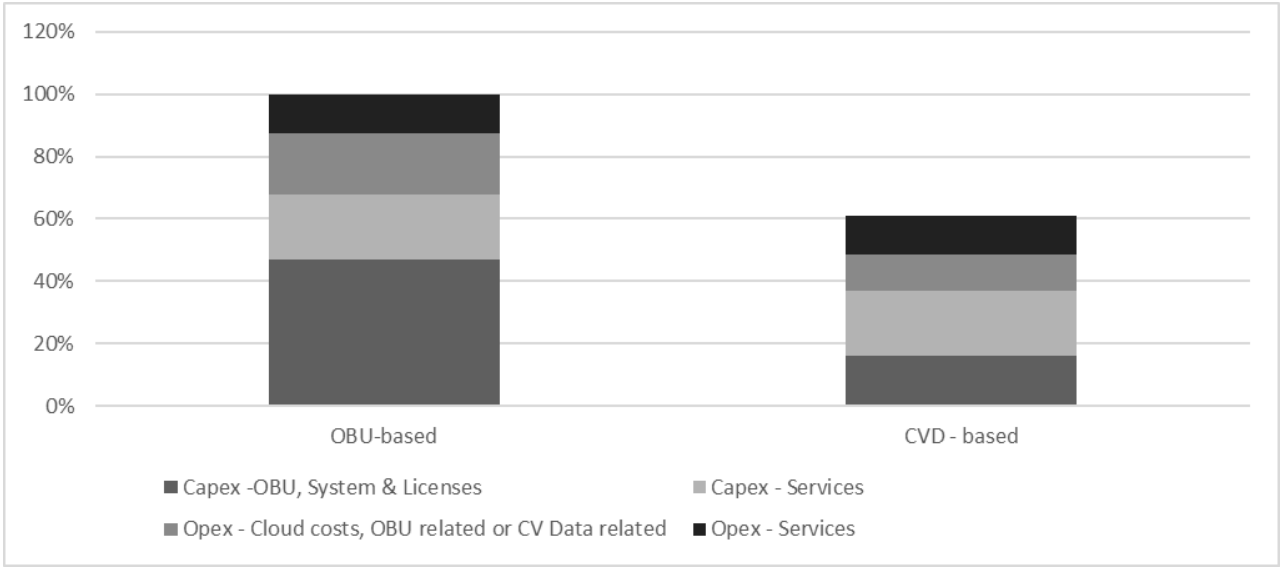
Road Usage Charging

- **Current State of RUC and the Role of OEM Telematics:**
  - RUC presently incurs significantly higher collection costs compared to fuel tax
  - Departments of Transportation (DOTs) are exploring leveraging OEM telematics data to drive cost reductions
  - Initial estimates suggest up to a 40% potential savings at a small scale, factoring in capital and operational expenditures (with even greater savings projected for larger scales)
- **Data requirements vary depending on the specific use case:**
  - Odometer readings are essential for statewide RUC implementations.
  - Location data becomes crucial for overlay charges, such as those applicable to municipal roads



Source: Arcadis Analysis

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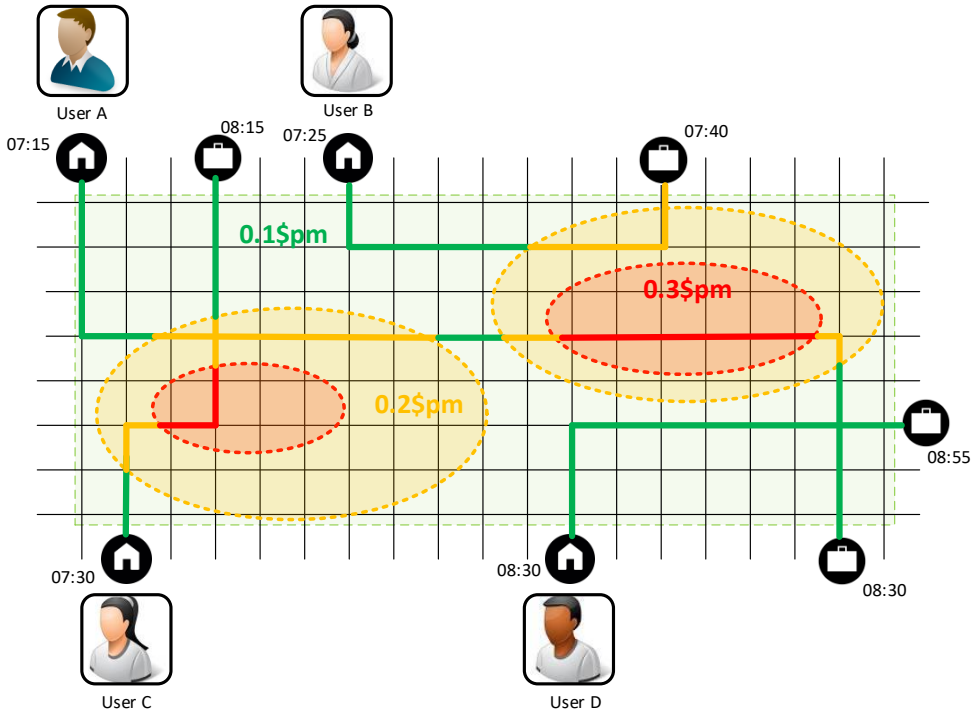
Tolling & Traffic Management

- **Location data from OEM telematics can be combined with information captured by infrastructure (or used exclusively)**
  - Applications for HOV lanes
  - Congestion charges or low emissions zone scheme to charge differently types of roads/zones
- **Polling intervals**
  - 20 sec or more sufficient for most applications
  - Near real time polling also possible to support advanced traffic management use cases



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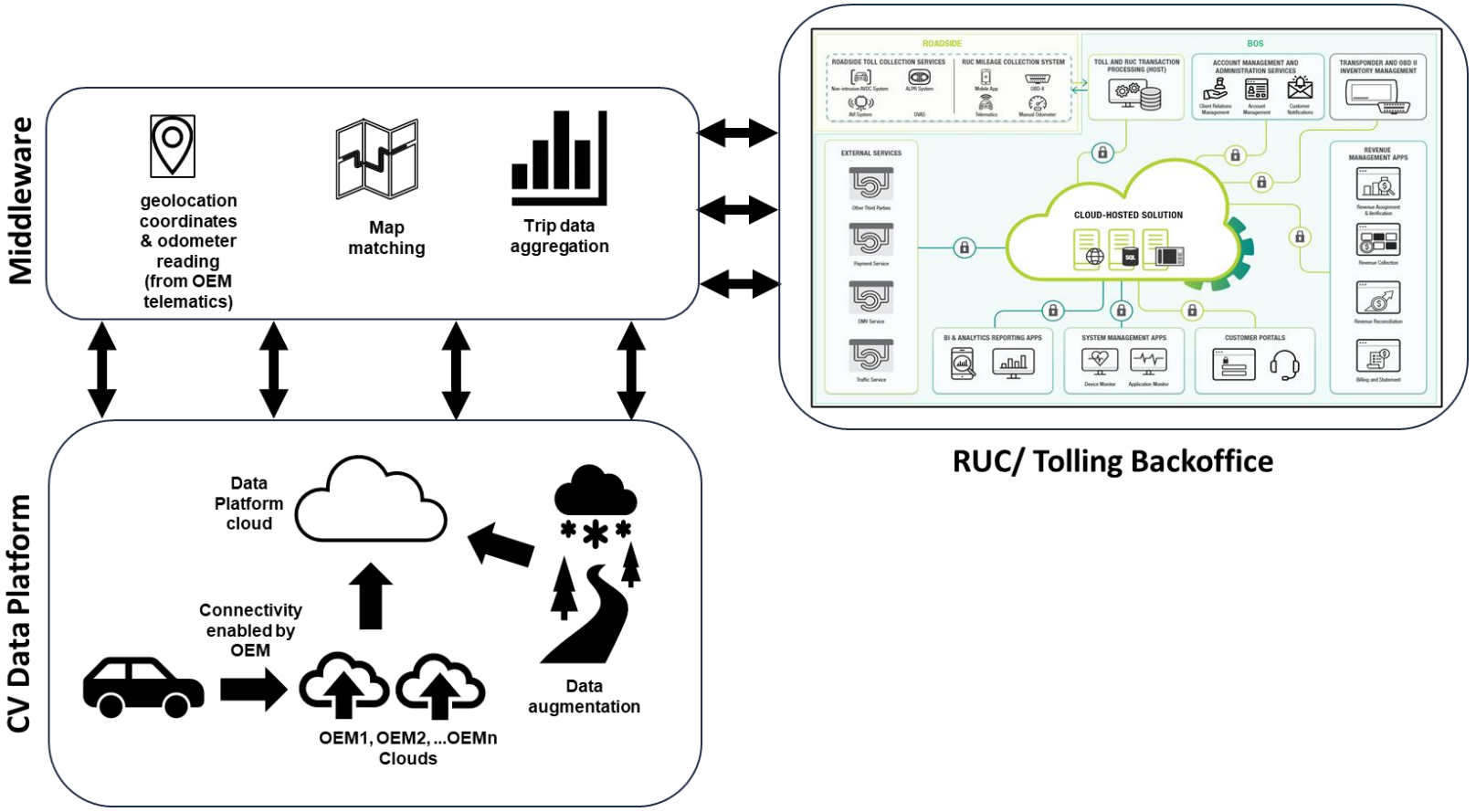
Architectural concepts

- **RUC/tolling specific "middleware" can be part of CV Data Platform or BO**
- **The vehicle is part of the architecture**
- **Potentially National coverage**



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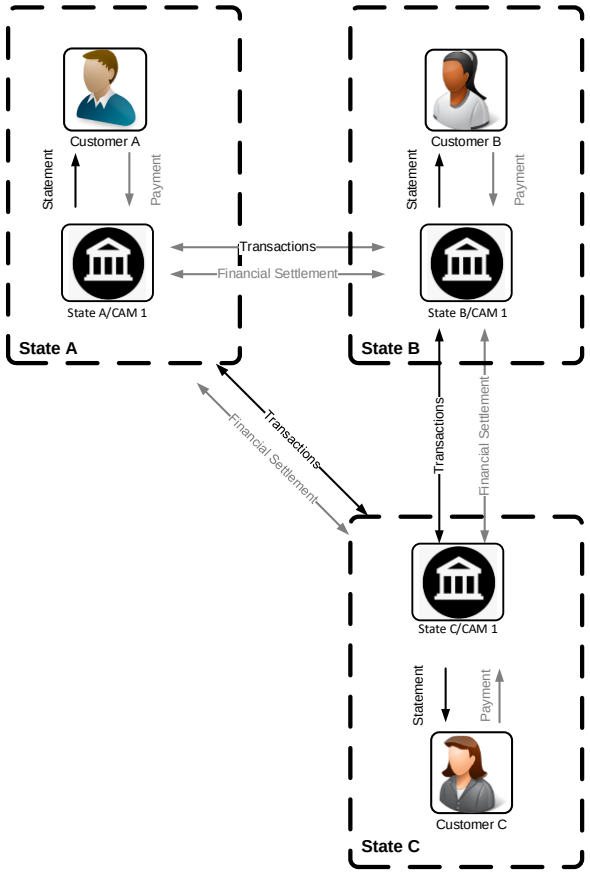
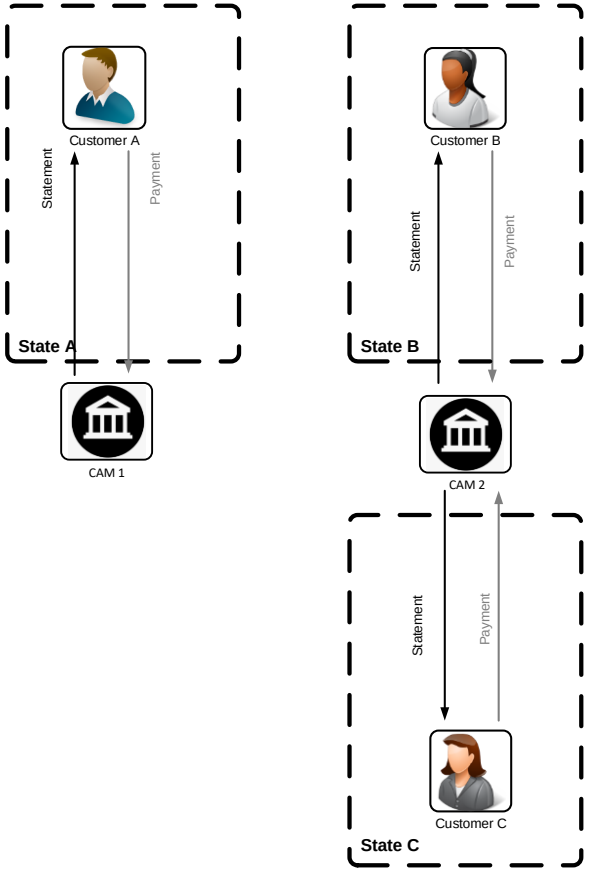
Architectural concepts

- Scale matters
- When the logistics of OBUs (and differences in business rules) is not an issue the concept can scale beyond a single State
- Interoperable State-dedicated CAM vs. competition at a broader scale



Scenario A: State-based Commercial Account Managers



Scenario B: Commercial Account Managers competing at a broader scale

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Potential risks & opportunities

Risk/ Opportunity	Description	Mitigation/comment
Risk: Vehicle technology limitations	Different polling frequency and geolocation accuracy between vehicles	Normalization is performed by Data Platforms. As new generations of vehicles become available this risk will be mitigated.
Risk: Coverage of vehicle fleet	Small % of current overall vehicle fleet	The share of fleet with embedded OEM telematics is increasing fast. RUC is targeted mainly towards EVs and newer vehicles.
Risk: Privacy & Security Concerns	Concerns about data used for purposes not authorized by the users	Make processes for obtaining user consent more clear
Opportunity: Wide geographical coverage	Coverage of US and Canada	A platform architected with scalable coverage can potentially be applied anywhere in the US and Canada very quickly and with a relatively limited cost
Opportunity: Lower lifecycle (capex & opex) cost	No need for separate OBD-II devices or other OBUs, cellular connection costs and storage of raw data in many different areas	This responds to the need by DOTs to lower the RUC collection costs. Equivalent savings, particularly for Capex, for tolling operations as well

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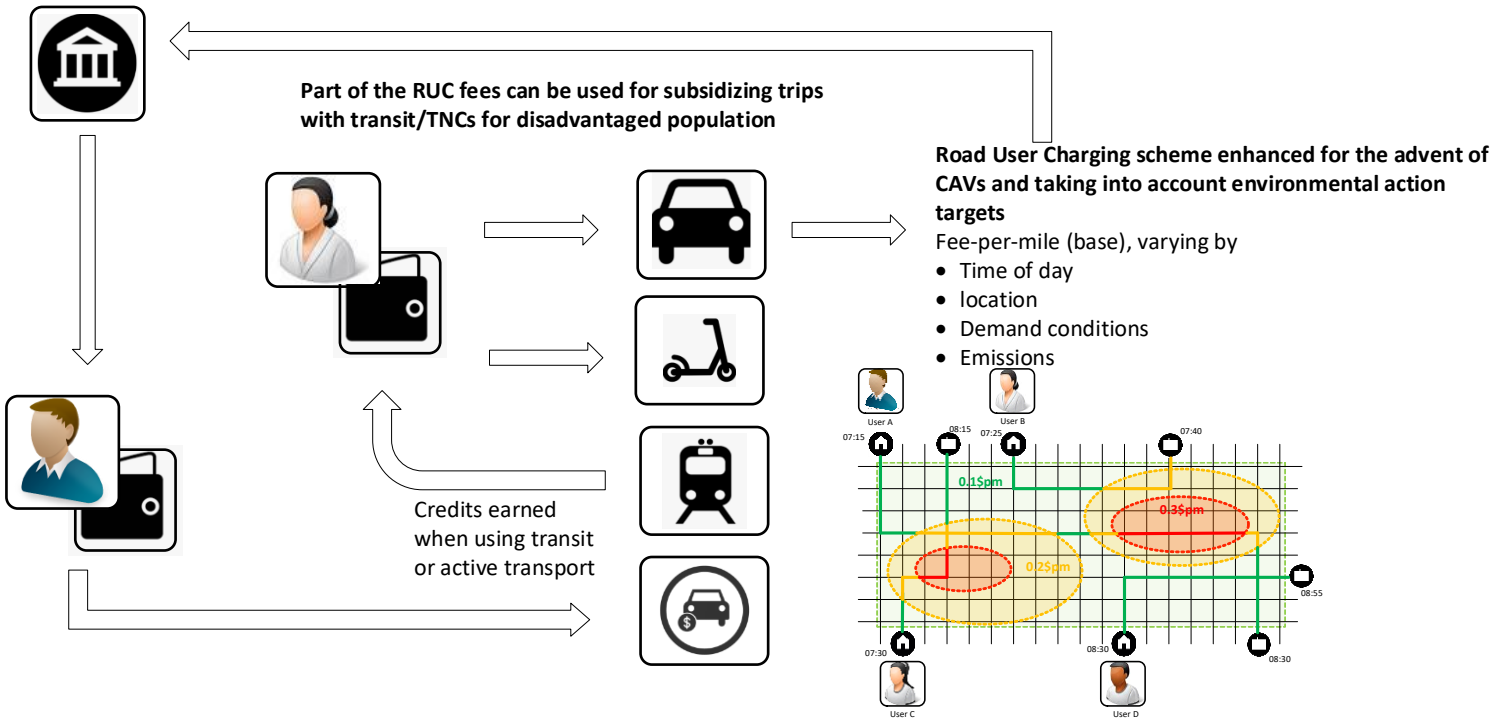
Extending the concepts

- **Sustainable financing for mobility wallets**
  - Access to mobility for disadvantaged users
  - Using RUC funds for subsidies
  - Payment of RUC/ Tolling/ TNCs and Transit from a single source



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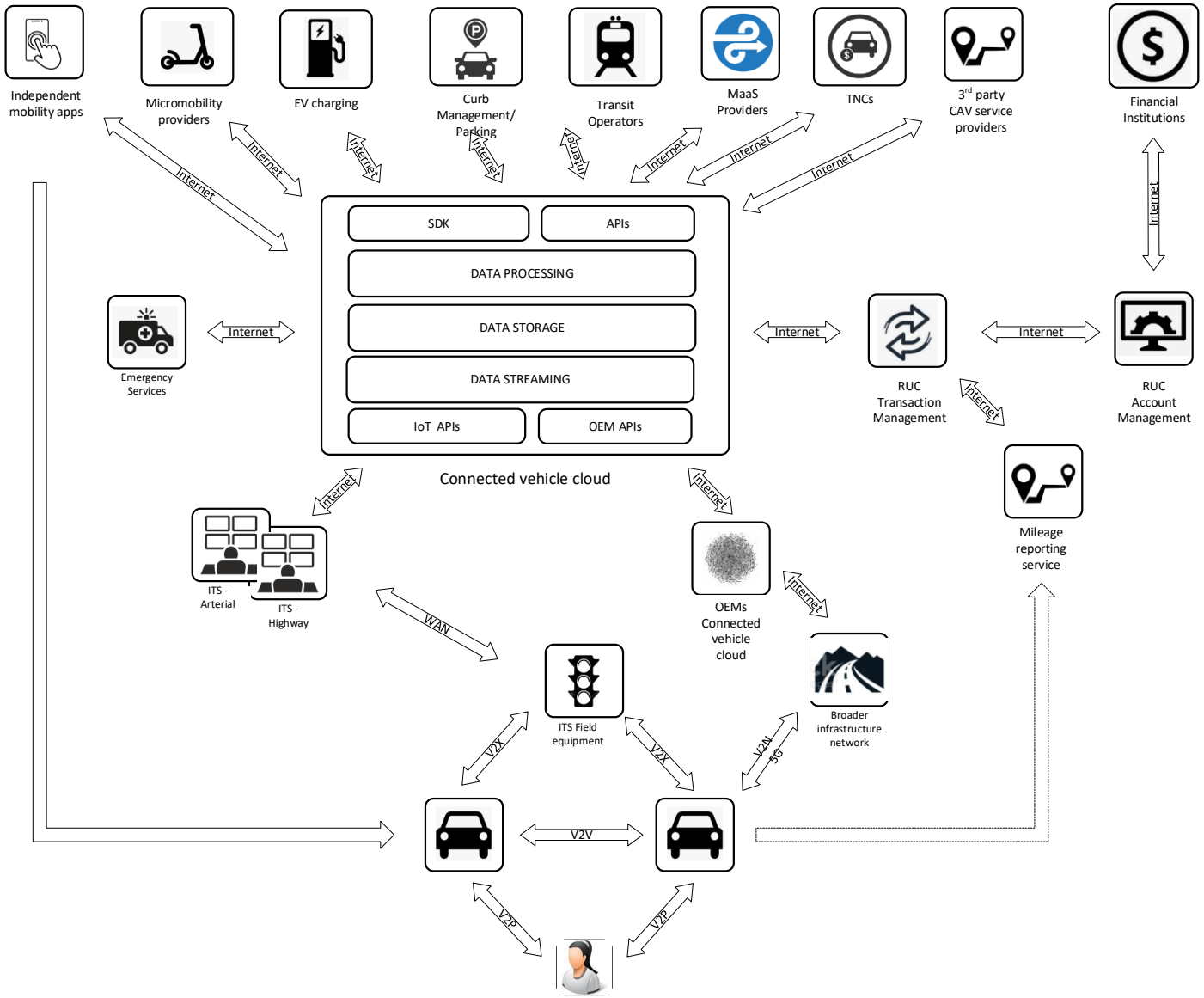
The need for new business models

- **Scalability not only needed for technical architectures but also for the business models**
- **Incentives for participation**
- **The role of OEMs**
- **P3 vs. solely private models for CV Data platforms**



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Challenges & next Steps

- Developing robust data validation approaches to steer clear of "black box" solutions
- Securing user consent and navigating the impacts of privacy laws
- Establishing standards for the storage and querying of diverse datasets, aiming to prevent duplication
- Formulating viable business models tailored to Connected Vehicle data use cases

Thank you

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