DAIMLER

Daimler Truck

The Truck as Economic Agent
Industry Use Cases – Digital Euro - CBDC
October 29, 2020

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Our vision

The Goal:

Leveraging the business opportunities of our customers by increasing the capabilities of our products

The Vision:

The Truck as economic agent
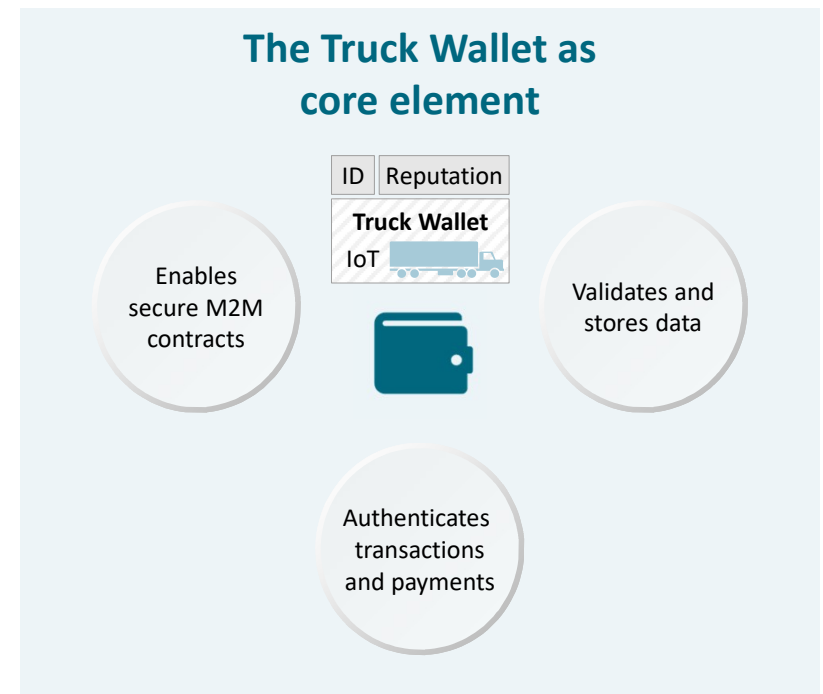
The Concept:

Truck ID as enabler for various services developed on a truck Wallet platform
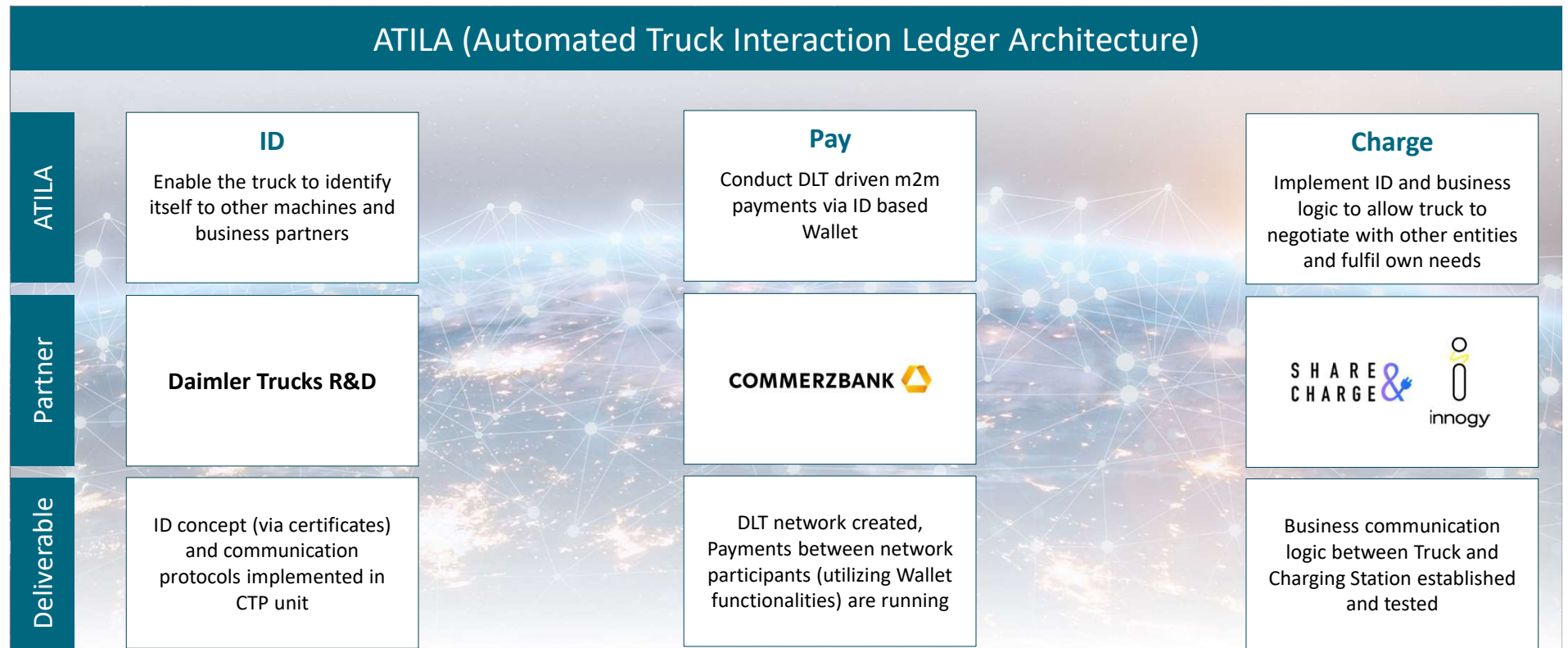
The Project:

Building a platform for an Automated Truck Interaction Ledger Architecture (ATILA)
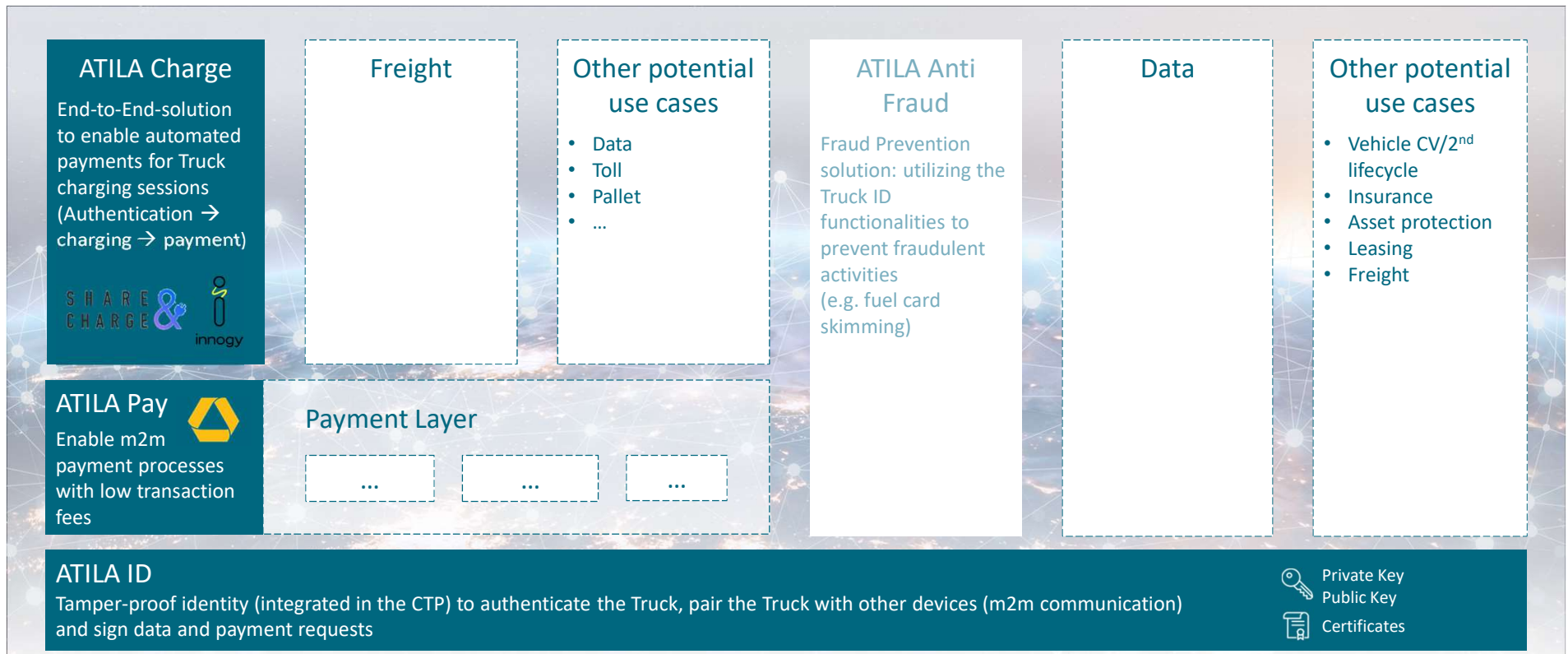
The Truck Wallet as core element

ID	Reputation

Truck Wallet

IoT

Enables secure M2M contracts

Validates and stores data

Authenticates transactions and payments

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ATILA consists of three major pillars

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	ATILA (Automated Truck Interaction Ledger Architecture)		
ATILA	**ID** Enable the truck to identify itself to other machines and business partners	**Pay** Conduct DLT driven m2m payments via ID based Wallet	**Charge** Implement ID and business logic to allow truck to negotiate with other entities and fulfil own needs
Partner	**Daimler Trucks R&D**	**COMMERZBANK**	**SHARE & CHARGE** **innogy**
Deliverable	ID concept (via certificates) and communication protocols implemented in CTP unit	DLT network created, Payments between network participants (utilizing Wallet functionalities) are running	Business communication logic between Truck and Charging Station established and tested

The three pillars are the cornerstones for a DT IoT Platform

Truck Wallet

ATILA Charge

End-to-End-solution to enable automated payments for Truck charging sessions (Authentication → charging → payment)

SHARE & CHARGE / innogy

Freight

Other potential use cases

- Data
- Toll
- Pallet
- …

ATILA Anti Fraud

Fraud Prevention solution: utilizing the Truck ID functionalities to prevent fraudulent activities (e.g. fuel card skimming)

Data

Other potential use cases

- Vehicle CV/2nd lifecycle
- Insurance
- Asset protection
- Leasing
- Freight

ATILA Pay

Enable m2m payment processes with low transaction fees

Payment Layer

… … …

ATILA ID

Tamper-proof identity (integrated in the CTP) to authenticate the Truck, pair the Truck with other devices (m2m communication) and sign data and payment requests

Private Key
Public Key
Certificates

Cash on ledger: exemplary high level process flow Corporate A+B multiple transaction partners

Truck Wallet
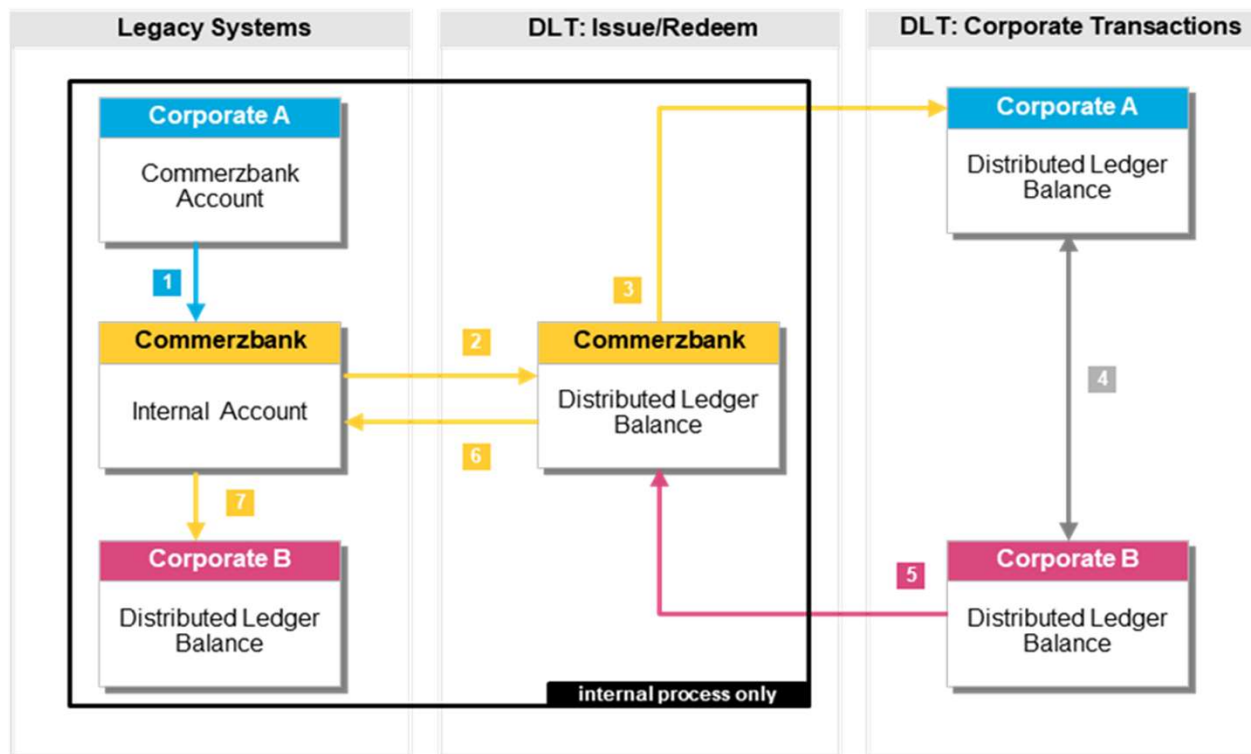
Description

1. Corporate A transfers EUR to internal Commerzbank (CBK) Account
2. CBK issues E-Money on CBK's Distributed Ledger (DL) balance
3. CBK transfers E-Money to Corporate A's DL balance
4. Corporate A and B conduct transactions using E-Money, Corporate B holds E-Money after transactions
5. Corporate B transfers E-Money to CBK DL balance
6. CBK redeems E-Money
7. CBK transfers EUR to Corporate B's CBK account

Note:
During the whole process, there will never be an "imbalance" between EUR on internal CBK account and issued E-Money; all actors are KYC'ed by Commerzbank

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4

PoC process
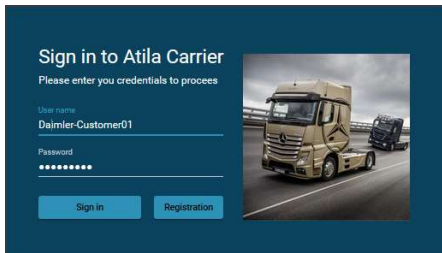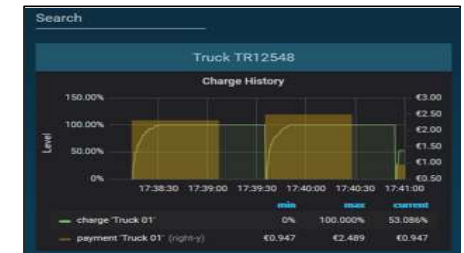
1 Carrier activates Truck ID functions in Wallet Front end
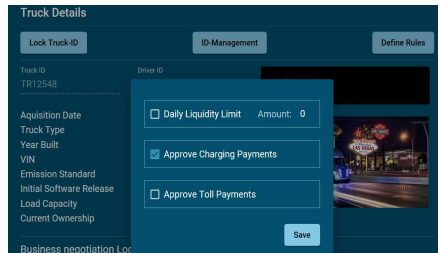
2 Carrier activates functionalities to use with Truck ID
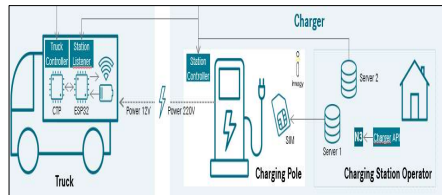
→ Payment

→ Charging
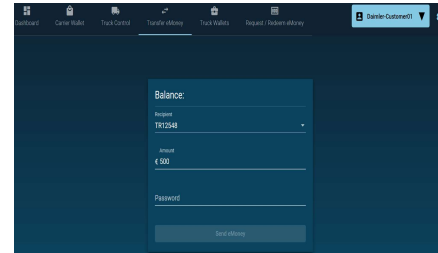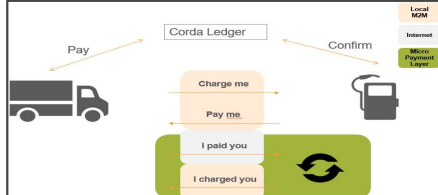

3 Carrier dedicates amount to Wallet / Truck
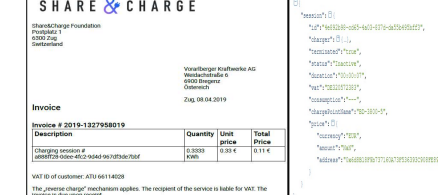
CoBa Emission of eEuros

4 Truck receives message to charge

5 Truck connects with operator back end and starts negotiation

6 Successful negotiation leads to prepayment of amount / operator unlocks charging station

7 After finalisation of charging transaction operator sends invoice data instantly to carrier

8 Wallet accumulates invoice data of ID based transactions/transfers data to carrier's ERP

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ATILA: Achievements and learnings

ATILA

Achievements

ID

- Implemented tamper-proof ID concept in CTP unit
- Truck identifies itself and signs transactions

Pay

Created Corda DLT network for payments between network participants (utilizing Wallet functionalities)

Charge

Implemented business communication logic between truck and charging-station/charging station operator

Learnings

- CTP has all hardware components for tamper proof ID (cryptochip) and connection and communication with other systems (WiFi, SIM, etc.)
- Concept and software of CTP are currently not in line with PoC approach (changes to be done for next generation CTP)
- Transactions to be designed to limited capacity of device

- Legally compliant m2m payment infrastructure works (real Euro/no crypto!)
- m2m payment supposed to be cheaper than current payment systems
- Micropayments possible but further technology development steps necessary
- Light node concepts will enable next steps of optimization (storage and transaction size)

- Truck communicates via ID base concept with Innogy backend (m2x)
- Negotiation protocol about availability, charging volume, and price is running
- Agreement is achieved, electricity is provided in exchange for eMoney
- Invoice data instantly transmitted to Truck Wallet after finalization of transaction

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Five reasons for a digital Euro

Truck **Wallet**

👍 Simplicity

👍 Legality

👍 Accessability

👍 Stability

👍 Operability

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