DRIVE&STAKE

R&C® MOBILITY

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MOBILITY

A DECENTRALISED, END-TO-END SOLUTION FOR THE CREATION OF AUTOMATED MOBILITY AND MACHINE DATA MARKETPLACES.

THE FUTURE OF MOBILITY IS DRIVEN BY DATA

The mobility sector is going through a fundamental transformation.

The traditional idea of everyone owning their car as the primary means of mobility is shifting towards more interconnected ride-sharing, car-sharing and autonomous vehicles. Intelligent transportation systems are generating and distributing vast amounts of data.

As a result, automotive companies are sitting on a data gold mine generated by a number of products, services, customers and external sources.

To unlock their full potential, mobility services need to:

create confidential and trusted data sets that are compliant with industry standards.

move away from centralised third-party frameworks and data silos.

deploy decentralised technologies to support new data business cases and marketplaces.

REINVENTING THE CONNECTED VEHICLE EXPERIENCE.

Drive&Stake is a **decentralised, end-to-end solution for the creation of automated mobility data marketplaces,** which enables all participants to access and benefit from vehicle-generated data.

SERVICE PROVIDERS

Create an end-to-end integrated ecosystem of mobility services, vehicles and surrounding infrastructure. Launch innovative, data-critical use cases, including over-the-air (OTA) updates and autonomous driving modelling. Combine personal information with vehicle usage and environmental information to gain a better understanding of your customers.

OEMs

Don't isolate data but build meaningful collaboration among all stakeholders. Move from data silos to transparency across the entire product life cycle for all stakeholders. Tokenize vehicle-generated data and monetise it in real time on data marketplaces such as Ocean Protocol or Otonomo.

DRIVERS

Never worry about managing multiple fuel cards, parking memberships or apps. By combining the car and the driver's or passengers' identity, personal or financial data need only be entered once. Pre-configure and control which data you want to share, and get rewarded with tokens. Spend your tokens on other mobility services such as EV charging, parking, insurance policies or toll roads.

LIBERATING DATA WITH CONFIDENTIAL PID

What do cars, trucks and space shuttles have in common with medical devices or even heavy machinery? They all use a Controller Area Network (CAN bus), a robust bus standard designed to allow microcontrollers and devices to directly communicate via their applications without a host computer.

WITHOUT CONFIDENTIAL PID

Today, in order to allow third parties to decode the CAN data, OEMs need to reveal their CAN decoding code database (DBC) files. This poses substantial security risks since it allows malicious users to not only access the data but to potentially hack into the car's safety-related electronic components.

WITH CONFIDENTIAL PID

Confidential PID enables the extraction of CAN data without revealing the actual access code. This novel approach, which is the core of Drive&Stake, has arisen from RIDDLE&CODE's development efforts for other sectors like fintech and energy, where various encryption and trusted computing technologies are successfully applied.

UNLOCKING DATA IN A SECURE, TRANSPARENT AND AUDITABLE WAY.

TRUSTED CAR WALLET FOR MANAGING CRITICAL MOBILITY DATA

A powerful, confidential edge-computing device that supports protocols such as CAN, CAN FD and LIN.

– Preserves driver privacy and industry secrets of automotive standards

– Creates an ECU-level digital twin on a full node in addition to robust hardware wallet capabilities

SECURITY

– Security and confidentiality: trusted isolated computation and memory zone

– Embedded homomorphic and elliptic-curve encryption

CONNECTIVITY

– 4G/5G LTE/NB-IoT

– LoRaWAN (optional)

– BLE 4.2/5.0

– Wi-Fi

– Mender over-the-air update

KEY FEATURES

– 2x CAN 2.0/CAN FD buses

– 1x LIN (ISO-17987)

– 2x digital I/O channels

– 32GB eMMC storage security data

– CAN frame error detection

– ASAM MDF (*.mf4 format): international-standard data format

– Low-power consumption in sleep mode and WakeOnCAN or wake-up signal feature

– Micro USB 2.0 - high-speed connection to the logger

– Edge computing capacities, Linux-based

– i.MX 8 processor with AI and high-speed processing capability

– GPS/GNSS receiver-type 72-channel, GPS L1C/A, SBAS L1C/A, QZSS L1C/A, QZSS L1 SAIF, GLONASS L1OF, BeiDou B1I, Galileo E1B/C

– IMU (Inertial Measurement Unit) accelerometer & gyroscope

– Temperature: operating & storage: -25 °C to +85 °C

RIDDLE&CODE'S

DRIVE&STAKE

UNLOCKS DATA IN A SECURE, TRANSPARENT AND AUDITABLE WAY.

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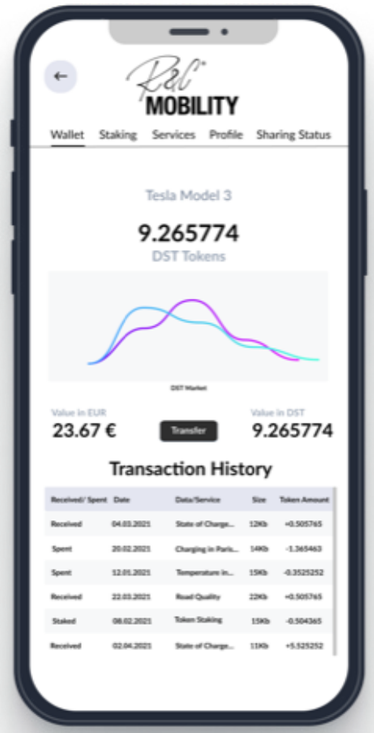
Data can be shared without revealing the path to safety-related processes and hence exclude current attack vectors. A vehicle can therefore trustfully send data not only to the OEM’s network but to external entities as well.

Vehicles are turned into autonomous business agents that encrypt and tokenize data on automated data marketplaces and make it available for various new business cases.

RIDDLE&CODE’s open-source hardware can be easily extended to other industrial machines to create innovative solutions around the aggregation and analytics of data, and build a foundation for a token-based economy.

BEHIND THE SCENES.



#1 Drive&Stake car wallet is connected to a vehicle.

#2 The embedded Secure Element creates a unique identity for the vehicle.

#3 The vehicle's environmental, smart-city and driver data is signed and attested on the blockchain.

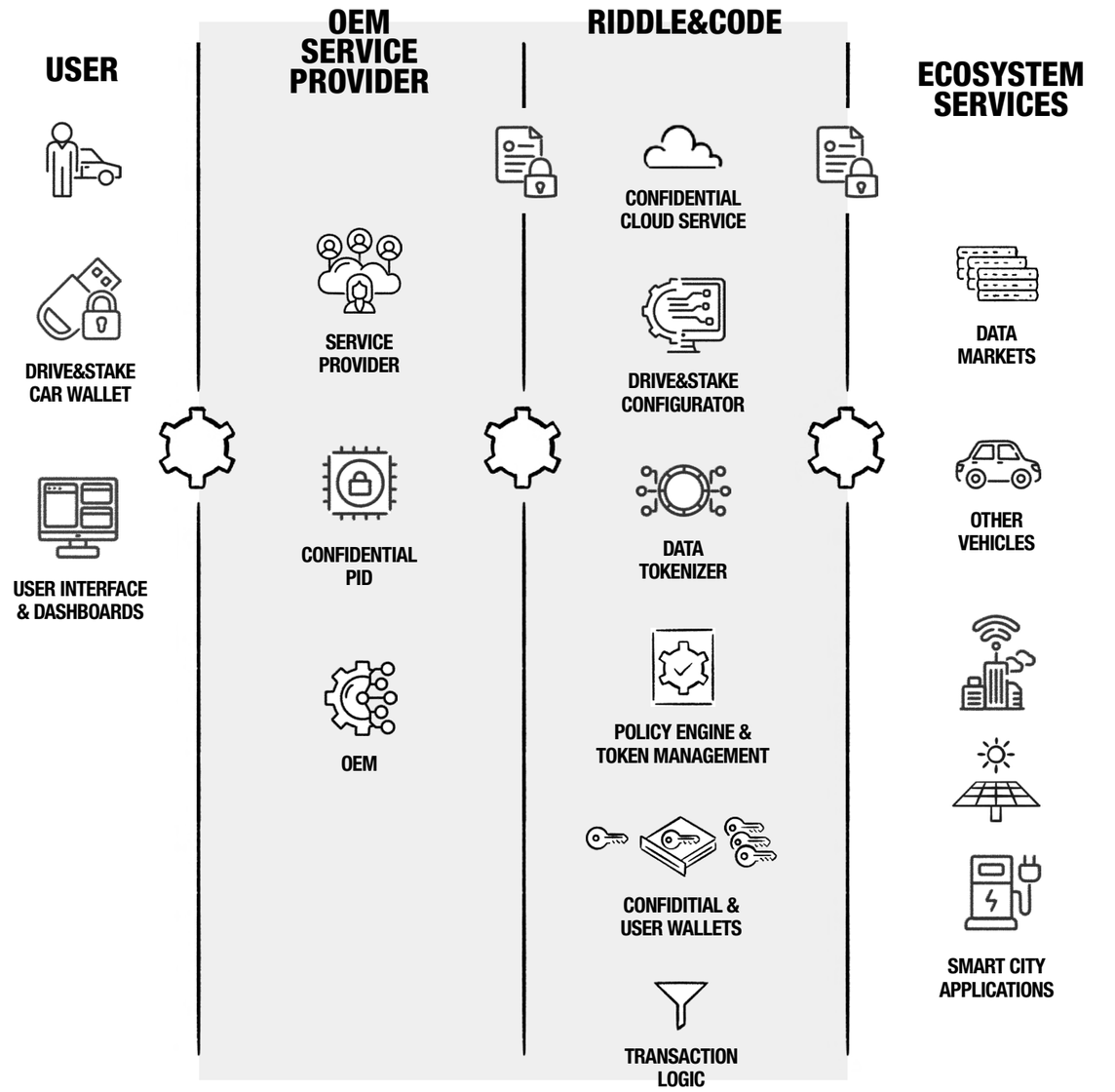
#4 The driver configures which data can be shared.

#5 Data publishers approve algorithms to run on their data, then the Compute-to-Data environment orchestrates remote data computation and execution while preserving its privacy.

#6 Sharing of data is compensated with Drive&Stake tokens.

#7 The tokens can then be used for other network services, EV charging or staking.

THE ARCHITECTURE



CAR WALLET.

A dedicated hardware wallet with a built-in Secure Element that provides the vehicle with an immutable identity and signs vehicle-generated data.

USER INTERFACE & DASHBOARD.

A dedicated web interface for drivers to configure data sharing, acquire micro-shares, and monitor token status and balance.

SERVICE PROVIDER.

A mobility service provider, such as a fleet operator or rental company, which defines the use case of Drive&Stake, including what kind of data should be captured and shared.

OEM.

Defines the use case of Drive&Stake, including what kind of data should be captured and shared.

DRIVE&STAKE CONFIGURATOR.

Hosted web service where drivers define what kind of data is collected and shared.

CONFIDENTIAL PID.

Process based on Intel SGX enclave to access the vehicle's CAN data without compromising OEM's industrial secrets.

DATA TOKENIZER.

Web service which ensures the integrity of the data shared by the vehicle and generates tokens based on the incoming data.

POLICY ENGINE.

Cryptographically protected rules defined by service providers and drivers. These rules govern and control all aspects of token management, from creation to distribution.

CONFIDENTIAL KEYSTORE.

A cryptographically secured component within the Trusted Execution Environment (TEE) that stores keys, signs transactions and manages user wallets.

TRANSACTION LOGIC.

Forwards approved transactions to the Confidential Keystore, where they are signed and broadcasted to the blockchain network.

DATA MARKETS.

Blockchain-powered data markets (for example, Ocean Protocol) for selling, buying or trading vehicle-generated data. By sharing pre-configured data with these marketplaces, a driver can be rewarded by third parties, such as city management, fleet operators or battery producers, that use this data for services and research.

VEHICLES AND SMART CITY APPLICATIONS.

Data generated from trusted sources can be leveraged to create new ways of interaction between vehicles and smart city applications.

COMPONENTS

RIDDLE&CODE

COMPELLING USE CASES

Enhanced pay-as-you-drive/pay-how-you-drive services

Optimise insurance telematics with dynamic parameters such as driving behaviour, place, time or distance. Minimise risk of damage and reduce insurance costs through incentivised behaviour. Launch new, data-driven products and services.

Networked parking for car sharing

Ensure business continuity with up-to-the-minute parking availability, pricing and special offers. Automate billing and payment processes, and reduce the administrative burden through decentralised data management.

Incentivised mobility patterns

Manage dynamic, complex incentivisation models to reach tax-income and emission targets. Minimise traffic congestion by incentivising commuting slots. Reward energy-efficient driving style.

Sustainable EV battery management

Accelerate transformation to more sustainable mobility solutions and develop new revenue streams through V2G technologies and P2P trading. Mitigate emission risks by allowing energy systems to balance increased levels of renewable energy. Get valuable input for battery development.

Supply chain traceability

Assure legal and regulatory compliance, and reduce costs for lowering environmental impact. Generate additional sales and profit based on securely documented sustainability of material origin.

… AND MANY MORE.


Wien
geht
weiter.
R&C
MOBILITY

COLLABORATIVE PARTNERS

EFS CONSULTING

REAL PEOPLE. REAL BUSINESS.

EFS Consulting was established to create modular platform strategies within the automotive industry. The consultancy company, with offices in Vienna and Shanghai, has since expanded beyond the automotive sector, to cover all aspects of a tech product life cycle.

ocean

Built on top of the Ethereum blockchain, Ocean Protocol is an open-source protocol that unlocks the value of data by allowing businesses and individuals to exchange and monetise data and data-based services.

intel

Intel® Software Guard Extensions (Intel® SGX) provides the security foundation needed to build and deploy a new era of dynamic and cost-effective networks.

CEVT is fully owned by the Zhejiang Geely Holding Group (ZGH) that encompasses a range of renowned global car brands with different characteristics and audiences. As part of the Drive&Stake project, CEVT validates and unlocks access to the CAN data using RIDDLE&CODE's confidential technology stack.

ELOOP

ELOOP is a Vienna-based start-up with a focus on green mobility solutions and environmental protection. The company is collaborating with RIDDLE&CODE on testing different use cases related to connected EV cars, including CO2 footprint, charging station management and data monetisation.

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WHAT OUR PARTNERS SAY

EFS

“Curiosity for novel technologies is in the very DNA of EFS Consulting. We are delighted to channel this curiosity together with our partner RIDDLE&CODE. Drive&Stake is a project that reinvents the connected vehicle experience, and we are proud to be part of it. Together with RIDDLE&CODE and other industry-leading partners, we are creating new decentralised business models and services on the basis of tokenized mobility data.”

CHRISTIAN SCHAUPP, MANAGEMENT DIRECTOR,
EFS CONSULTING

ocean

“Ocean Protocol has been at the forefront of open, privacy-preserving and secure data economy. We are delighted to join Drive&Stake, a forward-looking project that will build a strong data foundation for future growth and innovation of the industry.”

BRUCE PON, CEO,
OCEAN PROTOCOL

ELOOP

“As a company committed to taking the sharing economy to the next level, ELOOP is delighted to be part of Drive&Stake. We have already deployed a first use case, automating CO2 certificates that record the green energy consumption and mileage of electric vehicles, and are keen to test and develop further use cases within the Drive&Stake ecosystem.

LEROY HOFER, CEO,
ELOOP

“Decentralisation can transform vehicles into autonomous economic agents capable of performing business transactions entirely on their own. In return, this will open up new business models. We see many high potential use cases, and that is why we partnered with RIDDLE&CODE—to deep dive into interesting solutions and user scenarios.”

PETER STAVERED, HEAD OF INNOVATION,
CEVT

JOIN THE JOURNEY TOWARDS THE FUTURE OF MOBILITY.

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