# Blockchain based AI & IOT Solution for Smart Cities

Stefan Strobl

RISE Overview

- World class IT engineering company, R&D in IT
- Spin Off: Vienna University of Technology, founded 1987
- >300 Top-level IT-engineers & Architects
- Highly acknowledged R&D-enterprise in Europe
- Long history in payment, banking IT and integration projects
- Funds TU Vienna „Industrial Software" Group as its Think Tank
- Working across Europe as well as globally on Projects for our Customers
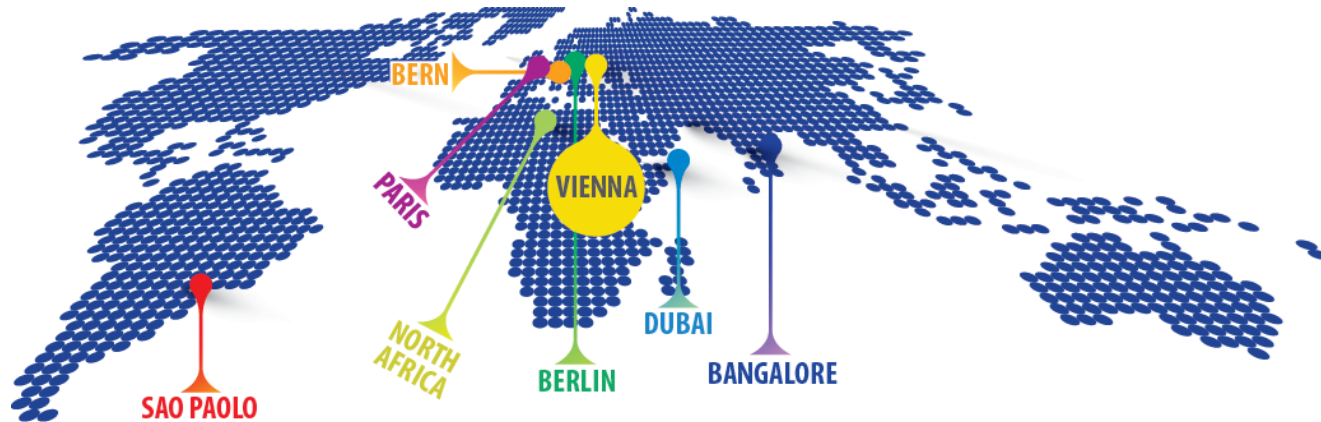
Combining Industry and Science

RISE
the **Do-Tank**

More than 400 specialists focusing on Design, Development, Installation, and Operation of secure, usable, fast IT environments.

INSO at TU Vienna
the **Think-Tank**

More than 100 scientists focusing on research, concepts, revision, and specification of secure and usable IT environments.

Free information exchange and frequent conjoined projects result in a high-quality mixture of state-of-the art and best practice solutions

RISE inside - rough (daily) operatives

> 20 mio passengers / year	> 1 bill. transactions	> 30 mio tickets / year	connecting 600 banks and 3 MNOs
National Airport Solution	**Health Insurance System Austria / Germany**	**Railways Nation-wide**	**Mobile Debitcard Mobile Channel Nation-wide**
> 30 mio push messages	Multiply awarded security system	2 mio members > 200 service stations	and relevant leading edge global services/ experiences
Post AG	**IIoT mobile Lock System**	**Automobile Club Driver2Driver**	**Poker Stars Volkswagen Sport-Data**
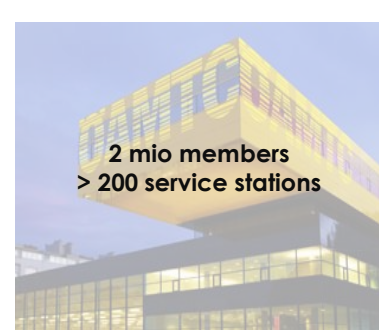
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Top-down governance approaches are gone for good and we need to shift the relation between city governments and residents taking it one step further.
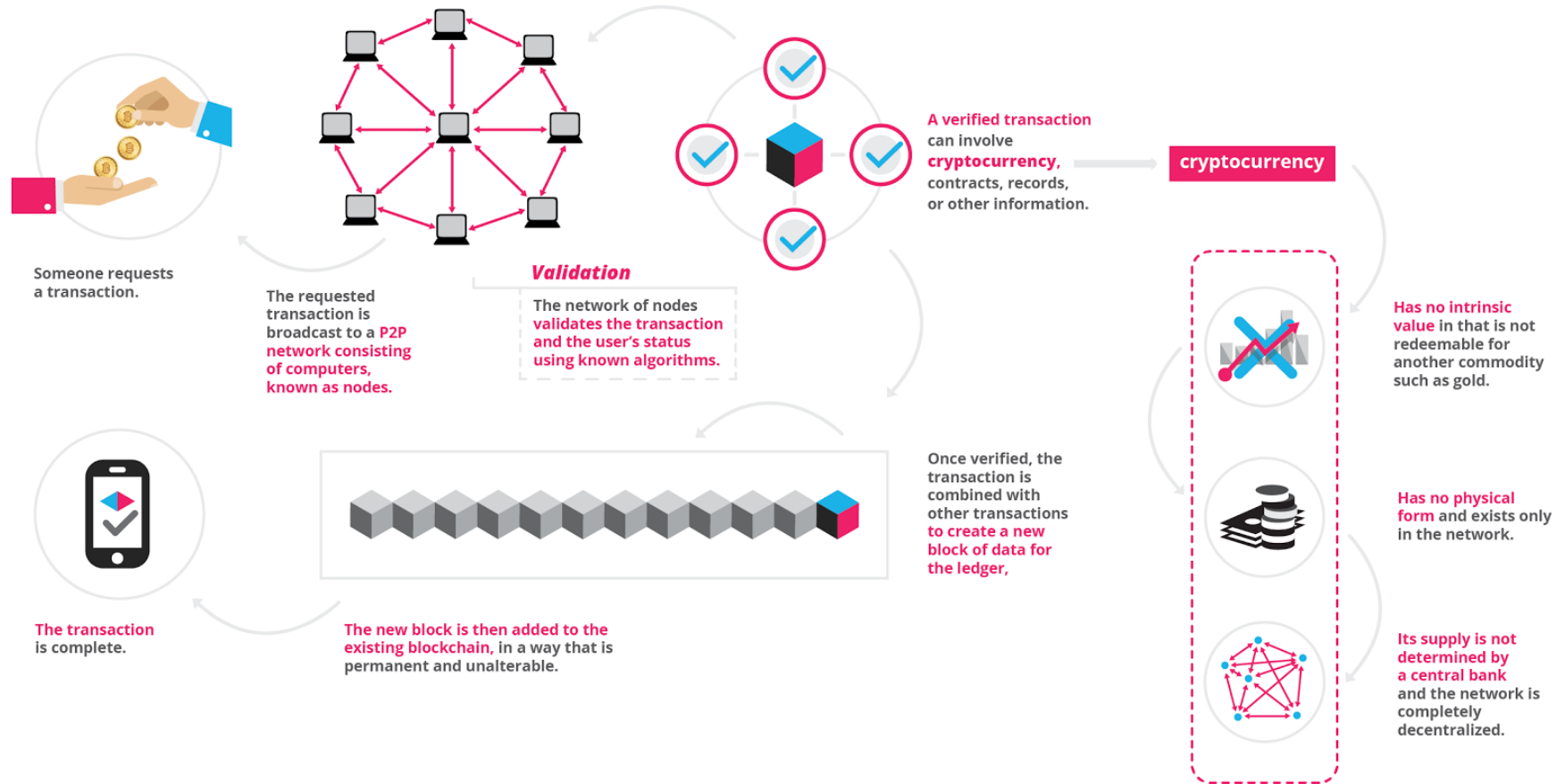
Ugo Valenti, director Smart City Expo World Congress 2017

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Smart City Strategy

Expansion	🌐	Expansion to other sectors
Payment	👥	Integration of use cases
	🏪	Payment as base for next step
Community Building	🤝	Reward system
	❤️	Implement use case on social responsibility
	☺	Community App as communication channel

Community

Knowledge about

Incentive
Behaviour
Data

Blockchain explained

Someone requests a transaction.

The requested transaction is broadcast to a **P2P network consisting of computers, known as nodes.**

Validation

The network of nodes **validates the transaction and the user's status using known algorithms.**

A verified transaction can involve **cryptocurrency,** contracts, records, or other information.

cryptocurrency

Has no intrinsic value in that is not redeemable for another commodity such as gold.

Once verified, the transaction is combined with other transactions **to create a new block of data for the ledger,**

Has no physical form and exists only in the network.

The transaction is complete.

The new block is then added to the existing blockchain, in a way that is permanent and unalterable.

Its supply is not determined by a central bank and the network is completely decentralized.

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Advantages of Blockchain

Without Blockchain

- intermediaries of trust
- digital footprint
- information security
- inefficient data integrity
- monopoly over data

With Blockchain

- Immutable information through blockchain
- Only relevant information is shared
- secure information by cryptography
- **Block chain**
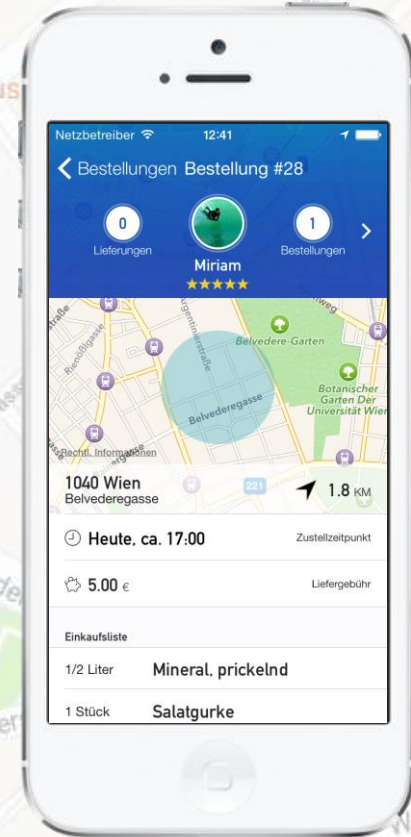- Mistakes are easily reviewable
- Stored data over network
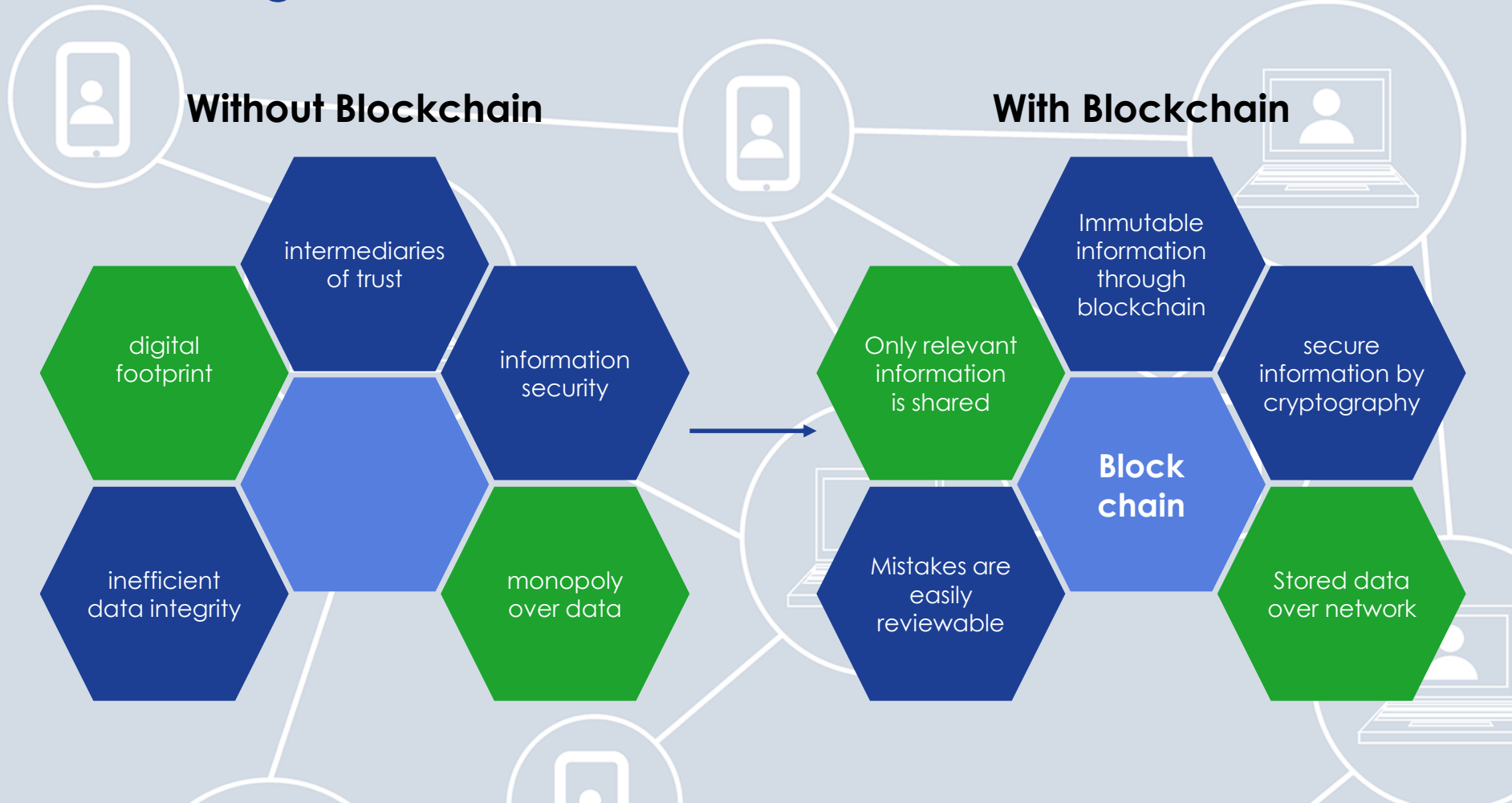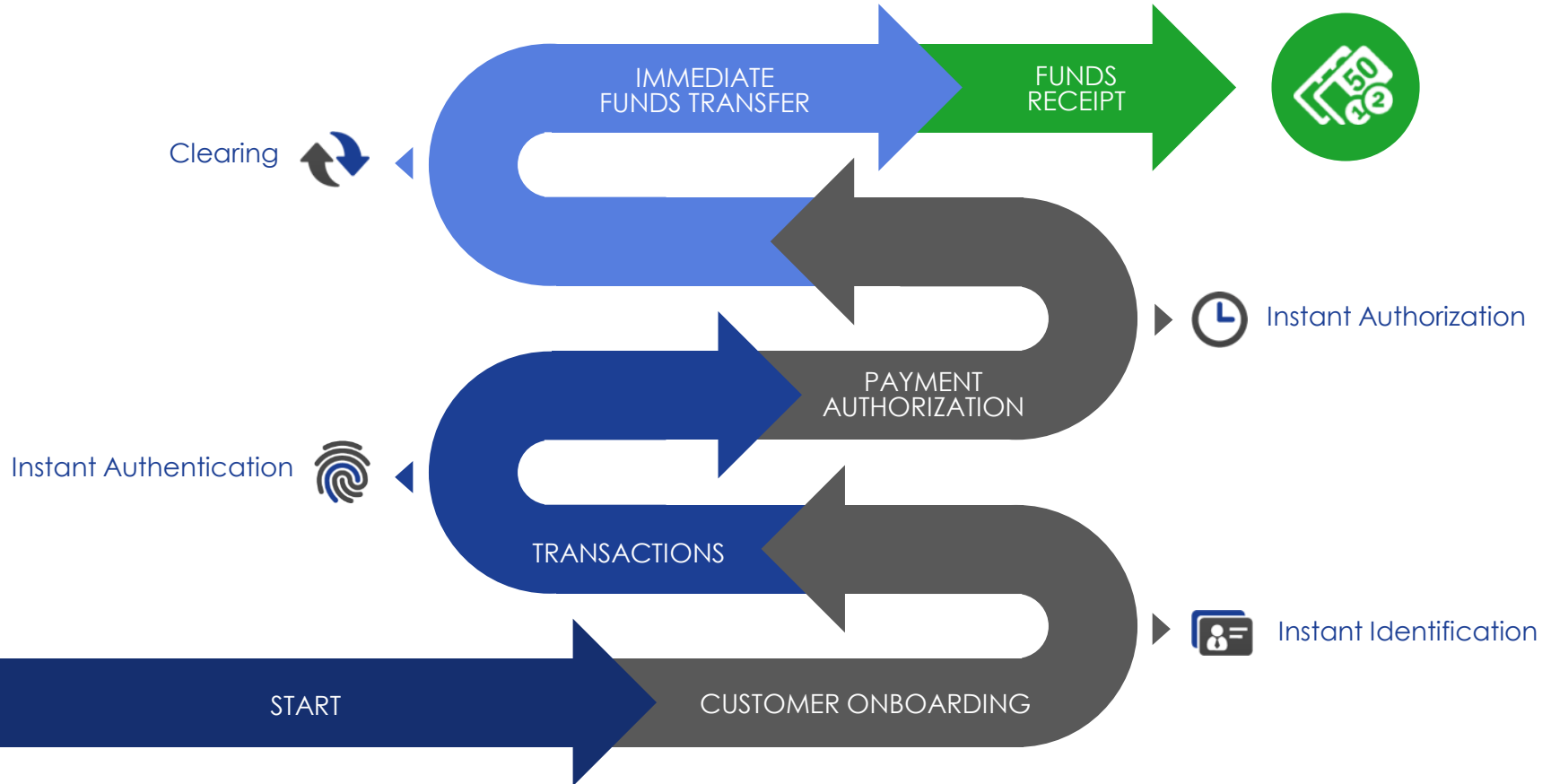
Community Building

Social Delivery via Blockchain
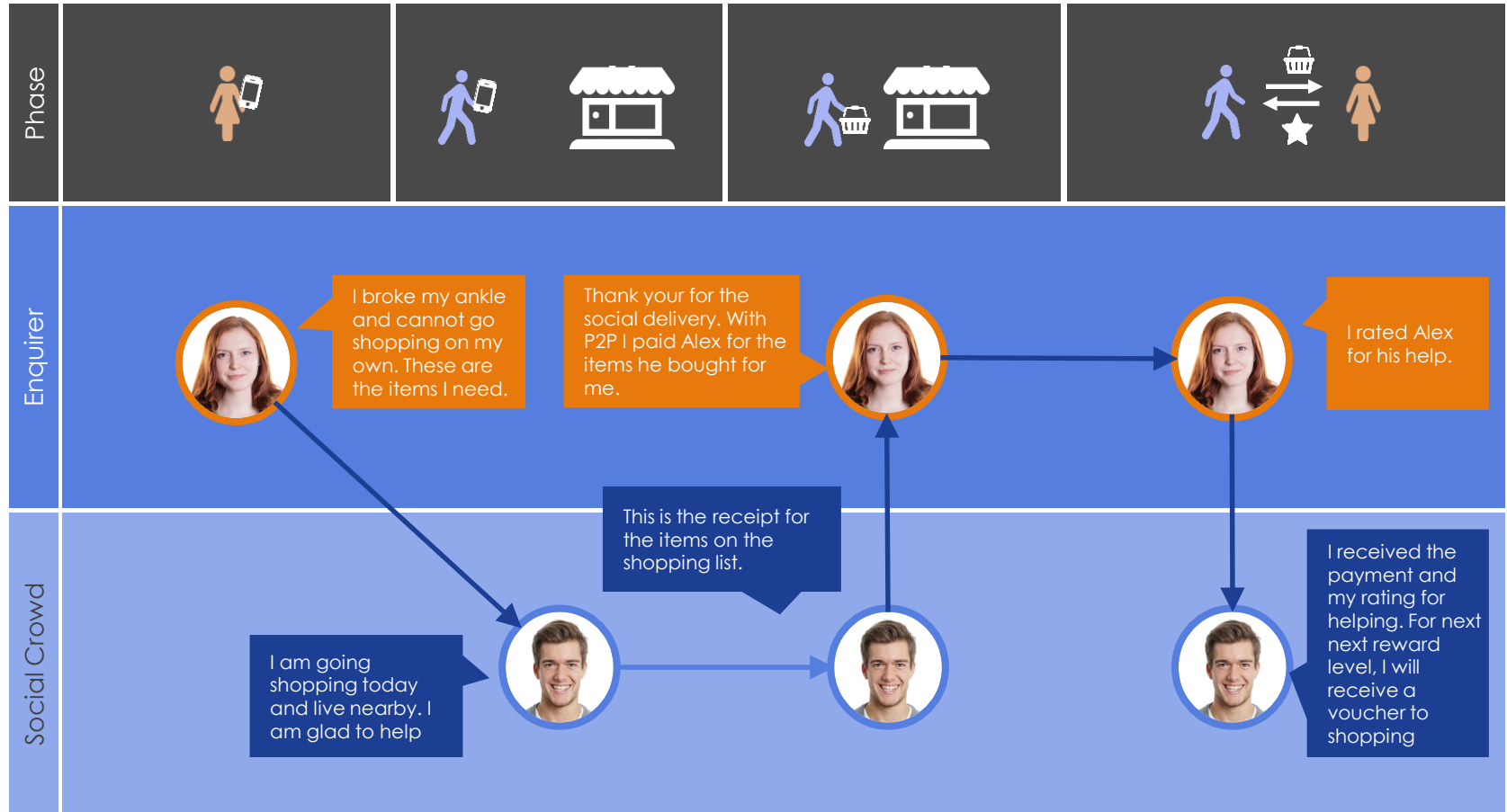
Social Delivery Shopping Service – Screenshots

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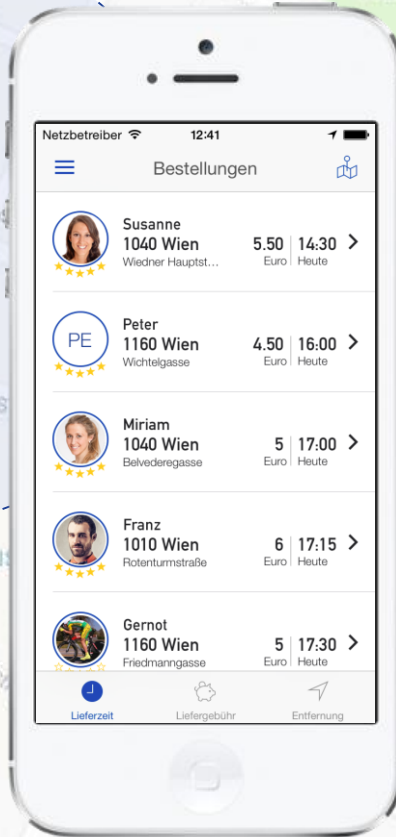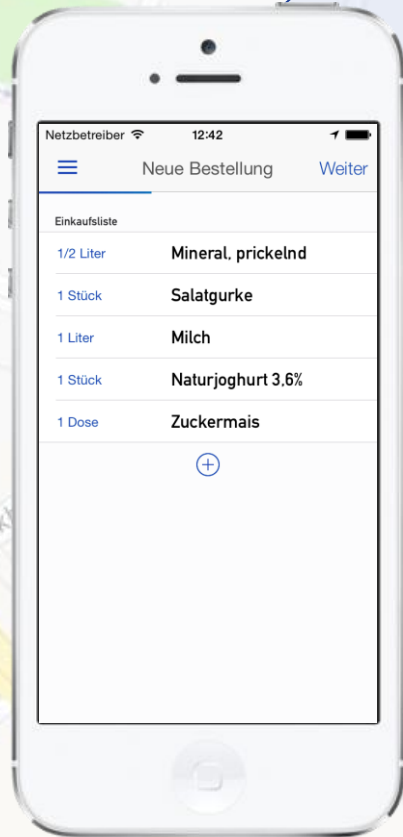
# Seamless transition from Community Building to Payment and Reward

Clearing

IMMEDIATE FUNDS TRANSFER

FUNDS RECEIPT

Instant Authorization

PAYMENT AUTHORIZATION

Instant Authentication

TRANSACTIONS

Instant Identification

START

CUSTOMER ONBOARDING

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Resource management

FAIRENERGYFUND – Fair Energy Exchange

- Today electricity is not created by only large energy corporations but by individuals

- To motivate more individuals to create sustainable energy in the city, the government has to create a fair and transparent exchange infrastructure

- FAIRENERGYFUND is a Blockchain based exchange platform, where

  - Individuals AND corporations can SELL energy based on the actual energy pricings on the market

  - Individuals AND corporations can BUY energy based on a variable contract form

- The market gains more transparency for both sellers and buyers

- Buyers profit from a fully variable smart contract with variable pricing, which are not dictated from large energy corporations
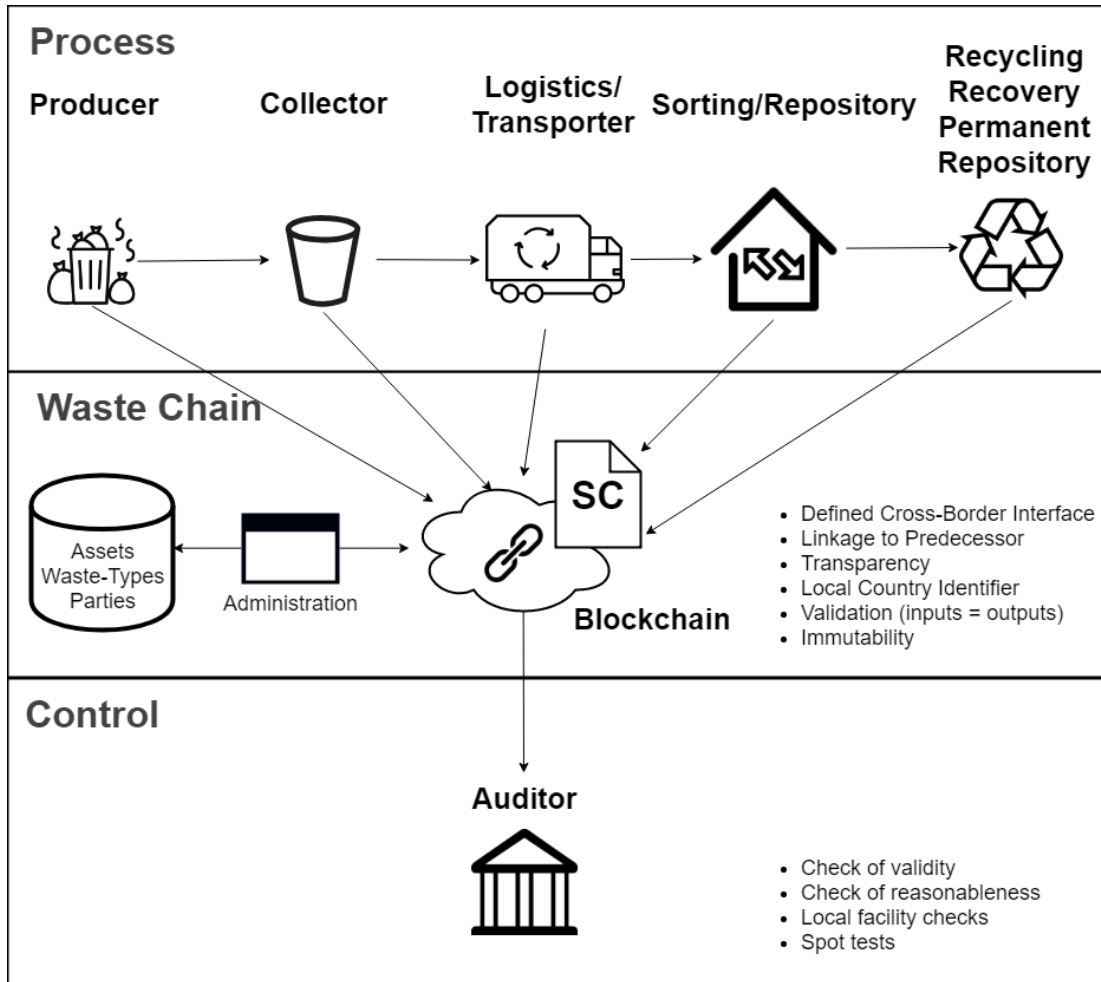
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# Schematics of a Blockchain-based energy trade
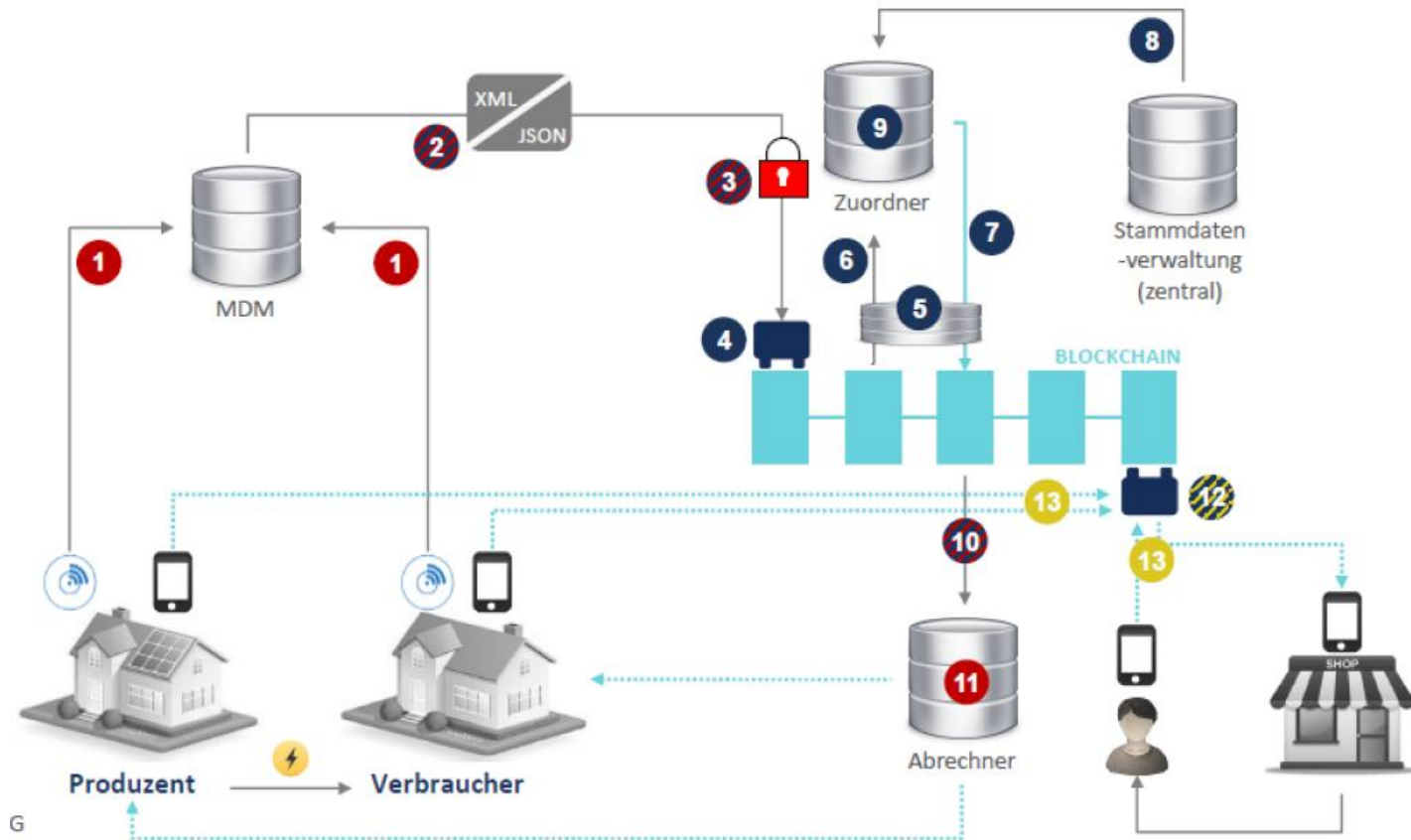
WASTECHAIN

A central or regional innovative, state-of-the-art Waste-Asset-Platform and Waste Tracking System, "Conservative Central" or "Blockchain-Based" if needed.

- Defines, and stores entities involved
- Stores assets, such as landfills, repositories etc. involved
- Local Waste types and translations of waste types
- Stores a log of all executed process steps with timestamps and waste types, assets and parties involved
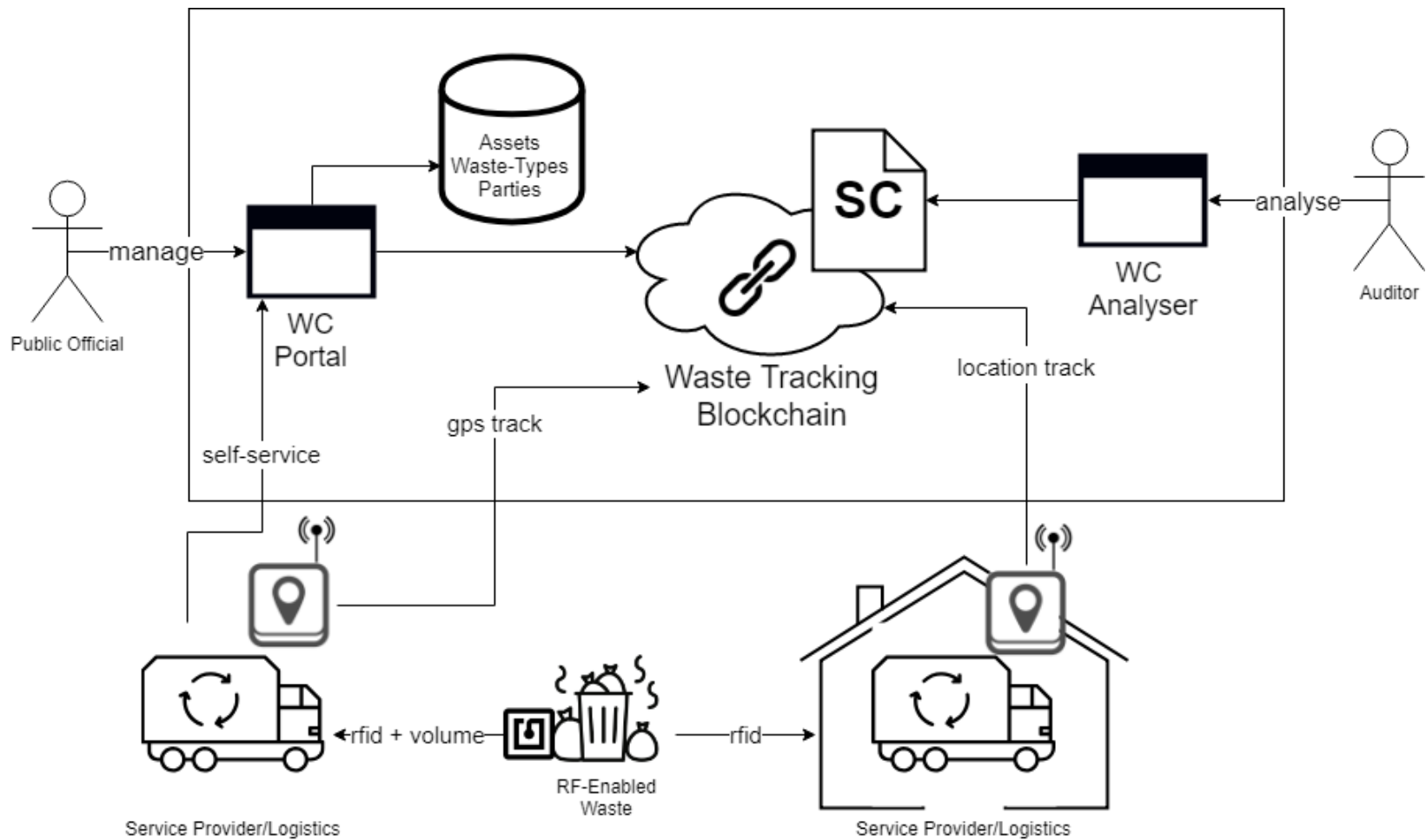
Collection Waste Reduction Instant Gratification

User initiated Recycling Bonus Transaction by using Smart Recycling Bins
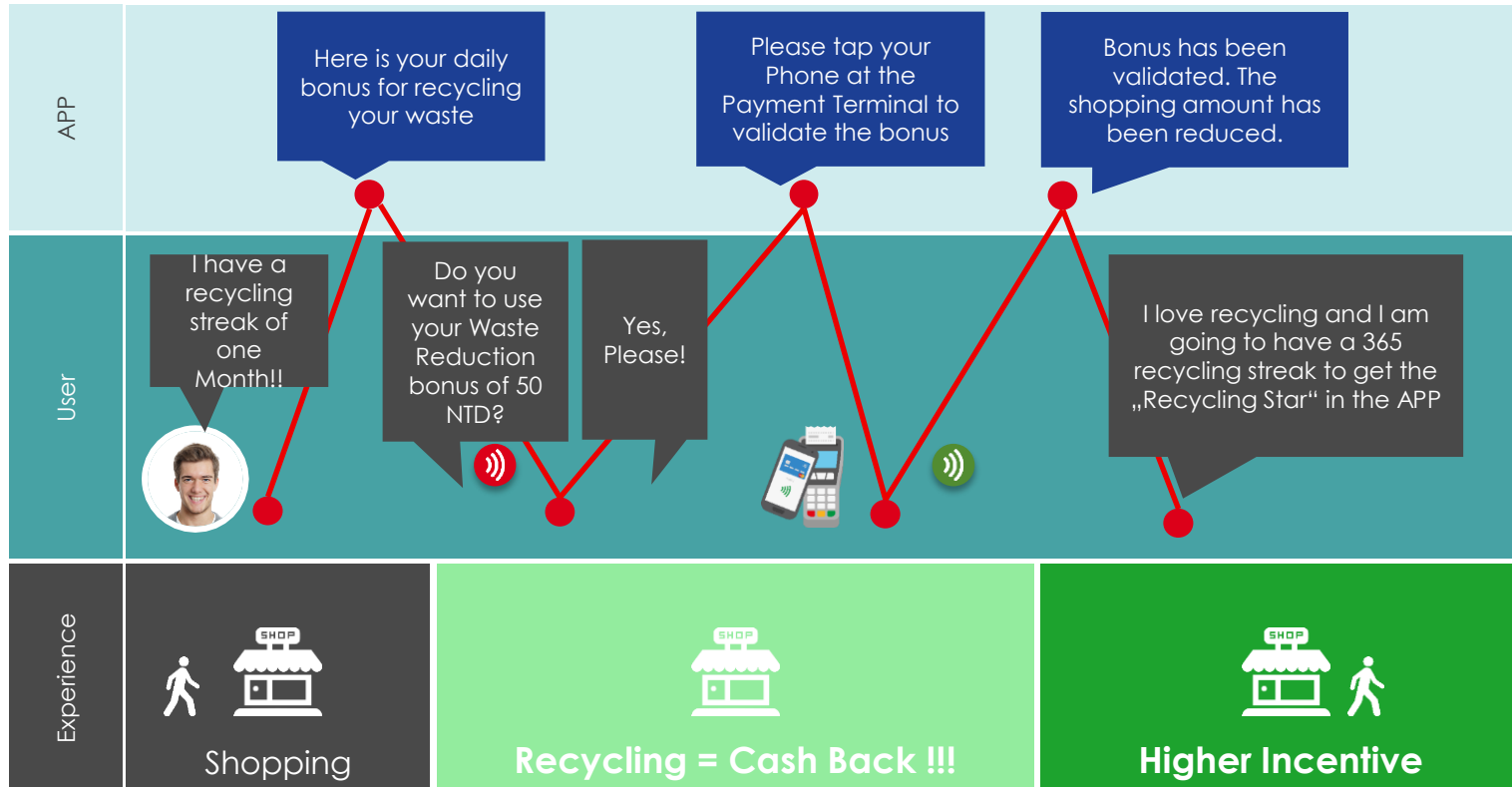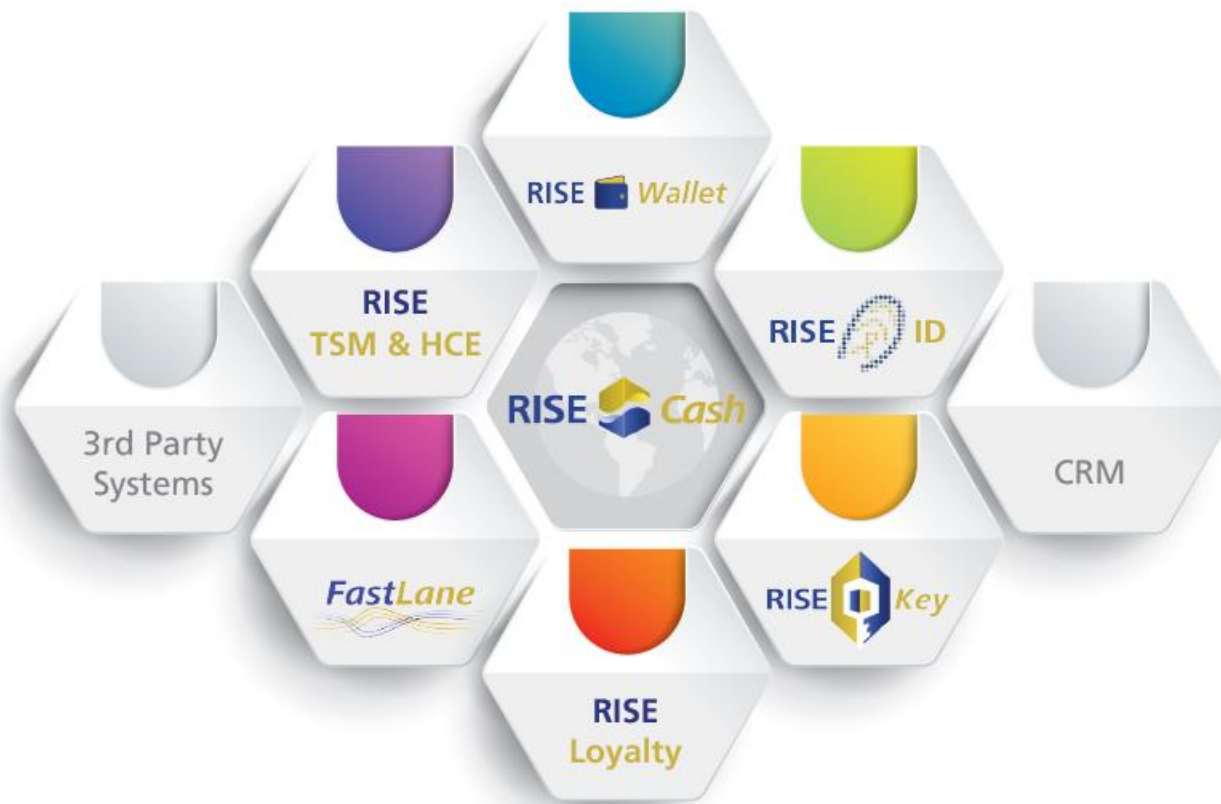
Recycling Bonus Transaction

Recycling Bonus

as Bonus Point, Voucher, or Cashback

RISE Loyalty Framework

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Waste Reduction Instant Gratification Experience

RISE Cash Portfolio – enabling Smart City

Summary

- The initial challenge lies in establishing the basic infrastructure and nurturing communities on it.

- Blockchain can be applied in a SmartCity context to enhance trust.

- Blockchain enables transparency and democratises the data

- We are currently looking for partners that are interested in exploring possible applications in the area.

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THANK YOU

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