E-services, innovation and Smart City solutions in Tartu

Raimond Tamm, Deputy Mayor of Tartu

29.01.2020

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Smart city since 1632

- Almost **100 000** citizens
- 50% are **under 35** years
- About **18 000** students
- Around **15 000** companies
- **3%** of unemployment
- **90%** uses internet
- **98%** holds ID-card

- Second-largest city in Estonia
- Research and education centre
- University of Tartu was founded in 1632

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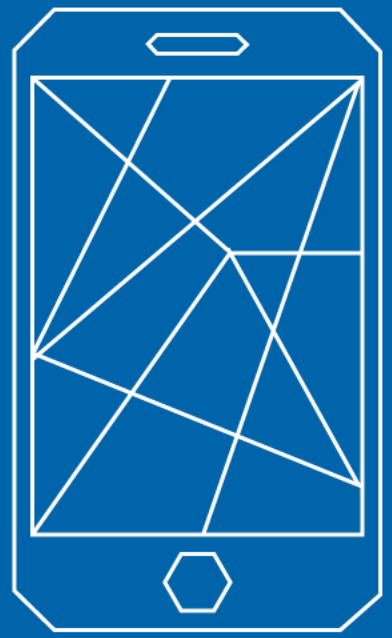
Know your strengths, weaknesses and actual challenges.

Create your strategy and tactics based on that!



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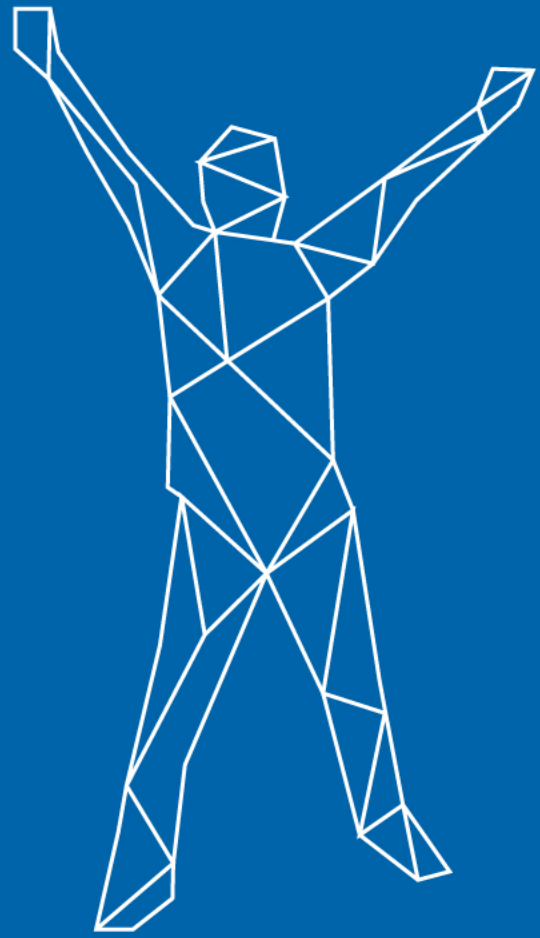

Technology

People


Technology is
just a tool, not the
holy grail of smart city.

Three things you would never lose in Tartu

Short distances – geographically and in human relations

Green living environment

Diverse cultural scene

Keep and develop your strenghts!

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European Capital of Culture in 2024

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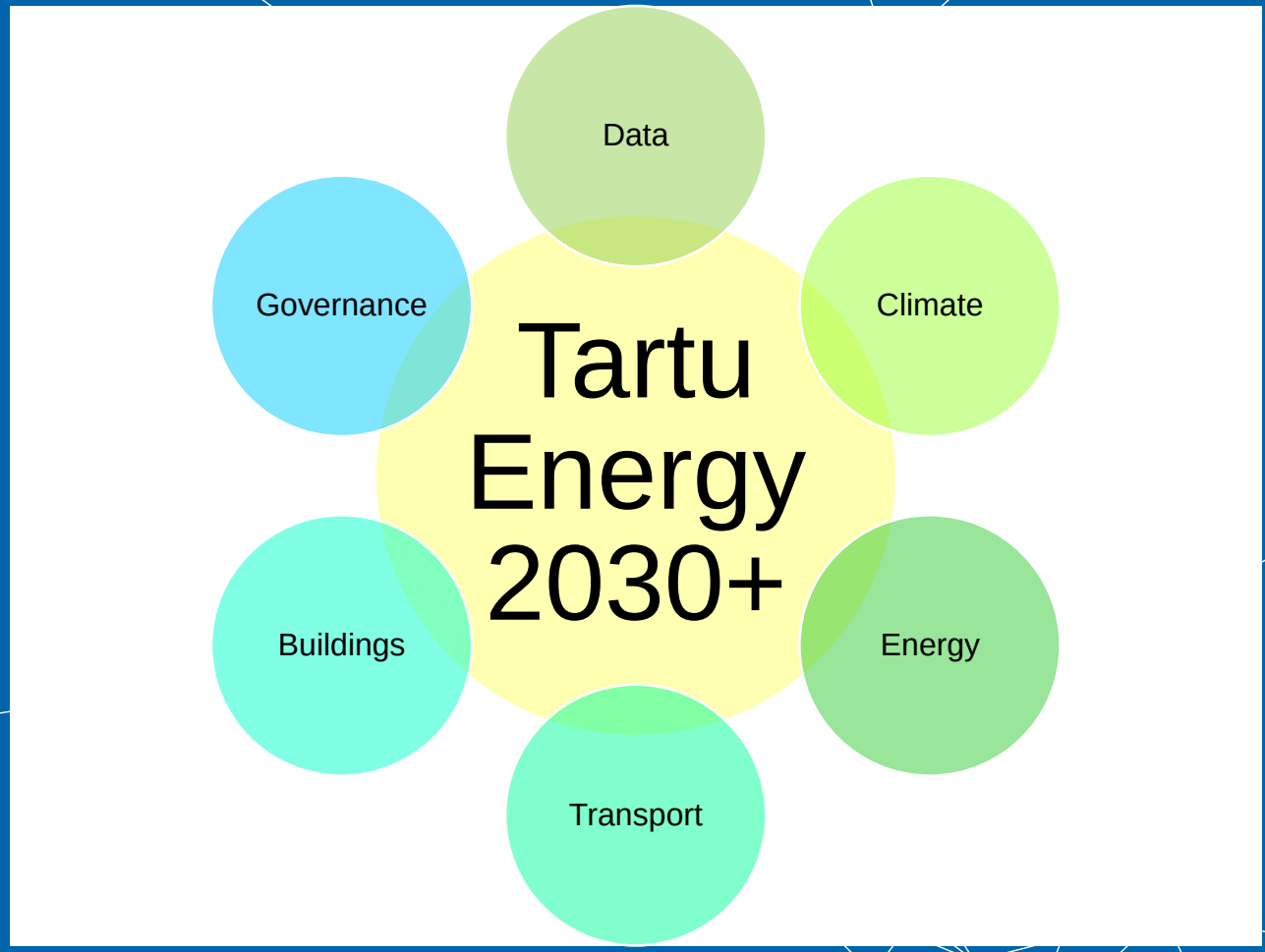
Tartu Energy and Climate Action Plan 2030



Energy and climate development plan for 2020 - 2030

Methodology: Secap, IUP

Delivery: February 2020

VISION:

Tartu is a smart community with good energy and a green pioneer.

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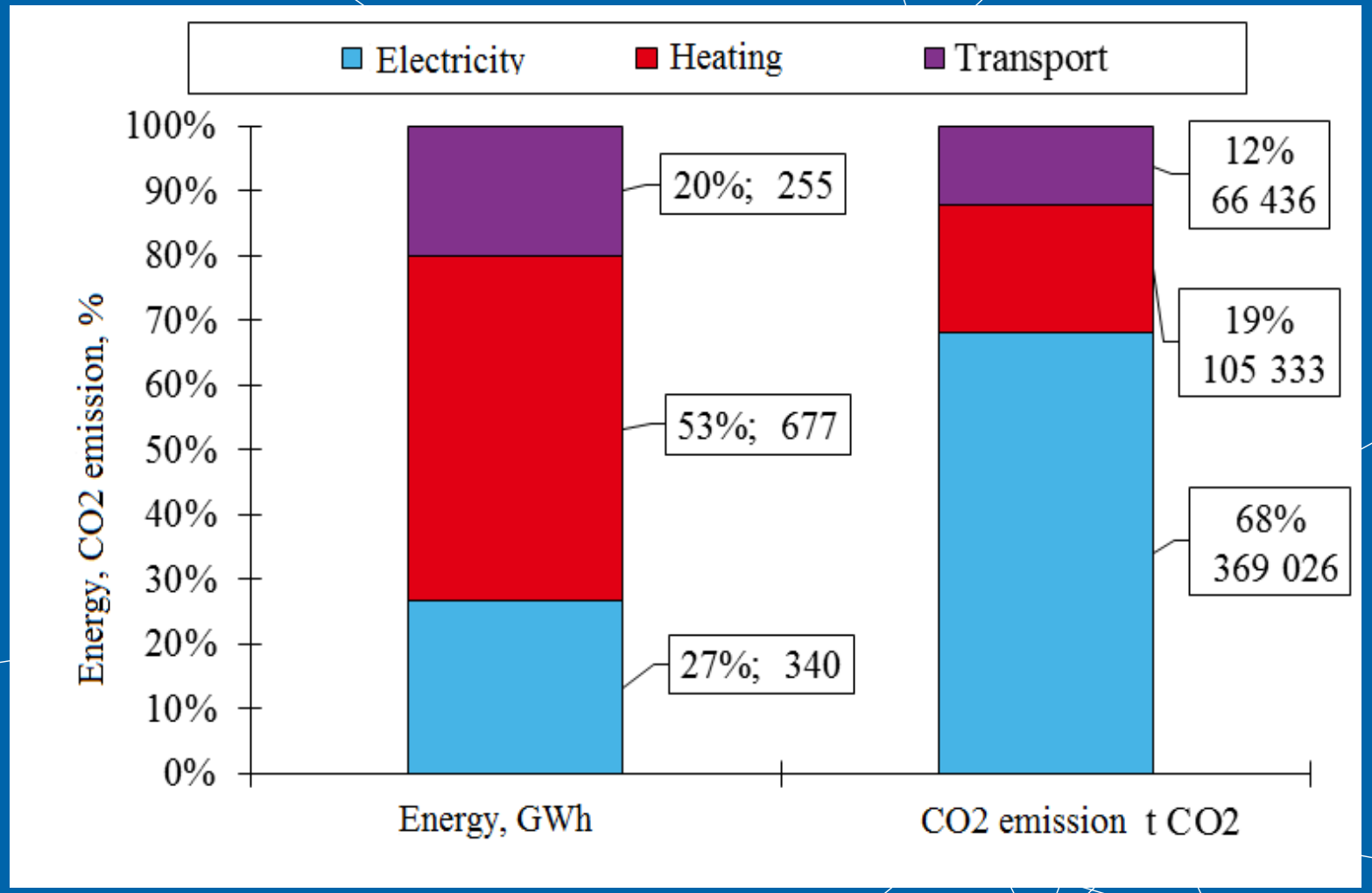
Energy consumption and CO^2 emissions in Tartu

Energy efficiency

Renewable energy



Source: Sustainable Energy Action Plan 2015-2020 for the City of Tartu

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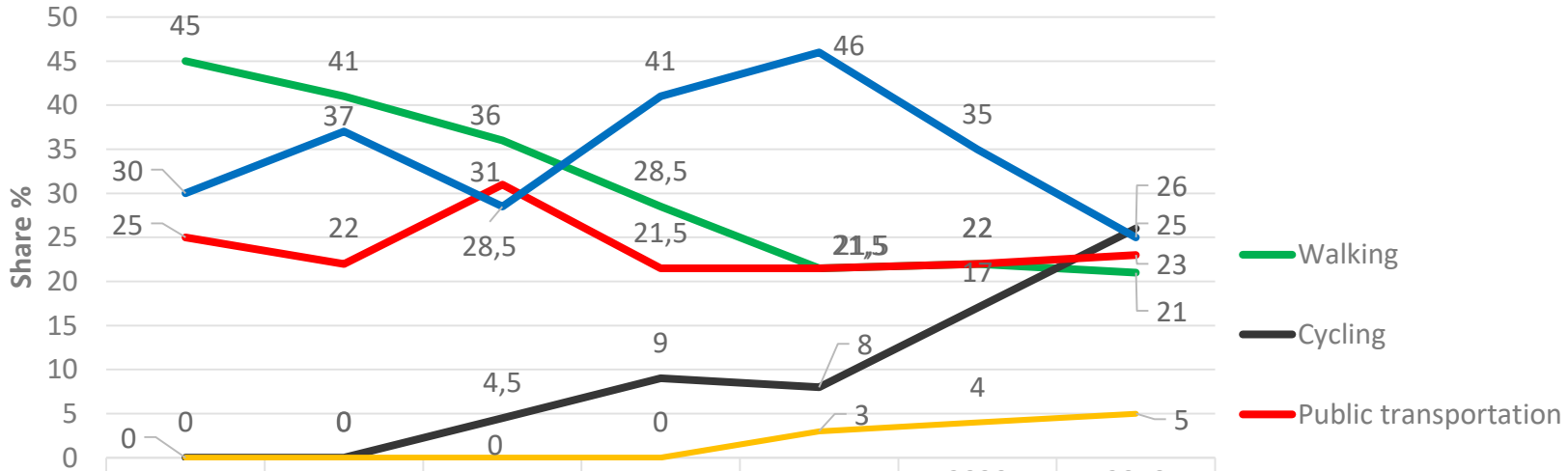
Modal split



	2003	2008	2009	2013	2018	2030 prog	2040 prog
Walking	45	41	36	28,5	21,5	22	21
Cycling	0	0	4,5	9	8	17	26
Public transportation	25	22	31	21,5	21,5	22	23
Car	30	37	28,5	41	46	35	25
Other	0	0	0	0	3	4	5

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Challenge: Decreasing number of inhabitants & urban sprawl

Strategies:
- Attractive living environment
- Attracting of new businesses and jobs

Tactics:
- Green city developments
- Smart city developments
- Remaining a compact city: in case of distances and human relations
- Potential of universities

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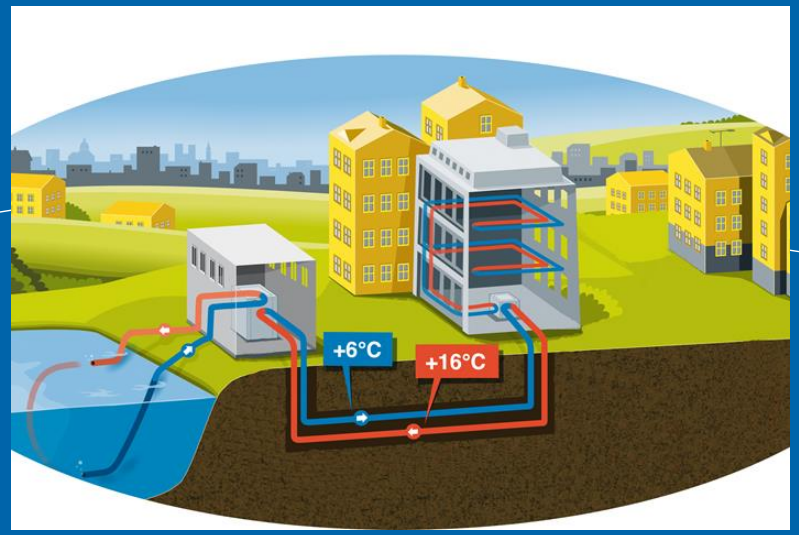
Decreasing negative impact on climate/city environment

Low energy consumption buildings

Biogas busses

District heating based on local fuels



District cooling

Biogas from sewage sludge etc

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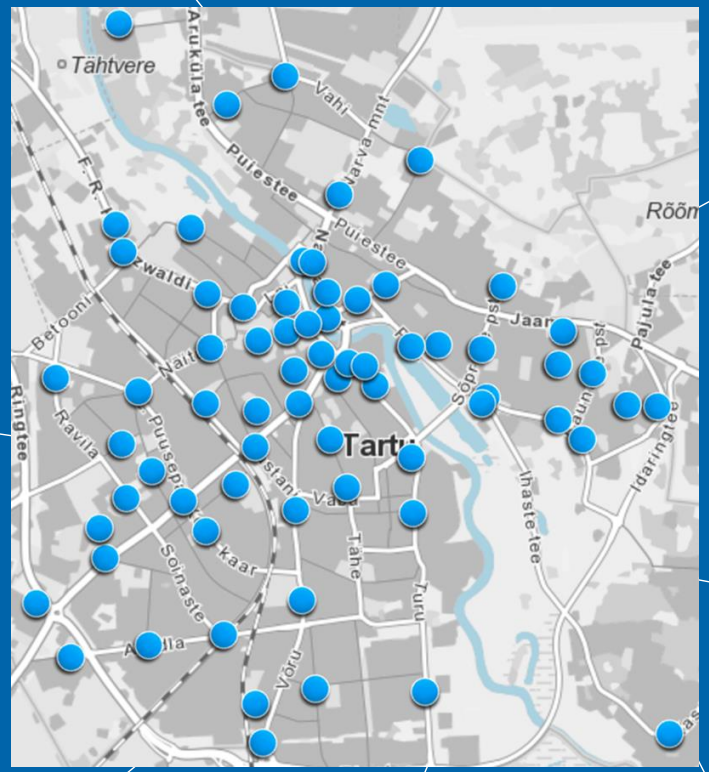
- 750 bicycles (2/3 eBikes)
- 69 parking stations
- Active users: ca 7200
- Total distance: 2,0 mln km
- On average per day: ca 13 000 km
- Trips per bike a day: ca 8



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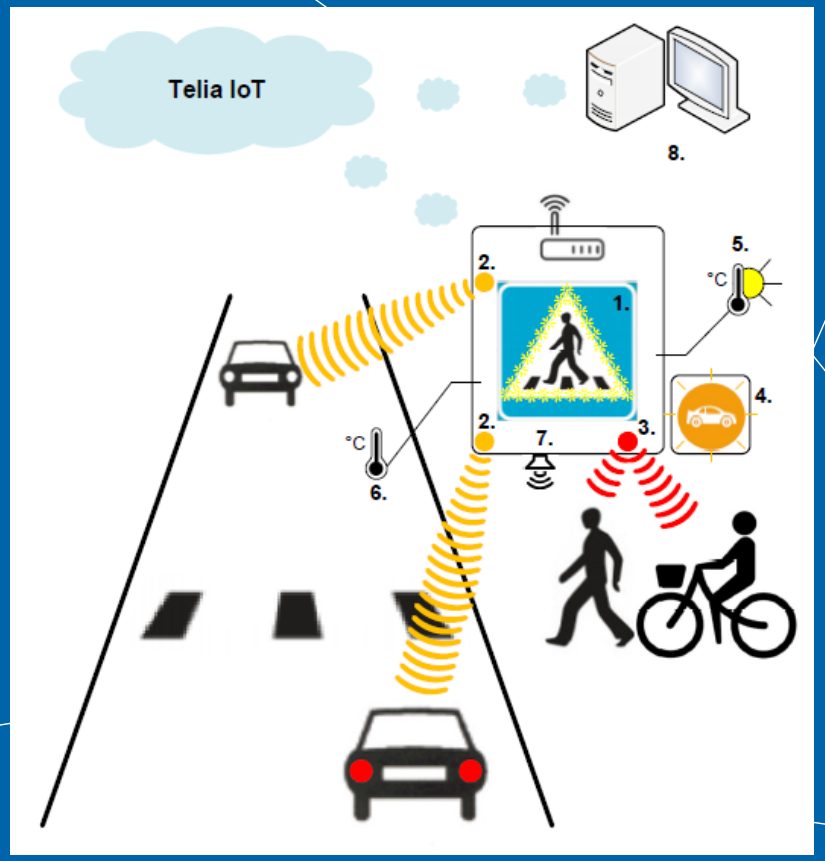
Smart pedestrian crossings

Increased traffic safety

Pilot project in 2019-2020



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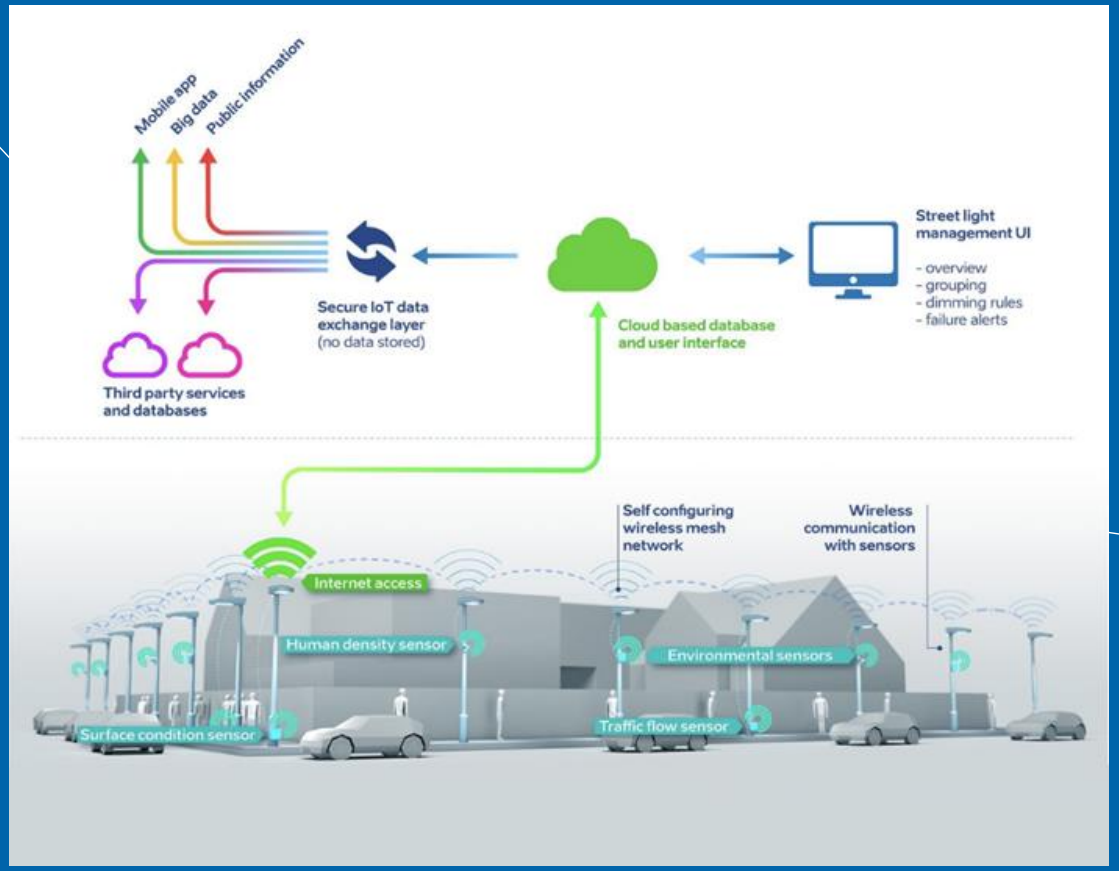
Smart street lighting

- Increased energy efficiency, decreased carbon emissions and socio-economic costs.
- Newest technology and ICT solutions in use – lighting with intelligent control system.



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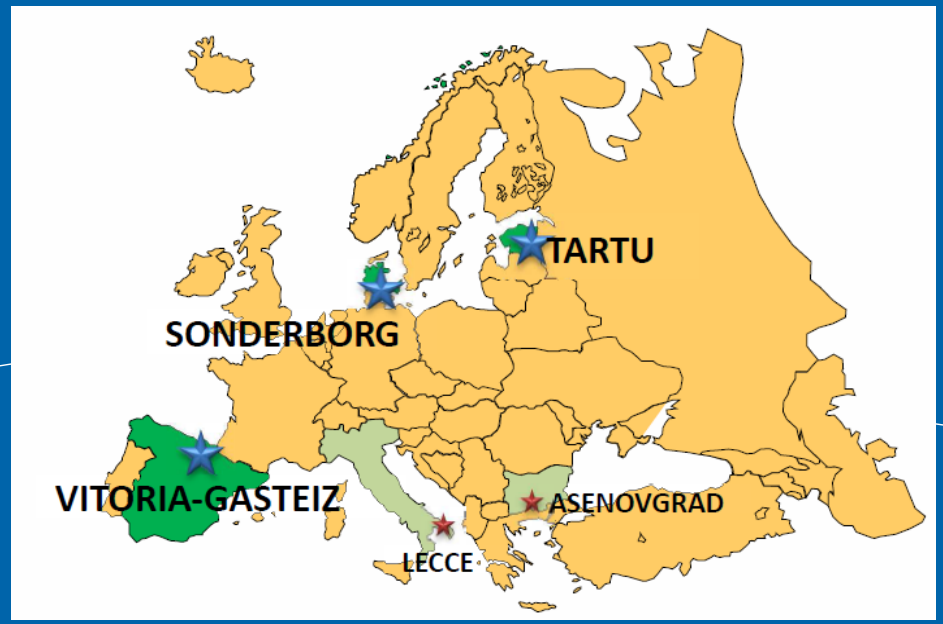
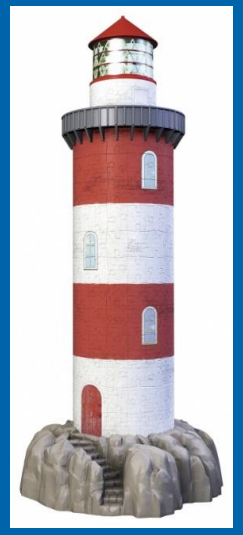
European Commission | Horizon 2020 European Union funding for Research & Innovation

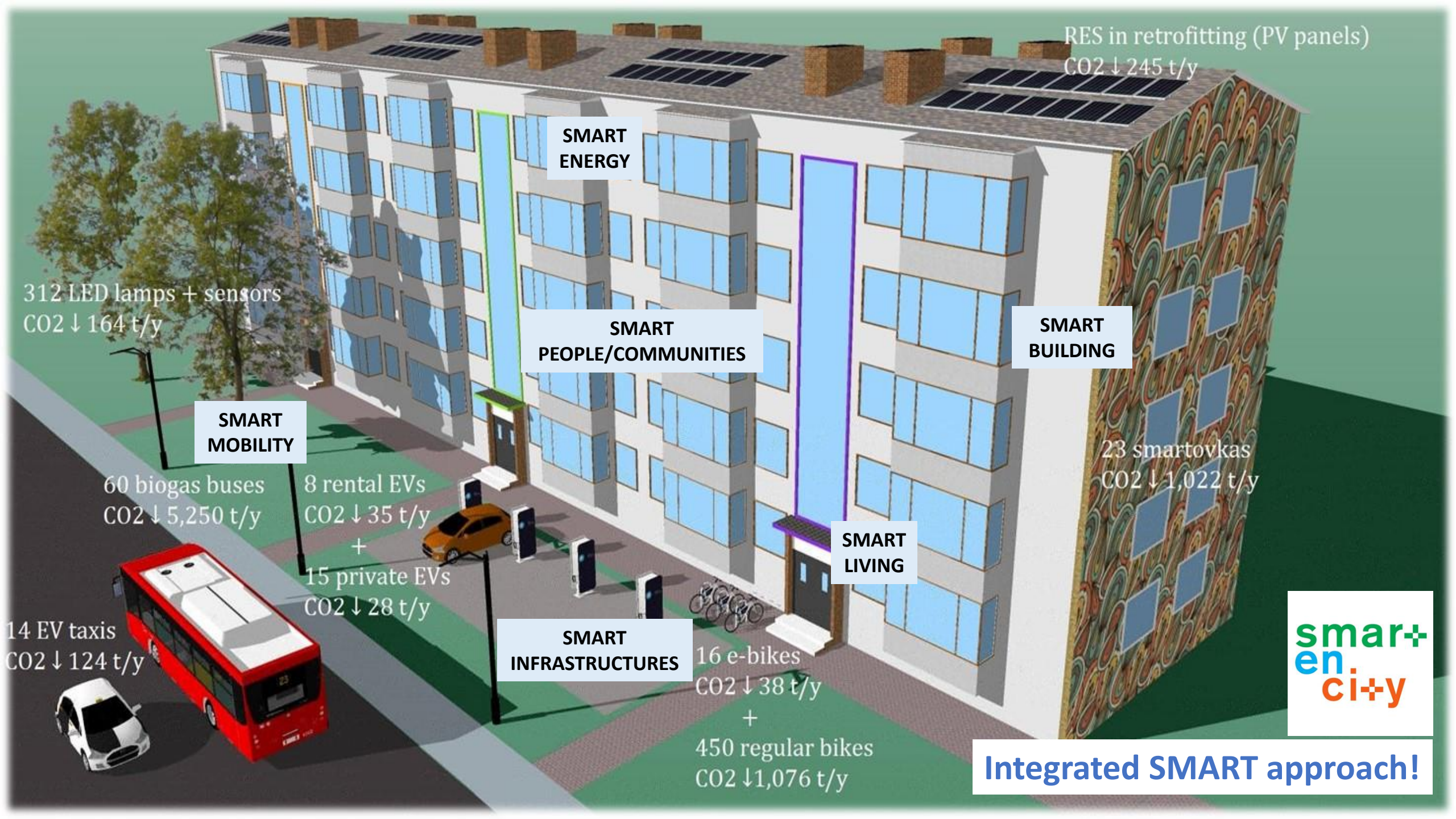
smar+ en ci+y

- Initiative *„Smart cities and communities“*
- 42 proposals were placed, only 4 are funded
- Project period: **Feb 2016 – July 2021**





TARTU – the first and only SCC Lighthouse from Eastern Europe


RES in retrofitting (PV panels)
CO2 ↓ 245 t/y
SMART ENERGY
312 LED lamps + sensors
CO2 ↓ 164 t/y
SMART PEOPLE/COMMUNITIES
SMART BUILDING
SMART MOBILITY
23 smartovkas
CO2 ↓ 1,022 t/y
60 biogas buses
CO2 ↓ 5,250 t/y
8 rental EVs
CO2 ↓ 35 t/y
+
15 private EVs
CO2 ↓ 28 t/y
SMART LIVING
14 EV taxis
CO2 ↓ 124 t/y
SMART INFRASTRUCTURES
16 e-bikes
CO2 ↓ 38 t/y
+
450 regular bikes
CO2 ↓1,076 t/y
smart en city
Integrated SMART approach!

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Challenge: Limited in-house human & financial resources

Strategy:

- **Co-creation and collaboration with other sectors**
- **Tartu as open innovation platform**

Tactics:

- **Collaboration with private sector**
- **Collaboration with universities**
- **Collaboration with neighbouring municipalities**
- **Data-based management**
- **E- & M-services**

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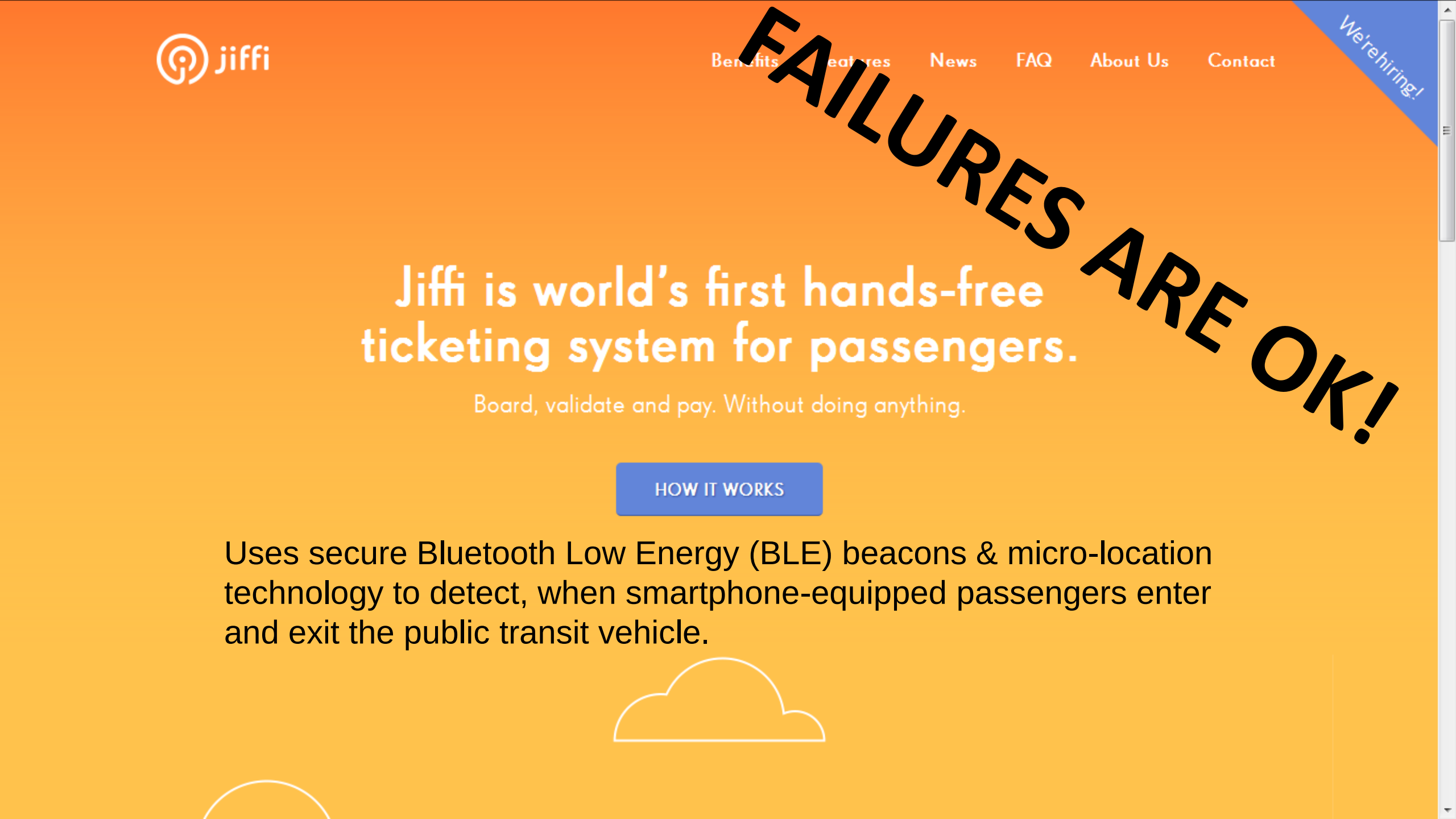
Smart City Capability Framework

If you need to go fast, go alone. If you need to go far, go together

Ecosystem has the power to deliver creative new solutions that neither of the parties could have realized on its own


jiffi
Benefits
Features
News
FAQ
About Us
Contact
We're hiring!
FAILURES ARE OK!
Jiffi is world's first hands-free ticketing system for passengers.
Board, validate and pay. Without doing anything.
HOW IT WORKS
Uses secure Bluetooth Low Energy (BLE) beacons & micro-location technology to detect, when smartphone-equipped passengers enter and exit the public transit vehicle.

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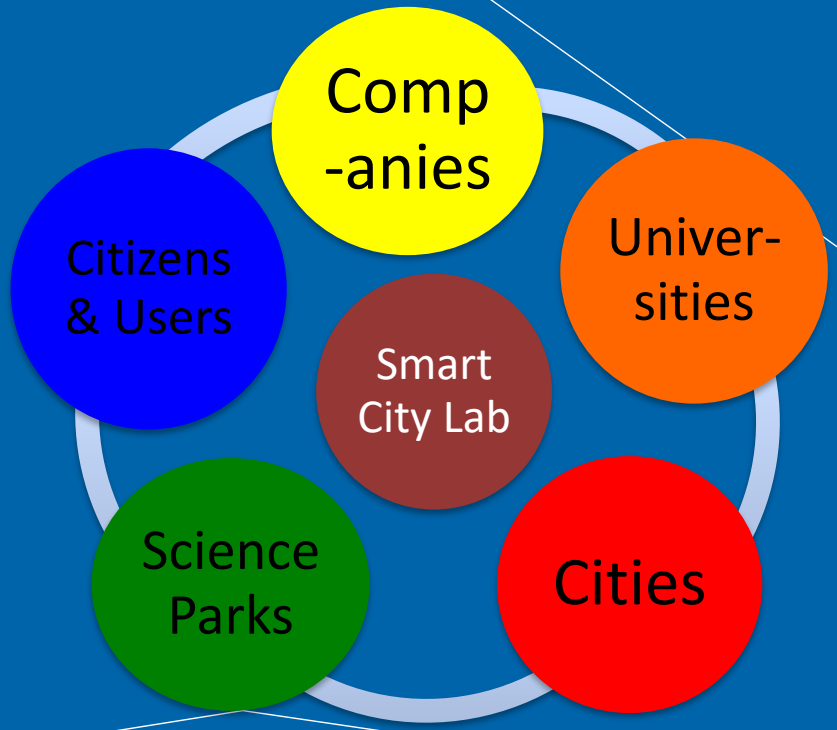
Cluster Initiative and Cooperation Platform for Smart Solutions for Cities



Smart City Lab

Ca 30 members from private, public and academic sector

SMART PRODUCTS

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Collaboration with WSP Finland & Positium – new bus line network for Tartu

Mobile positioning data

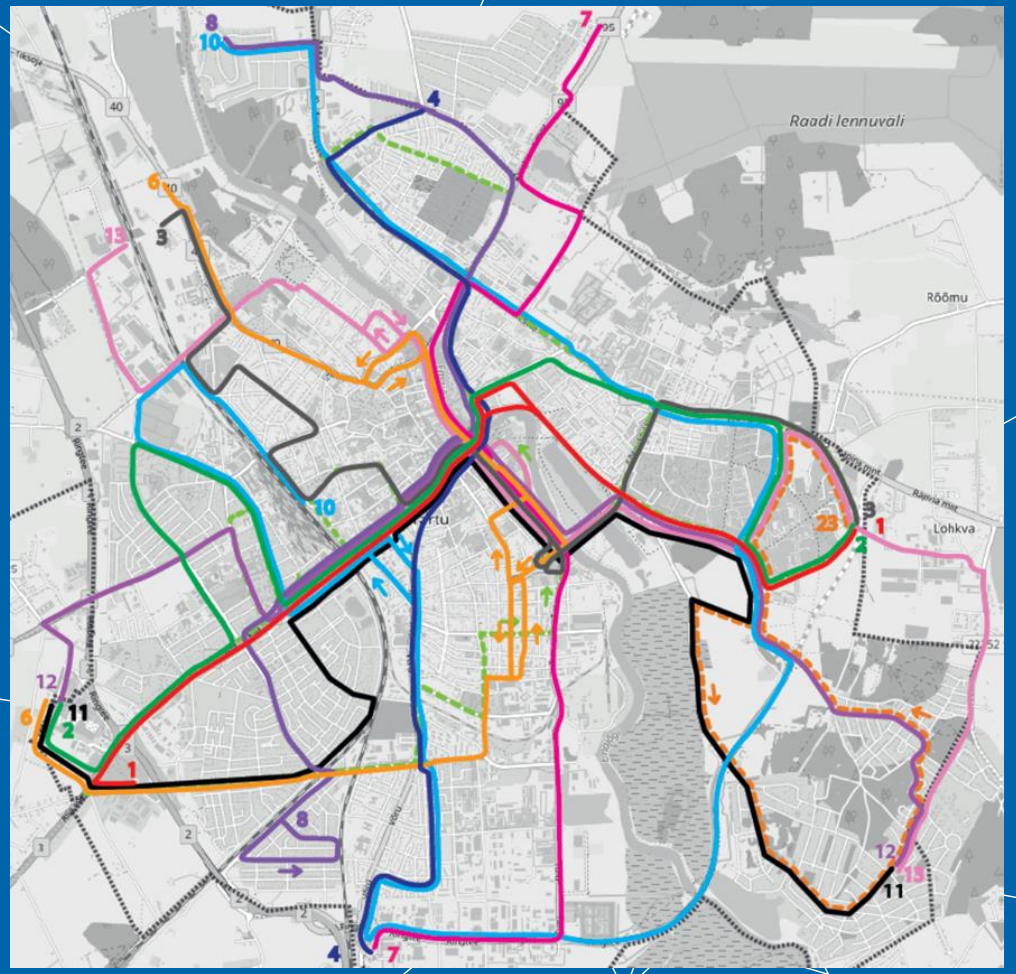
Demographic data

Ticket validation data

Development plans, legal acts, research results etc

Data based modelling

Interviews with focus groups



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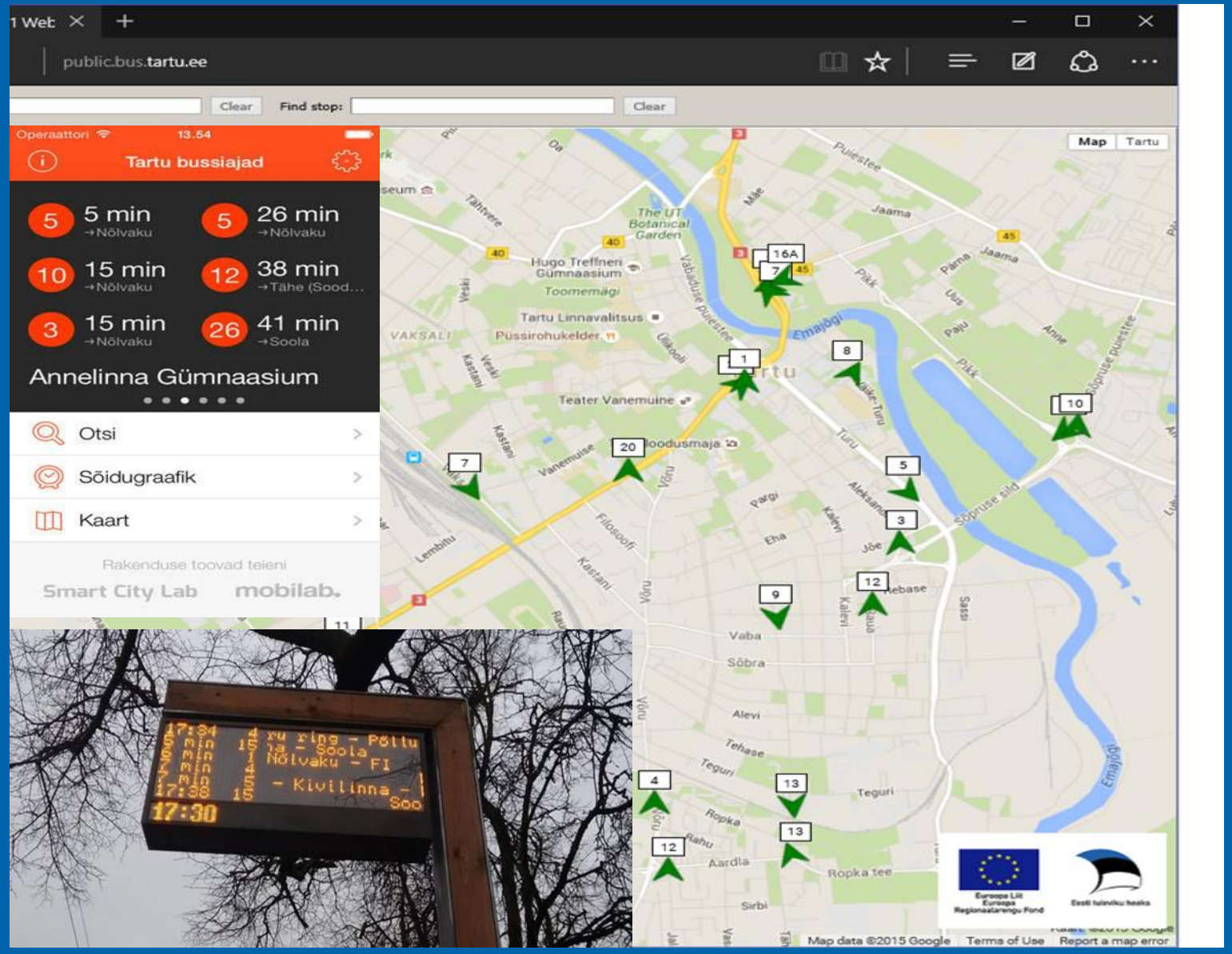
Supportive services for public transport

Realtime monitoring

App to find bus schedule based on your location

Bus stop info monitors



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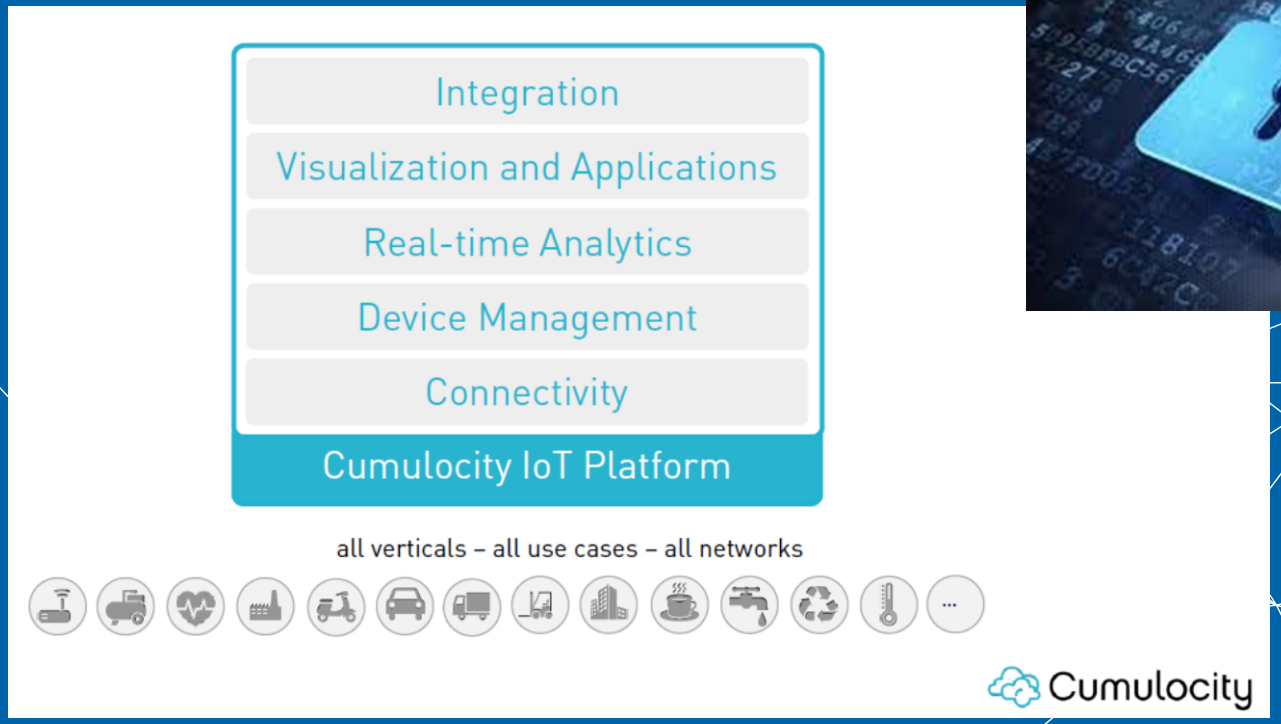
Collaboration with Telia – collection, analysis and opening of IoT data

Cloud based IoT & M2M Platform

Cumulocity
Connect to Innovate

Telia



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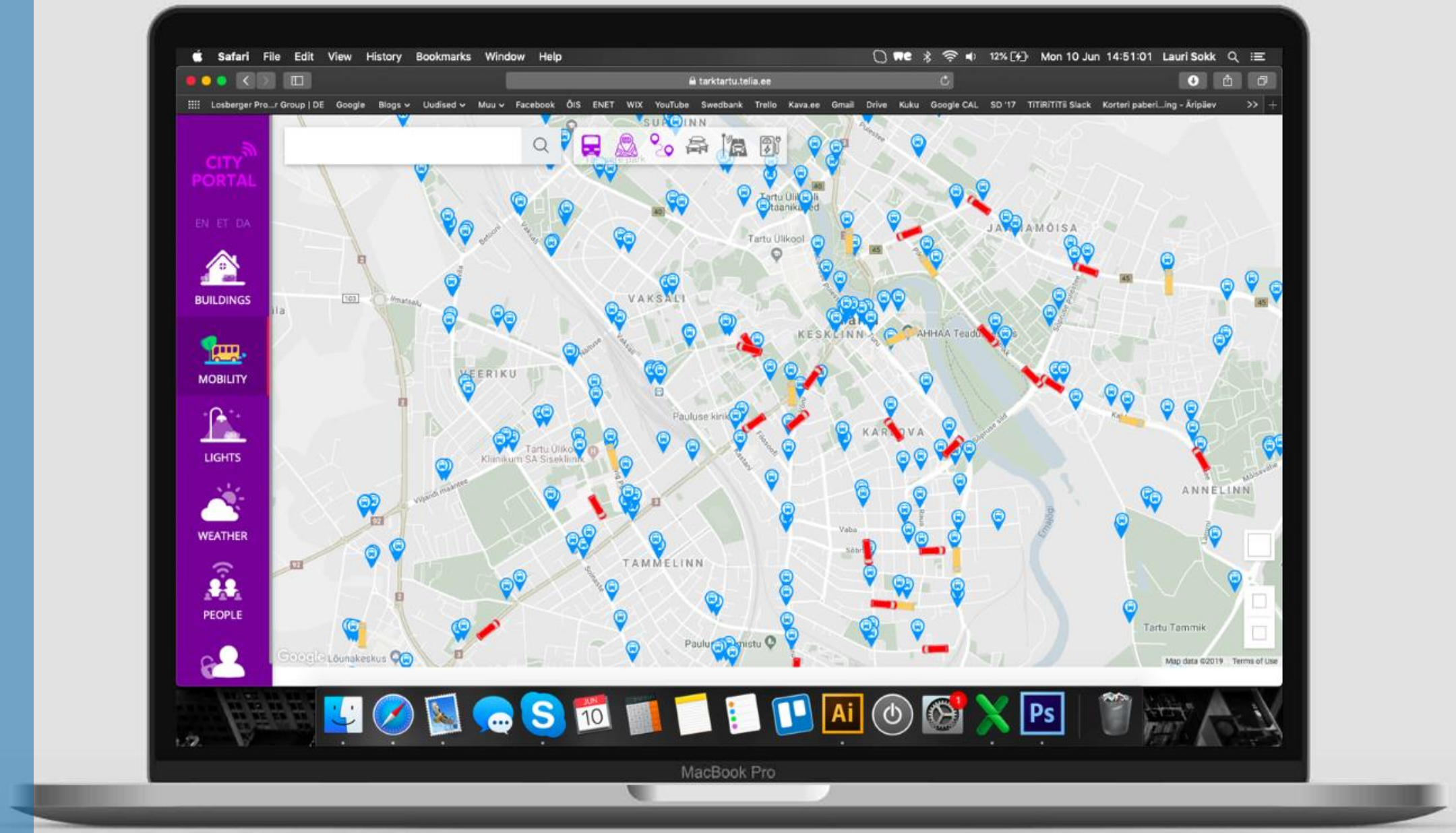
Cloud based IoT & M2M Platform



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If there is one ingredient that makes a city smart, it is DATA!

Real insight into societal challenges like sustainability, mobility, health and security

Smart decisions

Combined data from multiple sources

Large volumes of rich data (structured data, sensor data, audio, video) form the lifeblood of smart solutions

Innovation – new data based products and services

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- Digital signature
- Digital-ID
- Mobil-ID
- ID card

Digital services for citizens

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INTRODUCTION TO SMART CITY VISION STRATEGY

Paperless city government

- was implemented in **2003**
- **document management** and daily work
- **digital signature** and **mobile-ID**

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What is e-Tartu based on?

- Development of the state IT infrastructure has been the basis for rapid progress
- We use centered state solutions, whenever possible
- Our systems are built to query basic data from national registers
- Our systems are based on an electronic identity and secure information exchange

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eTartu roadmap

Public Legislation → Infrastructure → **Implementation**

2000 - 2002

- Public Information Act
- Digital Signatures Act
- Basics of state ICT interoperability

2002 - 2007

- Public key infrastructure
- Electronic identity
  ID card & Mobil ID
- Secure information exchange

2003 –

- Document registry
- Electronical document processing
- Document web publishing
- Digital signing
  Strong authentication

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SPOKU information system

1. Parents can confirm their child's participation and preferences for the activities
2. Activity clubs can submit applications for subsidy and submit activity reports
3. City has an overview of subsidies

National Population Registry

x-Road

Tartu.ee Spoku

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ARNO information system

- Automatic placement of children into schools by region
- Vacancies accounting system for schools and kindergartens
- Kindergarten places queuing system
- Meal planning
- Application for financial support for children going to school

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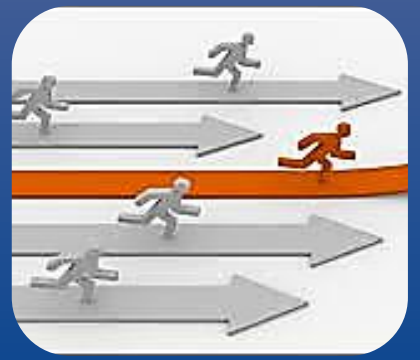
ARNO
Tartu haridusteenuste haldamise süsteem

National Population Registry

Asks for children's data from Population register

Asks for spatial data from Google Maps



Calculates the distance of the home from all schools.

Places the child to the nearest school

Asks for children's data from Population register

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Municipal parking management

Mobile app for public servant

1. Car verification from National Car Registry through secure x-Road
2. Parking permit verification by strong authentication
3. Signing penalty decision by Mobile-ID on the street
4. Penalty Decision Processing

Verification

Digital signature

Microsoft Dynamics AX 2012

GoPro case
Professional

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Success factors of digital cities

Digital cities need smart administration

- Small municipalities are good incubators for new e-solutions
- In Tartu, communities and citizens are very close to the municipality as everyone knows everyone

Municipality adapts to the e-needs of the community

- The more open the governing of the city, the more secure and aware is the citizen
- Citizens and communities need to be engaged with the creation of e-services

E-involvement creates new networks and million new ideas

- Citizens are not only needed for voting at the elections
- We need to be where the citizens are – in the internet!
- Citizens enjoy well-prepared e-involvement and they happily participate

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Thank you for your attention!

Raimond Tamm

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