SmartEnCity Lighthouse Project

CEE SEN
CENTRAL EASTERN EUROPEAN SUSTAINABLE ENERGY NETWORK

Source: Lauri Veerde

May 16, 2018

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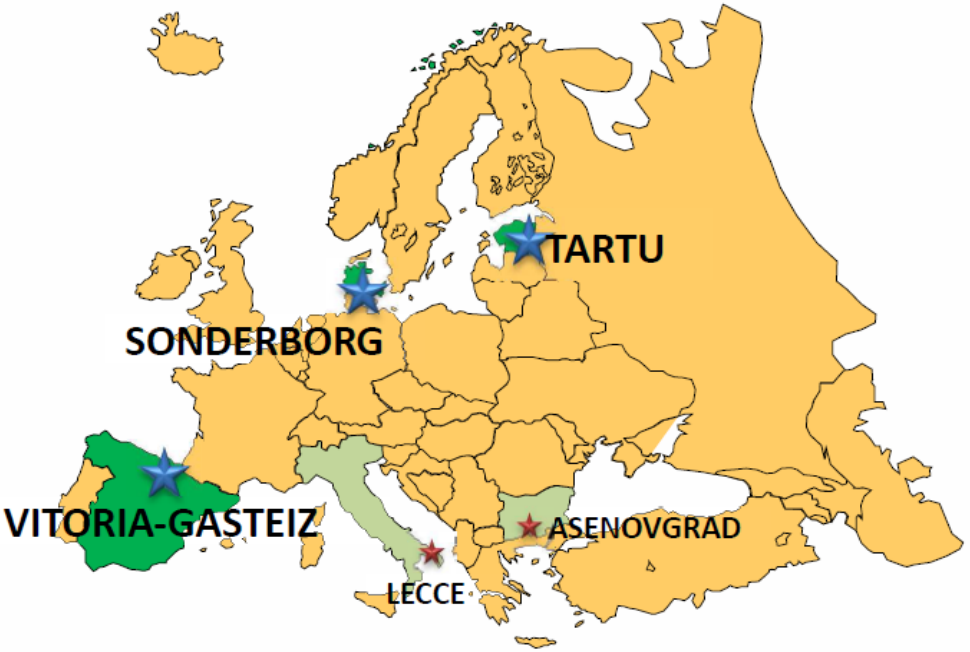
City of Tartu

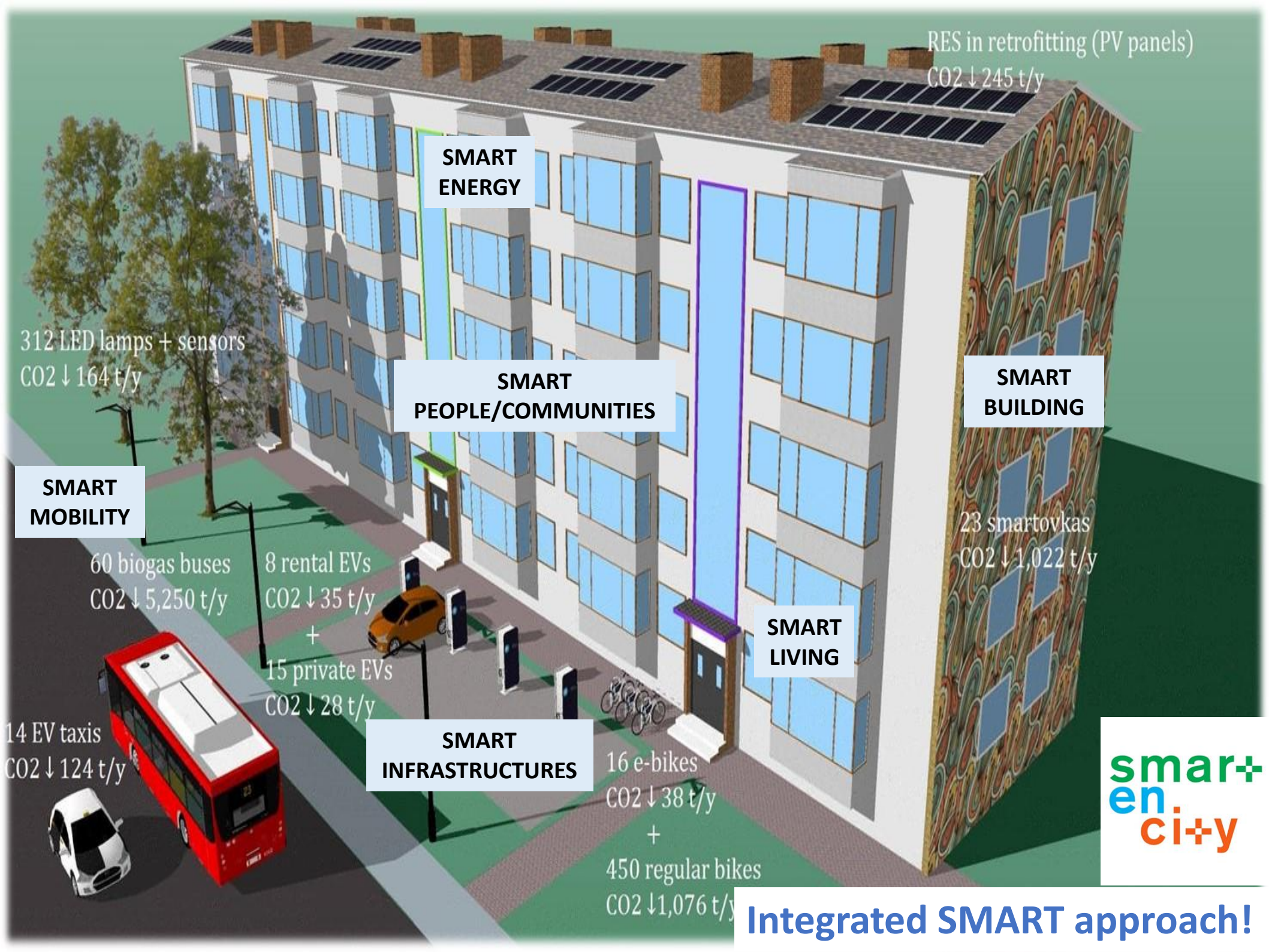
European Commission | Horizon 2020 European Union funding for Research & Innovation

smart en city

- Initiative *„Smart cities and communities“*
- 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!

Sustainable mobility: electric vehicles

Estonia has **extensive public charging network for electric cars**. 11 public fast chargers (5 will be added soon) also in Tartu.

2 **electric car rental points** in Tartu

Ca 40 **electric taxis** in Tartu

- No CO_2 emission – green electricity
- Remarkably decreased noise pollution

smart en. city

ELEKTRITAKSO

Re-use the batteries of electric cars!

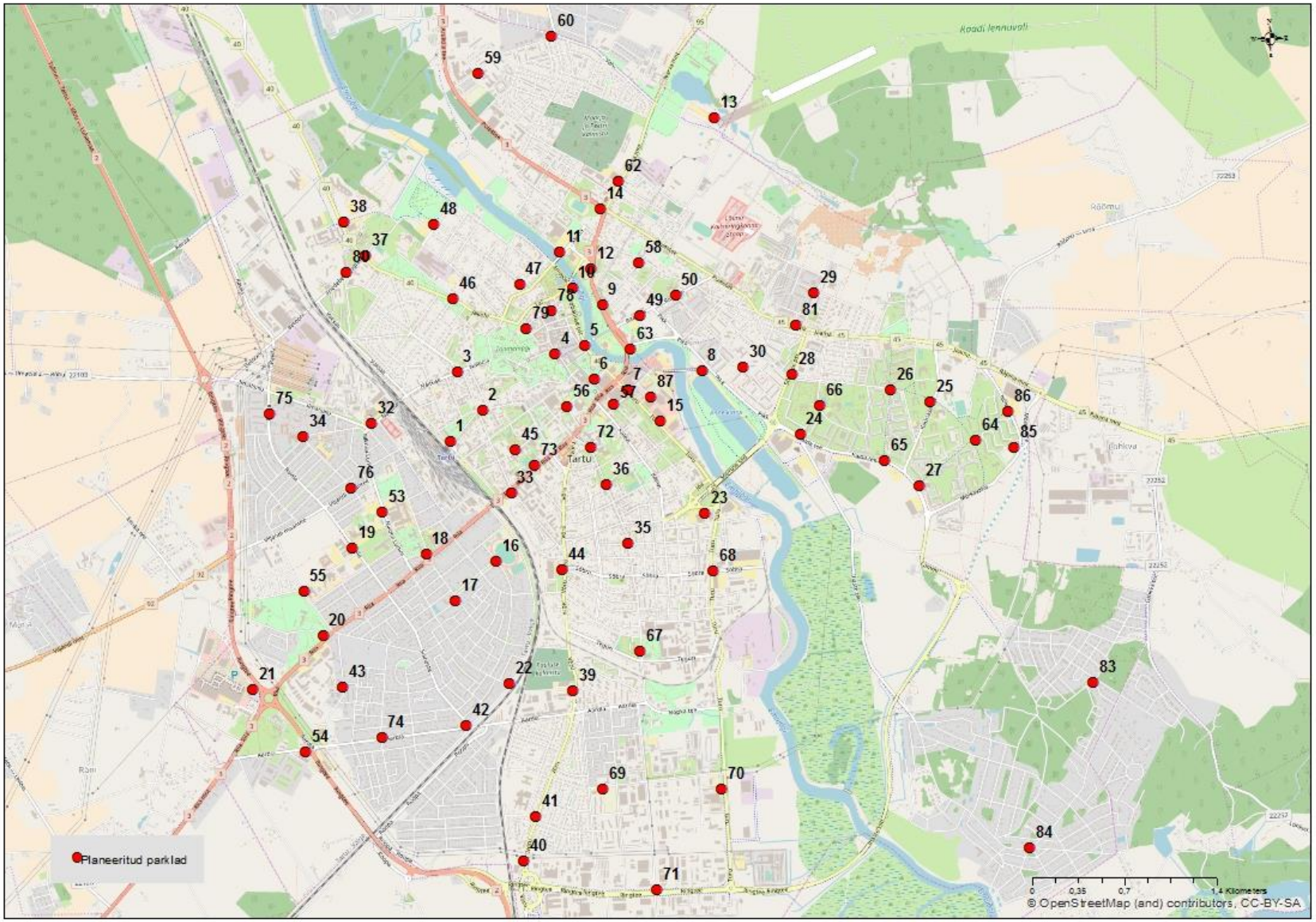
To save and use renewable (solar) energy

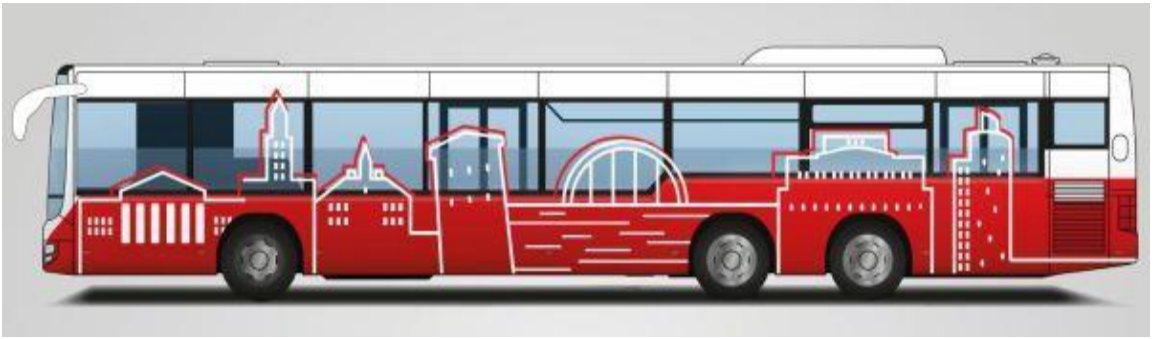
Solar panels: power rating 50 kW.

Bike sharing system (will start operation in 2019)

- Integrated into public transportation system
- 600 bikes (incl 400 e-bikes) and 60 stations
- Docking system with possibility to lock the bike and finish session out of station – more flexibility for users
- GPS, GSM – all smartness integrated into bikes (basis for more new business opportunities and models)

Citizens were involved to determine the locations





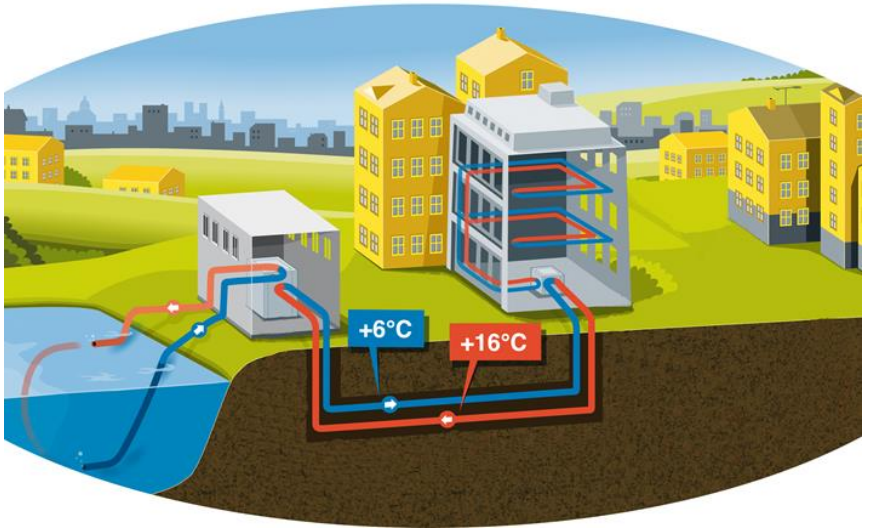
100% gas buses in public transport (starting from 01.07.2019)

Fortum Tartu

DISTRICT COOLING

- Residual heat from district cooling system into district heating system (heat pump)
- Renewable energy for district cooling station: PV panels (67kW power rating) and river water

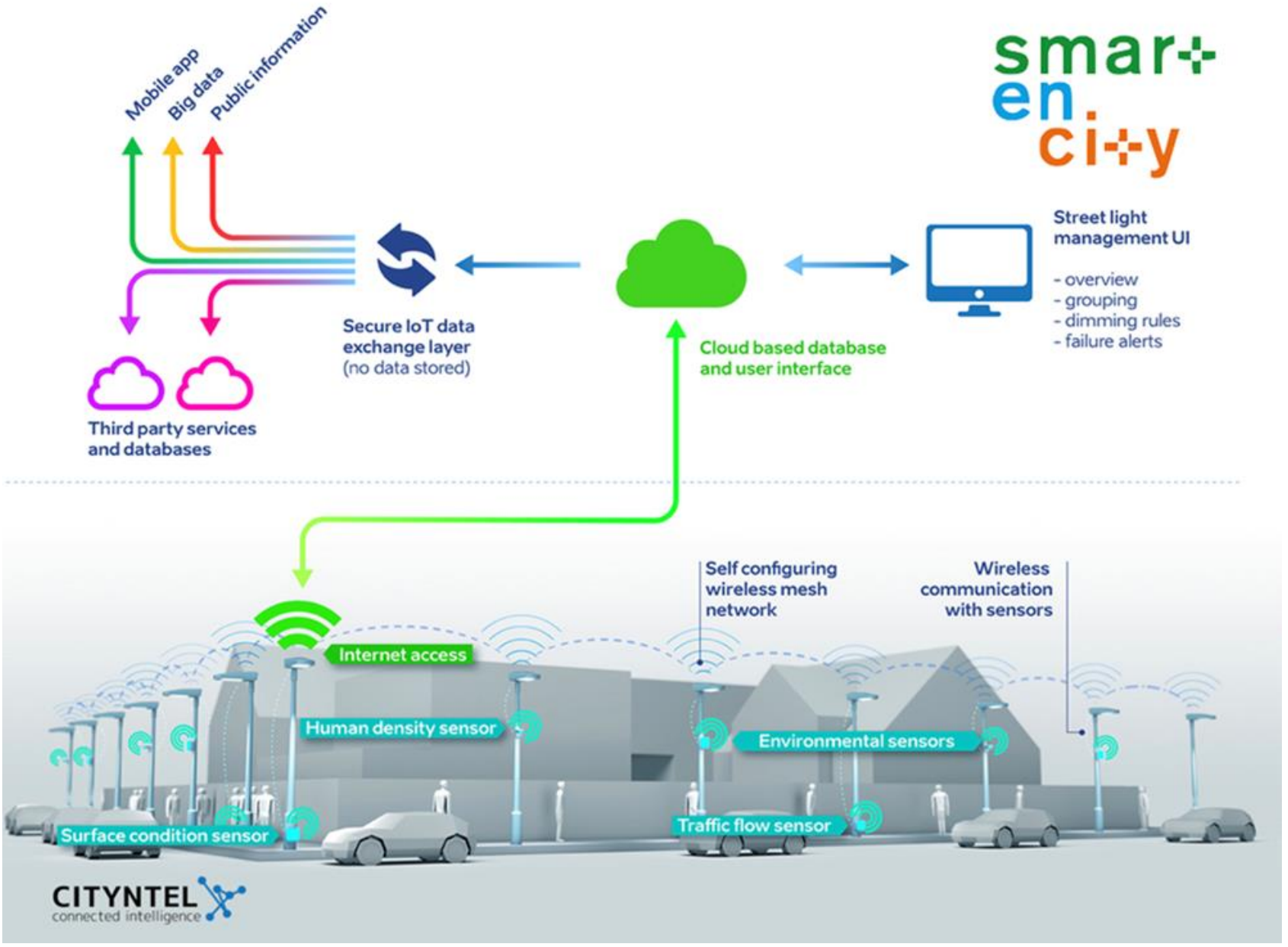
smart city



Target: reducing CO_2 emission in the cooling sector by 70%.

Street lighting with intelligent control systems

- Motion detectors (some with cameras to analyze traffic), surface condition sensors for streets, noise sensors, environmental sensors (air pollution, temperature, humidity)



Target 2020: 20% decreased energy consumption in the housing sector, share of renewable energy in electricity consumption at least 10%.

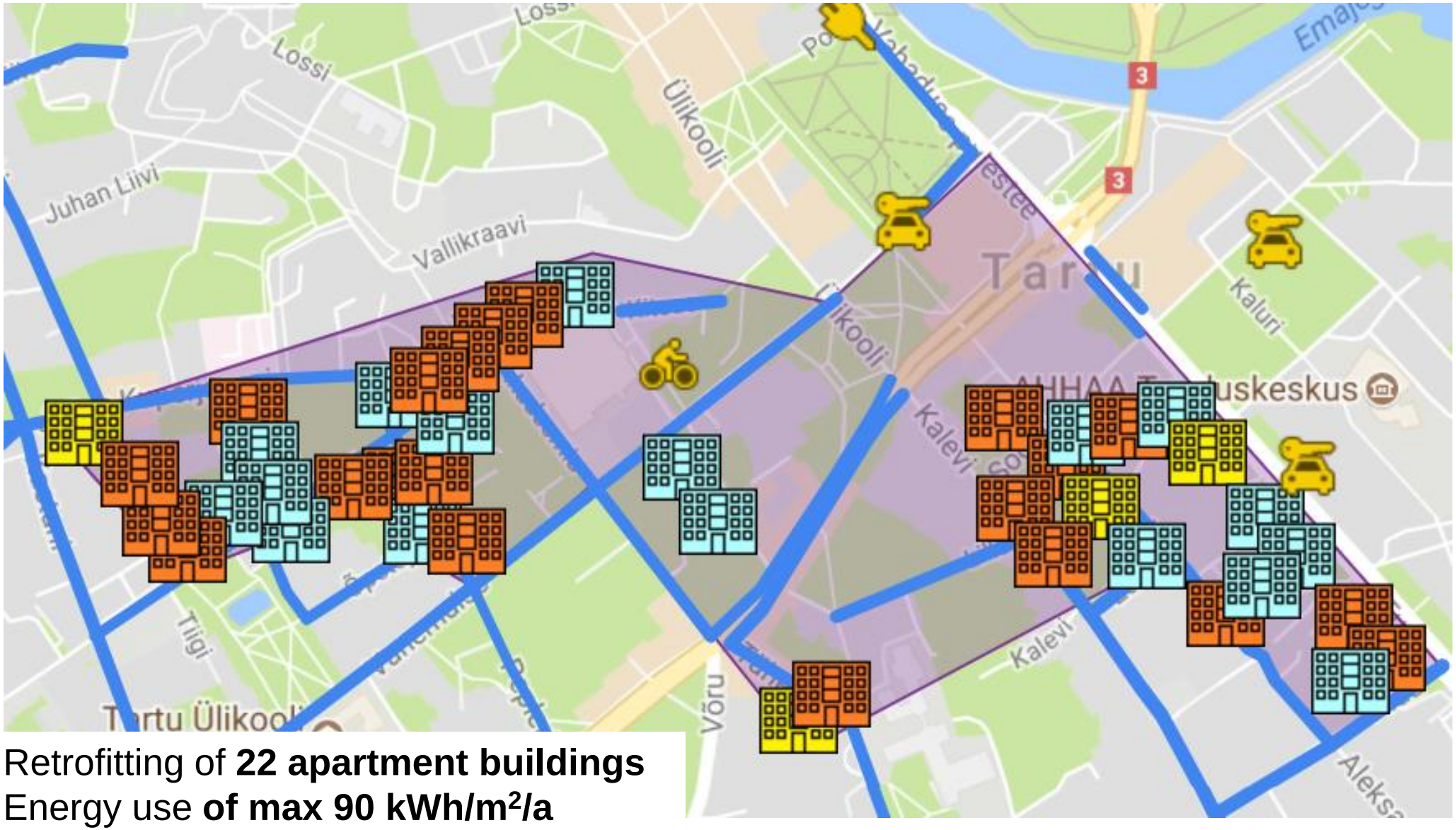
Ambition: developing a model for turning old Soviet apartment buildings into smart buildings and replicating the solution elsewhere

when the old meets the new

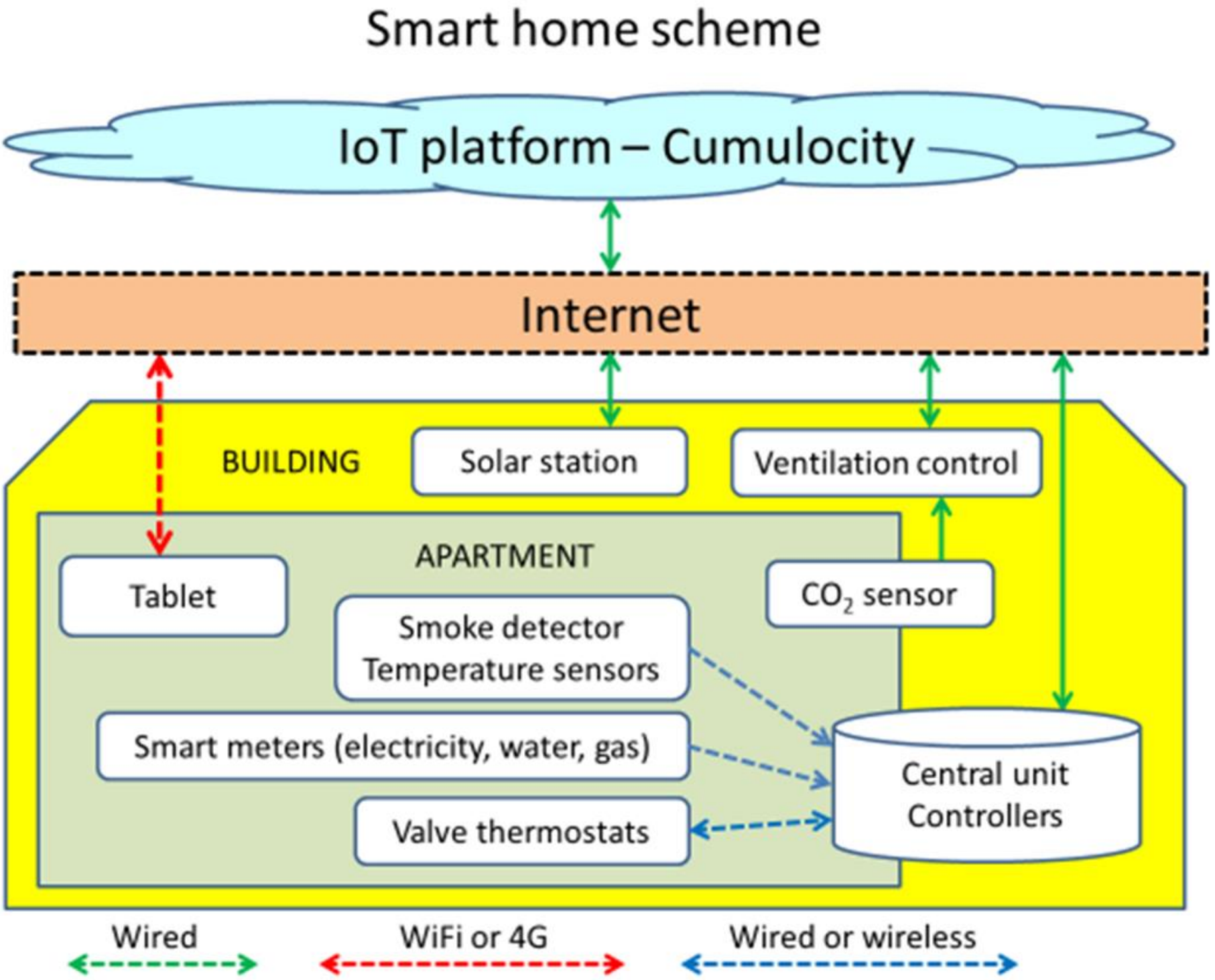
THE CHALLENGE

high number of quickly deteriorating brick and panel buildings with an energy consumption of 270 kWh/m^2/year

Source: et.wikipedia.org



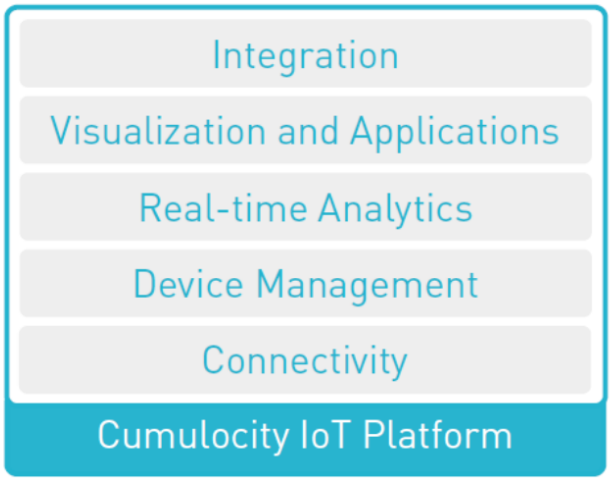
Retrofitting of **22 apartment buildings**
Energy use **of max 90 kWh/m²/a**


Smart home scheme
IoT platform – Cumulocity
Internet
BUILDING
Solar station
Ventilation control
APARTMENT
Tablet
CO_2 sensor
Smoke detector
Temperature sensors
Smart meters (electricity, water, gas)
Valve thermostats
Central unit
Controllers
Wired
WiFi or 4G
Wired or wireless

Cloud based IoT & M2M Platform

Cumulocity
Connect to Innovate

Telia



all verticals – all use cases – all networks

Cumulocity

LET’S GROW SMARTER, TOGETHER!

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