

An aerial photograph of a city, likely Aalborg, Denmark, showing a river and various urban structures. A red circular marker is placed on the map, indicating a specific location.

# Smarter Societies

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# Smarter Society – Vision



**Better living for citizens**

**Increased QoS and improved  
decision making  
from local governments**

**Better utilization  
of resources**

**Growth potential for  
new businesses**

# Smart City Wien



Smart infrastructure



Smart mobility



Smart technology



Citybike Vienna



Useful apps



VIDEO: Smart City Vienna



# Smart Society $\Rightarrow$ Big Data & IoT

Universities

Citizens

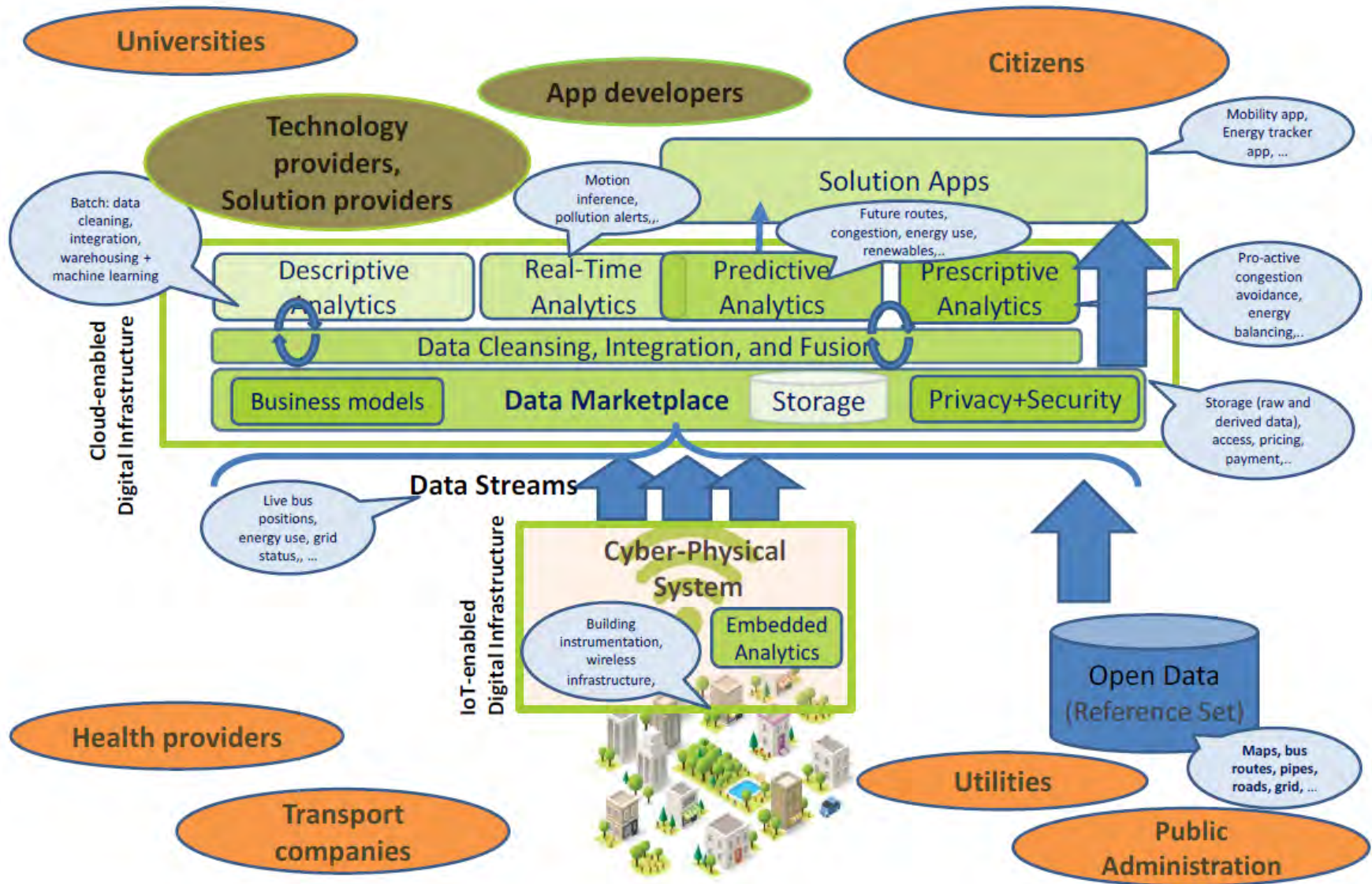
Health providers

Transport  
companies

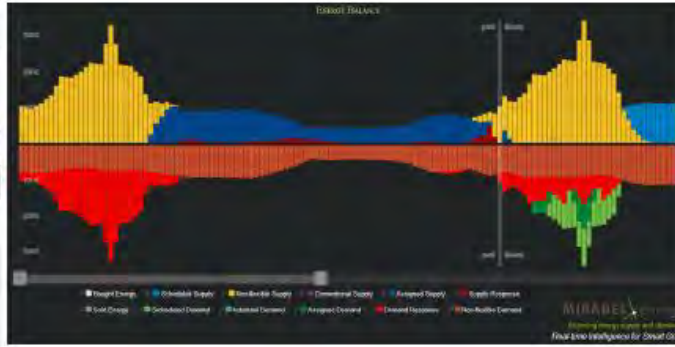
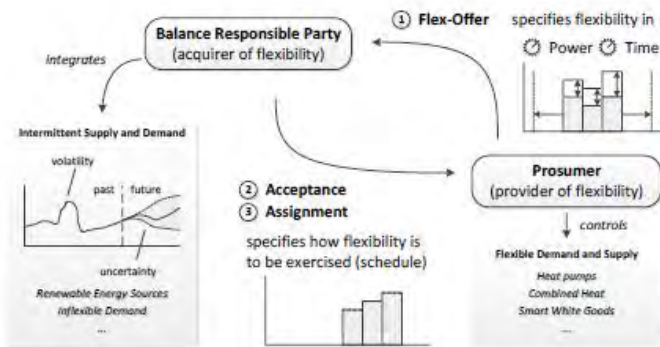
Utilities

Public  
Administration

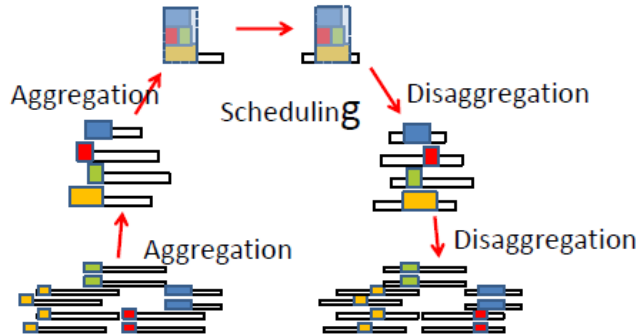
# Smart Society ⇒ Big Data & IoT



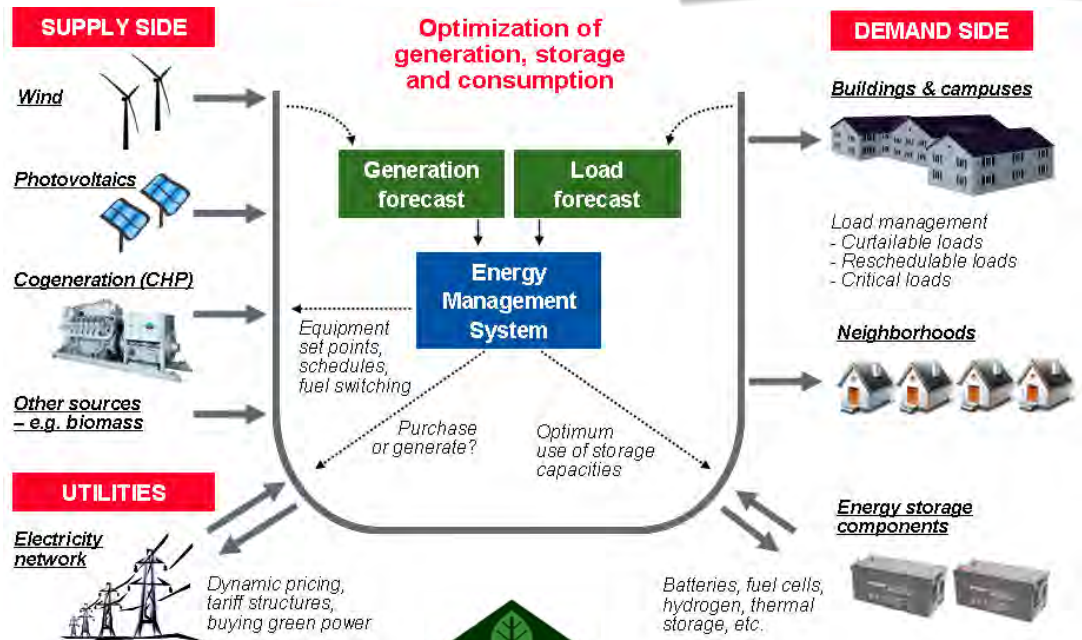
# Smart Energy



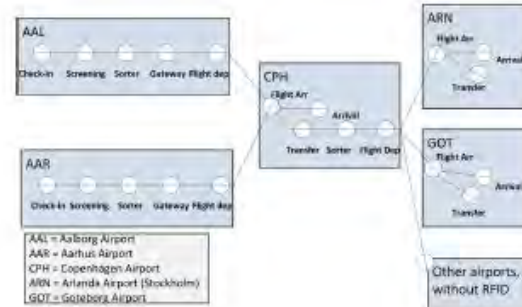
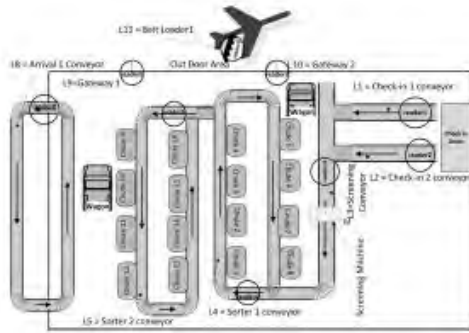
Aim: support 100% RES by using 40(->80)% demand flexibilities



**TotalFlex**



# Smart Logistic



*Aim: Reduce baggage problems by 50% in 2020, resulting in savings of 1.2 bio. US\$/year*



QUASIMODO

Information Society  
Technologies

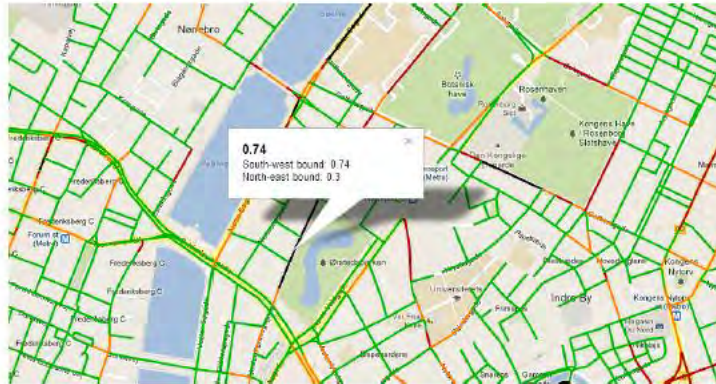
Flower auction Flora Holland (Naaldwijk)

150.000 auction cars used to support logistic processes





# Smart Transport



Aim: *Reduce CO<sup>2</sup> emissions and congestion*



## Statistics

- ~2.5 billion **GPS** observations
  - +80 % of road network
  - ~1.8 million GPS observations daily
- ~250 million **CANBus/OBD/FMS** observations
  - 12 % of road network
  - ~0.5 million CANBus observations daily
- +14.000 **vehicles** in total
  - ~3.000 vehicles daily (roughly half in weekends)
- Data warehouse updated nightly
  - Used for payment of taxi drivers
- **Not really “big data”**
  - Compensate by small hardware budget ☺
  - Big enough!

Courtesy of  
Kristian Torp, CS, AAU

# Smart Society – Challenges

- Cross–Sectorial Integration.
- Open standardized format that enables new services combining data in unforeseen ways.
- Dependability and security.
- Business Eco–System
- Privacy regulations
- Ethical and moral issues
- Involvement & acceptance of citizens
- ...



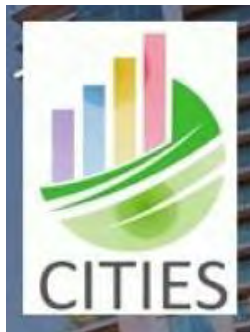
# Danish Front Runners



**Software and data** for the IT management of **complex physical systems**. Development of **smarter and more user-friendly solutions** for society and individuals within **energy and transport**.  
[Kristian Torp, AAU]



Provides a new **platform** for providing **energy efficient** and **smart in-door and out-door light** with a focus on creating new Danish jobs.  
[Kim Brostrøm, GATE21]



**Individual aspects** of the **energy system**, such as **zero emissions buildings** or **intelligent power systems** provide valuable insight, that facilitates **flexibility** throughout the energy system.  
[Alfred Heller, DTU]



# Smart DENMARK

## Visions & Challenges

- What will life be like in smart Denmark in 5, 10, 15 years time?
- Smart solutions to demographic development, noise, pollution, social, health problems?
- Challenges concerning dependability, security and privacy of smart solutions?
- How to avoid hacking of big physical infrastructures now on the Internet?
- How to ensure development of "generic" solutions across sectors despite market resistance?
- Regulatory barriers?