



# BigClouT: Big data meets Cloud of Things for smarter cities

## Introduction



Levent Gürgen

EU – JP coordinators



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# Agenda

- BigClouT goals and vision
- Summary of the main achievements
- Future trends and outlook

# BigClouT concept



Citizen-centric services



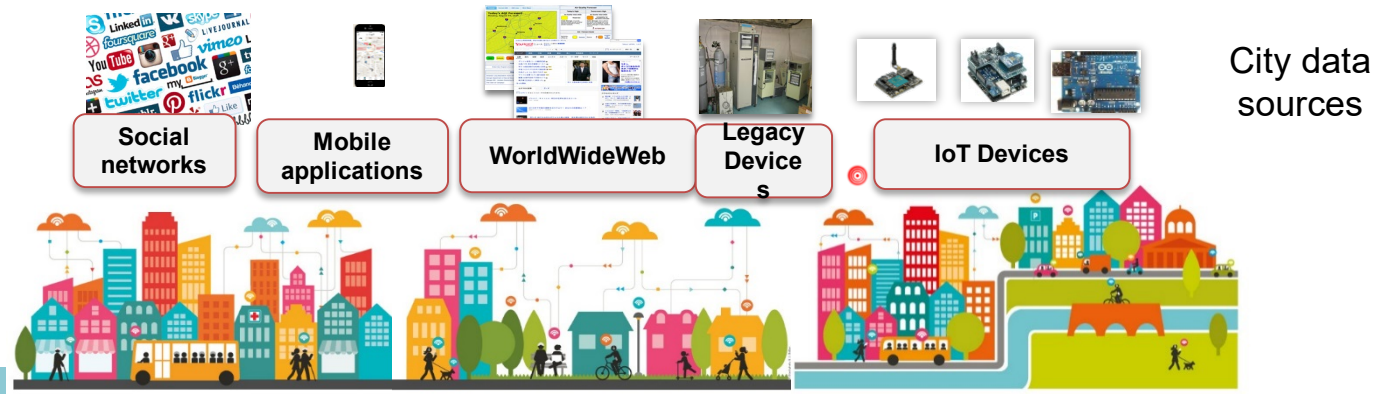
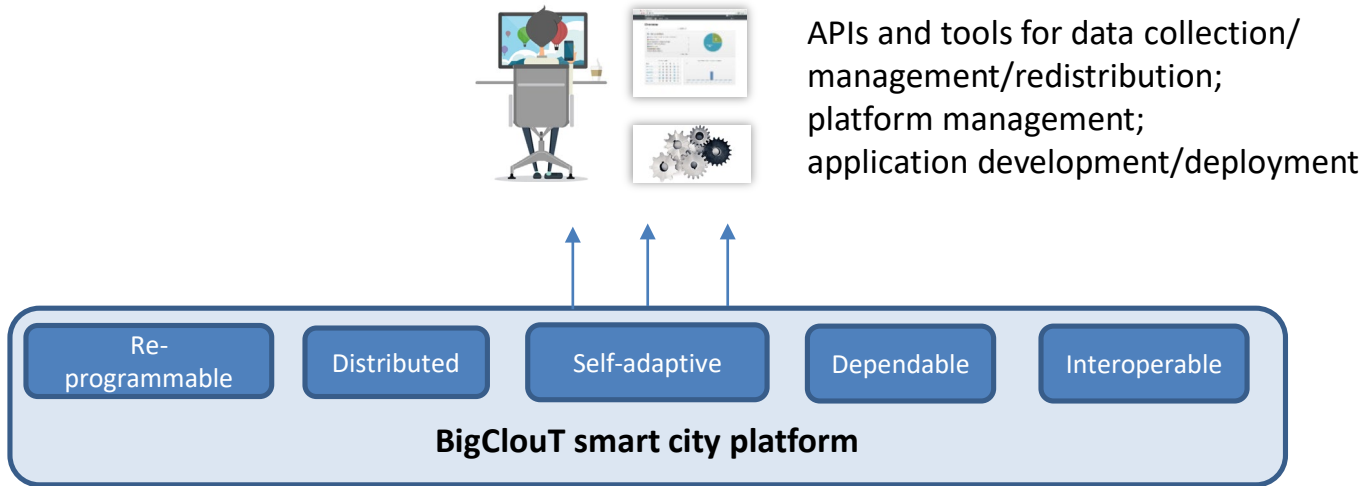
Data collection, analysis, knowledge, extraction, planning, action



City data sources



# BigClouT concept



# BigClouT challenges and objectives

- **Challenge 1: Interoperability**
  - OBJ1. To build an interoperable architecture enabling data-driven IoT applications
- **Challenge 2: Self-awareness and dependability**
  - OBJ2. To enable self-awareness in smart city platform with programmability and dependability properties
- **Challenge 3: Value of big data**
  - OBJ3. To provide libraries and tools for scalable knowledge extraction
- **Challenge 4: Real-life validation with citizens**
  - OBJ4. To design and assess, with citizen and end-user involvement, attractive smart city services
- **Challenge 5: Business models for data-driven innovation**
  - OBJ5. Propose sustainable dissemination and exploitation plans and create an ecosystem of innovators (SMEs, startups, citizens, etc.) with realistic win-win business models



# Main achievements so far (end of Y2)



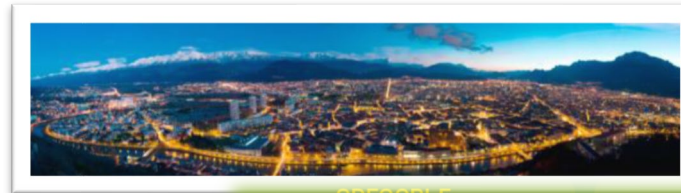
Use cases



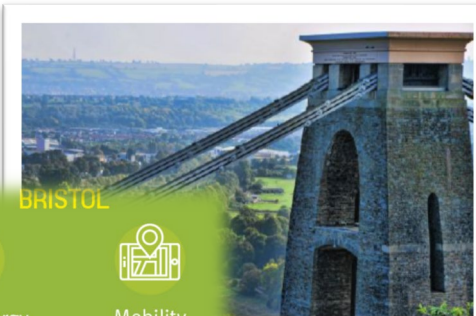
Further analyse requirements, define KPIs and prioritise them



Built the final architecture, sequence diagrams & data flows



GRENOBLE



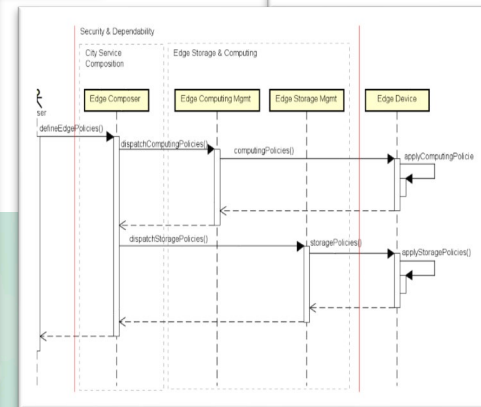
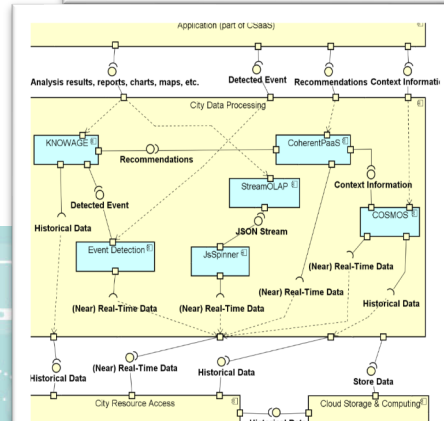
BRISTOL



FUJISAWA

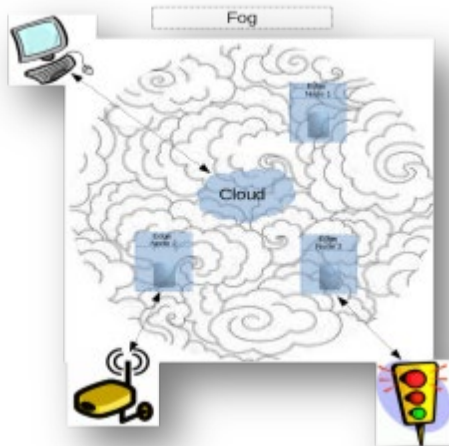


TSUKUBA

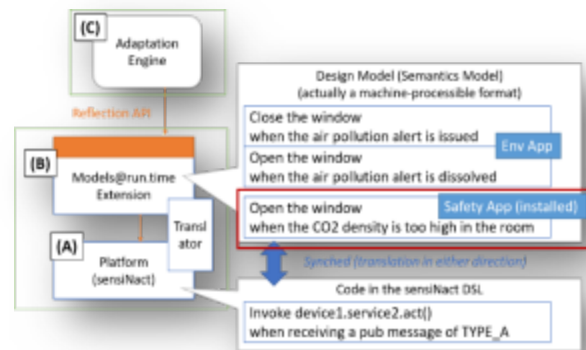


# Main achievements so far (end of Y2)

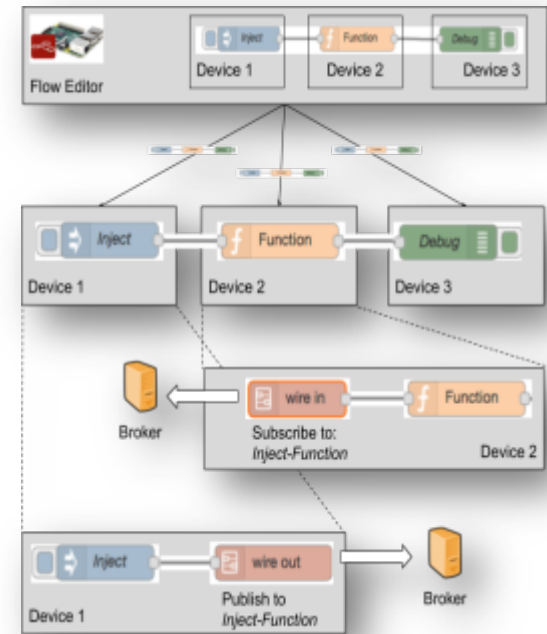
- ✓ Development of technical components



Distributed Cloud/Edge storage



Self-adaptation engine



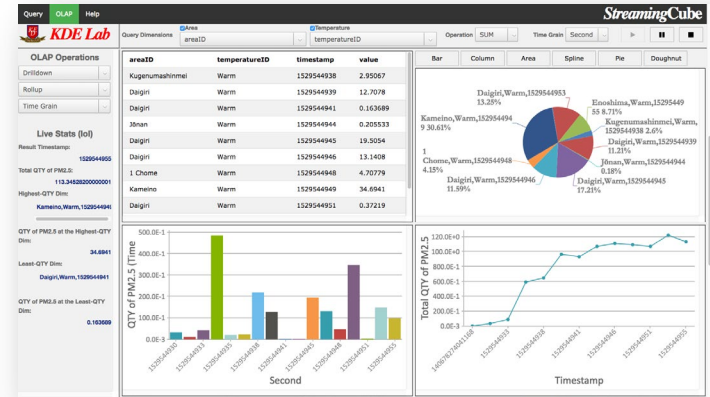
Distributed programming framework



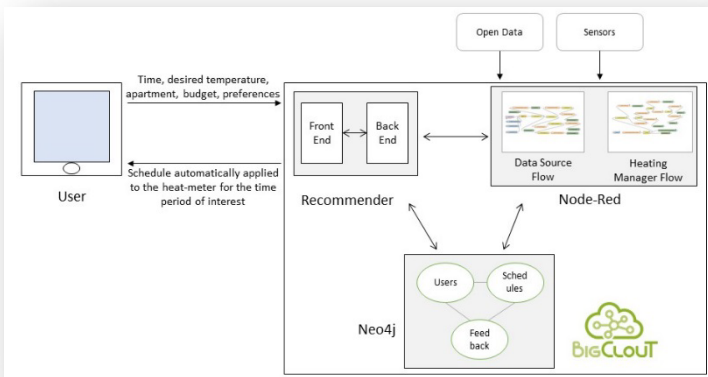
# Main achievements so far (end of Y2)



Development of technical components and performance analysis



StreamingCube



Recommendation system



Deep-on-edge system





# Main achievements so far (end of Y2)



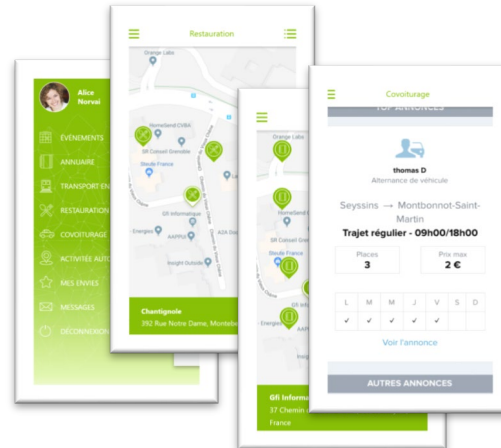
Update of trial guidelines, ethic plans and KPIs



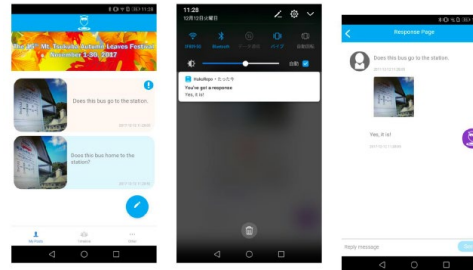
Integration plan and work for technical components with trials



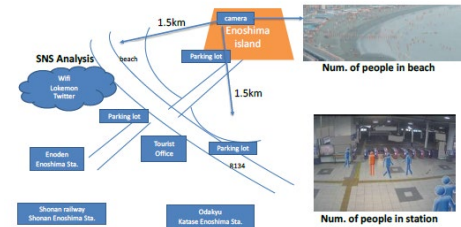
Developments and deployments for trials



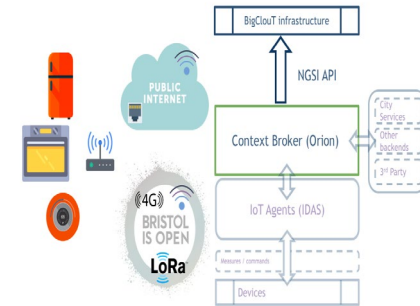
Grenoble



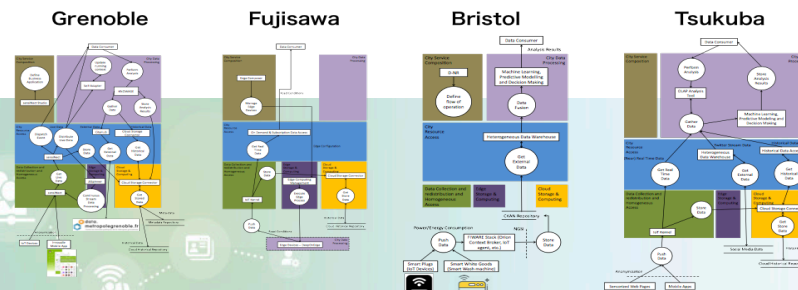
Tsukuba



Fujisawa



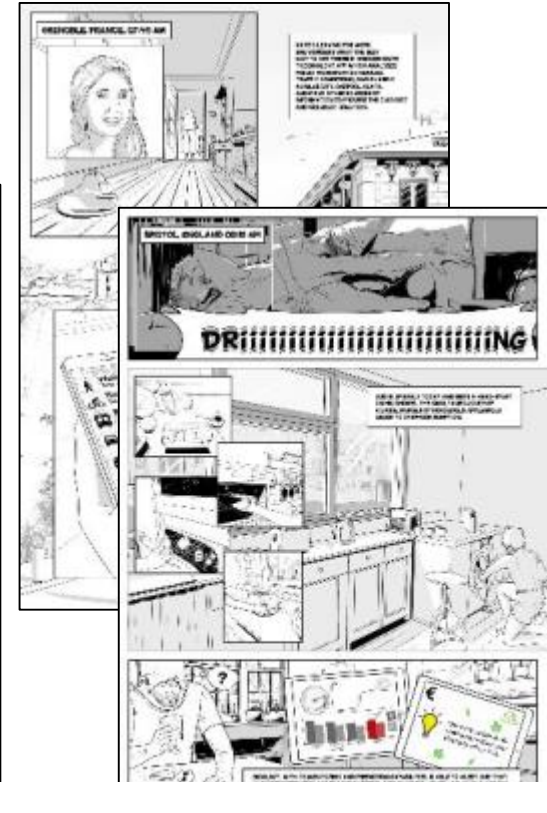
Bristol



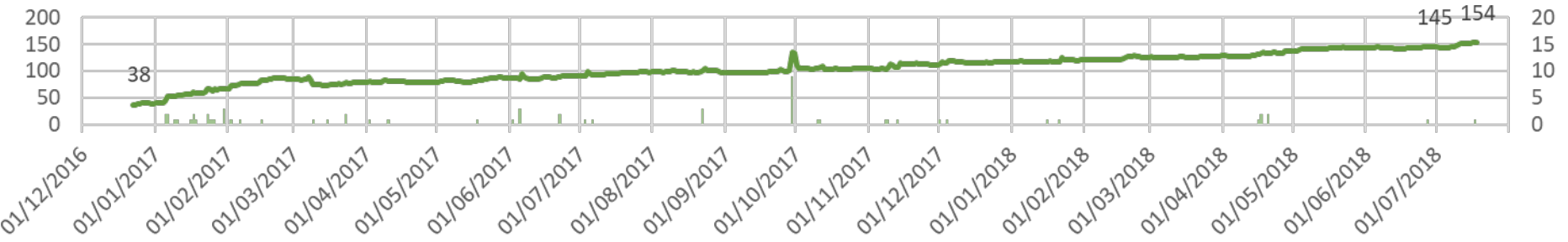
# Main achievements on dissemination and communications activities



Accelerating dissemination activities



■ Tweet per day    ■ Nb Followers



# Going global



✓ Accelerating dissemination activities

✓ Going global: Urban Technology Alliance

**READY TO BUILD YOUR SMART CITY?**

Join us as we build the sustainable and adaptable cities of the future

**Urban Technology Alliance**

The graphic features a city skyline at sunset reflected in a body of water, with a woman in a black leather jacket looking forward in the foreground. The text is overlaid on the image.



Validate your smart city solutions in our member city testbeds



Learn from cities all around the world, exchange best-practices and success stories



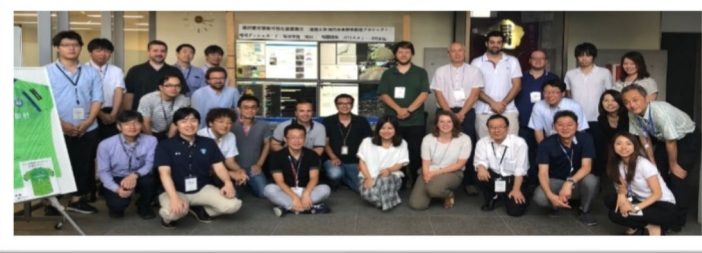
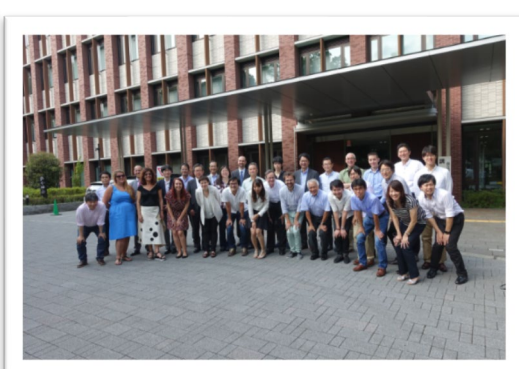
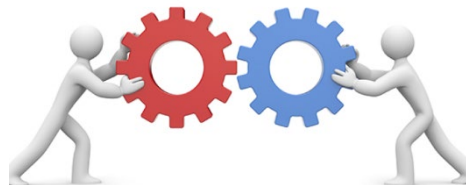
Network and collaborate with worldwide leaders and experts in a vibrant ecosystem



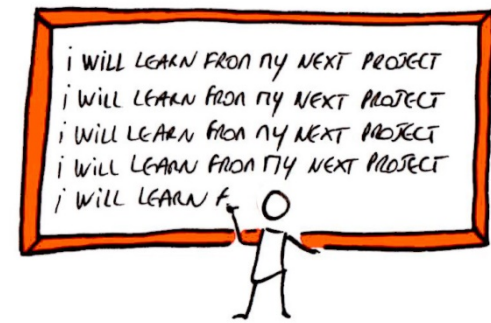
Build strategic partnerships in an open and neutral organisation



# Strong EU-JP collaboration



# Lessons learnt



## 1. Each city is unique, yet today's economic, societal and technological challenges are global

- Mutualise resources and cooperate and exchange to tackle the global challenges
- Europe and Japan have complementary vision and expertise

## 2. Cities are aware of the potential of IoT for increased efficiency

- But they are confused (too many standards, actors, initiatives, etc.)
- Need for common language by each stakeholder

## 3. The value is in the ecosystem

- Openness is key for the benefit of local actors
- No vendor-lock-in, no single platform; variety is richness

## 4. City scale testbeds are important to validate innovation

- Smart city applications need validation from citizens
- Cities belong to citizens: requirements-driven, solution-oriented, citizen-centric innovation. Include them in the loop!



# Future trends and outlook



## Need for pilot type of projects

- Focusing on deployments and testing, in smart city, industry 4.0, smart living domains.



## Cyber Physical Systems (IoT)

- high levels of reliability, safety, security and usability since they must meet the rapidly growing demand for applications



## Distributed Systems and Knowledge

- Artificial Intelligence on blockchains
- New ways of collaboration and sharing on Peer-to-Peer systems



## Sociality, Gaming & pervasive Machine Learning

- Impacting everything from game playing, online social communities to brain/machine interfaces
- “User friendly” ML that can learn from and make predictions on data in a simple way.





Thank you for  
your attention!



有難う御座います



Dr. Levent Güngen

Co-funded by the European Commission and NICT

Workshop Making Smart Cities Sustainable

