



2021PORTUGAL.EU

# Summit

# European Regions

# for Smart Communities



DATA:



# TRANSITING TO SMART COMMUNITIES BY FOSTERING COLLABORATION & CO-CREATION FOR OPEN KNOWLEDGE

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@dipina



# INTERNET OF PEOPLE (IOP)

- **Internet of People (IoP)** promotes the idea that a **Smart World** is only possible if there is a **better and smarter collaboration bridging machine intelligence & human intelligence**, between devices and people, **where technology** (AI in particular) is **applied from a human-centric and driven standpoint**.
- **IoP** is a new Internet paradigm where humans and devices they interact with are not seen only as end users but become active elements of the surrounding environment.
  - Results from the **progressive continuous merging of our personal physical and cyber worlds**
  - Represents **mapping of social individuals & their interactions with smart devices** to the Internet.
  - Focuses on **data collection, modelling, analysis and ubiquitous intelligence** for a wide range of applications of crowd sourced, Internet-based personal information.
  - **Interdisciplinary field** which encompasses **IoT, HCI and behavioural and social sciences**.



# WHAT IS A SMART PLACE?

*“Smart cities are places where information technology is combined with infrastructure, architecture, everyday objects, and even our bodies to address social, economic and environmental problems.”*

**Anthony M. Townsend,**  
author of the book “Smart Cities”

*“ Smart Villages are rural areas and communities which build on their existing strengths and assets as well as on developing new opportunities”, where ‘traditional and new networks and services are enhanced by means of digital, telecommunication technologies, innovations and the better use of knowledge’”.*

EU Action for Smart Villages, European Commission

## □ A Smart Place is an **innovative and sustainable place** that ...

- uses information and communication technologies (ICT) and other means to ...
  - improve quality of life, efficiency of urban/rural operation and services, and competitiveness, while ...
    - ensuring that it **meets the needs of present and future generations** with respect to economic, social and environmental aspects

Adaptation of “A smart sustainable city”  
Recommendation ITU-T Y.4900

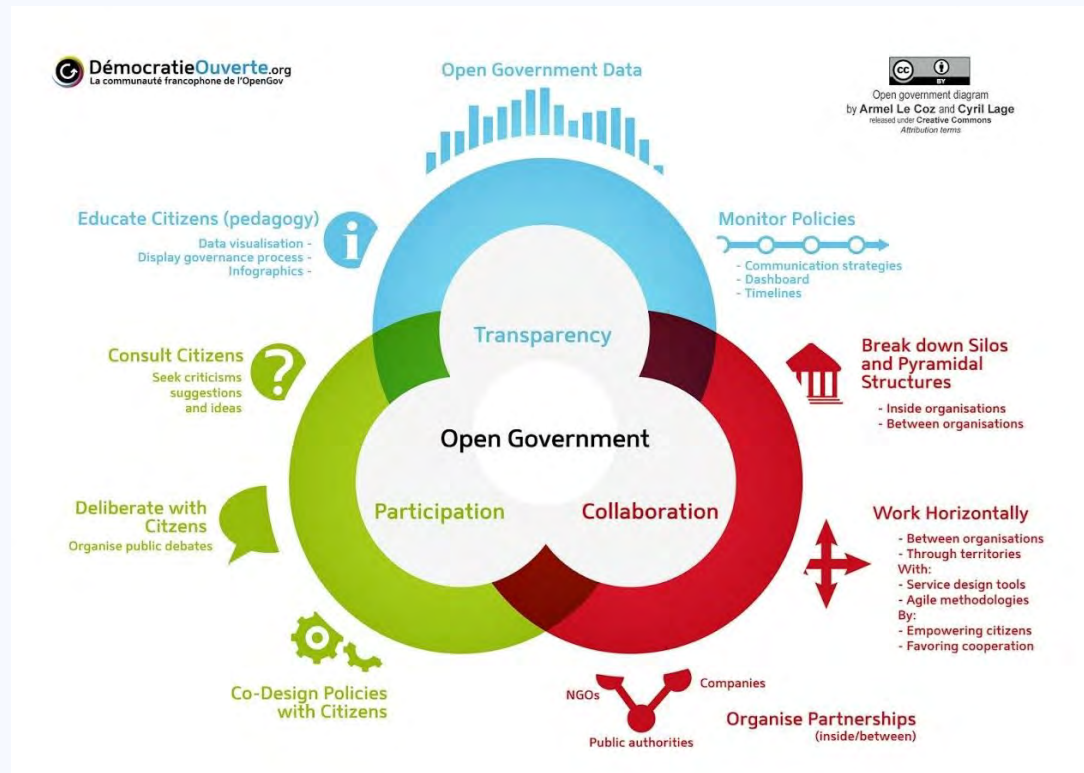


# THE NEED FOR PARTICIPATIVE RURAL ENVIRONMENTS

- ❑ **Smart Villages should not only be efficient but inclusive and participative:**
  - Only possible by **user-driven and centric innovation:**
    - **The citizen and other stakeholders (companies) should be heard, EMPOWERED!**
  
- ❑ **How to achieve more participative rural environments?**
  - ❑ **Ubiquitous rural apps and services** to enhance the experience and interactions of the rural stakeholders, by taking advantage of the rural infrastructure and their contributions
  - ❑ **The information generated by rural environment and rural stakeholders must be linked and processed**, still preserving the rights of contributors
    - ❑ Regulate, protect, legislate to guarantee the rights and opportunities of such data providers
  - ❑ **Rural citizens/stakeholders must be engaged** by being delivered back better services
  
- ❑ **How do we correlate, link and exploit such humongous data for all stakeholders' benefit?**
  - ❑ Demand for Big (Linked) Data for enabling Rural Data Analytics!!!



# THE NEED FOR PARTICIPATIVE PLACES



- ❑ **Place knowledge** not only fed by government or networked sensors' provided data, but also with **highly dynamic user-generated data**
- ❑ **Citizens may help on improving, extending and enriching the data, but...**
  - **Quality of the provided data** may vary from one citizen to another (duplication, miss-classification)
  - **Continuously prosumed data** only if they feel that services meeting their needs are offered back as useful services



# COLLABORATION OF CITIZENS/STAKEHOLDERS IN OPEN GOVERNMENT PROCESSES IS HARD

- **Continuous engagement of users** in collaborative processes is **hard to achieve**
  - Open Government Data (**OGP**) and **e-services** offer a **high innovation potential** (transparency, accountability, value creation)
    - BUT, its **take-up has been lower than expected**
    - Past attempted to address it:
      - [WeLive](#) tried to promote co-created data-driven public services
      - [SIMPATICO](#) aimed to democratize e-services combining machine & human intelligence
        - E.g. commenting & annotation promoted through gamification
    - Now, we are revisiting it with:
      - WeLive and SIMPATICO follow-up in [INTERLINK](#) project
      - Targeting rural communities in [AURORAL](#)



## □ Why?

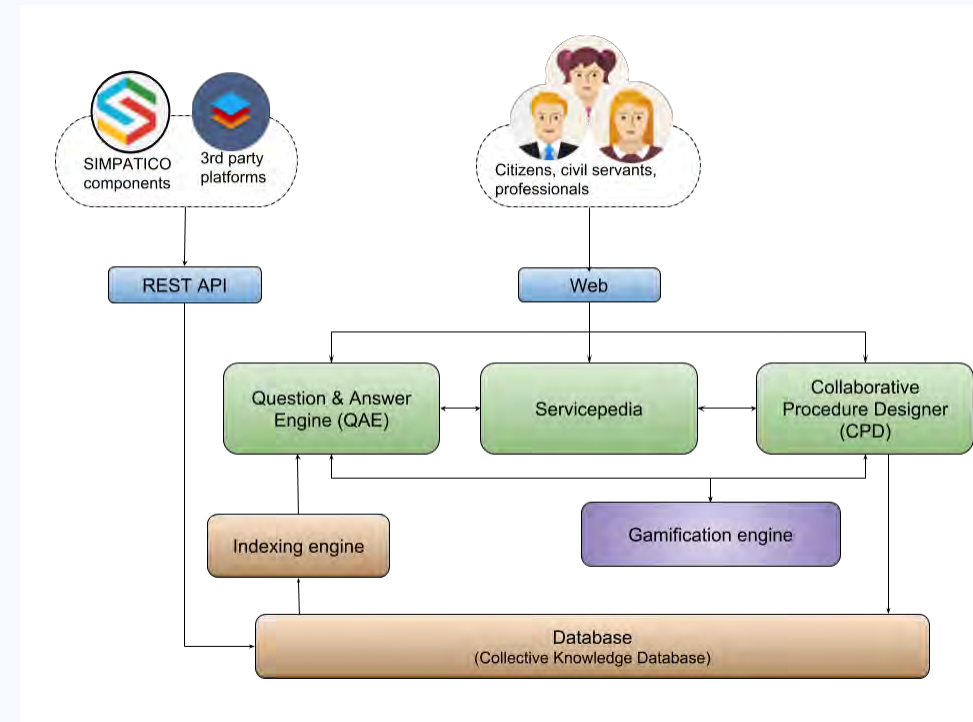
- Sustainability of stakeholder collaboration processes is key for e-service adoption!



# HUMAN COMPUTATION FOR MORE INCLUSIVE SERVICES

❑ **Citizenpedia**, in charge of performing Human Computation:

- **Question & Answer Engine (QAE)**: tool used by citizens to post and resolve questions regarding e-services and Public Administration
- **Collaborative Procedure Designer (CPD)**: offers graphical tools to the civil servants and stakeholders to collaborate on the design of administrative procedures
- **Servicepedia**: integrates all the data of the QAE, CPD and e-services to contextualize the existing questions, answers and procedure steps.





# CROWDSOURCING & GAMIFICATION ARE NOT ENOUGH TO TRULY ENGAGE USERS ...

- ❑ **Civil servants are reluctant to moderate the contents** provided by end-users
- ❑ **End users are usually initially motivated, but their contributions are diminished in time:**
  - Receiving no feedback is discouraging
  - If the benefit is not clear or reward immediate → eventually user contributions diminish

**Conclusion:** Human Computation is appealing but requires (moderation + automatic quality assessment) and continuous high involvement



# BEYOND OPEN DATA PORTALS ...



**CITIZENS** have  
**NO SKILLS** or **TOOLS** to  
utilize **COMPLEX DATA**

**LOW BENEFITS**  
from **OPEN DATA**  
published by **CITIES/RURAL**  
**ENVIRONMENTS**



# BLOCKCHAIN CAN AID TRANSFORMING CITIZENS INTO PROSUMERS OF PUBLIC DATA/SERVICES

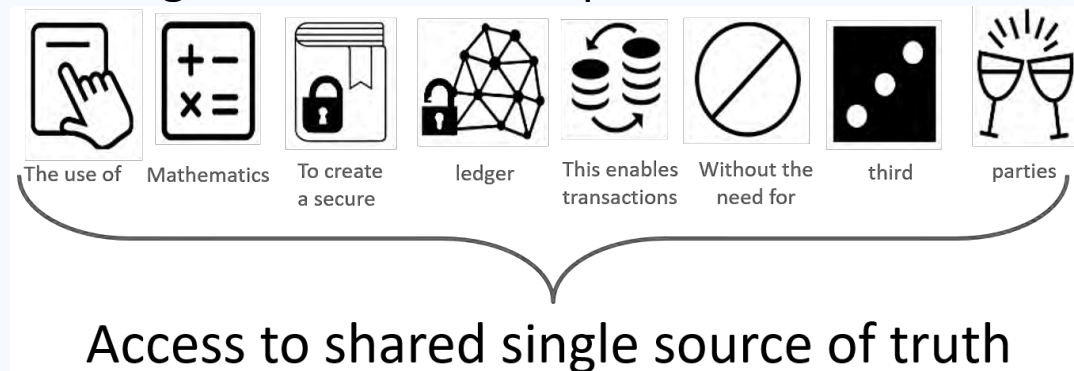
- ❑ **Turn consumers of open data (public services) into prosumers:**  
refining and enhancing contents, through incentivized crowdsourcing, encouraging more proactive users
- ❑ **Examples:**
  - **AUDABLOK:** framework to **make open government data portals increasable evolvable and sustainable** in time. **HOW?**
    - **By combining Human Computation & Internet of People**
      - KISS principle: **Pull Request combined with Blockchain**
  - **DeustoCoin:** social coin to redeem to citizens for contributing pro-SDG goals actions promoted by an organization



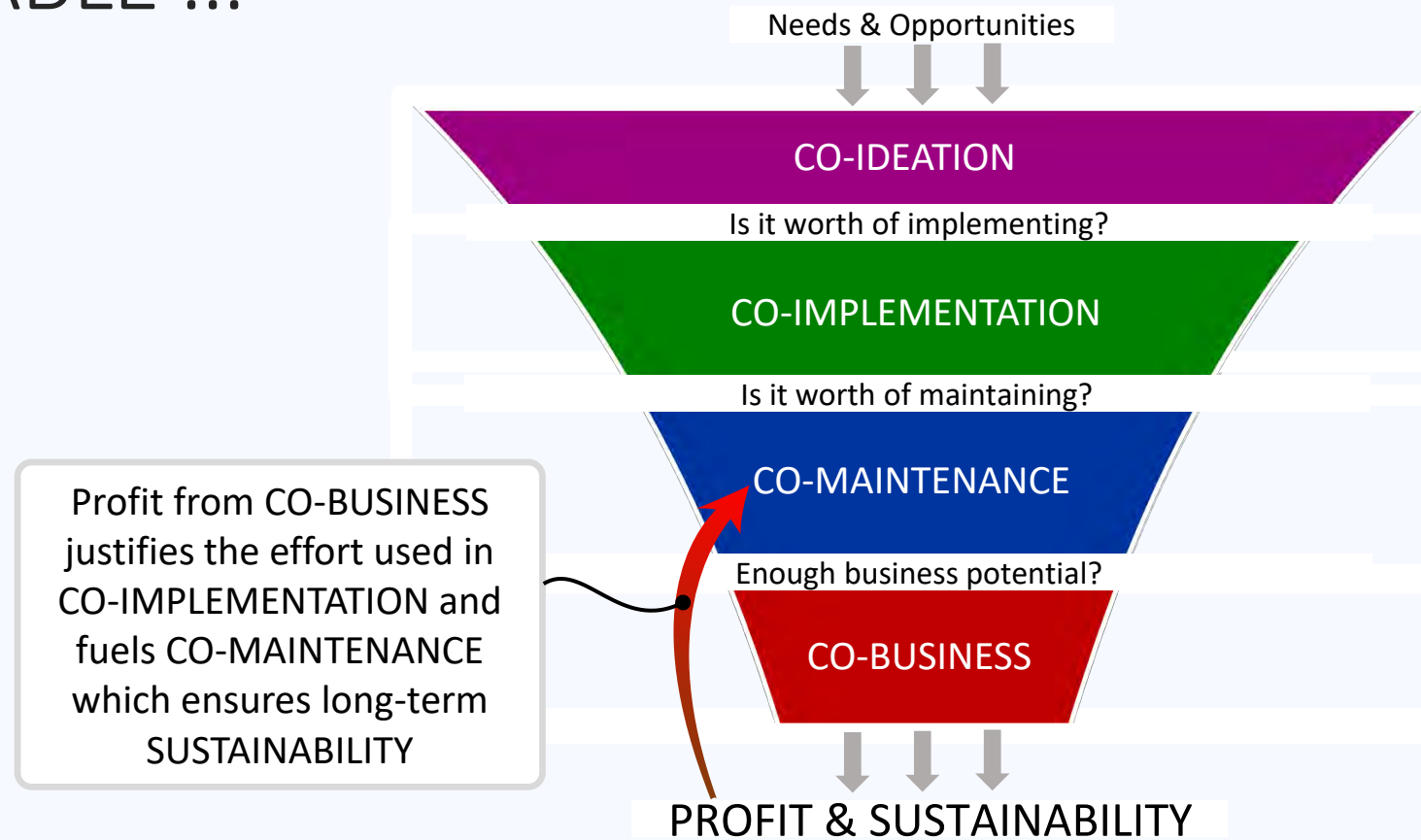
# INCENTIVISATION-DRIVEN ENGAGEMENT

- ❑ AUDABLOK **improves citizen collaboration through incentivisation (token economy)** and recognition, i.e., **trustworthy recording** of citizen collaborations
  - **Blockchain is used to deal with rewarding and recognition aspects**, i.e. higher co-creation of citizens
  - AUDABLOK feeds Ethereum network, recording citizen-initiated Open Data refinement transactions

Continuous Engagement =  
Pull request + Blockchain



# PARTICIPATION AND COLLABORATION NEED TO BE SUSTAINABLE ...



# RURAL INTELLIGENCE

## ❑ **Broad Data** aggregates data from heterogeneous sources:

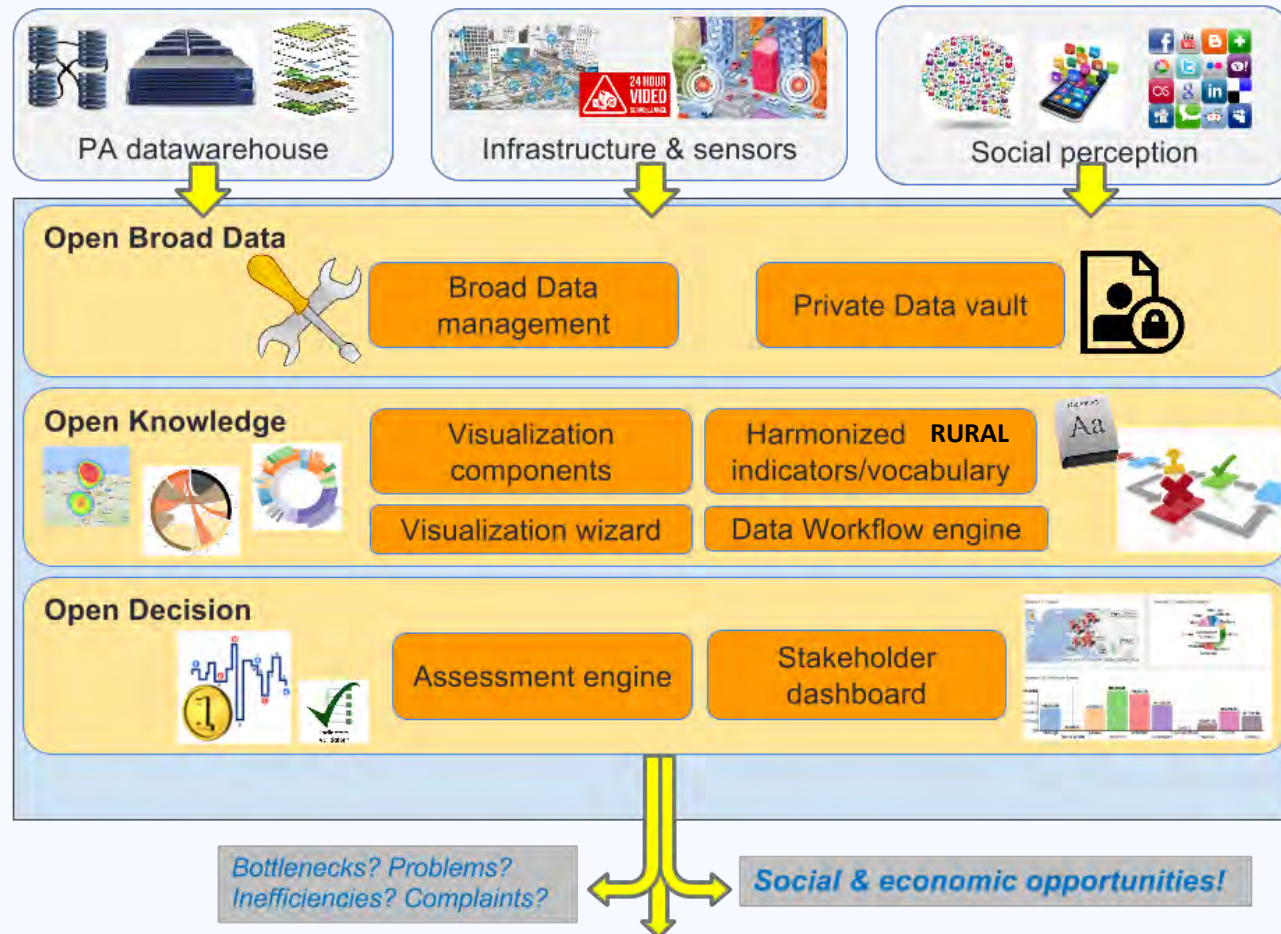
- Open Government Data repositories
- User-supplied data through social networks or apps
- Public private sector data (Data Marketplaces) or
- End-user private data

## ❑ **Rural Intelligence = giving sense to the correlation and analysis of Broad Data in the rural context**

- **Leverage digital traces left by rural citizens in their daily interactions in the rural environment** to gain insights about why, how and when they do things
- We can **progress from Open Rural Data to Open Rural Knowledge**
  - Energy saving, improve health monitoring, optimized transport system, filtering and recommendation of contents and services



# FROM OPEN DATA TO OPEN KNOWLEDGE



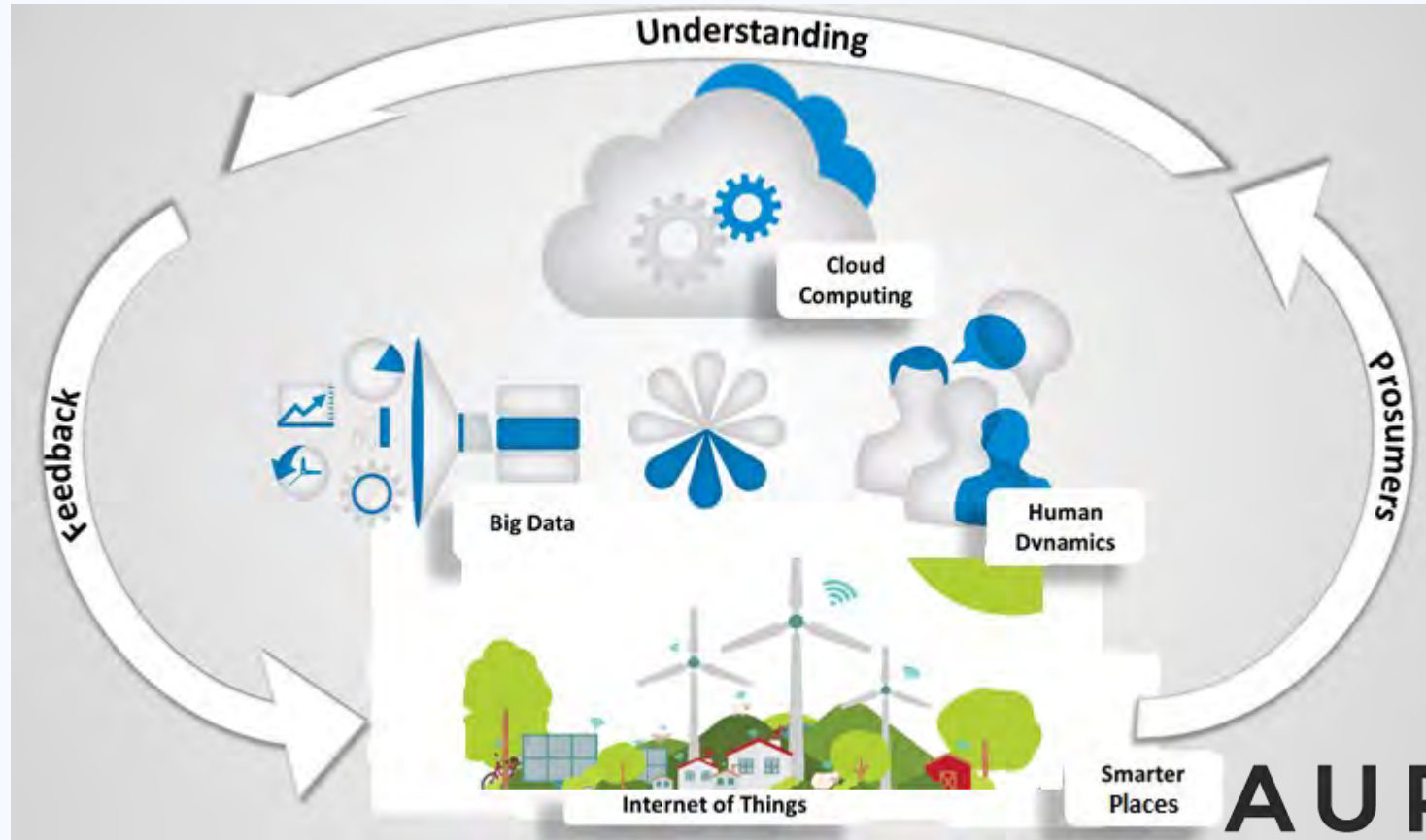
# FROM PRIVATIVE KNOWLEDGE GRAPHS TO OPEN (NOT NECESSARILY FREE) KNOWLEDGE GRAPHS ...

- ❑ **Knowledge Graphs** provide **structured and detailed information about a given topic**, together with a list of links to other concepts
  - **Google Knowledge Graph** is a good example of a **privately-owned semantic network contains more than 570 million objects and more than 18 million facts** about – and relations among – those different objects which are used to understand the meaning of the terms used in the search query
- ❑ **Open Knowledge Graphs (OKG)** – as **suitable data models to capture the knowledge in different key public and industrial areas**, e.g. public physical asset management, community-managed sensing and analytics
  - Fed by ontological background knowledge, Open Data, social data, legacy data, private data, but also user-generated data and real-time data coming from environment-wide sensor infrastructure





# ACTIONABLE OPEN KNOWLEDGE TO THE SERVICE OF RURAL CITIZENS & ENTERPRISES



# AURORAL



# THANK YOU! QUESTIONS?



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