

# Building an Eco-System of Trusted Services through user Transparency, Control and Awareness on Personal Data Privacy

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**Personal Data: convergence of traditional data with novel heterogenous, ubiquitous, highly dynamic data**

M-Payments

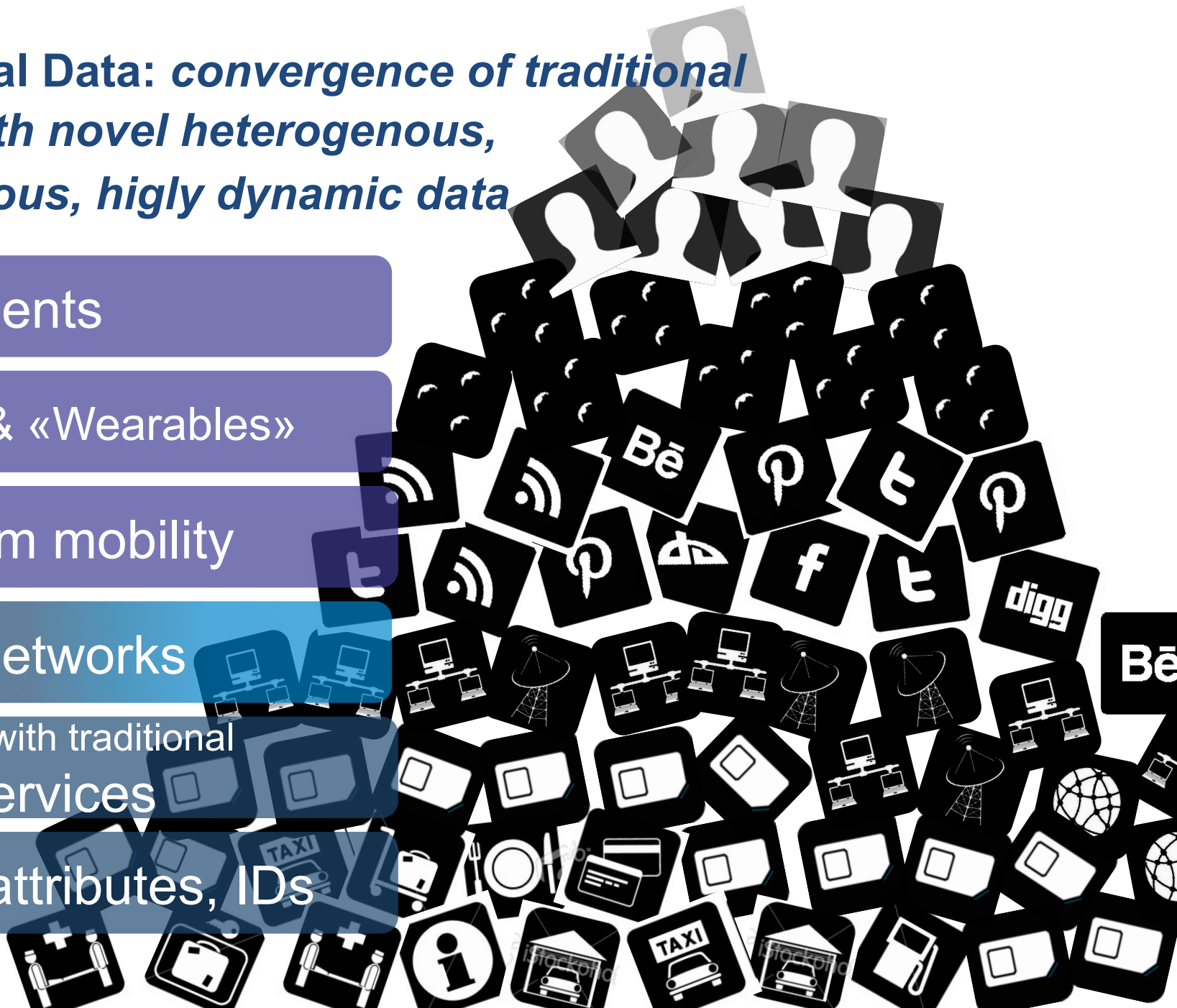
Sensors & «Wearables»

Data from mobility

Social Networks

interaction with traditional online services

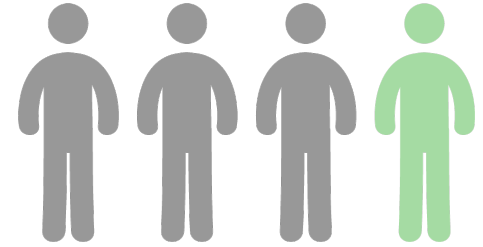
Profile, attributes, IDs



# The evolution of Personal Data: RISKS

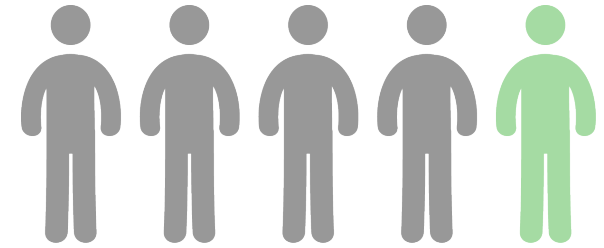
## *From static profiling to behaviors...*

Almost 3 citizens out of 4 on EU bases \*: *agree that there are few or no trusted way to find out about personal data management and protection online*



Almost 4 citizens out of 5 on EU bases \*:

- *lacks of trust on how companies use their personal data!*
- *feel that services providers hold too much information about consumer behaviour and preferences*



\* *The Future of Digital Trust, Feb. 2014, Orange (UK, France, Spain, Poland)*



# The evolution of Personal Data: OPPORTUNITIES Toward Personal (Big) Data

The rapid evolution of the technology enabled the collection of **highly dynamic Personal Data**, describing the **behavior** of people in the real life (e.g. locations, communication patterns, social interactions, services usage, etc.) and rich contextual information.

From a large number  
of user (as sensors)

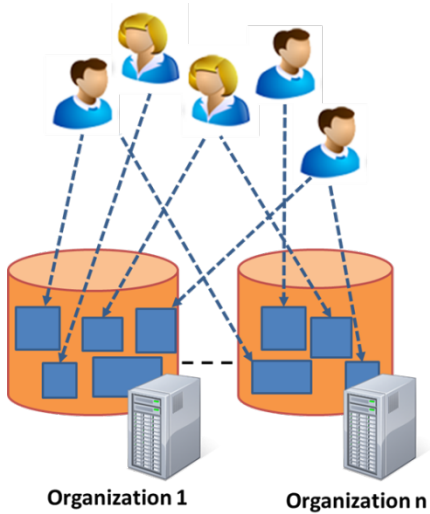
OPPORTUNITY:  
Large number of user (as sensors)



Personal (Big) Data

# The current «Organization-Centric» landscape

Individual's Data live in organization-side only



1

1. Data spread
2. Limited benefits
3. More risks

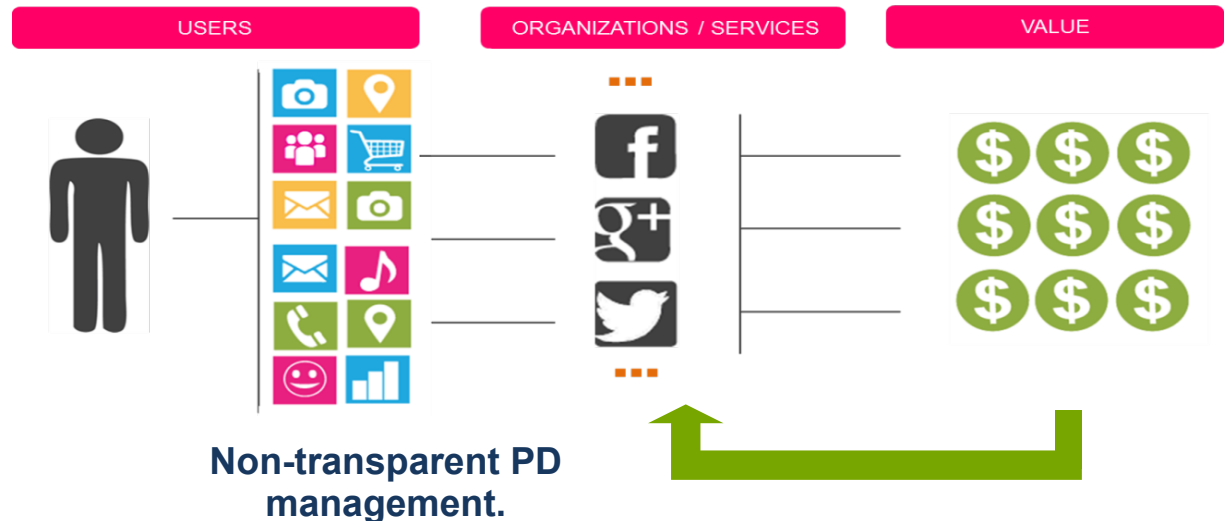
Data owners (USERS) are excluded from:  
 - their data life-cycle and control of Personal Data (PD)

2

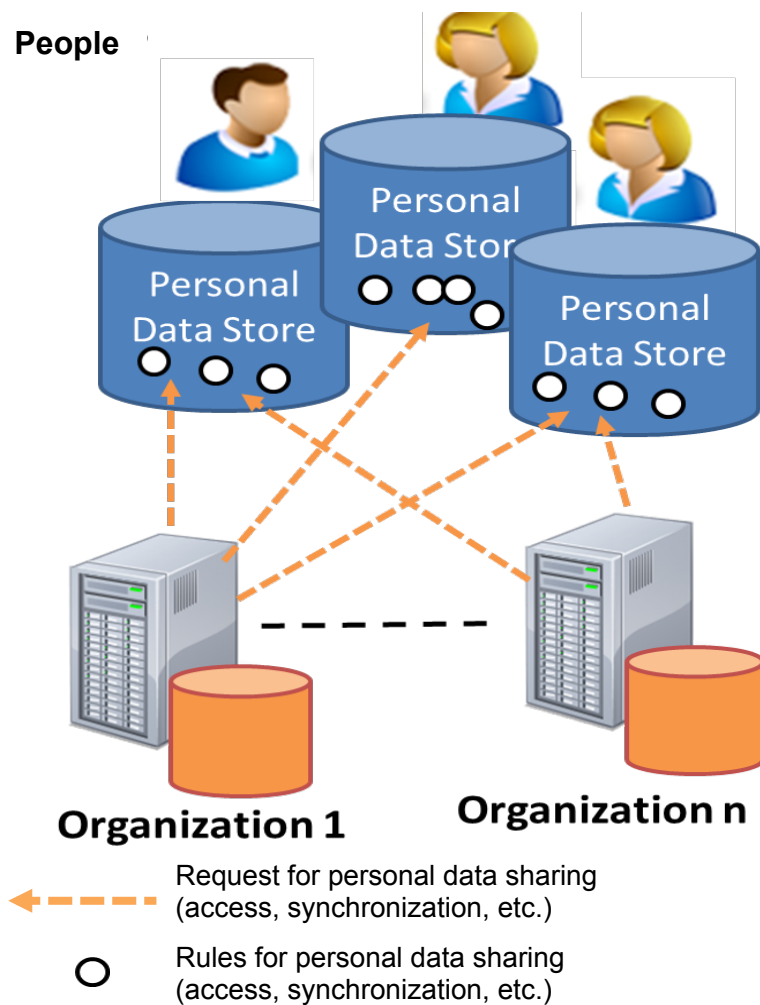


- and from value chain, being mainly unaware producer of PD!

3



# The proposal of a new «User-Centric» model for Personal Data Management



# The proposal of a new «User-Centric» model for Personal Data Management

Many initiatives proposed the shift toward a different model (e.g. W.E.F.)

## USER

PRODUCTION & SHARING OF DATA

BETTER / PERSONALIZED SERVICES

SELF QUANTIFICATION

## COMPANIES

PERSONAL DATA MANAGEM.

NOVEL BUSINESS OPPORT.S

BUSINESS INTELLIGENCE.

EXPLOITATION and MONETIZATION

Complements the organization-centric model, does not replace it

## PUBLIC ORGANIZATIONS

SMART CITIES APPLICATIONS/ SERVICES

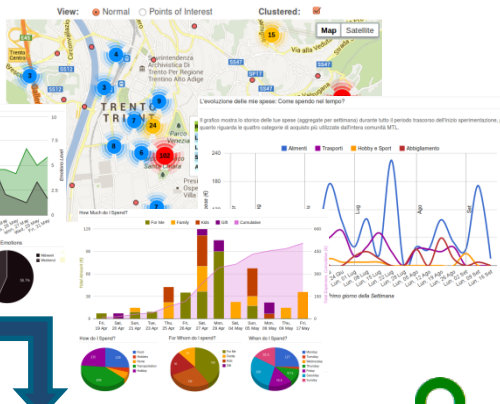
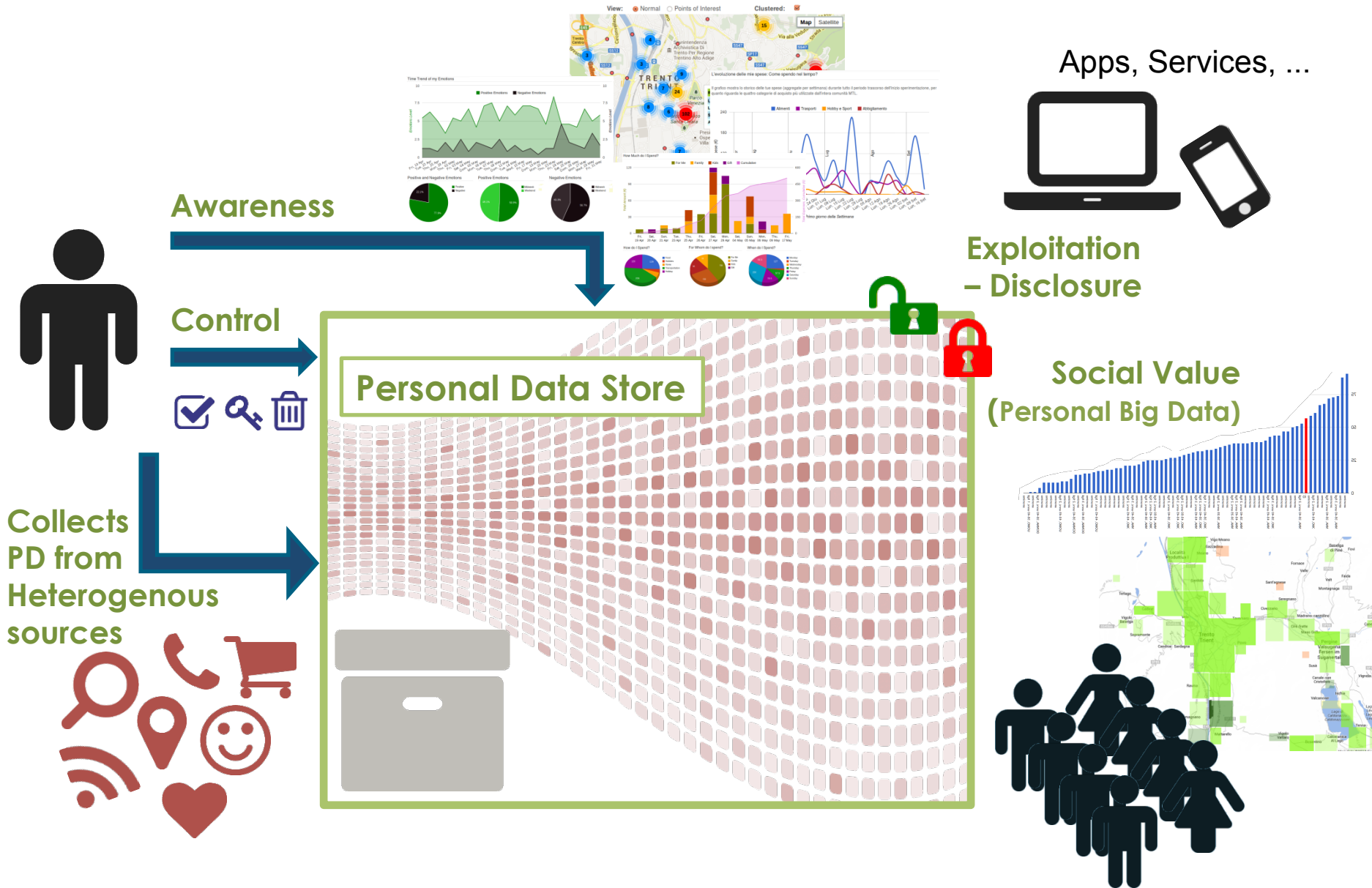
ANALYTICS and TERRITORY UNDERSTANDING

IMPROVE QUALITY and EFFICIENCY

Wider control over the life-cycle of their PD



# Personal Data Stores

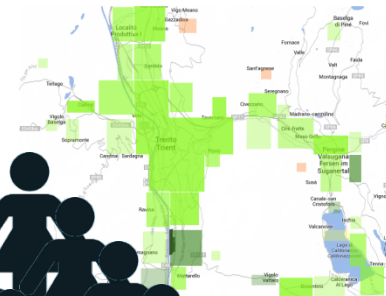


Apps, Services, ...



Exploitation - Disclosure

Social Value (Personal Big Data)





# Mobile Territorial Lab ...a living lab experience

*Open infrastructure with real users  
in a real community for experimenting in  
a **real living environment** privacy-preserving Personal  
Data Management and exploitation  
of Personal (Big) Data*

**SKIL**

Semantics & Knowledge Innovation Lab



*In cooperation with:*



*Telefonica*



# Main Goals of MTL



Increment people awareness on the value and potentials of their Personal Data

Understand people approaches, attitudes and feelings toward user-centric Personal Data paradigm

Explore Individuals' Personal Data exploitation for self-empowerment and comparative behavioral analysis

Investigate the Personal Data ecosystem dynamics and identify opportunities, risks and balance between Personal Data protection and exploitation

# The main ingredients of MTL

150 parents with children (aged 0-10)



High community management effort



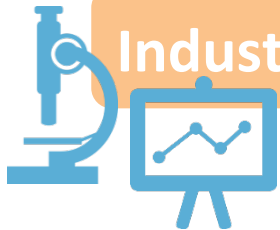
Complex legal framework



Innovative Technological Infrastructure



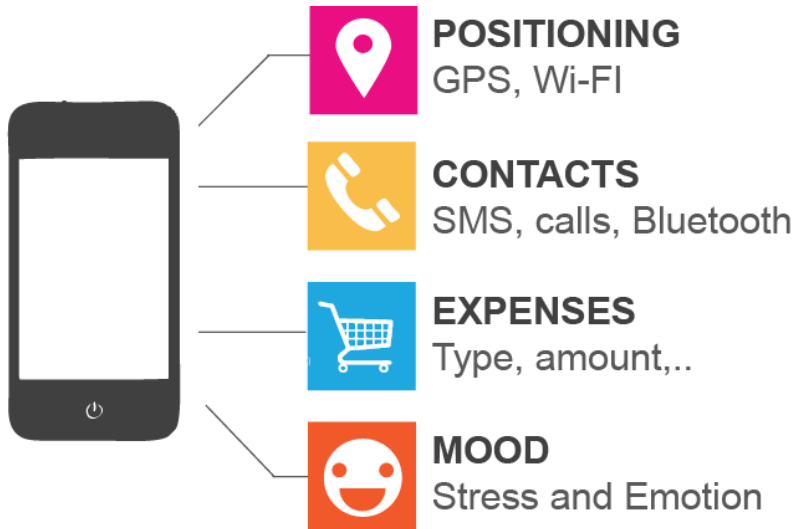
Industrial and Research partners of excellence



Applies services co-design methodologies



# The Experimental setting of MTL...

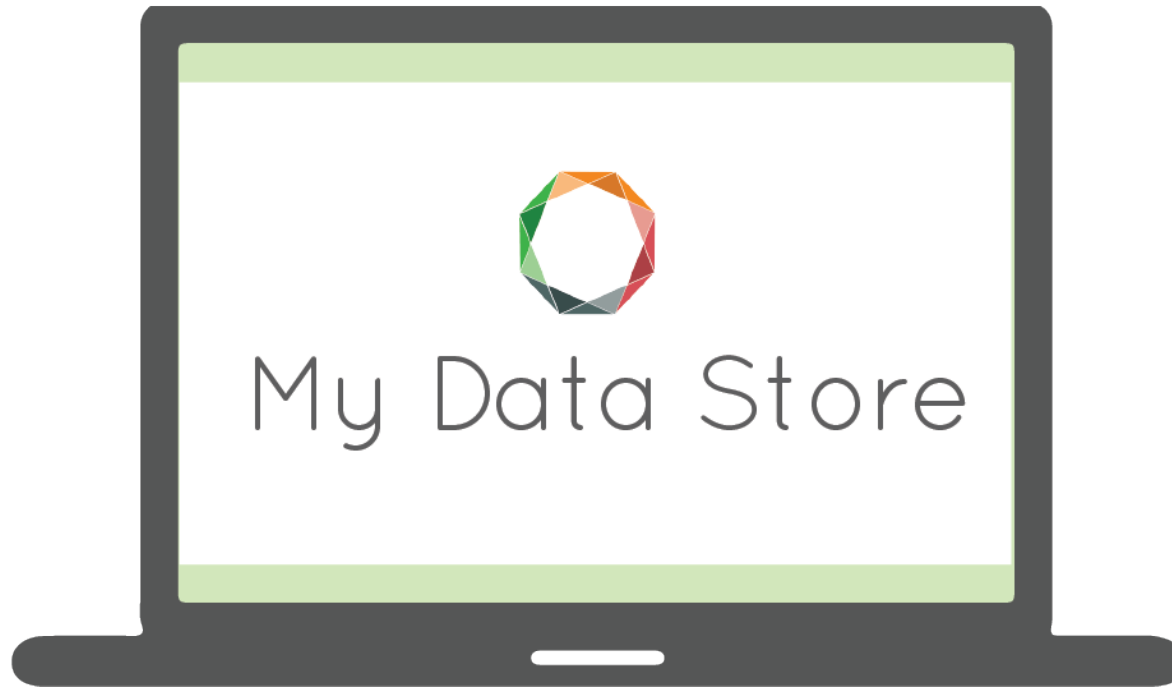


Personal data are collected through smartphones

Other data are collected through connected portable



# The MTL Personal Data Store:



# Control and Exploitation features

User primacy over the entire PD life-cycle (from collection to usage)

Collection Area



Deletion Area



Sharing Area



## ✓ Personal data Collection preferences

Save Preferences

### Personal Data Type

### Description

Locations

It collects your geographic locations over time, and the points of interest you have been

Social Interactions

Collects your data concerning your interactions with other users (e.g. when and in which way you interacted)

▶ Examples of data sources and information extracted:

- Information (logbook) of incoming/outgoing phone-calls
- Information (logbook) of incoming/outgoing text messages and MMS
- Personal devices detected by Bluetooth in the proximity of your device

Applications

Collects information on the execution of applications on your devices and the data produced by these applications

## 🔍 Personal data Sharing/Usage preferences

Save Preferences

### Personal Data Type

### Sharing

Locations



Social Interactions



Environment



Mood



Expenses

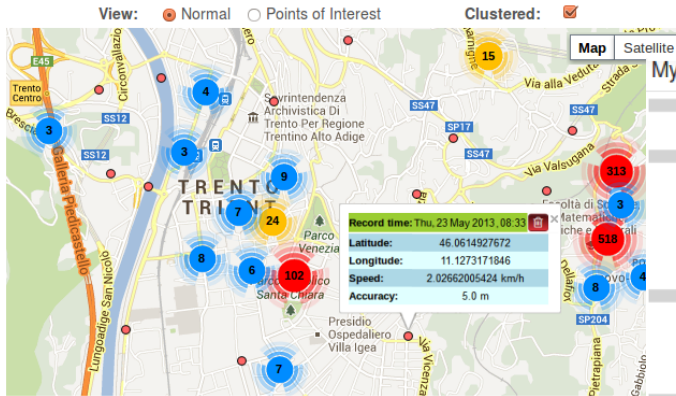
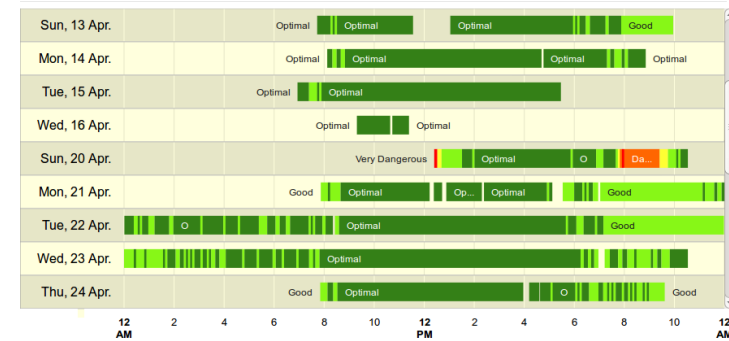


### How do I share my data?

- I DO NOT share my data (only personal usage)
- I share aggregations of my data with the community only ANONYMOUSLY
- I share aggregations of my data with the community PARTIALLY NON-ANONYMOUSLY
- I share aggregations of my data with the community FULLY NON-ANONYMOUSLY

# Increasing Awareness and Engagement

The Air Quality | Experimented ...

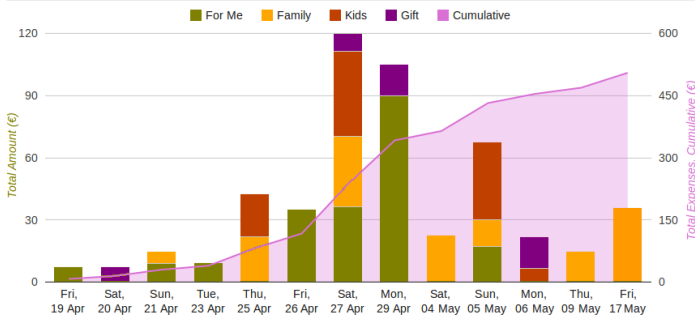


## My Expenses

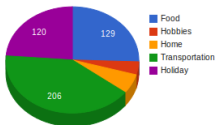
Group by:  Date  Category

| Category       | Date             | Time  | Amount          | Purpose | Details |
|----------------|------------------|-------|-----------------|---------|---------|
| Food           | Sun. 21 Apr 2013 | 02:36 | 10.00 - 20.00 € | for me  | —       |
|                | Thu. 25 Apr 2013 | 19:55 | 7.00 €          | gift    | —       |
|                | Mon. 29 Apr 2013 | 12:05 | 10.00 €         | for me  | —       |
| Hobbies        | Sat. 20 Apr 2013 | 11:00 | 5.00 - 10.00 €  | gift    | —       |
| Transportation | Thu. 25 Apr 2013 | 19:55 | 20.00 - 50.00 € | for me  | —       |
|                | Fri. 26 Apr 2013 | 12:05 | 50.00 €         | for me  | —       |
|                | Mon. 29 Apr 2013 | 12:04 | 70.00 €         | for me  | —       |

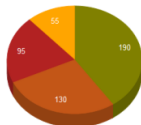
## How Much do I Spend?



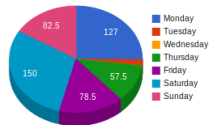
## How do I Spend?



## For Whom do I spend?



## When do I Spend?

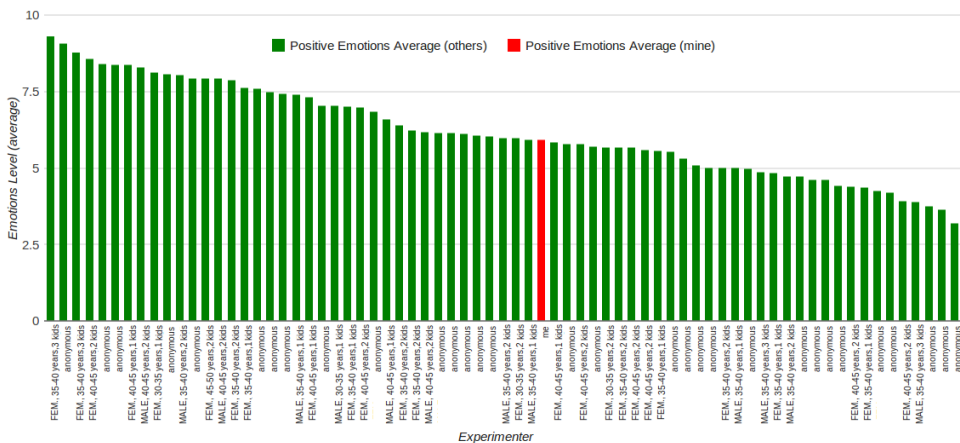


Aggregated Individual Views  
(charts, timelines, maps, clusters, ...)

Detailed «Auditing» Views  
(raw/single data)

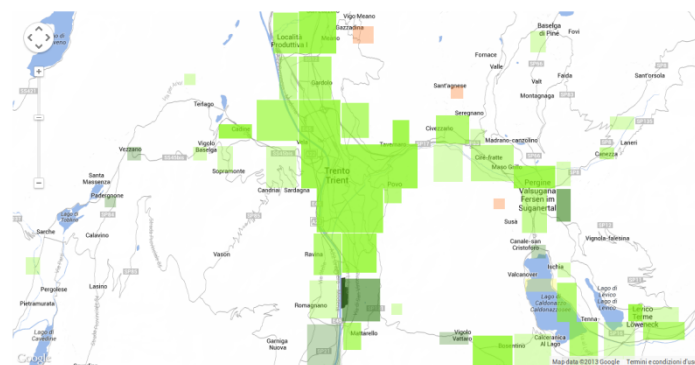
# Increasing Awareness and Engagement

## value for the community & social comparison



La qualità dell'aria rilevata dalla Comunità MTL!

Per ogni quadrante della mappa viene mostrata la qualità media dell'aria ottenuta dai rilevamenti compiuti e condivisi da tutti gli sperimentatori MTL. Viene evidenziata solo l'area del quadrante interessata dai rilevamenti, ed il colore è tanto più forte quanto maggiore è l'accuratezza della misura (numero di rilievi rispetto alla superficie).



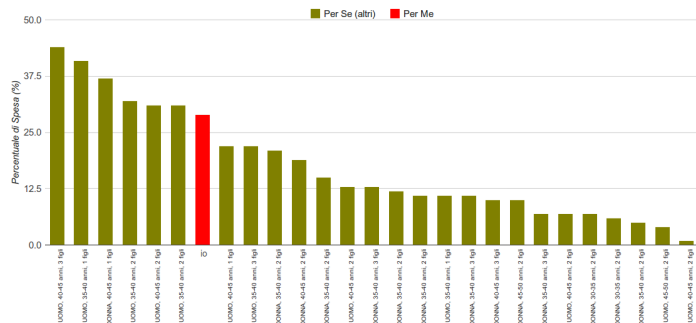
Tu dentro MTL! Dati di *Spese*

Visualizza dati ultimo:

Mese Settimana Giorno dal 27/10/2013 al 26/11/2013 Appioma

Quanto spendo PER ME rispetto alla Comunità MTL

Questo grafico mostra quanto hanno speso PER SE (in percentuale nel periodo da te scelto) le persone simili a me della comunità MTL.



Torna ai dati tuoi dati

Solo persone simili a me:

L'opzione si applica solo ai partecipanti che hanno condiviso i dati in modo NON ANONIMO.



## Social Views

(collaborative views, comparison, ...)



## Aggregated Individual Views

(charts, timelines, maps, clusters, ...)



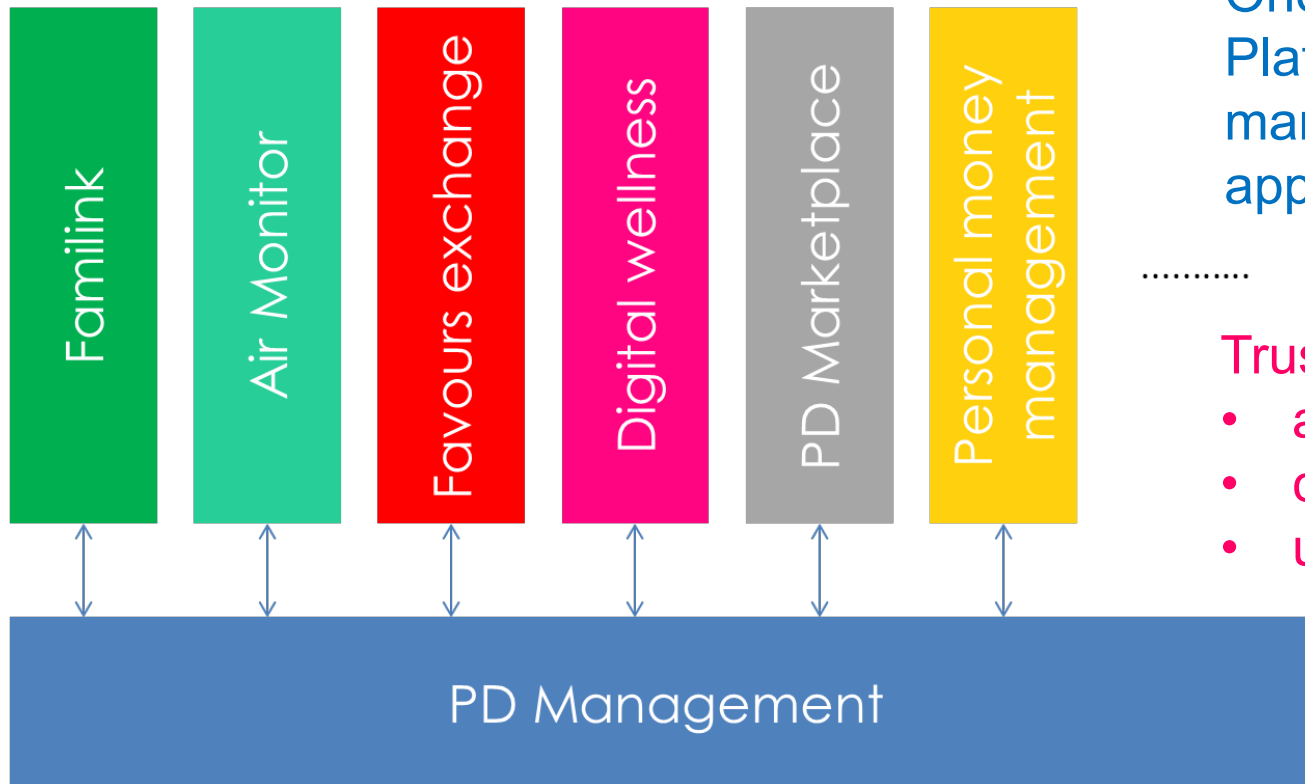
## Detailed «Auditing» Views

(raw/single data)



# One *Personal Data Management platform* many *integrated Trusted Applications*

A **single** PD Management **platform** that enables many different scenarios



One PD Management Platform enabling many different Trusted application scenarios

Trusted in:

- access to PD
- collection of PD
- usage of stored PD

# Toward an Eco-System of Trusted and Controlled Personal Applications

## Types of Usages



discriminates

assesses

Trusted Apps

Types of Data

See your Trusted Applications, the Personal Data they access and their usages...

|        |            |           |          |        |
|--------|------------|-----------|----------|--------|
| access | uses hist. | generates | collects | shares |
| ↓      | ↑          | ↑         | ↓        | ↗      |

|  |                           |   |   |   |   |
|--|---------------------------|---|---|---|---|
|  | Famalink                  | 📌 | 👤 | 📶 | 📶 |
|  | Favour Exchange           | 📌 | 👤 | 📶 | 📶 |
|  | Personal Money Management | 📌 | 👤 | 📶 | 📶 |
|  | Second Nose               | 📌 | 👤 | 📶 | 📶 |

|   |   |   |   |   |
|---|---|---|---|---|
| ✓ | ✓ | ✓ | ✗ | ✓ |
| ✗ | ✓ | ✓ | ✓ | ✓ |
| ✗ | ✓ | ✓ | ✓ | ✗ |
| ✓ | ✗ | ✓ | ✓ | ✓ |

App Privacy Prefs

**Personal Money Management**

Are you aware of the way you use your budget? Monitor your expenses to discover it...

Semi-automatic expenses detector and mirror.

↶ Apps List

Your Application Preference for *Personal Money Management*

📄 Save Preferences

| Personal Data Type      | access                              | collect                             | usage                               | share                               |
|-------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| 📌👤 Locations            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| 📶📶 Social Interactions  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 👤📶 Expenses             | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 👤📶 Running Applications | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |

**Personal Data Types Description:**

- 📌👤 **Locations**  
It collects your geographic locations over time and the points of interest you have been
- 📶📶 **Social Interactions**  
Collects the data concerning your interactions with other users (e.g. when, how long and in which way you interacted)
- 👤📶 **Expenses**  
It collects the information on your expenses you reported or collected through automatic services
- 👤📶 **Running Applications**  
It collects information on the applications running on your smartphone (such as browsers, social networks, maps, ...)

📄 Save Preferences

Thank you for your attention!  
Questions...

*\* Acknowledgement:*  
Material for slides provided by Michele Vescovi (Telecom Italia)