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

Michele Vescovi, Telecom Italia - SKIL
Corrado Moiso, Telecom Italia - Future Center
Fabrizio Antonelli, Telecom Italia - SKIL
Mattia Pasolli, Telecom Italia - SKIL
Christos Perentis, FBK & Telecom Italia - SKIL
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.

**OPPORTUNITY:**
Large number of user (as sensors)

From a large number of user (as sensors)

Personal (Big) Data
The current «Organization-Centric» landscape

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

Individual’s Data live in organization-side only

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

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

Non-transparent PD management.

1. Collect
2. Store
3. Process
4. Extract value
5. No control to:
   - Access
   - Modify
   - Delete

1. USERS
2. ORGANIZATIONS / SERVICES
3. VALUE
The proposal of a new «User-Centric» model for Personal Data Management

- Request for personal data sharing (access, synchronization, etc.)
- Rules for personal data sharing (access, synchronization, etc.)
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.)

Complements the organization-centric model, does not replace it

Wider control over the life-cycle of their PD
Personal Data Stores

Awareness

Control

Collects PD from Heterogenous sources

Personal Data Store

Exploitation – Disclosure

Social Value (Personal Big Data)

Apps, Services, ...
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

In cooperation with:
Main Goals of MTL

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

- **POSITIONING**
  - GPS, Wi-Fi

- **CONTACTS**
  - SMS, calls, Bluetooth

- **EXPENSES**
  - Type, amount,...

- **MOOD**
  - Stress and Emotion

- **Air Quality**
  - CO, humidity, temperature

Other data are collected through connected portable devices.

Personal data are collected through smartphones.

### DATA COLLECTION

- Widget MTL
  - Locations
  - Social Interactions
  - Environment
  - Data from Mobile Applications

### SECURE DATA STORAGE

- "Cloud"

### PERSONAL DATA MANAGEMENT

- Personal Data Store
  - Visualizations / Awareness
  - Management / Control
  - Sharing / Exploitation
  - Social Value
  - Pers. Services
  - Pers. Apps
The MTL Personal Data Store:
Control and Exploitation features
User primacy over the entire PD life-cycle (from collection to usage)

- **Collection Area**
  - Personal data Collection preferences
  - **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

- **Deletion Area**

- **Sharing Area**
  - Personal data Sharing/Usage preferences
  - **Locations**
    - I DO NOT share my data (only personal usage)
    - I share aggregations of my data with the community only ANONYMOUSLY
  - **Social Interactions**
    - I share aggregations of my data with the community PARTIALLY NON-ANONYMOUSLY
    - I share aggregations of my data with the community FULLY NON-ANONYMOUSLY
  - **Environment**
  - **Mood**
  - **Expenses**
Increasing Awareness and Engagement

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

Detailed «Auditing» Views (raw/single data)
Increasing Awareness and Engagement
value for the community & social comparison

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

- Trusted Apps
  - Discriminates
  - Assesses

- Types of Data
  - Familink
  - Favour Exchange
  - Personal Money Management
  - Second Nose

- App PrivacyPrefs

- Personal Money Management
  - Are you aware of the way you use your budget? Monitor your expenses to discover it...
  - Personal Data Type
    - Locations: access □ collect □ usage □ share □
    - Social Interactions: access □ collect □ usage □ share □
    - Expenses: access □ collect □ usage □ share □
    - Running Applications: access □ collect □ usage □ share □

- 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 monitors the information on your expenses you reported or reimbursed through automatic services.
  - Running Applications: It collects information on the applications running on your smartphone (such as browsers, social networks, maps...).
Thank you for your attention! Questions...

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