DIGITAL HEALTH REVOLUTION
Digital Traces in Connective Preventive Health
Empowering citizens to take control of their health through health data openness and Mydata based services
To develop future MyData based health services

We will:
- contribute to the change in the control of data in favor of the individual
- explore health-related data from genomics to digital footprint
- develop successful personal data movement across systems and services
- create MyData ecosystem
- promote MyData based health business
Solving future digital health paradigm change needs mixture of high-level expertise and different insights for the development

COORDINATOR: Centre for Health and Technology

FUNDING: The Finnish Funding Agency for Innovation

WEB: www.digitalhealthrevolution.fi
Our goal is to promote

Personalized, predictive, preventive, participatory service ecosystem
What is My Data?

According to MyData White Paper the term MyData refers

1) to a new approach, a paradigm shift in personal data management and processing that seeks to transform the current organization centric system to a human centric system,

2) to personal data as a resource that the individual can access and control.

The aim is to provide individuals with the practical means to access, obtain, and use datasets containing their personal information, such as purchasing data, traffic data, telecommunications data, medical records, financial information and data derived from various online services.

Outcomes so far

- MyData principles
- MyData Architecture definition
- MyData Clinics
- Research pilot set up
- Ethical and regulatory privacy issues on data sharing
- User interface and MyData
- MyData ecosystem players
- Benchmarking
MyData principles

1) Human centric control and privacy

2) Usable data – technically easy to access and use

3) Open business environment

MyData Architecture

Digital Health Revolution is developing a technical architecture for MyData principles to meet EU-wide privacy regulation related requirements and to authorize data access to services.

In the first period of the project, the MyData Architecture specification has been determined. This specification works as a base for the proof-of-concept MyData Service experimentation implementation.

MyData principles about citizen’s right to monitor and make decisions about the use and utilization of their data have been successfully included in one of the spearheads (Digitalization of public services) of the Finnish Government Programme 2015.
In the MyData architecture, data flows from a data source to a service or application that uses the data.

Individual acts as
- **Correlation point:** data from one person can be connected
- **Control point:**
  - Individual decides who uses her data and how by giving consents
  - Individual has rights and practical means to manage her personal data
  - Data is accessible to individuals and services authorized by her in a machine readable format

Boosting novel business model of MyData consents management

During the first period of the project, MyData operator model has been opened for discussion.

The model is cooperation model with many service operators, which can provide interoperative MyData accounts (data management, storage, security, etc.) and integrate to data sources and services.

Creation of MyData operator alliance is under discussion.

“The MyData architecture is based on interoperable and standardized MyData accounts… MyData accounts will generally be provided by organizations that act as MyData operators.”
MyData White Paper
The flow of consents to use the data is separate from the actual flow of data.

**Individual / data subject / account owner:** person who created and is using the account to link new services and authorize data flows with consents. Has relationship with the source, the sink and the operator

**MyData Operator:** Provides MyData Accounts and related services. Account enables digital consent management – Authorization as a Service.

**Data sources and data using services:** Data source provides data about the Individual to the services that use this data (Data Sinks). Same actor can be working as both Data Source and Data Sink.

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Co-creative activities and participatory design

In the first period of the project, many co-creative workshops have been organized for service, business, and participatory design.

New methods have been planned and developed to increase the understanding of MyData principles and MyData based services, and the future possibilities of such services.

MyData Clinic is a new method to take forward the service scenarios and business model development.

As a result, three service scenarios have been chosen to be develop further. The main criteria for going further is active involvement of companies and organizations.
MyData Clinics

Ecosystem creation by identifying most promising companies, municipalities and public health organizations

In MyData Clinics, the project consortium defines scenarios of service concepts. The service concepts are such that they take account the data sharing possibilities between several companies and individuals.

The MyData Architecture definition, value co-creation analysis, consumer involvement and business logics are studied on these future scenarios.
Service, interaction and concept design

Several concepts and prototypes have been developed during the first period of the project:

- Augmented Reality (AR) User Interface for My Health Data (Concept + Demo)
- Guided Interaction with Touch Screen Based Health Data (Concept + Demo)
- Wearable Sensors for Ice Hockey Juniors (Concept); Coaching case - Information sharing & privacy (Concept + demo)
- Dual-sided tablet for coach-patient interaction (Concept + demo)
- Niklas – ”Coaching Young Actives” (Concept)
- Disposable Wristbands for Data Collection (Concept)
- User studies
Service, interaction and concept design - Concept “Niklas”

Integrating MyData services to a mobile application for a teenager with ice-hockey hobby

- Sensor input from sports gear
- Coaching
- Eating habits
- Comparing the data with a sports idol
- Addressing also other sectors in life

Design drivers: Multiple data sources in informative format, easy feedback supportive and motivational aspect
Service, interaction and concept design - Double-sided tablet interaction

For doctor/coach – patient interaction

Mobile device concept with two screens – front and back

Primary display for the coach
  ◦ Input and detailed information presentation

Secondary display for the patient
  ◦ Providing a customized, limited UI view of the coach UI to the client
  ◦ Design drivers: privacy, awareness, trust
Service, interaction and concept design – Feedback for tooth brushing

Here a smart toothbrush to assess the quality of your brushing and gives feedback based on your brushing performance, e.g. which areas of your teeth you are cleaning poorly. The data is presented on a bathroom mirror display with the aim used to help you brush your teeth better.

Design drivers: real time data supporting, from wearables to “medical mirrors”
Helping citizens to comprehend their personal data

From the value of data perspective, work has concentrated on the practices of self-tracking and the exploration of the limits of self-tracking in the health care system. This work has been done by mapping the regulatory environment and formulating the possible futures, which is beneficial also for the research pilot set-up.

Consortium has been active also in opening up new data sets for research purposes and in initiating alternative and citizen-centric routes for studying and promoting health and wellbeing. The datasets allow methodology development on data analysis and visualization, as well as research on the peer support algorithms, decision making aids, and automated communication.

The health data dashboard web tool has been developed. The user interface design and graphics design elements have been studied in several existing health services, and new UI designs were developed to interactive prototypes.
Demonstrating the MyData based services for future predictive wellness and health care

The proof of concept pilot has been planned during the first project period. The aim is - for the first time in Finland - to show how digital footprint data, wellness data and multi-omics data can be collected, processed and fed back to individuals as a new service for life couching.

This novel service can be used to support individuals to make right decision for his/her wellbeing. The planned interactive service will allow the interaction between individual, medical professionals and life-style couching services providing companies. Several Finnish companies will be involved in this proof-of-concept study.

The study will start in September 2015, and active phase will last until end of 2017.
MyData Pilot 1

N = 120 people
Systems wellness health check-up, coaching and monitoring

- Health questionnaire
- Health check-up
- Clinical lab tests

Biobanking
Genome sequence analysis
Metabolomics & biomarkers for inflammation

Gut microbiome
Quantified self sensors (exercise, sleep, pulse)
Other health data (digital footprints)

Daily monitoring (QS sensors) + laboratory data at 4 mo intervals

Researchers
Data mining
Time trends
Correlations

Research database
Personal health account

Clinicians
Participants

Health and wellness advice and coaching

Coaches
Questions?

Don´t hesitate to contact us!

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