Midas

Meaningful Integration of Data, Analytics and Services
Grant Agreement No. 727721

https://www.youtube.com/watch?v=yiVd4wgVA1s

Paul Carlin

This project is funded by the European Union

H2020-SC1-2016-CNECT
SC1-PM-18-2016 - Big Data Supporting Public Health Policies

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MIDAS - Strengths

- Project Funding Review Score: 15/15
- Value: €4.5M
- Duration: 40 months
- Strong consortium
  - Academic Partners
  - Technical Partners
  - Policy Board Partners
- Great opportunities
  - Opportunities for improved policies for health using big data across Europe
  - High impact research
  - High impact output potential
<table>
<thead>
<tr>
<th>Scientific/Technical Team</th>
<th>Policy Board</th>
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<tbody>
<tr>
<td>University of Ulster (Coordinator)</td>
<td>South Eastern Health And Social Care Trust NHS (SET)</td>
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<tr>
<td>Dublin City University (DCU)</td>
<td>Health and Social Care Board (HSCB) Business Services Organisation (BSO) NI</td>
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<tr>
<td>City of Oulu University</td>
<td>Health Service Executive (HSE) Ireland</td>
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<tr>
<td>VTT: Technical Research Centre of Finland</td>
<td>Finland’s National Institute for Health and Welfare (THL)</td>
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<tr>
<td>VICOMTECH (Spain)</td>
<td>BIOEF Public Foundation of the Health Department of the Basque Government</td>
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<tr>
<td>KU Leuven, Department of Electrical Engineering-ESAT (Belgium)</td>
<td>Department of Health Public Health England (DH PHE)</td>
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<tr>
<td>Industry: IBM Ireland</td>
<td>Arizona State University/ Mayo Clinic</td>
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<td>SME: Analytics Engine (UK)</td>
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<td>SME: Quintelligence (Slovenia)</td>
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Geographically Diverse Heterogeneous Data-Sets

Citizen Focused Effective Informed Policy Development Within Regions, Member States and Across Member States – Health Policy as well as Integrated Policy Development e.g. Social Housing

Midas Secure Interoperable Data Architecture Platform

Member State Policy Makers & Citizens

Member State Policy Makers & Citizens

midas
Meaningful Integration of Data, Analytics and Services
MIDAS Platform Stakeholders

Solution Drivers
VTT, Vicomtech, SMEs, Universities, IBM

Data Providers
HSC, BSO, HSE, ES (Basque), FI, BE, PHE

Citizens
Social Media & ‘Mydata’ for Crowd Connection & Value Co-creation

Policy Makers
Ministries and Departments of Health, PHE, THL

MIDAS Platform

Visualisation
Analytics
Data Connection Layer

Health Agencies
Insurance
Acute, Primary and Community Care

Insurance
1. Access Heterogeneous Data Sources for Policies Including Governance & Consent
2. Data Connector Layer
3. Data Analytics Layer
4. Visualization Tool for Policy makers

- Increasing Aging Population
- Less Resources & Finances in Health Care
- Fractured Heterogeneous Data for Policies

• Improved Data Access
• Enhanced Policy Creation & Effectiveness
• Empowered Patient

Stakeholders: Policy Board Members - Testing, Evaluation & User Feedback
Leading Solution Drivers

Current Unstable Infrastructure

MIDAS Platform Supported Stable Infrastructure
Stakeholders: Policy Board Members - Testing, Evaluation & User Feedback

Leading Solution Drivers

1. Access Heterogeneous Data Sources for Policies Including Governance & Consent
2. Data Connector Layer
3. Data Analytics Layer
4. Visualization Tool for Policy makers

Emerging data driven analytics
= Meaningful, Actionable Information for Prevention & Risk Stratification
= Co-created Benefit to Citizens and Stakeholders

Data Sources: OpenData (EU), MyData (FI) Open Data Providers
Data Consent & Governance: Ministries of Health in partner regions

MIDAS Platform For Policy Makers

Policy Review, Forecasting, Simulation, Effectiveness
Technical Consortium

[Machine Learning], Forecasting, Simulation
Technical Consortium

Connect Internal & External Existing data Sources
Technical Consortium
Improved Policy Process

Policy Review

Build Evidence for Policy Review

Assure Governance

Collect & Use Data with Key Indicators

Explore & Simulate Models

Evaluation

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Analysing & evaluations needs

Continuous feedback and guidance

Health care provider invites customer for a visit when risk levels rise → Early intervention
Key stakeholders have been identified from each pilot and with them the most relevant scenarios and user stories for the pilot topic:

- **Basque Country (BIOEF)**: Child overweight and obesity prevention prioritised policy
- **Finland (THL)**: Preventive mental health and substance abuse of young people
- **Northern Ireland (BSO)**: Children in Care
- **Republic of Ireland (HSE)**: “Healthy Ireland” framework and related policies
Co-creative Workshop on User Personas

1. Decision makers and public health authorities: who mainly use predefined dashboards. They need to be aware of the current and past situation of the health domain and be able to test the outcomes of possible decision scenarios

2. Information Officers: the supporting personnel of health care policymakers, who create the dashboards for the first group according to the current need

3. Data Scientist: the health care research oriented users, who can even develop the analytics further, define new forecasting models and analytics scenarios

4. System management: updates health system metadata, maintains interfaces to virtual data storage, grants access rights to users

In addition we added 2 new personas:

5. Clinical Policy Directorate
6. CEO of a Charity
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Reasoning Loop Logic

1. Overview of data
   - Data model, basic statistics and visualizations

2. Select data objects
   - Measurements, background properties, indexes

3. Select System suggested analysis and visualization
   - Suggestions based on data type and number of selected objects, number of object instances and time interval

4. Interpret results
   - Interactive visualizations, brushing, details-on-demand

5. Make subset selection

Start new analysis task
Try another subset
Try other analysis
Try subset
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Capture the "voice of the public" through open social data. To provide a clear picture to policy makers, so they can make better informed decisions.

By building a tool that

- Allows policy makers to create a custom campaign
- That drives a twitter chat bot to engage with the public
- Analyze and aggregate the data so that it can be read easily
Chatbots and Social Media

Our application Uses the Twitter API

To post a question to the public via a tweet

Depression is the second leading cause of disability worldwide. Sharing data may provide insights into effective treatment. Would you be willing to share yours?

#MidasDepression

5:50 PM - 12 Nov 2017

We are free to Tweet them back and ask them to start a direct message session with a chatbot

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WP 2 - Ethics Governance & Consent

• Personal Identifiable Data (PID) or Personal Identifiable Information (PII) is data from which individuals may be identified

• Issues around using PID/PII
  – Identifiable data can be used without an individual’s consent for various purposes (Great Britain, 1998)

  – The GDPR states that anonymised data is not subject to data protection considerations (The European Parliament and the Council of Europe, 2016)

  – However, linking disparate datasets represents a real risk to anonymity (Cohen et al., 2014)
    • Jigsaw Identification (Wellcome Trust, 2016)

  – Public perceptions of data usage?
WP 2 Continued

- PHE will conduct primary research to explore public perceptions concerning the use of PID
- How do public perceptions of data sharing vary depending on:
  - type/ nature of data
  - the context of sharing and
  - the recipient organisation?
MIDAS - Achievements to Date

• Strong Policy Board Interaction
  – Cross Site Visits
  – Sharing of Current Practice
  – Growing Policy Board

• Impact journal and conference papers
• Workshops
• Pilot case videos

• Show Case & Dissemination Events
  – Brussels – November 2016
  – BIOEF - Bilbao – February 2017
  – Helsinki – June 2017

  – 16 November 2017 - MIDAS Platform Co-Design Workshop, **Focus On Big Data in Health**, Belfast

  – 17 November 2017 - **MIDAS Consent, Ethics & GDPR Workshop**, Ulster University
Thanks

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https://www.youtube.com/watch?v=24E5LWp-Pz8