midas

Meaningful Integration of Data, Analytics and Services

Grant Agreement No. 727721

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Executive Board Document Sign Off

Role	Partner	Signature	Date
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WP7 Lead	Ulster	Jonathan Wallace	25/10/2018
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Scientific-Technical Manager	Analytics Eng	Scott Fischaber	29/10/2018

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Abstract

This deliverable as per the Grant Agreement is a Version 3 update on the design and production of MIDAS promotional materials including the design of a generic MIDAS poster / pop-up stand and brochure / folder, the first MIDAS Digital Story and the production and circulation of two e-newsletters.

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The MIDAS project is funded under the EC Horizon 2020 SC1- PMF-18 Big Data Supporting Public Health Policies

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Document History

Version	Issue Date	Stage	Content and Changes
0.1	18/10/2018	Draft for Internal Review	Suggestions and modifications made.
0.2	25/10/2018	Sent to EB for Review	

Statement of Originality:

This deliverable contains original unpublished work except where clearly indicated otherwise. Acknowledgement of previously published material and of the work of others has been made through appropriate citation, quotation or both.

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Executive Summary

Work Package:	WP 7
Work Package leader:	Jonathan Wallace
Task:	T7.2 – Communication and Awareness Activities
Task leader:	Ulster - University of Ulster

This deliverable as per the Grant Agreement is a Version 3 update on the design and production of MIDAS promotional materials including the design of a generic MIDAS poster / pop-up stand and brochure / folder, MIDAS Digital Stories and the production and circulation of e-newsletters. For this update, the designs of marketing materials have been updated, including a new generic MIDAS gate fold flyer, an updated folder design and an improved design for the pop-up stand to incorporate partner logo changes. In total three e-newsletters have been circulated. A third Youtube video has been uploaded in partnership with InterTradeIreland showcasing MIDAS as an exemplar H2020 project for collaboration across the island of Ireland. Significant enhancements have also been made to the MIDAS website based on reviewer feedback, including updating partner information and publication links, and a redesigned navigation structure to improve the user experience.

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1 Physical Media

1.1 MIDAS Folder

The purpose of any brochure or flyer is to promote and disseminate the project. In order to provide as much flexibility to partners as to what specific content they might want to promote relating to MIDAS, rather than having a brochure to look to try to fit all audiences, which would be expensive to produce and would need to have at least three versions produced during the project as we progress through the three iterations of the MIDAS platform development and testing, we have agreed to produce a MIDAS folder within which partners can place info sheets / inserts on whichever aspects they are looking to promote e.g. the technical platform, data analytics, data visualisation, or ethics and governance of big data, etc.

The Brochure template has been updated to reflect logo changes from some of the partner organisations

Figure 1: Artwork of MIDAS folder template for professional printing and self-assembly.

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As there is a limited consumable budget available for the coordinating partner as is the case with the promotional poster / pop-up stand below we are sharing the high resolution artwork with all partners and as agreed they will be able to produce the folders to meet their needs from their own budgets.

1.2 MIDAS Flyers

Ulster have designed a gatefold flyer for MIDAS, providing an overview of MIDAS, its objectives, WPs and Phases (see Fig. 2). This flyer is intended to be printed in colour and folded for use as disseminations flyers at events.

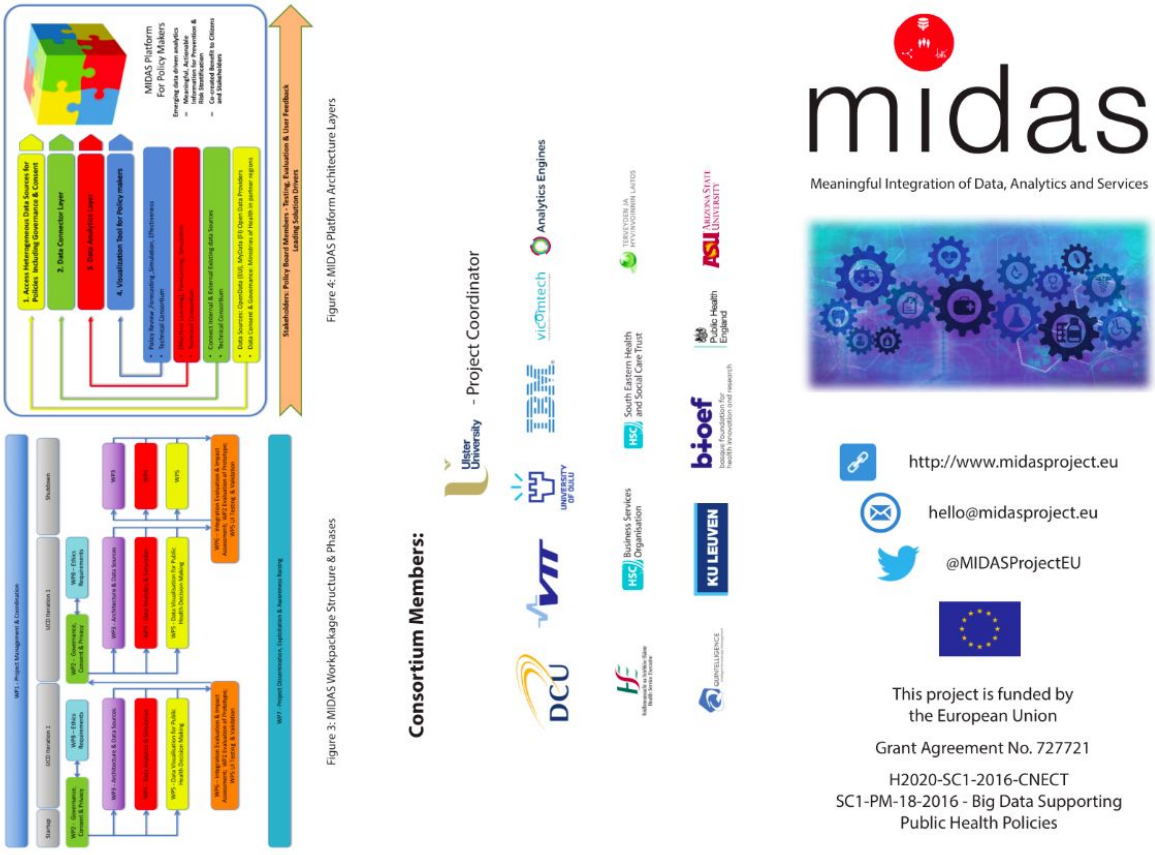

Figure 2: Generic Gatefold flyer for MIDAS Project

In addition to the generic MIDAS gatefold flyer, bespoke flyers will be created for specific events as required. As an example, a separate flyer was produced for the two Belfast workshops in November 2017 on Co-Design and Consent, Ethics and GDPR (see Fig 3).

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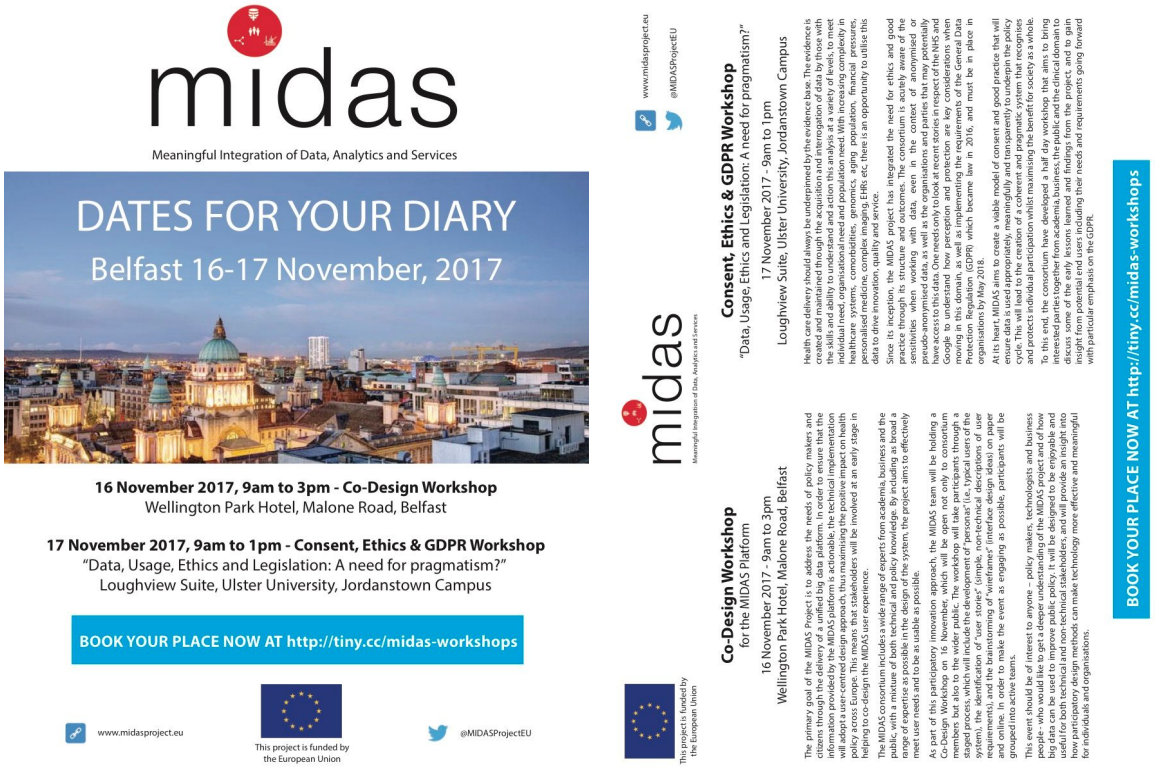

Figure 3: A5 flyer for Belfast Co-Design and Consent, Ethics and GDPR workshops.

1.3 Pop-up Stand

In order to maximise professional visibility of the MIDAS project and events including workshops, conferences, public engagements we created the artwork for and have produced two pop-up stands.

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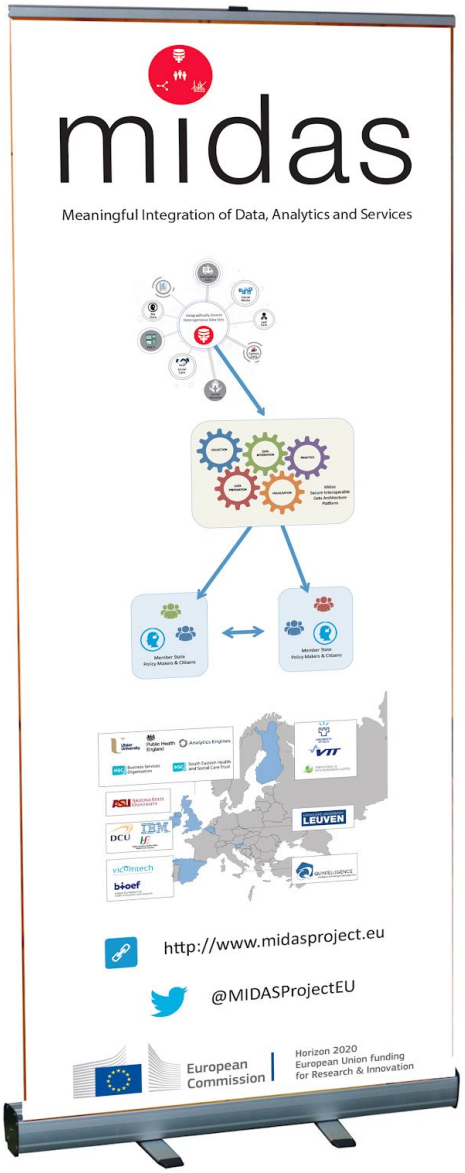

Figure 4: MIDAS Pop-Up Stand

As with the poster / folder above as there is a limited consumable budget available for the coordinating partner we are sharing the high resolution artwork with all partners and as agreed they will be able to produce the pop-up stand to meet their promotional / dissemination needs from their own budgets. Colleagues in Finland have also produced pop-up stands from the provided artwork.

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Figure 5: MIDAS Pop-up stand as produced from high-resolution artwork by colleagues in Finland for their dissemination.

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Figure 6: MIDAS Pop-up stand in background of project representatives' group photograph at MIDAS General Assembly in Belfast in November 2017, as produced from high-resolution artwork by Ulster for their dissemination.

1.4 Posters

We have created a common poster publication template for the project and now have had four paper poster publications at conferences using this template in the interim period. We have included three exemplars below:

- EMBEC '27 - entitled 'Meaningful Integration of Data Analytics and Services – Finnish Pilot' (Fig. 7)
- TMED 2017 - entitled 'The MIDAS Platform: Facilitating the Utilisation of Healthcare Big Data in Northern Ireland and Beyond. (Fig. 8)
- BHCI 2018 - entitled 'Meaningful Integration of Data Analytics and Services in MIDAS Project: Engaging Users in the Co-Design of a Health Analytics Platform' (Fig. 9)

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Meaningful Integration of Data, Analytics and Services – Finnish Pilot

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Introduction

The MIDAS EU project will bring **policy makers, data owners and scientists together** to develop a **decision support system** (DSS) for information-based **health policy making** at regional and national level. Currently, the main limitations for data driven decision making in healthcare are in **legislation and heterogeneous data management** [1]. It is a governance and consent issue combined with heterogeneous data.

***For example**, using healthcare records together with biobank registers and hospital management data requires significant amount of paperwork and sometimes the planned study can even turn out to be prohibitively difficult to carry out due to the involved bureaucracy.*

MIDAS develops a proof of concept (PoC) of a DSS for policy making to discover the opportunities, which a broader range of data integration in health domain would enable. The concept is visualized in Figure 1.

Because policies should affect always to populations, **MIDAS project concentrates on larger cohorts instead of single subjects.**

Implementation

Initial MIDAS data sources include:

- **Citizen data** like MyData [2],
- **Social media** like Twitter,
- **Open data** [3, 4] and
- **Healthcare data**, which is provided in Finland from the University of Oulu (UO), City of Oulu (CO) and the Finnish National Institute of Health and Welfare (THL)

Main components of MIDAS system:

- Analytics Engines XPD; state of the art **data virtualization** [5],
- Apache Spark framework with **state-of-the-art data analytics**
  - e.g. from Python, R and Scala
- Semantics server software [7] for the **model-based forecasts**.
- **Social media analytics** and **other free text analytics**
- **User Interface** (UI) with VTT OpenVA framework [8].

Key concepts:

- Data stays on **original source systems** and integration is done only **on request** when needed.
- **System dynamic forecasting models** are built with specialist knowledge from domain experts and data analytics
- The evaluation of **impact models** is supported by social media and news analytics.
- **Dedicated smart UI system**
  - Fully customizable shareable dashboards.
  - Three main types of users will be catered for:
    - high-level policy makers (predefined dashboards);
    - supporting personnel (creators of the dashboards); and
    - research oriented users (developers of new analytics).

Results & Discussion

The first Finnish pilot topics from the initial interviews in Oulu:

- Prevention of mental health problems;
- Wellbeing of young people and;
- Wellbeing of elderly people.

Main topic for Finnish pilot after interviews with extended group of policy makers:

- **The mental health and wellbeing of young people.**

The interviews with owners of controlled data have shown that:

- Current **legislation and data sensitivity** requires **anonymized secured datasets,** and
- Only preprocessed secured datasets can be connected to MIDAS data virtualization system.

These create challenges for the data integration and analytics.

The project started in November 2016 and lasts 40 months. The MIDAS system will be implemented in parallel for: Finland, Northern Ireland, Republic of Ireland and Basque Country.

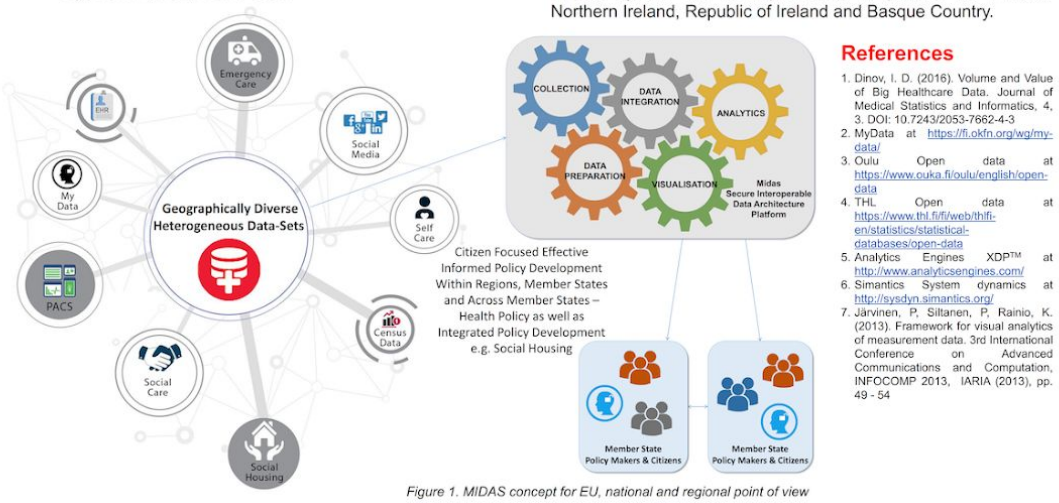

Figure 1. MIDAS concept for EU, national and regional point of view

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2. MyData at https://fi.okfn.org/wg/my-data/
3. Oulu Open data at https://www.ouka.fi/oulu/english/open-data
4. THL Open data at https://www.thl.fi/fi/web/thlfi-en/statistics/statistical-databases/open-data
5. Analytics Engines XDP™ at http://www.analyticsengines.com/
6. Simantics System dynamics at http://sysdyn.simantics.org/
7. Järvinen, P, Siltanen, P, Rainio, K. (2013). Framework for visual analytics of measurement data. 3rd International Conference on Advanced Communications and Computation, INFOCOMP 2013, IARIA (2013), pp. 49 - 54

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Figure 7: EMBEC 27 Poster

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The MIDAS Platform: Facilitating the Utilisation of Healthcare Big Data in Northern Ireland and Beyond

Debbie Rankin[1*], Michaela Black[1], Jonathan Wallace[2], Maurice Mulvenna[2], Raymond Bond[2], Brian Cleland[2] for the MIDAS Consortium

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2. School of Computing, Ulster University, Jordanstown, BT37 0QB

Introduction

We live in a **data rich, information driven society** with numerous **data sources** available that have the potential to provide **new insights** into areas such as:

- **disease prevention**
- **policy decisions**
- **personalised medicine**.

Data sources are not optimally utilised, existing in heterogeneous silos with no current solution to connect or integrate them with valuable open and social data[1]; a **solution** that could enable **evidence-based health policy decision making**, leading to **significant improvements in health care and quality of life**[2] (Figure 1).

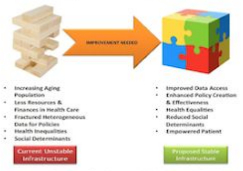

Figure 1. Current Problems within Health Policies

Figure 2. MIDAS Stakeholders

Materials and Methods

The MIDAS project is developing a **big data platform** that facilitates the **utilisation of healthcare data beyond existing isolated systems** making that data amenable to enrichment with **open data, social data**, and **citizen data**, e.g. **MyData**[3].

A unique **Policy Board** comprising **health policy makers** and **data guardians** has been formed with members acting as stakeholders of MIDAS. The Policy Board:

- participate in **user-centred design**
- ensure **patient and public involvement**
- advise on **implementation**
- participate in **evaluation**

The MIDAS platform will enable the **integration of heterogeneous data sources**, provide **privacy-preserving analytics**, **forecasting** tools and bespoke **visualisations** of **actionable information** (Figure 3). **Policy makers** will have the capability to perform **data-driven evaluations** of the **efficiency and effectiveness of proposed policies** in terms of expenditure, delivery, wellbeing, and health and socio-economic inequalities, thus improving current **policy risk stratification**.

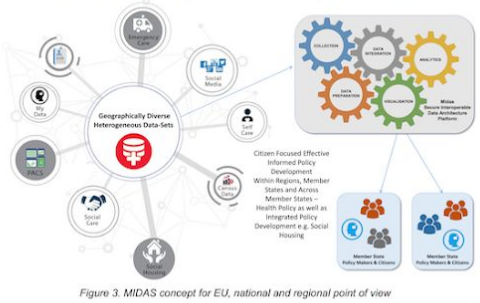

Figure 3. MIDAS concept for EU, national and regional point of view

Figure 4. Geographic Distribution of MIDAS Consortium Members

Results

By bringing together a unique combination of data scientists and key stakeholders via the Policy Board, MIDAS is producing a **platform that empowers policy makers** by providing **actionable knowledge** to **support decision making at regional and national levels** (Figure 2).

The Policy Board's involvement ensures that the platform:

- Meets real user requirements
- Is usable and effective
- Respects governance, ethical, consent and privacy aspects.

As a result of **Policy Board engagement** several **case studies** have been identified that Big Data technologies could answer and the **MIDAS platform architecture** has been defined. Datasets have been accrued for feasibility testing of the platform.

Case Studies

MIDAS **enhancement** of the **policy** process (Figure 5) will be **piloted** in four regions: Northern Ireland, Republic of Ireland, Basque Country and Finland, via **policy case studies**:

- **Diabetes**
- **Youth mental health**
- **Children in care**
- **Child obesity**

Figure 5. MIDAS Enhancing Policy Process

MIDAS Platform Architecture

- **Data Virtualisation:** Analytics Engines XDP[4] (Figure 6)
- **Data Analytics:** Apache Spark framework, R, Python, Scala etc.
- **Forecasting:** Simantics System Dynamics[5]
- **Social Media Analytics**
- **Free Text Analytics**
- **User Interface & Visualisations:** VTT OpenVA framework[6]

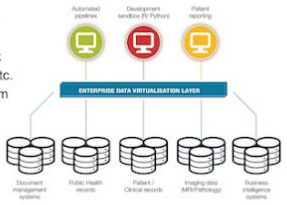

Figure 6. MIDAS Virtualisation Layer

Conclusions

There is an urgent need to develop applications and tools to consume and map the variety of data from the public, patients and healthcare systems to make it more meaningful, insightful and useful for health policy makers[7]. MIDAS will exploit the enormous economic potential of this data and big data analytics to the benefit of the economy and society, setting in motion a new network of knowledge pertinent to supporting enhanced public health decision-making.

Challenges & Achievements in Year 1

Challenges:

- **Geographically diverse** consortium (Figure 4)
- **Interdisciplinary** consortium: technical, academic, clinical & policy
- Differing **perspectives** and **perceptions**
- Significant variations in **technical baseline** & **user requirements**

Achievements:

- Enhanced Policy Board **engagement** and **learning**
- Test platform deployed
- Test datasets accrued: **diabetes** & **ageing population** data
- Strong **technical progress** towards first prototype of MIDAS platform
- Investigation of **MyData**[3] **potential** in healthcare policy
- Continuous **communication** and **knowledge sharing** improvement
- Organisation of **workshops** on Consent, Ethics & GDPR, Platform Co-Design

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5. Simantics Team. *Simantics System Dynamics*. http://sysdyn.simantics.org/ (accessed 15 August 2017)
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The MIDAS project started in November 2016 and lasts for 40 months.

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Figure 8: TMED 2017 Poster

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Meaningful Integration of Data, Analytics and Services

Meaningful Integration of Data Analytics and Services in MIDAS Project: Engaging Users in the Co-Design of a Health Analytics Platform

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[2] School of Computing and Intelligent Systems, Ulster University, Magee, BT48 7JL
[3] University of Oulu, Oulu, Finland
[4] Health Service Executive, Dublin, Ireland
[5] Vicomtech, San Sebastian Basque Country, Spain
[6] Business Services Organisation, Belfast, Northern Ireland

Introduction

The **MIDAS Project** (Meaningful Integration of Data Analytics and Services) is a 40-month Horizon 2020-funded project to address the needs of policy-makers and citizens through the delivery of a **unified big data platform**. In order to ensure that the information provided by the MIDAS platform is actionable, the technical implementation has adopted a **user-centred design approach** (see Figure 1). Based on this participatory ethos, the MIDAS Project held a Co-Design Workshop on 16 November 2017, which was open to consortium members as well as the wider public.

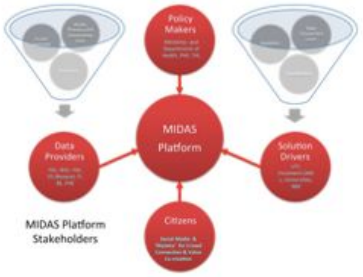

Figure 1. MIDAS Stakeholders

Methodology

The workshop was attended by approximately 80 participants, including a mixture of consortium members and external stakeholders. The professional backgrounds of attendees were diverse and included policy-makers, civil servants, academic experts, and industry representatives.

Figure 2. Example User Persona

Key elements of the workshop:

- **User Personas** - Each table evaluated five pre-existing personas and also came up with a novel user persona (Figure 2)
- **User Stories** - Each group developed user stories for the five pre-existing personas plus the new persona they had created.
- **Wireframing** (Figure 4) - Users selected a user story from the previous activity, and then collaborated on a paper-based wireframe. Facilitators took the paper wireframes and converted them into their digital equivalents (Figures 3 & 4).

Figure 3. Example paper wireframe from the workshop

Figure 4. Example digitised wireframe from the workshop

Results

Results generated by the workshop:

- Detailed feedback on 5 key user personas
- 8 new user personas
- 80 user stories
- 16 paper-based wireframes
- 16 digital wireframes

Attendees were also asked to complete a questionnaire on their experience. Responses were generally favourable, with most participants stating that they found the process both educational and enjoyable.

Discussion

The participant survey suggested that the workshop should be repeated in other regions. Further workshop sessions to evaluate ongoing design decisions would strengthen the user-centredness of the final system. The agenda could be improved, particularly with regard to the later wireframing and presentation sessions. More time could be allocated to engaging technical stakeholders in a structured analysis of the results.

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Figure 9: BHCI 2018

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2 Digital Media

2.1 e-Newsletters

As reported in D7.8 a mailchimp account has been set-up and a Wordpress plugin installed to allow users to subscribe to our newsletter from the MIDAS website.

Figure 10: Screenshot of MIDAS home page with link to newsletter

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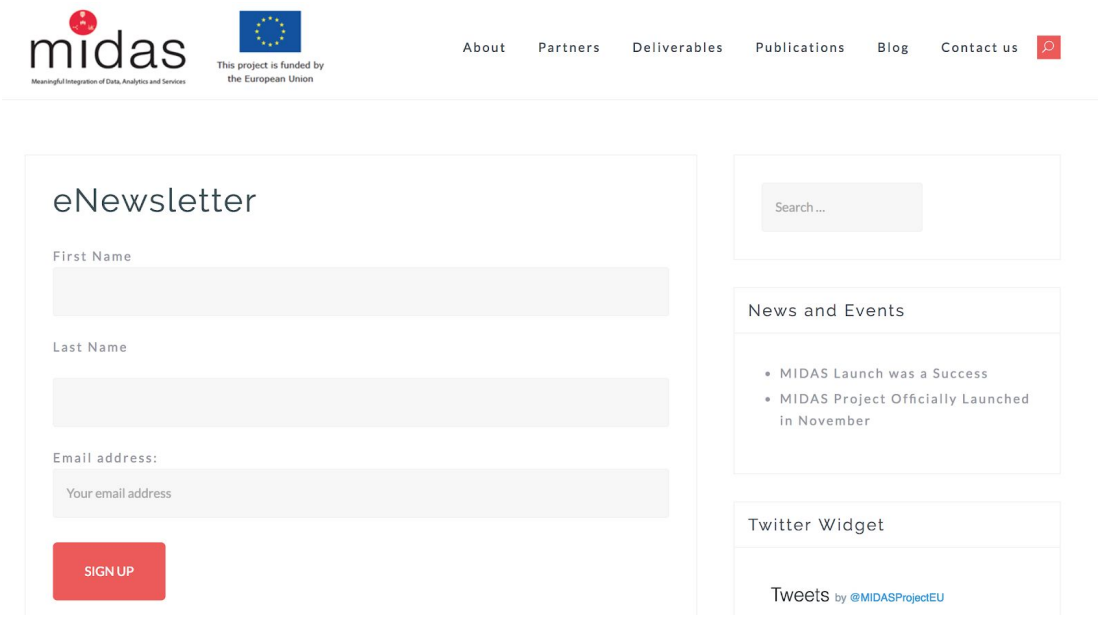

Figure 11: Screenshot of the subscription form to the MIDAS newsletter http://www.midasproject.eu/enewsletter/

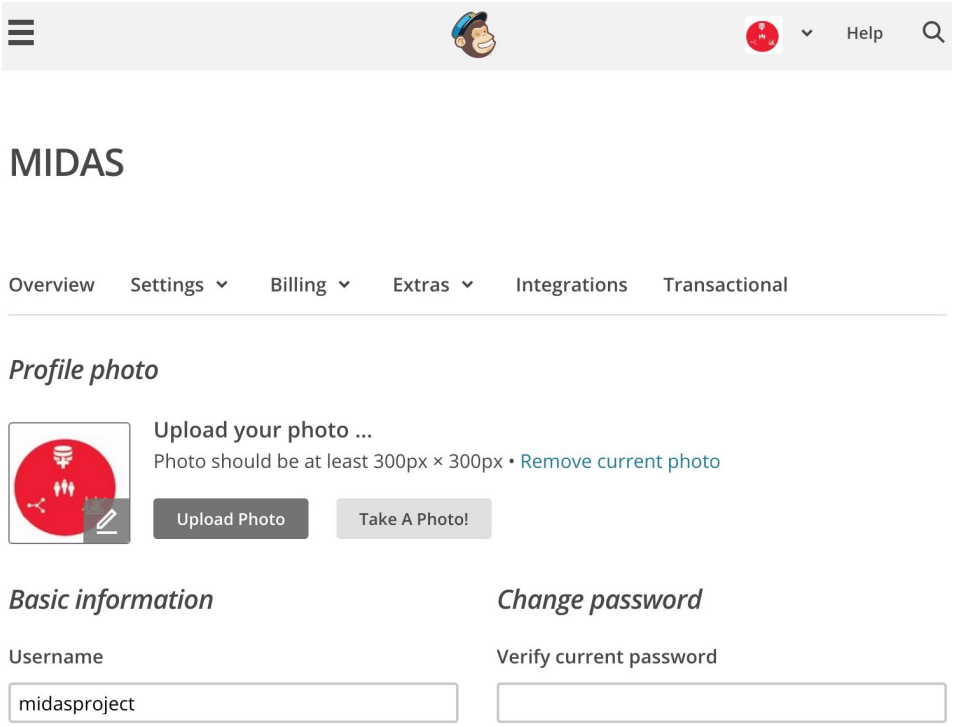

Figure 12: Screenshot of MailChimp account

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The process, roles, responsibilities/actions and timings for the MIDAS Newsletter are described below:

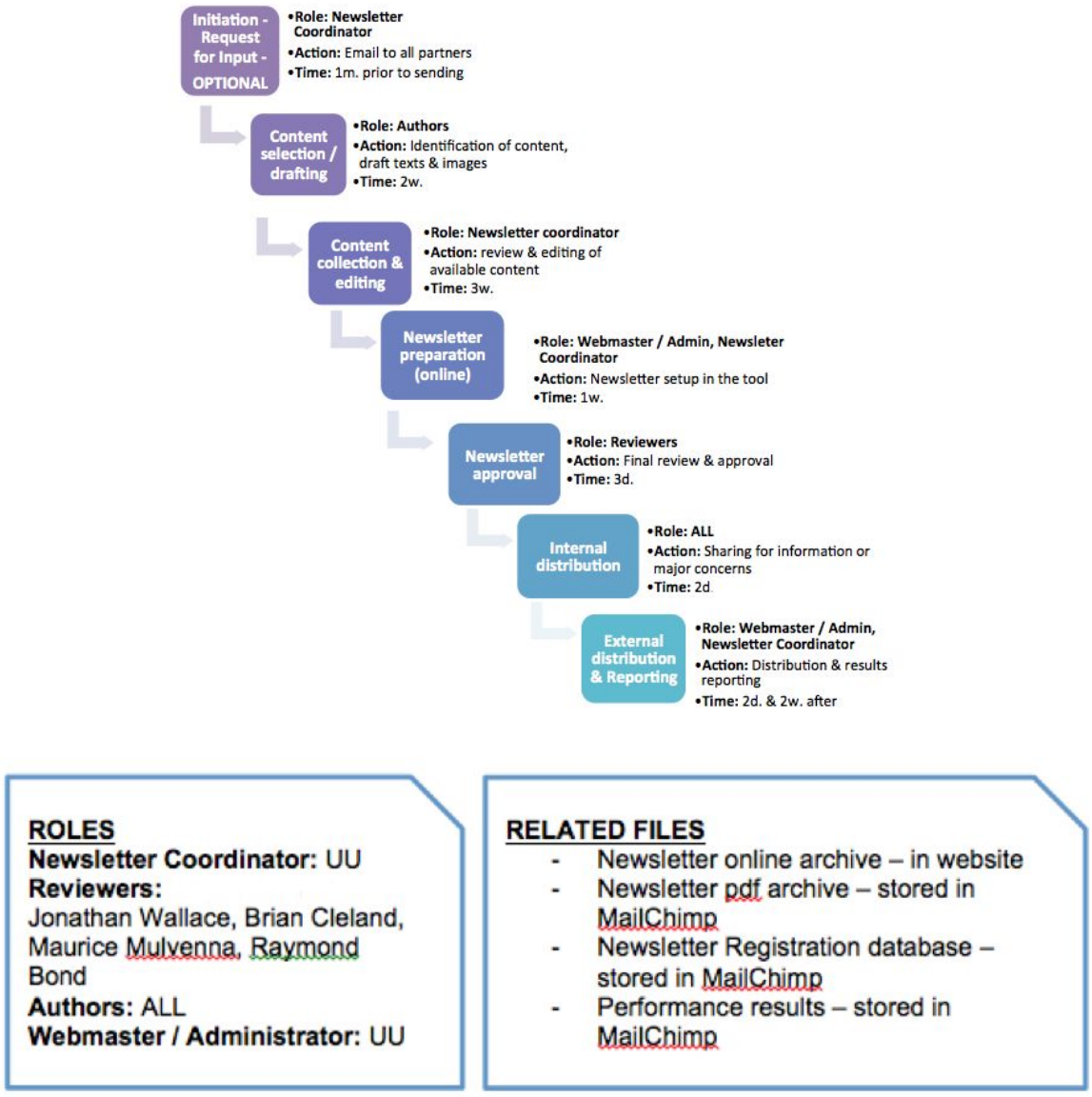

Figure 13: E-Newsletter Process

To date as per the schedule we have released three Newsletters to those subscribed to the MIDAS Newsletter, which currently stands at 86 subscribers. The newsletters contain the aggregated Blog posts from the website as well as any major news events.

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2.2 Website

The MIDAS website has been updated following feedback from the 2018 reviewers' report. A number of changes were implemented, including: improvements to the overall structure and navigation of the website; enhanced partner information and links, and improved linkage to online MIDAS publications.

The MIDAS website has been holding steady in terms of traffic, and has recorded almost 4.8k individual visitors as per the Google Analytics analysis shown below:

Figure 14: MIDAS Website Google Analytics Analysis Months 1 to 24

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2.3 Social Media

We have chosen Twitter as the preferred Social Media Platform for MIDAS, using the handle @MIDASProjectEU and hashtags such as #MIDAS, #BigData, #PublicHealth and #GDPR. The figure below shows the Twitter impressions for the most recent three months of the project.

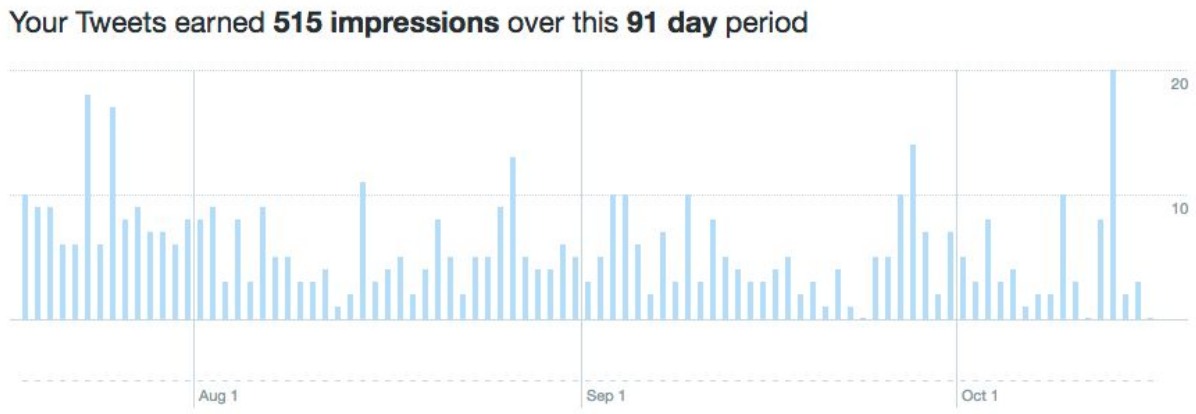

Figure 15: MIDAS Twitter Analytics from 18 July 2018 to 16 Oct 2018

2.4 YouTube Channel

We have also created a MIDAS YouTube Channel called MIDAS Project for dissemination of any video material that we create. Thus far we have uploaded the video of the public workshop held in Helsinki in June 2017[1], a promotional video for Horizon 2020 produced by InterTradeIreland[2], which focuses exclusively on the MIDAS Project, and as the first of the "digital stories" to be released from MIDAS – this one by Susan Campbell from BSO in relation to Anonymising Childrens' Data for MIDAS[3]. The remaining MIDAS policy regions have agreed to produce their own digital stories before the end of January 2019. All uploaded videos are available on the Midas website[4].

In total, the uploaded videos have had 499 views on YouTube.

[1] https://www.youtube.com/watch?v=1Ke7h0ORkc8
[2] https://www.youtube.com/watch?v=24E5LWp-Pz8
[3] https://www.youtube.com/watch?v=yiVd4wgVA1s
[4] http://www.midasproject.eu/videos/

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3 Conclusion

This deliverable describes how various information materials have been developed within the MIDAS brand platform. Specifically, we have outlined physical media that have been created - such as brochures and flyers, pop-up stand and posters - as well as digital materials including the MIDAS website, e-newsletters, Twitter content and YouTube videos. These materials have all been developed consistently with the MIDAS logo and branding, in order to effectively raise awareness of the project and assist in dissemination activities across the consortium partner regions.