



## Deliverable 6.1

### Website Portal

## Big Data for Medical Analytics

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## Management Summary

This document describes the building process of a website portal for BigMedilytics project, which is the first deliverable of the Work package 6: Dissemination, Communication & Standardisation, led by INCLIVA.

This report has been structured in six parts:

- Introduction and overview: this section describes the background, the justifications and the objectives of the website.
- Building process: this section exposes the target covered and the phases carried out to build the website. These phases are: definition of a website structure and creation of the initial contents; look and feel, and development.
- Technology used to build the website.
- The look and feel defined to confer visual identity.
- The initial structure and contents to explain the main goals of the project.
- Finally, it includes a glossary of terms used in this document.

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# 1. Introduction and overview

## 1.1. Purpose of the document

The purpose of this document is to describe the building process of the BigMedilotics website that will be launched on June 2018. This deliverable has been developed by INCLIVA as lead beneficiary of the Work package 6: Dissemination, Communication & Standardisation.

## 1.2. Background and justification

Digital technologies are making science more collaborative and open to citizens. In this framework, three main policy goals for EU Research and Innovation have been set: open innovation, open science, open to the world<sup>1</sup>.

This new paradigm establishes that science needs to be accessible to scientists but also to citizens engaging them. Understandable, effective and transparent communication to citizens becomes a priority in order to explain, on one hand, how the results of researching will improve their lives and, on the other hand, in an exercise of responsibility, how public resources are invested.

Thus, nowadays a website is an essential tool to communicate the progress and results of a project to all its audience.

## 1.3. Objective

The BigMedilotics project takes the dissemination and communication task as the second highest priority after the creation/exploitation of the planned project results. For this reason, the objective of WP6 is to ensure that the BigMedilotics results will have a maximum impact and that the consortium reaches its ultimate objective through communication.

In this sense, the website is the main channel to reach general and scientific public, in order to publicise the purpose of the project, its impact and its results in an understandable and appealing way. Thus, the website has been designed to incorporate different visual elements such as graphics to help explain the project.

## 1.4. Related documents

- D6.2 Communication plan and tools (to be released month 8)
- D6.3 Dissemination procedures (to be released month 8)

<sup>1</sup> <https://ec.europa.eu/digital-single-market/en/news/open-innovation-open-science-open-world-vision-europe>

## 2. Building process

### 2.1. Target

The website is focused on general public and media, as well as different specialized target groups such as:

- Healthcare authorities
- Policy makers
- Patient organisations
- Researchers
- EU HealthTech industry
- EU ICT / big data technology industry
- Clinical scientists and professionals
- Standards development organizations

### 2.2. Phases

The building process has been carried out in four phases:

- **Definition** of a website structure.
- **Creation of the initial contents:** during this phase, information and logotypes have been requested to all the partners in order to elaborate the consortium subsection.
- **Look and feel:** this phase started with the definition of the identity of the website, establishing a chromatic range, a project image, the design of the sections and subsections and the identity of the pilots.
- **Development:** in this fourth phase, the development process has been carried out, graphic pieces have been designed and banners for the sections have been chosen. Finally, contents have been uploaded.

## 3. Technology

### 3.1. Content Management System (CMS)

This section describes the technology that has been used for the construction of the website. The website is built on WordPress, a Content Management System (CMS). WordPress is an open source software that allows an easy maintenance. It receives continuous updates that guarantee the correct running of the website.

This CMS also enables the implementation of a wide range of plugins that add new functions. For example, a plugin for Search Engine Optimization (SEO) has been installed to help users find the website on search engines.

The website complies with a responsive design that automatically resize it and adapt it to the different devices such as computers, tablets or mobile phones.

Moreover, SSL (Secure Socket Layer) and HTTPS (Secure Hypertext Transport Protocol) certificates have been added to ensure the communication between user's browser and server is protected at all times.

### 3.2. Domain

The domain bought for the project website is *bigmedilytics.eu*. The domain contains the *.eu* extension to help identify easily that the website consists of a European project.

### 3.3. Google Analytics

The website has been linked to Google Analytics to understand users' behaviours on the website in order to improve their experience.

## 4. Look & feel

### 4.1. Chromatic range

The website uses a range of blue and green colours that are traditionally associated to the healthcare sector. Three of these colours (in the centre of the image bellow) are used to define the three big themes of the pilots. Finally, a complementary colour has been chosen (Pantone 2010C) for the highlighted information (figure 1).

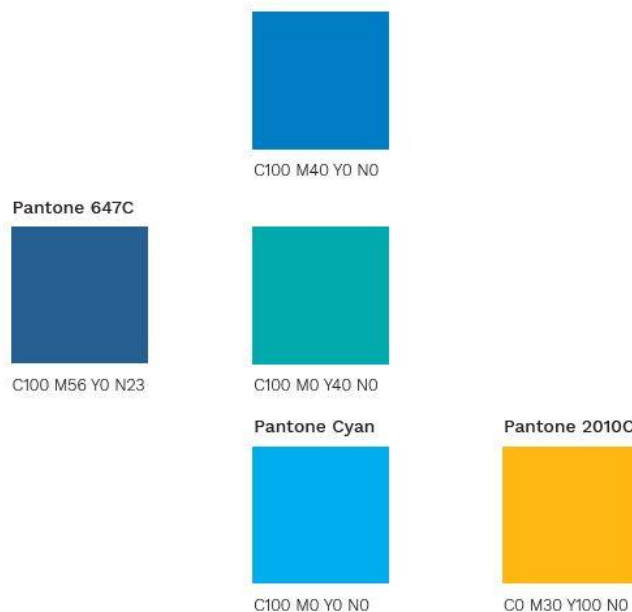


Figure 1: Chromatic range

### 4.2. Typography

The typography used is Work Sans, an open font optimized for screen resolutions. Figure 2 shows the family font.

Work Sans Thin  
Work Sans Extralight  
Work Sans Light  
Work Sans Regular  
Work Sans Medium  
**Work Sans Semibold**  
**Work Sans Bold**  
**Work Sans Extrabold**

Figure 2: Typography



### 4.3. Project image

A project image has been developed in order to transmit the main purpose of the project in an understandable way. It is located on the top of the website home and it represents the convergence of data from different sources to improve healthcare in Europe. It also corresponds with the colours palette defined for the website and the project itself (figure 3).



Figure 3: Project image

### 4.4. Pilots and themes icons

The twelve pilots are the heart of the project. For this reason, it is important to confer them a personalized image. Thus, different icons have been chosen for each pilot and for the three different big themes to help users identify them easily (figure 4).

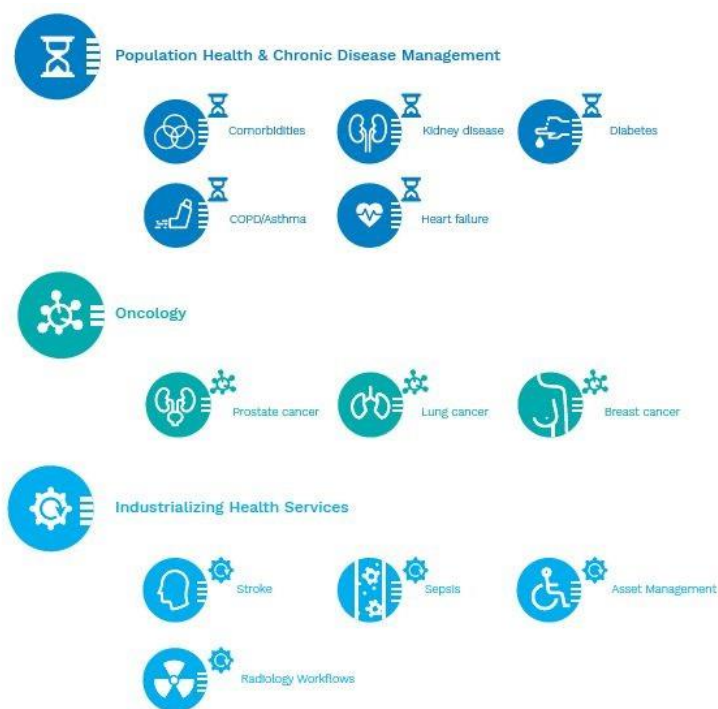


Figure 4: Pilots and themes icons

## 5. Initial structure and contents

### 5.1. Initial web structure

This section describes the initial website structure with the main sections and subsections that could be expanded, depending on the needs of the project during its lifetime.

#### A. HOME

#### B. PROJECT

- a. Background
- b. Project overview
- c. Objectives
- d. Impact
- e. Consortium
- f. Supporters

#### C. PILOTS

- a. Pilots overview
- b. Population Health & Chronic Disease Management
  - i. Pilot 1. Comorbidities
  - ii. Pilot 2. Kidney disease
  - ii. Pilot 3. Diabetes
  - iv. Pilot 4. COPD / Asthma
  - v. Pilot 5. Heart failure
- c. Oncology
  - i. Pilot 6. Prostate cancer
  - ii. Pilot 7. Lung cancer
  - iii. Pilot 8. Breast cancer
- d. Industrialization of Healthcare Services
  - i. Pilot 9. Stroke management
  - ii. Pilot 10. Sepsis management
  - iii. Pilot 11. Asset management
  - iv. Pilot 12. Radiology workflows

#### D. KNOWLEDGE & RESULTS

- a. Publications
- b. Deliverables
- c. Related projects
- d. Related links

#### E. NEWS & EVENTS

#### F. ETHICS & SECURITY

#### G. CONTACT

The different sections and main subsections are accessible from the navigation bar on the top of the website. On the left of this bar, the project's logo has been set. By clicking this logo, we can always go to the website's home.

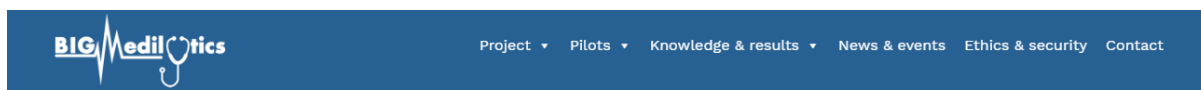


Figure 5: Navigation bar

## 5.2. Home

The home is the project main showcase. It has been designed in an appealing way to invite general public to discover the project.

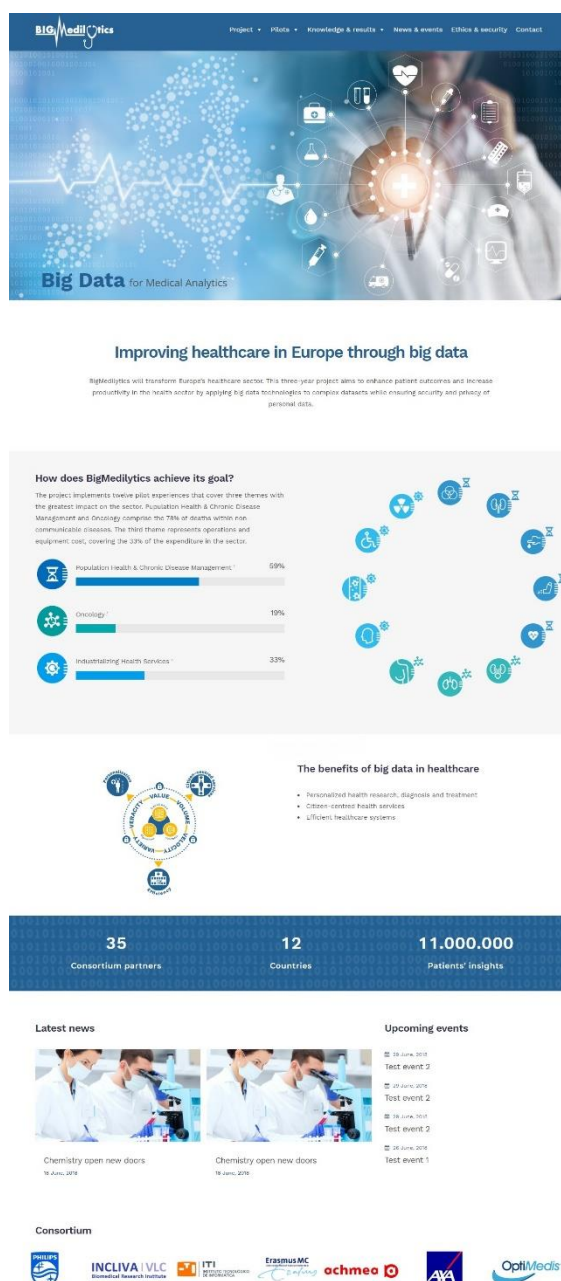


Figure 6: Home

On the footer, the logos of the European Union and the Big Data Value Association (BDVA) have been included.



Figure 7: Footer

This section is structured in six subsections (Background, Project overview, Objectives, Impact, Consortium, Supporters). All the subsections are displayed as a one page although they are also accessible from the drop-down menu.

This subsection presents the three main reasons for an immediate innovation action to apply big data technologies in healthcare and the need to improve the sustainability of current health system models.



### 3 main reasons to apply **big data technologies** in Healthcare



1. An improvement in health leads to economic growth through long-term gains in human and physical capital, which ultimately raises productivity and per capita GDP.



2. Healthcare accounts for 10% of the EU's GDP continuously becoming more expensive due to a rapidly aging population, rising prevalence of chronic diseases and costly developments in medical technology.



3. As healthcare is traditionally very conservative with adopting ICT, while big healthcare data is becoming available, the expected impact of applying big data technologies in healthcare is enormous.

In 2014 the EU-28's total healthcare expenditure was €1.39 trillion.  
This is expected to increase **to 30% by 2060**.

The expected increase of healthcare expenditure results in **the need to improve the sustainability of current health system models:**

The effectiveness of a healthcare system depends on quality (determined by efficacy, value and outcome), access (who can receive care when needed) and cost (the actual expense of patient care).

To improve productivity of the healthcare sector, it is necessary to **reduce cost while maintaining or improving the quality of care provided**. The fastest, least costly and most effective way to achieve this, is to use the knowledge that is hiding within the already existing large amounts of generated medical data, currently estimated around 1 Zettabyte. The current trend is towards digitalization of these large amounts of data resulting in what is known as big data.



Figure 8: Background

### 5.3.2. Overview

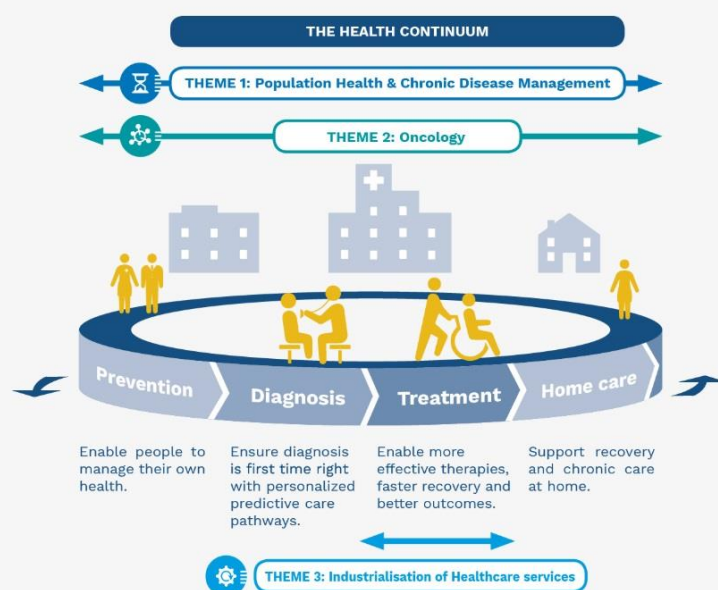
This subsection describes the goals of the project and how the twelve pilots cover the entire Health Continuum, as well as how big data achieves breakthrough productivity, what does define BigMedilytics and the characteristics of datasets used.

## Overview

### The largest initiative to transform healthcare sector through big data

BigMedilytics (Big Data for Medical Analytics) is the largest EU-funded initiative to transform the region's healthcare sector by using state-of-the-art big data technologies to achieve breakthrough productivity in the sector by reducing cost, improving patient outcomes and delivering better access to healthcare facilities simultaneously.

The project is composed of 12 pilots that address three themes with the greatest impact on the sector—Population Health and Chronic Disease Management, Oncology and Industrialization of Healthcare Services— and covers the entire Healthcare Continuum from Prevention to Diagnosis, Treatment and Home Care.



### What BigMedilytics delivers

1. A **Big Data Healthcare Analytics Blueprint** (defining platforms and components), based on open Big Data technologies, which enables secure collaborative innovation.
2. **Instantiations of the Blueprint** which are used to replicate BigMedilytics concepts across the 12 large-scale pilots accounting for an estimated 86% of deaths and 77% of the disease burden in Europe
3. The **Best "Big Data technology and Healthcare policy" Practices** taking into account aspects related to Big Data technologies, new business models and European and national healthcare data policies and regulations.

### Characteristics of datasets used

BigMedilytics will use health records of more than 11 million patients across 8 countries in Europe, streaming data from Internet of Things (IoT)-connected devices at more than a million records per hour and patient generated data from mobile apps. It also ensures that **security and privacy of personal data are guaranteed** and managed within national and EU regulatory frameworks.

The BigMedilytics project is an initiative which originates from the Big Data Value Association (BDVA) with the intention to implement a part of the program related to the Large Scale projects. The project is formed by a consortium of 35 entities led by Philips.

Figure 9: Overview



### 5.3.3. Objectives

This subsection presents the seven concrete objectives of the project.

## Objectives


Objective 1: Improve chronic disease and cancer outcomes using Big Data	—
Demonstrate that Big Data solutions can be used to improve productivity by at least 20% in the care of patients suffering from chronic diseases or cancer by reducing cost of care, improving quality through better patient outcomes and improving access to healthcare facilities.	
Objective 2: Optimize workflows through industrializing healthcare services using Big Data	+
Objective 3: Guarantee replicability of Big Data concepts for healthcare	+
Objective 4: Increase the activity through data integration	+
Objective 5: Establish secure and privacy preserving cross-border and cross-organisation healthcare services thus strengthening EU's Digital Market Strategy	+
Objective 6: Define Best "Big Data" practices	+
Objective 7: Enable knowledge transfer	+

Figure 10: Objectives

### 5.3.4. Impact

This subsection describes the transformational impact that BigMedilytics will have in the healthcare sector in Europe and the results expected.

## Impact



BigMedilytics will have a transformational impact on the Healthcare sector by ensuring that big data technologies will be used routinely throughout the healthcare sector in delivering high-quality care while reducing costs. In this sense, the project will:

- Demonstrate an increase in healthcare productivity between 20% and 63%** across 12 pilots covering the most prevalent and expensive disease groups across Europe. Evidence suggests that by improving the productivity of the healthcare system, public spending savings would be large, approaching 2% of GDP on average in the OECD which would be equivalent to €330 billion in Europe based of GDP figures for 2014.
- Enable **collaborative innovation across the key players** of the Healthcare and Data Value Chains.
- Increase of market share of big data technology providers by at least 25%** in the Oncology, Cardiology, Radiology, Hospitals Logistics and Healthcare IT Security market segments.
- Create **lasting impact of big data in the healthcare sector**, even after project completion, due to investment of €78 million by the consortium.
- Contribute to 40-70 times reduction in carbon emissions** due to the usage of telehealth driven by big data technologies thus contributing to Europe's 2020 emission targets.
- Be instrumental role in **training Europe's next generation of healthcare data innovators**.

Figure 11: Impact

### 5.3.5. Consortium

This subsection presents an interactive map to understand the significance of the project that involves 35 partners in Europe, the largest EU-funded initiative to transform Europe's healthcare sector through big data. By clicking on a partner, its logotype, website and basic information are displayed.

## Consortium

BigMedilytics is a consortium of 35 entities, led by Philips, in which companies, health centres, research institutes and universities from 12 different countries participate.

The Netherlands and Germany, with 8 members each, are the countries with the largest number of partners, followed by Spain with 5 and United Kingdom with 3. France, Austria and Greece participate in the project with 2 partners each. Finally, there is the collaboration of a participant from Finland, Ireland, Israel, Serbia and Sweden.



Figure 12: Consortium

### 5.3.6. Supporters

This subsection shows a list of 69 External Exploitation Partners that have given their support to the project and that will participate in the demonstration of the twelve large scale pilots.



Figure 13: Supporters

## 5.4. Pilots

This section is structured in thirteen subsections. The pilots overview is accessible from the main menu and the rest of the subsections, that correspond to the twelve pilots, are displayed in the drop-down menu: Comorbidities; Kidney Disease; Diabetes; COPD / Asthma; Heart failure; Prostate cancer, Lung cancer; Breast cancer; Stroke management; Sepsis management; Asset management, and Radiology workflows.

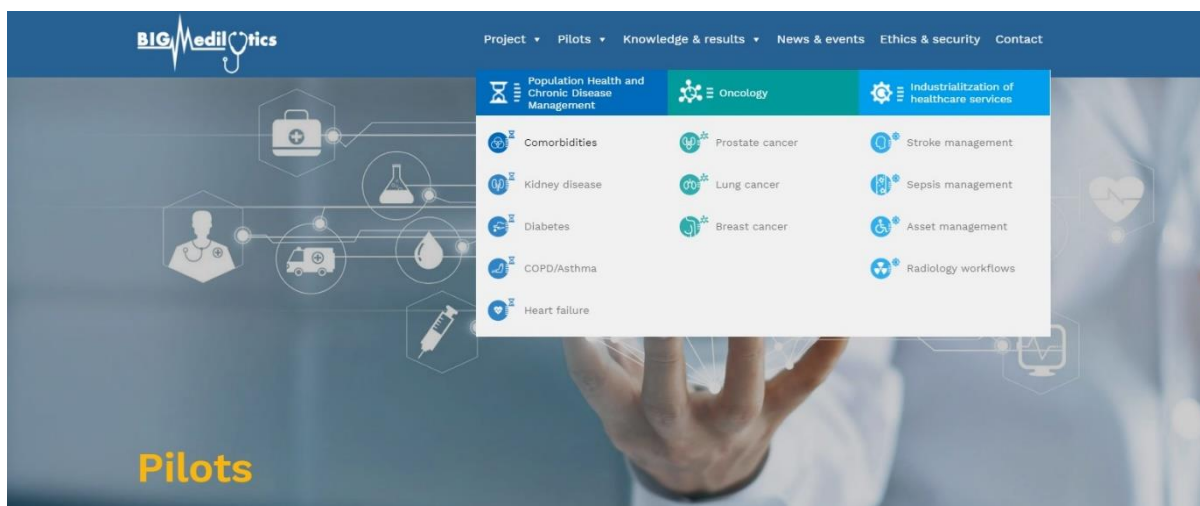


Figure 14: Pilots in the drop-down menu

### 5.4.1. Pilots overview

This subsection describes the relevance and purpose of the three big themes where the twelve pilots are included and the blueprint that will be defined.

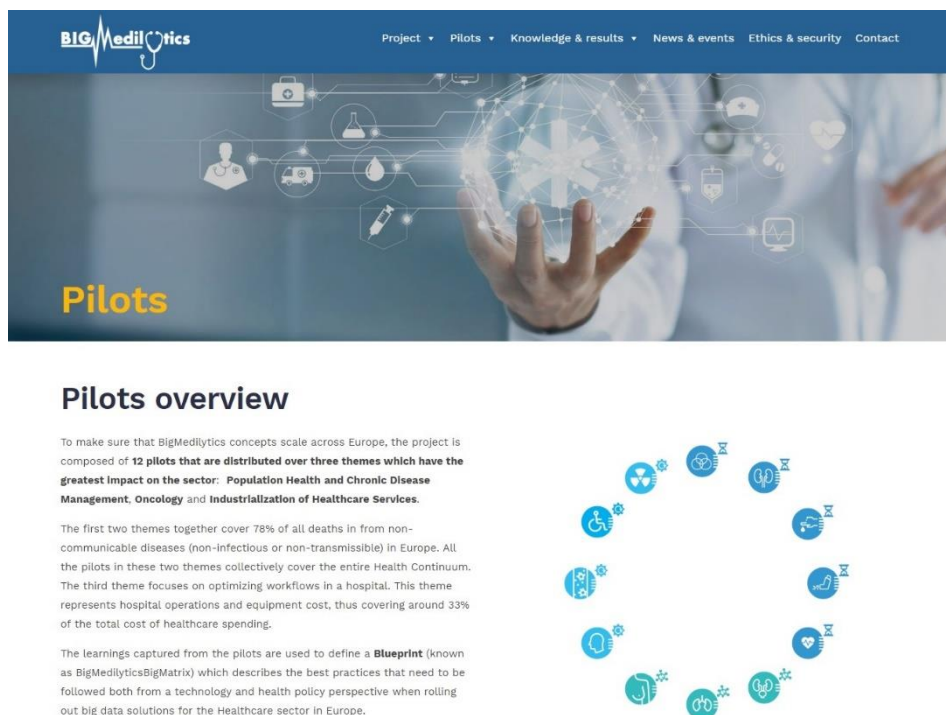


Figure 15: Pilots overview



## 5.4.2. Example of a pilot

This subsection presents an overview of the consequences of the topic tackled, the goal of the pilot and why a big data approach is needed. It also mentions the entities that are running the pilot. In the image bellow we can see the Pilot 1. Comorbidities.



Figure 16: Comorbidities

## 5.5. Knowledge & Results

This section will present the different publications generated along the project as well as other resources related to the project. All the subsections show the same banner to transmit graphic coherence. Another subsection will be built to include other materials like the videos created for the project.

### 5.5.1. Publications

This subsection will display the papers published by the partners. It will include the title, the date of publication, an abstract, the Link DOI, the Link PubMed, a Link and the PDF attached. It will also include White Papers generated.

BigMedilytics will follow an open access approach for all its scientific publications. It will opt for Green Access whenever possible and as it would guarantee that the results will be immediately available. When this model can't be possible, the publication will be offered in a Gold Open Access.

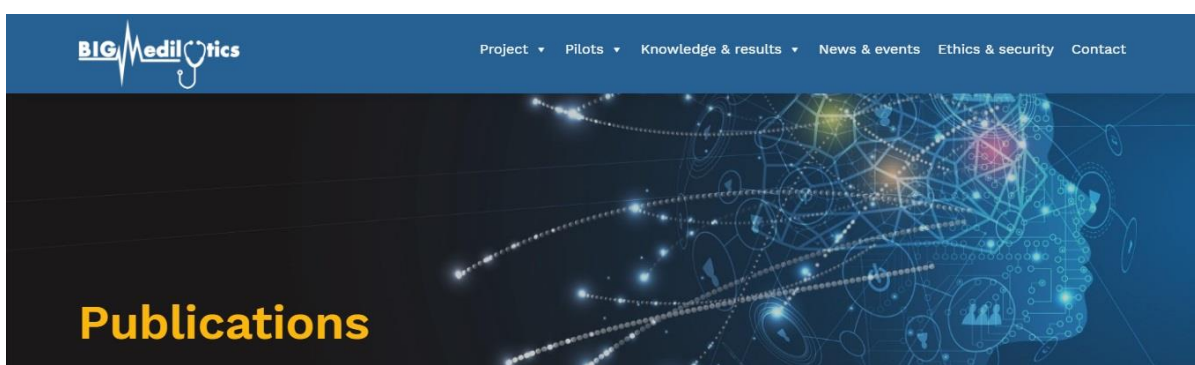


Figure 17: Publications

### 5.5.2. Deliverables

This subsection will include the list of public deliverables associated to the different work packages that make up the project. Different public deliverables created by the partners will be published during the whole life of the project. All of them are available to download.

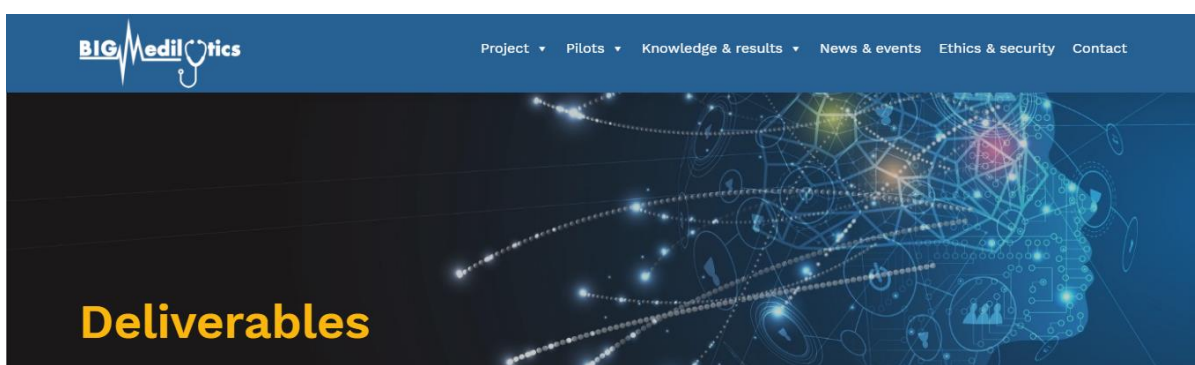


Figure 18: Deliverables

### 5.5.3. Related projects

This subsection shows other projects whose knowledge is being used by BigMedilytics.

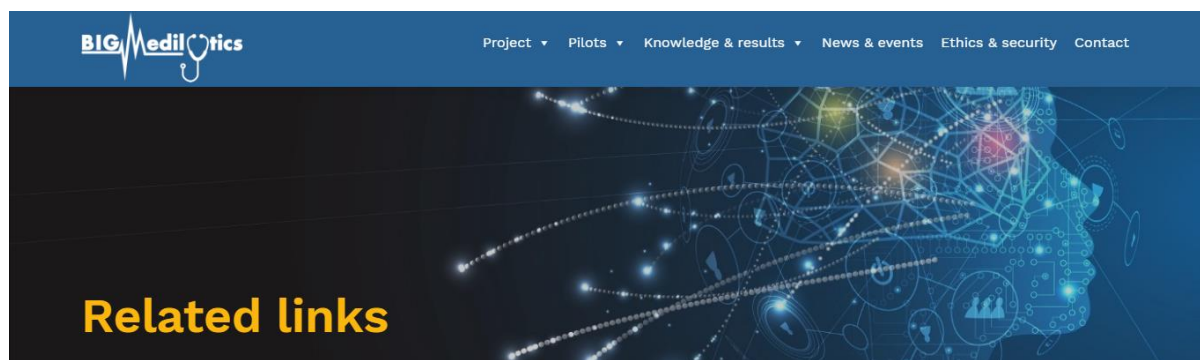
BigMedilytics will use the knowledge generated in the following projects in which consortium members are currently involved or have participated previously.

<p><b>NHS National Innovation Accelerator</b></p> <p>National roll out and assessment of MyCOPD platform with monitoring of patient symptoms, medication usage and exercise interventions in national UK scheme.</p> <p>Monitoring of patient and environmental data feeds to enable BigMedilytics to create national model of exacerbation prediction.</p>	<p><b>INVEST</b></p> <p>Implementation projected funded by the German Innovation Fund, aimed at setting up and implementing an integrated health care system with the aim to increase patient activation and reduce hospital admissions.</p> <p>BigMedilytics utilizes population health management strategies.</p>
<p><b>Perspective (STW)</b></p> <p>The goal of this project is to integrate various medical imaging related data (e.g., PET, CT, MRI) and correlate the data with tissue samples after pathology in the same patient.</p> <p>Knowledge will be directly applied to the Prostate Cancer Pilot.</p>	<p><b>Blood Pressure monitoring</b></p> <p>Blood pressure measurements monitoring using smartphone and wearable devices.</p> <p>Knowledge will be directly applied to the mother care pilot for remote monitoring.</p>
<p><b>MACSS</b></p> <p>Medical Allround-Care Service Solutions proposes a new patient-centred smart electronic health care service platform and focuses on improving the safety of patients after kidney transplants.</p> <p>System architecture and developed methods form the baseline for the Kidney Disease Pilot.</p>	<p><b>BIGDATA@ HEART. IMI2 program in big-data</b></p> <p>BigData@Heart's ultimate goal is to develop a Big Data-driven translational research platform in order to deliver clinically relevant disease phenotypes and scalable insights driving drug development and personalised medicine.</p> <p>Integration of multiple data sources in coronary heart disease, atrial fibrillation and Heart Failure</p>
<p><b>Selfie, H2020</b></p> <p>It aims to improve patient-centred care for patients with multi-morbidity by proposing evidence-based, integrated chronic care (ICC) models.</p> <p>Patient-centred care BigMedilytics integrates all relevant patient-related data.</p>	<p><b>Paphos, EIT Health</b></p> <p>Application of medical knowledge extraction techniques from electronic health records.</p> <p>BigMedilytics enables the integration of EMR with other big data.</p>
<p><b>COMPARE, H2020</b></p> <p>COMPARE is a multidisciplinary research network that has the common vision to become the enabling analytical framework for the rapid identification, containment and mitigation of emerging infectious diseases and foodborne outbreaks.</p> <p>BigMedilytics supports big data analytics across several domains.</p>	<p><b>Data Pitch (H2020-ICT14)</b></p> <p>Data Pitch creates a transnational, Europe-wide data innovation ecosystem that brings together data owners and Big Data technology providers with startups and SMEs with fresh ideas for data-driven products and services.</p> <p>Knowledge from Data Pitch will help in developing the Big Data Healthcare Analytics Blueprint.</p>
<p><b>Crowd-HEALTH (H2020 – PM18)</b></p> <p>CrowdHEALTH will deliver an integral ICT platform that provides decision support to public health authorities for policy creation and co-creation.</p> <p>This knowledge will be applied to the whole project in terms of application domain.</p>	<p><b>SODA</b></p> <p>SODA will enable practical privacy-preserving analytics of information from multiple data assets using multi-party computation (MPC) techniques.</p> <p>The work based on Multi-Party Computation will utilize knowledge from SODA.</p>
<p><b>BDVe CSA</b></p> <p>The mission of BDeV is to support the Big Data Value PPP in realizing a vibrant data-driven EU economy.</p> <p>Link to CSA of the PPP enables close collaboration with the PPP community and all other Big data PPP projects.</p>	

Figure 19: Related projects

#### 5.5.4. Related links

This subsection includes useful links related to the project, like H2020 website or the Big Data Value Association (BDVA) website.

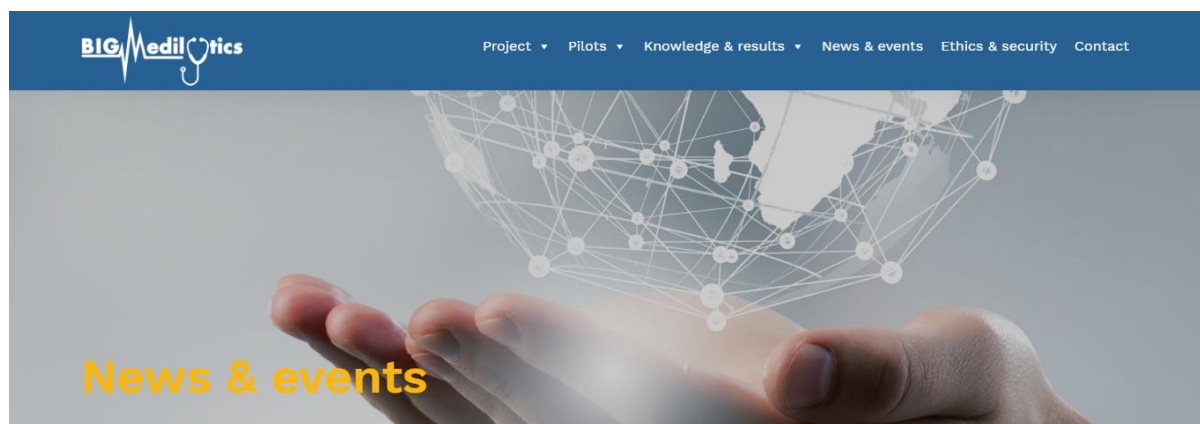


- Horizon 2020
- Big Data Value Association

Figure 20: Related links

#### 5.6. News & Events

This section displays all the news generated by BigMedilytics and the different resources such as photos or videos, as well as announcements and upcoming events.



##### Latest News

ALL NEWS ANNOUNCEMENTS PRESS RELEASES

Figure 21: News & events

#### 5.7. Ethics & Security

In order to show transparency, this section describes briefly how BigMedilytics ensures the privacy of data and the different procedures adopted by the 35 partners. An email address is provided in case users need more information.





The BigMedilotics project has 12 pilots that deal with a large amount of data generated by patients and/or healthcare workers. Due to the sensitivity of such data, proper protocols have been put in place to ensure that all ethical concerns are addressed appropriately. This ensures that the pilots comply with relevant national and EU legislation (e.g. GDPR).

The project has established an Ethics Board headed by a Data Protection Officer (DPO). The DPO advises the consortium on how ethics-related matters should be handled within BigMedilotics. In addition, the project is also advised by an independent, external ethics advisor.

If you have any questions, you can also send an email to: [dpo@bigmedilotics.eu](mailto:dpo@bigmedilotics.eu)

Figure 22: Ethics & security

## 5.8. Contact

This section includes a contact form and an email address to get in touch in case users need more information about the project.



You can get in contact with us through the form below or you can also email us at [info@bigmedilotics.eu](mailto:info@bigmedilotics.eu).

Figure 23: Contact

## 6. Conclusion

The BigMedilytics website has been designed and launched to be the main communication channel to reach the different targets of the project and explain its results and impact.

The website has been designed taking into account society in order to engage citizens explaining the benefits of the research conducted by the consortium.

The website will evolve during the project's lifetime and it will be fed constantly with content created by the lead beneficiary, INCLIVA, according to the goals defined in the communication plan. To get its purpose, the input from the 35 partners will be essential.

Through the website, new results, publications, deliverables as well as updated news, photos, videos and upcoming events will be released. To promote among the audiences all the content generated, the website will be linked to social media and several newsletters will be launched aligned with the project objectives.

## Appendix A

### A.1 Glossary

Banner	Graphic image that expands the width of the page
BDVA	Big Data Value Association
CMS	Content Management System
Consortium	Partners of the project
Domain	The name of the website
Footer	Bar on the bottom of a website
Google Analytics	Tool that allows to know users behavior on a website
HTTPS	Hypertext Transfer Protocol
Look & Feel	Graphic aspect of the website
SSL	Secure Sockets Layer
Target	Objective public