



**Health Cluster  
Portugal**

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## **Portuguese Health Cluster Evolution**

*Joaquim Cunha*  
*September 2020*

- 1. Health Portugal at a glance**
- 2. Health Cluster Portugal**
- 3 Strategic Vision**
- 4 Key projects**

**Health in Portugal is a prominent fast-evolving reality, which has experienced a remarkable evolution during the last couple of decades.**

**Portuguese companies are internationally recognised as high-quality suppliers of healthcare products and services** – e.g., pharmaceuticals, medical devices and other medical technologies –, having high standards of quality and being capable of developing, manufacturing and supplying a wide range of products and services, with high flexibility. A consistent offer also exists in the country in terms of contract development and manufacturing organisations, and producers of active pharmaceutical ingredients.

**Portugal has a vibrant and innovative R&D ecosystem**, characterized by the presence of world-class institutions and scientists. International panels of experts have classified 13 out of 24 Portuguese Life and Health Sciences R&D Units as Exceptional, Excellent or Very Good.

**Portugal has a high-level education system**, which every year graduates thousands of well-prepared professionals. More than 600 of these new graduations each year correspond to new doctorates in the areas of life, medical and health sciences, and medical engineering.

**Portugal has a high-quality healthcare system**, with excellent professionals and modernly equipped. This quality is regularly assessed by an independent national regulatory organisation, and there is a growing number of hospitals achieving international accreditation. The ultimate evidence of the quality of the Portuguese healthcare system consists on the country's high-standard health indicators.

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## Pharma & Biotech | Offer of products/services

### PRODUCTS / SERVICES / CAPACITIES / TECHNOLOGIES / PLATFORMS

- Manufacture of basic pharmaceutical products and pharmaceutical preparations.
- Development of pharmaceutical synthesis processes.
- Production of Active Pharmaceutical Ingredients (API).
- Development of formulations, and scaling-up, with production of laboratory and pilot lots.
- Production of solid, semisolid and liquid forms (pills, capsules, sachets, suppositories, ointments, pastes, creams, gels, solutions, suspensions, syrups, drops, shampoos); sterile (moist heat sterilization and membrane filtration) and non-sterile products.
- Primary and secondary packaging material, and codification and traceability solutions.
- Good Manufacturing Practices and Quality Control.

### BIOPHARMACEUTICAL / BIOLOGICAL THERAPIES

- Antibodies.
- Bacteriophages.
- Collections of natural products/ extracts, for pharmaceutical and cosmetic applications.
- Development of vaccines.
- Cell therapy.

### R&D / CLINICAL RESEARCH

- Contract R&D.
- Pre-clinical and translational research.
- Clinical trials.

### THERAPEUTIC AREAS / CLINICAL SPECIALTIES

- Allergology and immunotherapy.
- Anaesthesia.
- Cardiovascular diseases.
- Central nervous system.
- Dermatology.
- Gastroenterology.
- General practice.

- Gynaecology and obstetrics.
- Hematologic diseases.
- Infectious diseases and antibiotic therapy.
- Metabolic diseases.
- Musculoskeletal system, osteoarticular and inflammatory diseases.
- Oncological diseases.
- Ophthalmology.
- Respiratory diseases.
- Treatment of pain / chronic pain.
- ...

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## Medical Devices, Supplies, Hardware & Services | Offer of products/services

### MEDICAL DEVICES & HOSPITAL AND LABORATORY SUPPLIES

- Wound dressings, non-woven swabs, cotton, elastic and tubular bandages.
- Surgical drapes, gowns and other protection materials.
- Technical and functional textiles/clothing.
- Plastic products for hospital use.
- Haemodialysis devices.
- Surgical and non-surgical sets, and first-aid materials.
- Hygiene and disinfection products.
- Prostheses, orthoses and technical aids.
- Biomaterials, implants and prostheses for regenerative medicine (bone reconstruction and other medical or surgical procedures).
- Containers for biological samples.
- Sterilization material.

### HOSPITAL AND LABORATORY HARDWARE

- Operating room equipments.
- Intensive care unit equipments.
- Imaging diagnostic equipments.
- Hospital furniture.
- Laboratory furniture.
- Laboratory equipments.
- Medical simulation equipments.

### TECHNOLOGY SERVICES / PLATFORMS (EXCEPT ICT)

- Development and processing of polymeric materials and composites.
- Micro- and nanomolding technologies.
- Sterilization of medical devices (ethylene oxide).
- Medical device testing services (plastic, woven and non-woven textiles, ...).
- Primary and secondary packaging material, and codification and traceability solutions.

### R&D / CLINICAL RESEARCH

- Contract R&D.
- Pre-clinical and translational research.
- Clinical trials.

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## ICT & Electronics | Offer of products/services

### SOLUTIONS FOR HEALTHCARE UNITS

- Operational, logistics and human resources management.
- Patient management.
- Drug circuit management.
- Electronic drug prescription.
- Management of complementary means of diagnosis and therapy.
- Integration and sharing of clinical information.
- Electronic clinical record.
- Decision support software/tools.
- 3D biomodelling for medical/ surgical procedures.
- Hospital robotics.
- Clinical research management.

### SOLUTIONS FOR PHARMACIES

- Electronic prescription.
- Pharmacy management.
- Automation and robotics.
- Business process management.

### OTHER SOLUTIONS

- Industrial electronics.
- Sensorization.
- Codification and traceability solutions.
- Location of goods and people.
- Telecommunications and advanced communication solutions.
- E-learning platforms.
- Medical simulation solutions.
- 3D multimedia contents.
- Solutions for ambient assisted living, remote monitoring, telemedicine and telecare.
- Applications for mobile devices (mobile phones, ...).
- Personal health record.

## Portuguese Health Cluster Evolution

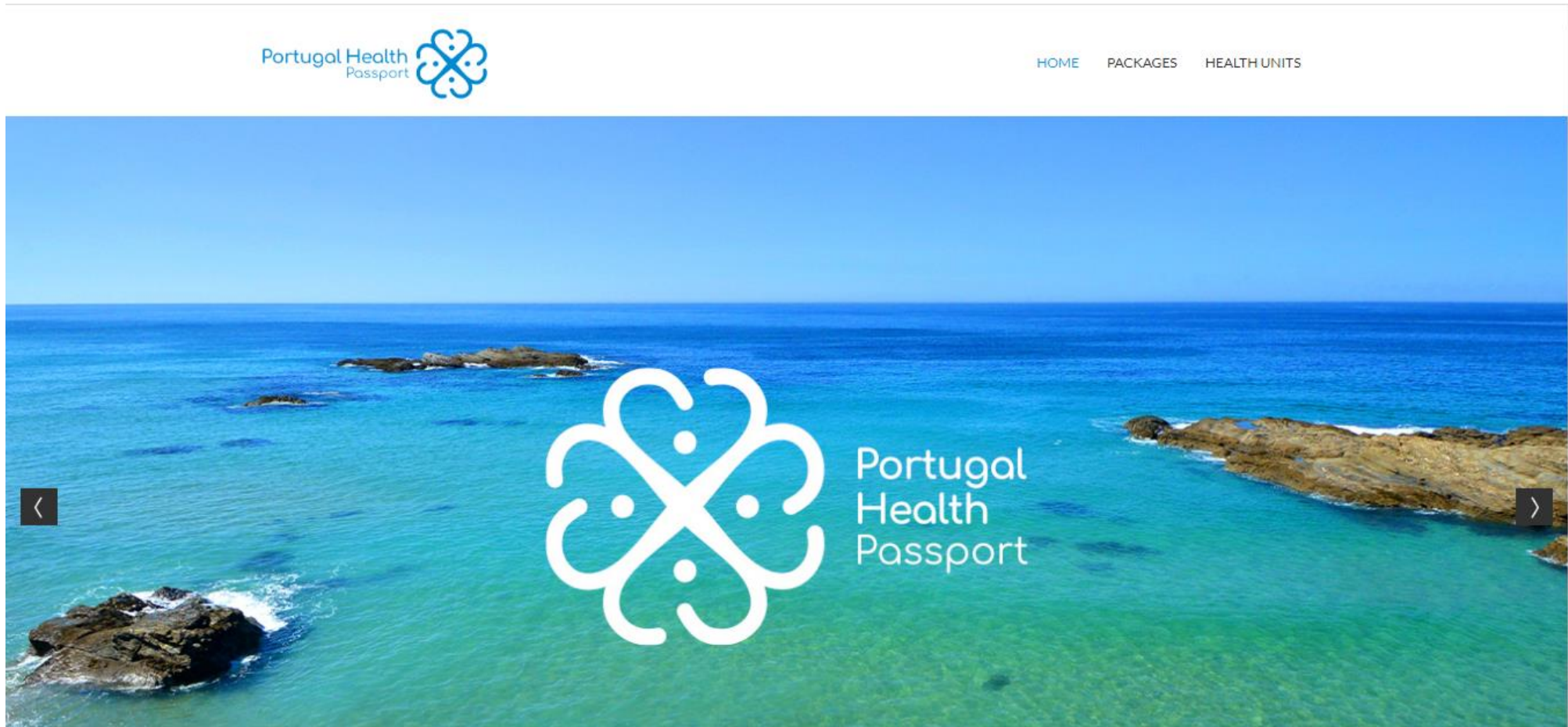
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Indicator	2009	2019 or nearest year
R&D Investment (million €)	365	513
Workers in R&D activities (FTE)	5.625	6.543
Researchers (FTE)	4.841	5.350
Publications	3.967	9.398
Health expenditure as a share of GDP (%)	9,9	8,9
Health expenditure per capita (€)	1.640	1.784
Life expectancy at birth (years)	79,3	80,9
Infant mortality rate (‰)	3,6	2,8
Companies / Institutions	83.297	88.909
Workers (thousands)	265,2	279,3
R&D investment - Companies (million €)	59	167
Patent applications: European + PCT	18	29
Exports (million €)	704	1.478

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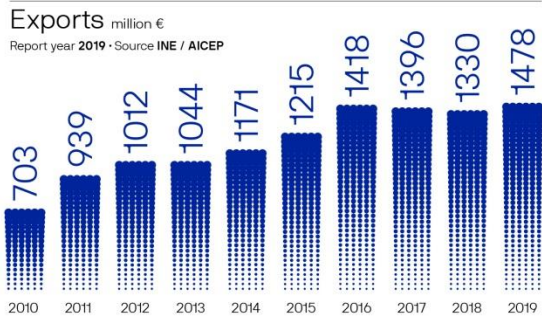
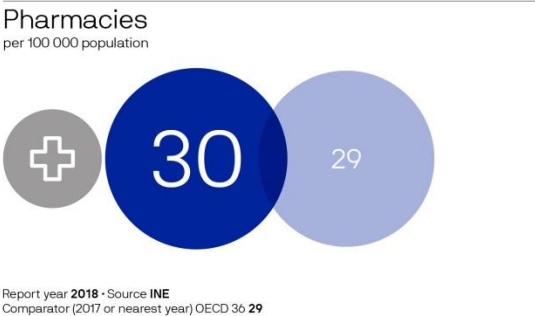
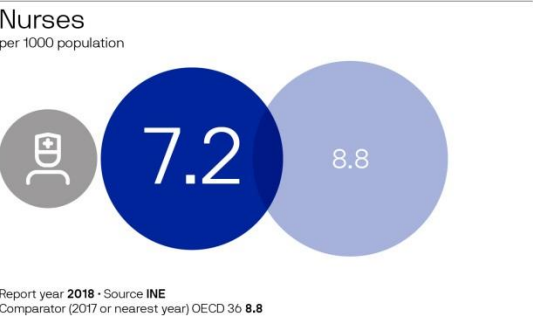
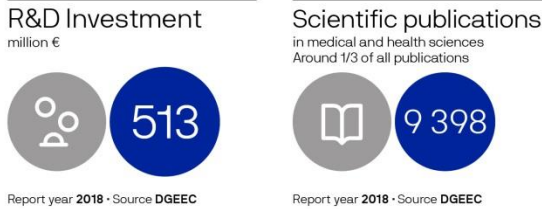
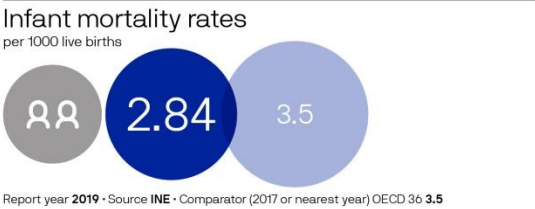
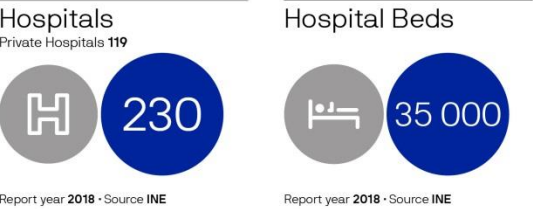
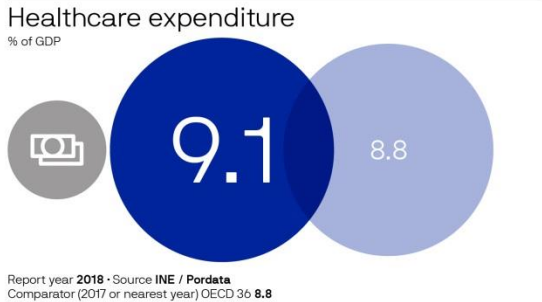
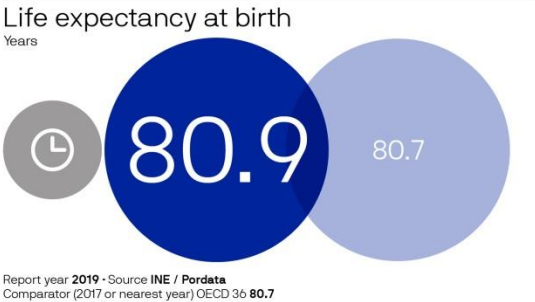
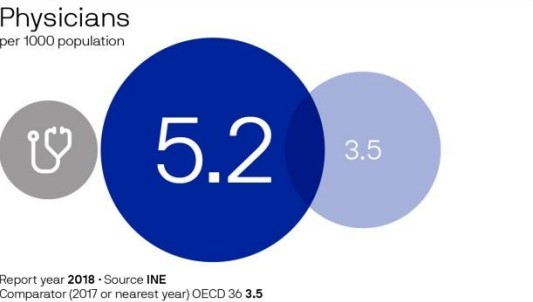
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Portugal Health in Numbers



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## Portuguese Health Cluster Evolution

... is a private non-profit association founded in 2008, that currently brings together over 180 members, including **R&D institutions, universities, hospitals, organizations from civil society, and companies** in the areas of **pharmaceuticals, biotechnology, medical technologies, and services**. Together, HCP and its members develop innovative projects in areas such as **translational and clinical research, active and healthy ageing, health tourism, and eHealth**, with the purpose of turning knowledge into new solutions and contribute to the improvement of human health and wellbeing, and work to make **Portugal the right place to invest and build partnerships in Health**.

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# 183

## ● R&D Institutions + Universities

3100 researchers in Health  
2000 PhDs

## ● Hospitals

8500 physicians  
8000 beds  
17 M€ in R&D

## ● Pharma & Biotech

1250 M€ turnover  
80 M€ in R&D  
4000 employees  
130 PhDs

## ● MedTech & Services

570 M€ turnover  
30 M€ in R&D  
6000 employees  
30 PhDs

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## 2030 Vision for the Portuguese Health Cluster



One of the most  
**dynamic and  
competitive**  
economic sectors  
in the country



A pillar for the  
increase of  
Portuguese **exports**,  
exceeding €3 billion



Greater access to  
**innovative and more  
convenient** health  
care



**Data guide**  
**therapeutic decisions**  
and are differentiator  
for **research**



Quality of the  
sector's products and  
services **recognized  
worldwide**

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## Leveraging on 5 key trends

### Tech-enabled Healthcare

- New digital technologies are completely redefining health care
- Customer centricity, real world data and efficiency improvements

### Open Innovation

- Bigger and better collaboration
- R&D outsourcing

### Active ageing

- Increasing health care demand
- Challenge for balancing care quality & costs
- Change in the disease burden mix

### Value Based Healthcare

- Standardization and measurement as new HC cornerstone
- Increased competition amongst health players

### Patient 2.0

- Better informed, more demanding patients
- Need for providers to differentiate amongst themselves

**Covid19**

## Portuguese Health Cluster Evolution

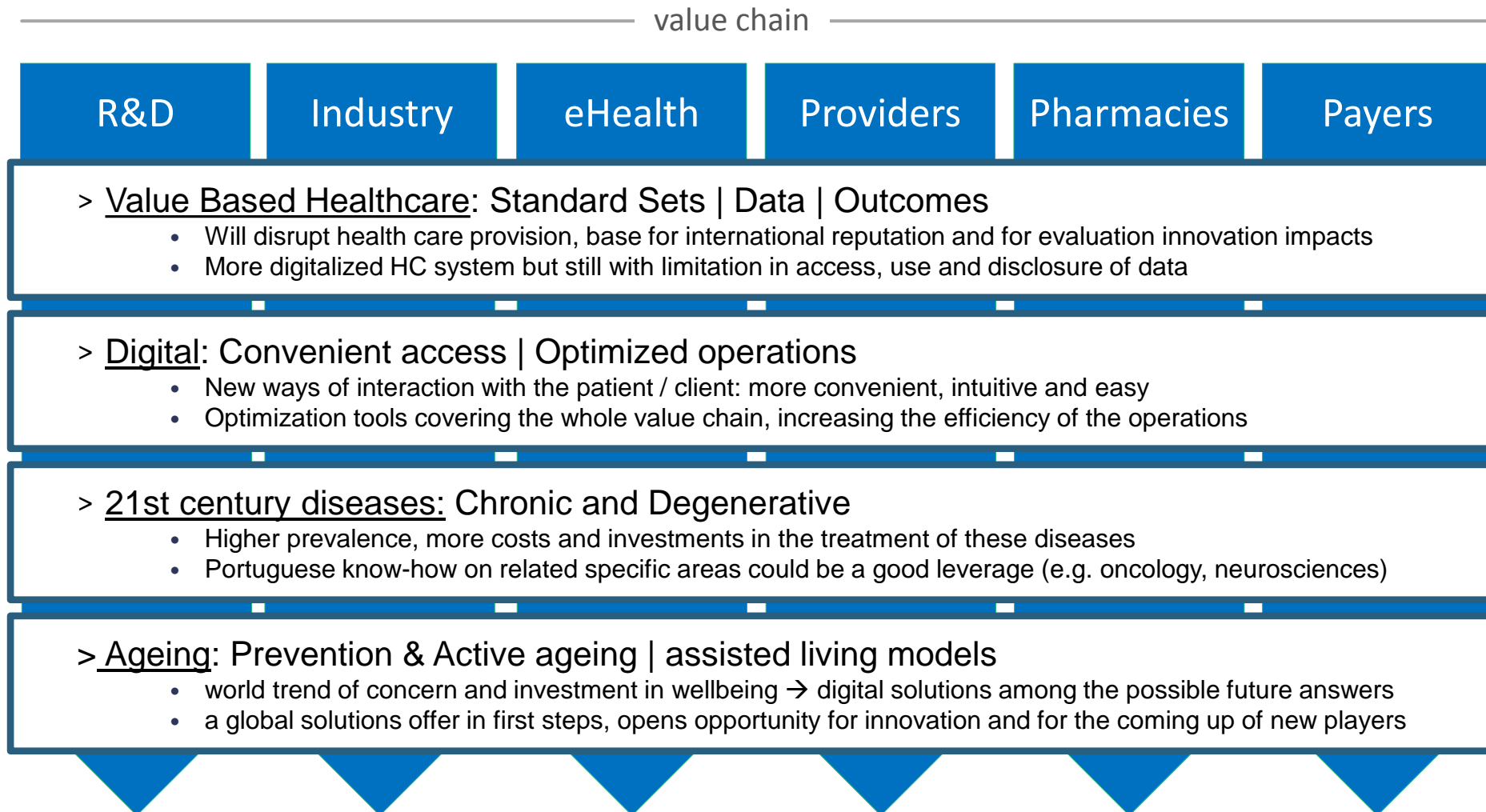
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## 4 cross sector opportunities identified



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## 4 strategic agendas crossing the cluster ....

- | 1 <u>Innovation</u> : more and better collaborative and translational R&D                                                                                                                                                                                                                 | 2 <u>Industrialization</u> : support FDI and industrial cooperation                                                                                                                                                                                          | 3 <u>Digitalization</u> : speed up digital ecosystem enlargement                                                                                                                                                                                                                                            | 4 <u>Data</u> : VBHC implementation and access to data                                                                                                                                                                             |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"><li>• share/integration of competences between r&amp;d centers</li><li>• more partnerships for research financing</li><li>• support to innovation by health care providers</li><li>• more national r&amp;d integration in products / services</li></ul> | <ul style="list-style-type: none"><li>• attraction of productive capacity investment</li><li>• growing up of the national companies</li><li>• consolidation and cooperation between national companies for gains economies of scale and efficiency</li></ul> | <ul style="list-style-type: none"><li>• development of more and bigger health startups</li><li>• attraction of global health innovation centers</li><li>• export of new solutions based on medical devices and data</li><li>• adoption of digital innovations that promotes efficiency and equity</li></ul> | <ul style="list-style-type: none"><li>• privilege the use of data in outcomes evaluation</li><li>• more and better use of data for healthcare management and r&amp;d activities</li><li>• personalization of health care</li></ul> |

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## and 10 key initiatives ...

- |                                                                                  |                                                                                        |                                                                                  |                                                                                  |
|----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|----------------------------------------------------------------------------------|
| <b>1</b> <u>Innovation</u> : more and better collaborative and translational R&D | <b>2</b> <u>Industrialization</u> : support FDI and industrial cooperation             | <b>3</b> <u>Digitalization</u> : speed up digital ecosystem enlargement          | <b>4</b> <u>Data</u> : VBHC implementation and access to data                    |
| <b>1.1</b> Action Plan for the competitiveness of clinical trials                | <b>2.1</b> reinforce actual program of attractiveness for productive investment        | <b>3.1</b> attract a relevant global conference on health digital and technology | <b>4.1</b> prepare and build up a consortia to develop a health data lake        |
| <b>1.2</b> strategic alignment of r&d activities with industry needs and demands | <b>2.2</b> foster of economies of scale and collaboration in the medical devices field | <b>3.2</b> setting up of a program to attract innovation and technology centers  | <b>4.2</b> propose a legal environment for the use of health data                |
|                                                                                  |                                                                                        | <b>3.3</b> setting up a one-stop-shop to support SMEs and start-ups              | <b>4.3</b> spread outcomes measurement and assure their international disclosure |

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## Three relevant global trends to understand the future of health



Demography



Human resources  
in health



Technology

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## HCP Smart Health Network



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# Chronic diseases management platform

transforming data into information for better home monitoring



CINTESIS  
Health Research

Fraunhofer  
PORTUGAL



ineqi  
Driving science & innovation

INESCTEC

NEUTROPLAST



PS  
Digital Medicine  
Digital IS

plux  
measuring energy balance

PROMPTLY  
Health Analytics

sensing  
future  
a greater step

WISIFY

 Health Cluster Portugal

## Platform description



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## The Network's response to COVID19 pandemics



Remote digital monitoring of  
suspected or infected individuals



Professional remote support on  
invasive mechanical ventilation



Knowledge sharing for  
health professionals

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# HCP pioneering VBHC enablement in Ophthalmology

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- Evaluate the clinical results of different Ophthalmological Centers in Portugal, validating efficiency and rationalizing costs without loss of quality; shifting the focus of income from volume of services onto patient outcomes.
- Create value for the patient with a culture of self-assessment and improvement.
- Provide payers a significant benefit through a Health Care System based on value;
- Create an interaction between Clinicians and Researchers from different organizations and institutions, giving rise to huge new business opportunities and collaboration with industry;
- Recognize and promote the excellence of Portuguese Ophthalmology

# A true PPP Ecosystem

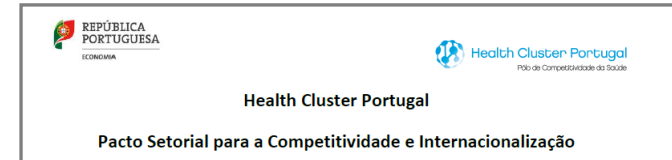


Enablers



PROMPTLY

Government



6 Private & 7 Public  
ophthalmic centres



Life  
Sciences  
Companies

Alcon



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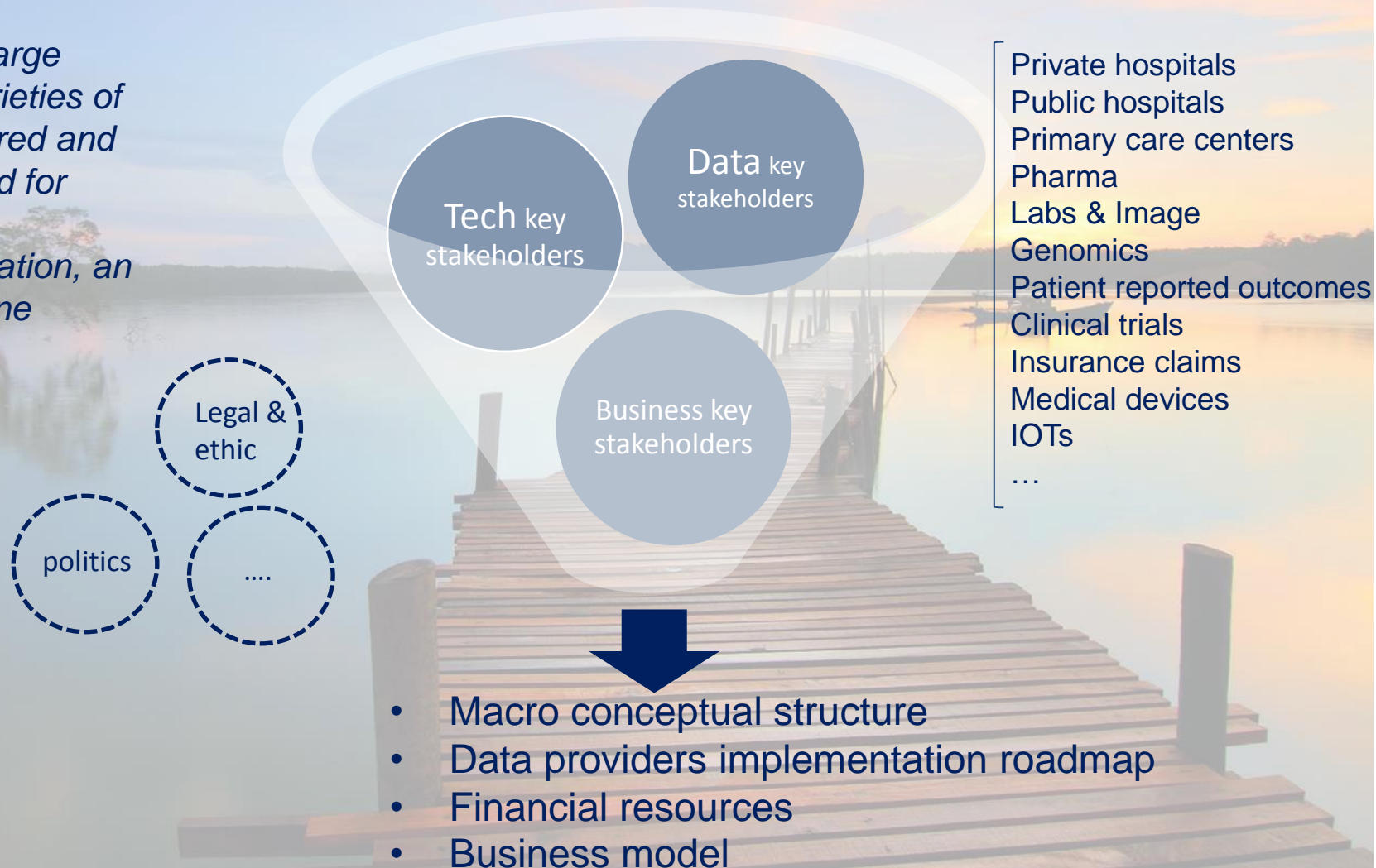
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# Portuguese Health Datalake

## A new model for product and services development

*“A repository for large quantities and varieties of data, both structured and unstructured, used for tasks such as reporting, visualization, analytics and machine learning.”*



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**Thank you very much!!**

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