

# Digitalização e Integração: Perspetivas

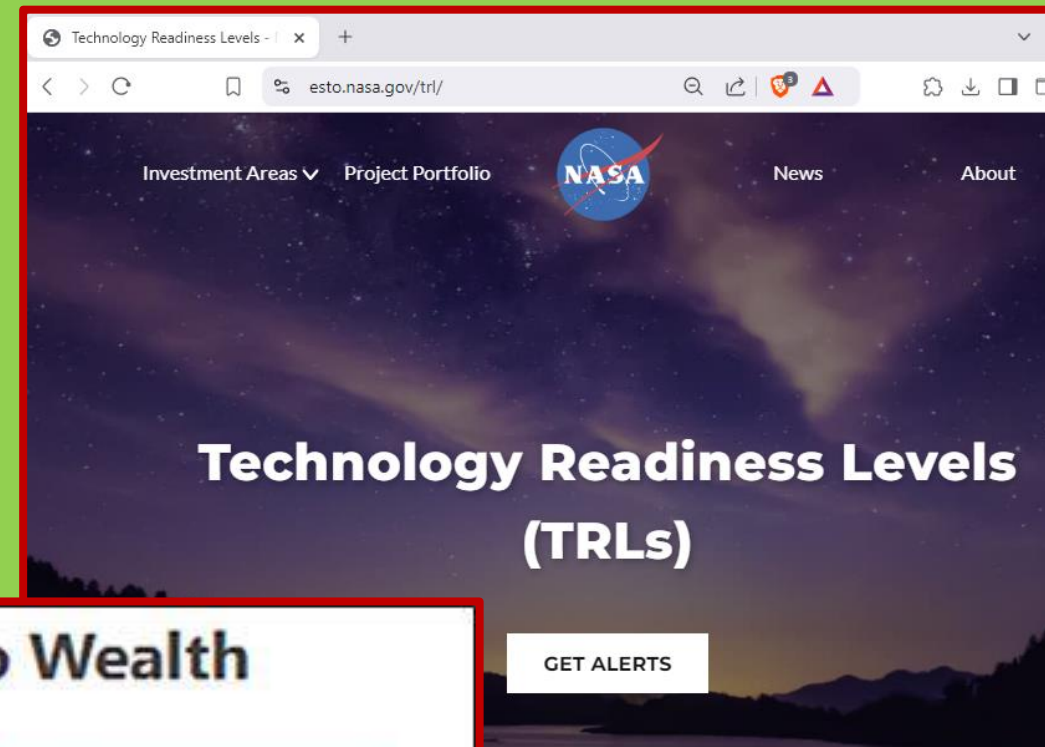
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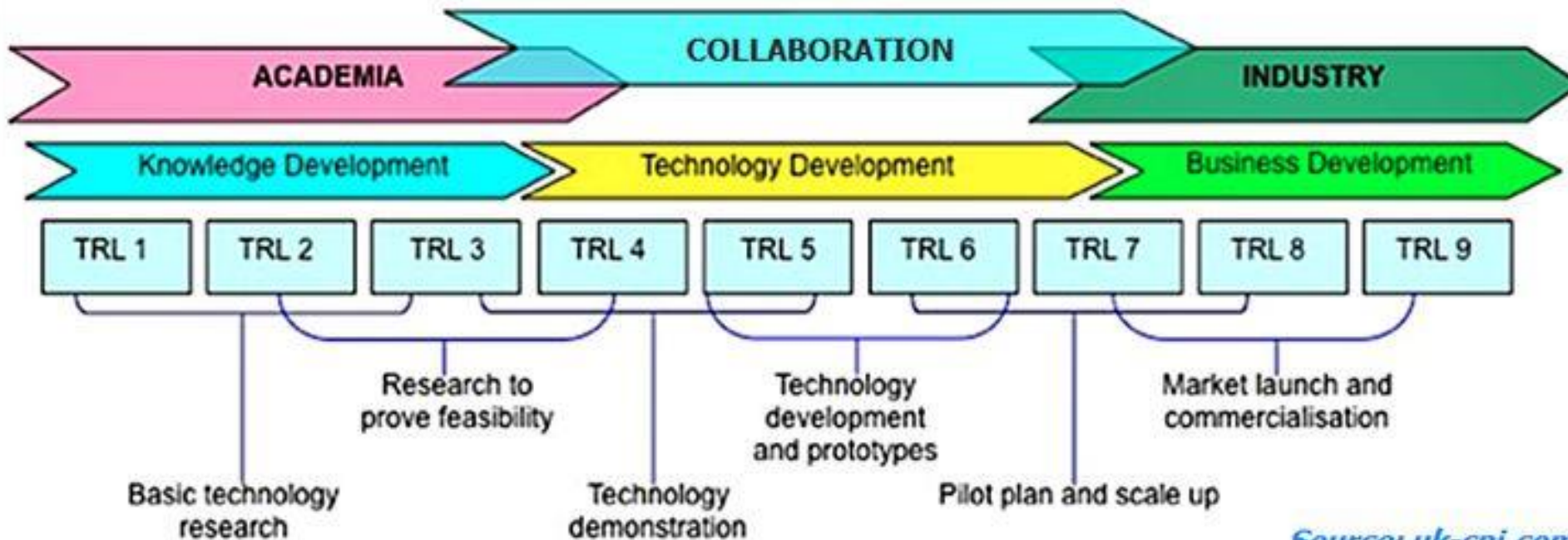
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Investigador Integrado - INESC-ID, Grupo de Sistemas de Informação e Apoio à Decisão

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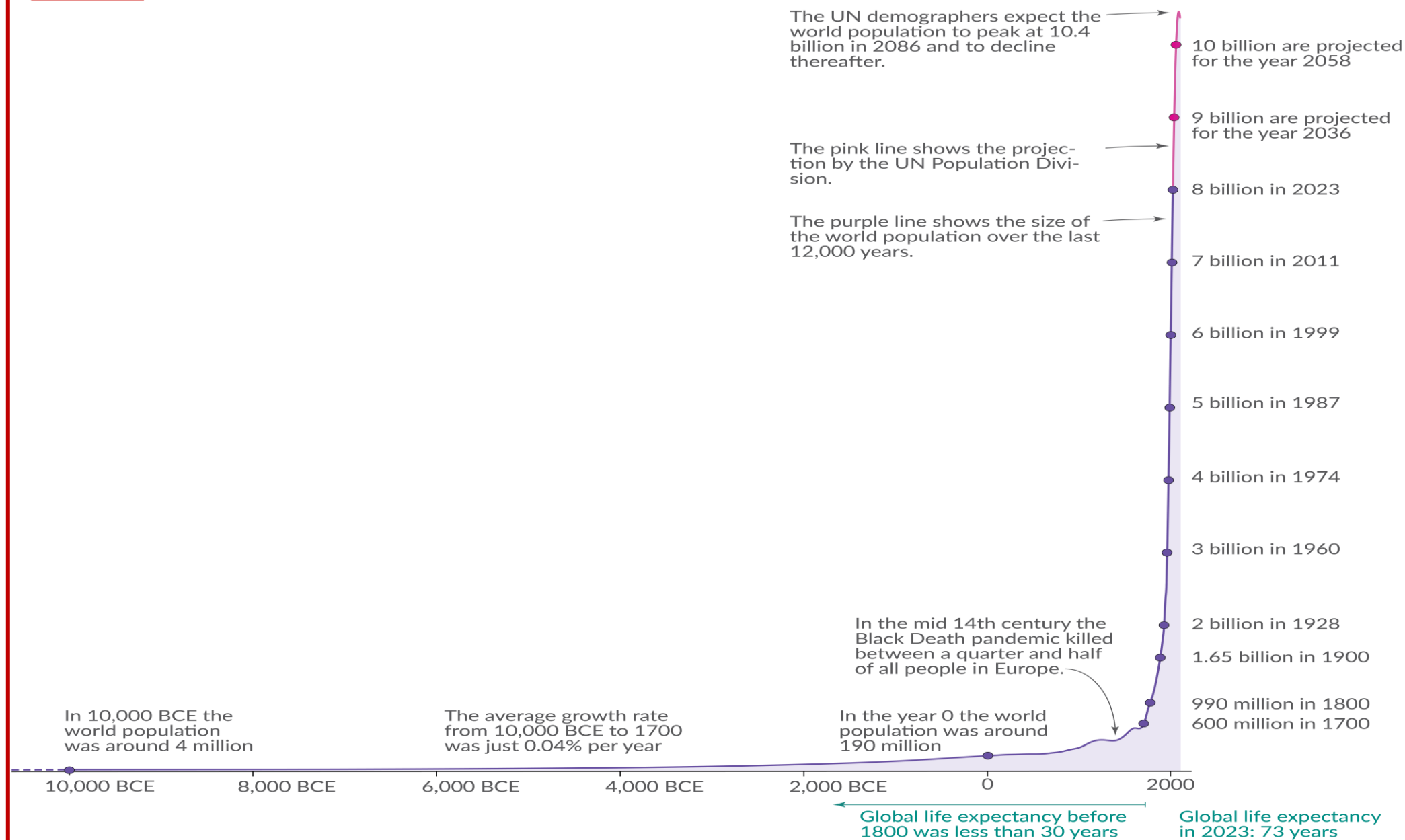


## The Innovation Chain: Converting Science into Wealth



Source: uk-cpi.com

# The size of the world population over the long-run



Based on estimates by the History Database of the Global Environment (HYDE 3.2) and the United Nations, World Population Prospects (2022).

This is a visualization from [OurWorldinData.org](https://ourworldindata.org).

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# The Top 20 R&D Spenders

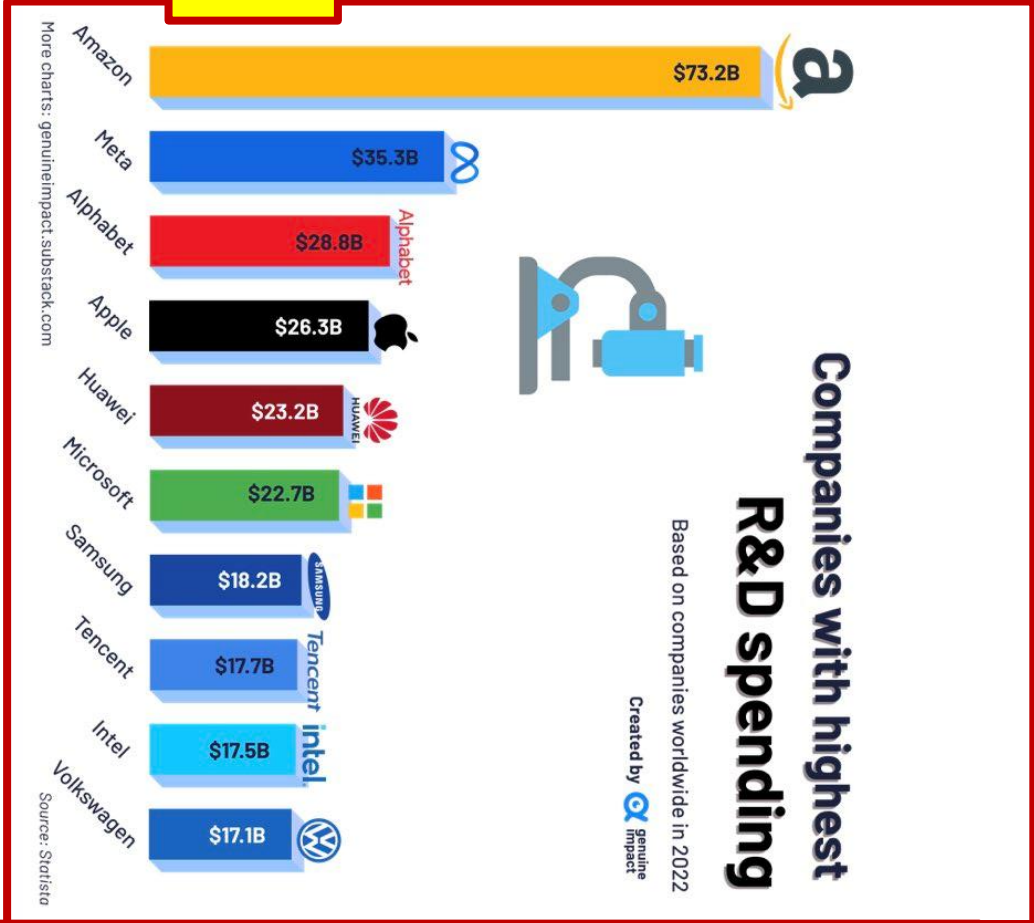
Companies in RED have been among the top 20 R&D spenders every year since 2005.

RANK		R&D Spending					
2016	2015	Company	2016 US\$ Billions	Change from 2015	% of Revenue	Headquarters	Industry
1	1	Volkswagen	\$13.2	2.7%	5.6%	Europe	Auto
2	2	Samsung	\$12.7	-3.0%	7.2%	South Korea	Computing and Electronics
3	7	Amazon	\$12.5	35.2%	11.7%	North America	Software and Internet
4	6	Alphabet	\$12.3	24.9%	16.4%	North America	Software and Internet
5	3	Intel	\$12.1	5.1%	21.9%	North America	Computing and Electronics
6	4	Microsoft	\$12.0	5.8%	12.9%	North America	Software and Internet
7	5	Roche Holding	\$10.0	-3.2%	19.9%	Europe	Healthcare
8	9	Novartis	\$9.5	-1.6%	19.2%	Europe	Healthcare
9	10	Johnson & Johnson	\$9.0	6.5%	12.9%	North America	Healthcare
10	8	Toyota	\$8.8	5.1%	3.7%	Japan	Auto
11	18	Apple	\$8.1	33.5%	3.5%	North America	Computing and Electronics
12	11	Pfizer	\$7.7	-8.4%	15.7%	North America	Healthcare
13	13	General Motors	\$7.5	1.4%	4.9%	North America	Auto
14	14	Merck	\$6.7	-6.6%	17.0%	North America	Healthcare
15	15	Ford	\$6.7	0.0%	4.5%	North America	Auto
16	12	Daimler	\$6.6	4.5%	4.0%	Europe	Auto
17	17	Cisco	\$6.2	-1.4%	12.6%	North America	Computing and Electronics
18	20	AstraZeneca	\$6.0	7.5%	24.3%	Europe	Healthcare
19	32	Bristol-Myers Squibb	\$5.9	30.6%	35.7%	North America	Healthcare
20	22	Oracle	\$5.8	4.8%	15.6%	North America	Software and Internet
TOP 20 TOTAL			\$179.4	6.3%	8.7%		

<https://www.consultancy.uk/news/12952/the-20-largest-rd-and-innovation-spenders-of-the-globe>

2005

2022



[https://www.reddit.com/r/dataisbeautiful/comments/176uadf/oc\\_companies\\_with\\_highest\\_rd\\_spending/?rdt=64543](https://www.reddit.com/r/dataisbeautiful/comments/176uadf/oc_companies_with_highest_rd_spending/?rdt=64543)

# Hype Cycle for Artificial Intelligence, 2024



Source: Gartner  
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# 2/3



Federated  
European  
Genome-phenome  
Archive



European  
Genomic Data  
Infrastructure



**Federated  
European  
Genome-phenome  
Archive**



**European  
Genomic Data  
Infrastructure**

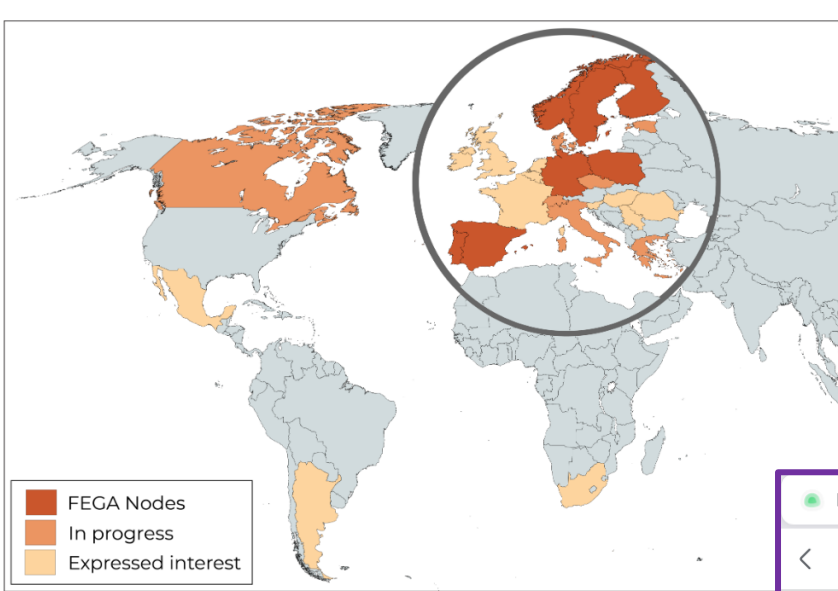


The **Federated EGA** is a global resource for discovery of and access to sensitive human omics and associated data consented for secondary use, through a network of human data repositories to accelerate biomedical research and improve human health. The Federated EGA network was launched in September 2022 with five inaugural nodes, and **since 2023 seven operational nodes** can share data across national borders in adherence to European and national laws.

A few weeks after FEGA's official launch, in November 2022, the **European Genomic Data Infrastructure (GDI)** project was kicked-off. This European Commission co-funded project, coordinated by ELIXIR, is aimed to deliver federated, sustainable and secure data infrastructure to access genomic and related phenotypic and clinical data across Europe. This project supports the aim of the [1+MG initiative](#) (25 EU countries, Norway and UK) to enable personalised medicine and health through a shared framework and infrastructure for securely accessing and integrating high quality genomic data and other health data across borders.1+MG will be an integral component of the European Health Data Space (EHDS) for secondary use (Healthdata@EU) as an authorised participant.

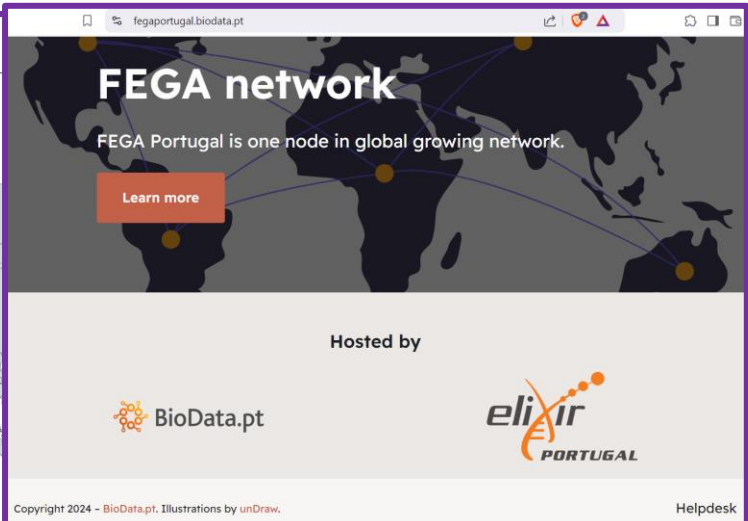
(...) **FEGA and GDI are both built on open and interoperable software solutions**, a subset of which are based on the [LocalEGA components](#). FEGA and GDI implementation solutions are based on international community standards, for example those developed by the [Global Alliance for Genomics and Health](#), which contributes to making them interoperable...

Map of FEGA status across the world



Current status of the FEGA Network

Node	Description	
<a href="#">CEGA</a>	Central EGA is managed by the Centre for Genomic Regulation (CRG) and EMBL-EBI, a trusted repository for sensitive data since 2008. CEGA coordinates the FEGA network and the EGA catalogue.	
<a href="#">Finland</a>	FEGA Finland is hosted by CSC - IT Center for Science Ltd., which is the national ELIXIR node in Finland. CSC is a state-owned company specialising in providing high-quality IT infrastructure and services for education and research.	
<a href="#">Germany</a>	The German Human Genome-Phenome archive (GHGA) is part of the German National Genomic Data Infrastructure (NfDI). It is coordinated by the German Cancer Research Center (DKFZ) and its academic partners.	
<a href="#">Norway</a>	FEGA Norway is a service by ELIXIR Norway, the Norwegian node of the European Open Science Infrastructure. ELIXIR Norway is hosting the service relying on the infrastructure for sensitive data. ELIXIR Norway is a consortium of 5 Norwegian universities by University of Bergen.	
<a href="#">Spain</a>	FEGA Spain is co-hosted by the Barcelona Supercomputer Center (BSC) and the Centre for Genomic Regulation (CRG), both part of ELIXIR Spain and the Spanish National Infrastructure for Genomics and Health (INGENIO) associated with Science and Technology (IMPaCT).	
<a href="#">Sweden</a>	FEGA Sweden is hosted by the National Bioinformatics Infrastructure Sweden (NBIS), Uppsala University. NBIS forms the bioinformatics platform at SciLifeLab and constitutes the European organisation ELIXIR.	
<a href="#">Poland</a>	FEGA Poland is hosted by Biobank Lodz, which is part of University of Lodz. Biobank Lodz is an element of the infrastructure of the Regional Digital Medicine Centers established by the Medical Research Agency.	2022
<a href="#">Portugal</a>	FEGA Portugal is managed by BioData.pt, the distributed infrastructure for Life and Health data for Portugal. This entity is a non-profit association of 15 life sciences R&I organisations spread across the country, and the home of ELIXIR Node in Portugal.	2023



EGA Status

Federated Nodes

99.65%	Finnish Federated Services	
99.58%	Norwegian Federated Services	
99.72%	Polish Federated Services	
99.44%	Portuguese Federated Services	
99.79%	Spanish Federated Services	
99.72%	Swedish Federated Services	



English

Search

## Shaping Europe's digital future

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# Common European Data Spaces

Common European Data Spaces will make more data available for access and reuse. This will be done in a trustworthy and secure environment for the benefit of European businesses and citizens.

## Building the single market for data

Data is reshaping the way we produce, consume and live. From real-time navigation to improved personalised medicine, precision farming or reducing CO<sub>2</sub> emissions, data is a key ingredient for innovative products and services.

To harness the value of data for the benefit of the European economy and society, the [European strategy for data](#) of February 2020 set out the path to the creation of Common European Data Spaces in a number of strategic fields: health, agriculture, manufacturing, energy, mobility, financial, public administration, skills, the European Open Science Cloud. The green deal data space also stresses meeting the Green Deal's objectives as a key priority.

Since then, data spaces in other important areas such as media and cultural heritage have also emerged. Together, the data spaces will gradually be interconnected to form the [single market for data](#).



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### Quick Links

[Status of Common European data spaces](#)

[EU-funded R&I projects on data](#)

Follow the latest progress and learn more about getting involved.



Follow the Commission's work on tech and digital @DigitalEU

## Rollout of Common European Data Spaces

Common European Data Spaces are currently being developed across 14 sectors/domains. Additional updates (including links) will be published when they become available.

Agriculture	<a href="#">AgriDataSpace</a> , <a href="#">Divine</a> , <a href="#">CrackSense</a> , <a href="#">ScaleAgData</a> , <a href="#">AgDataValue</a> , 4Growth, Dig4Live
Cultural Heritage	<a href="#">Europeana_pro</a> , <a href="#">Eureka3D</a> , <a href="#">5Dculture</a> , <a href="#">DE-BIAS</a> , <a href="#">AI4Europeana</a>
Energy	<a href="#">IntNET</a> , <a href="#">OMEGA-X</a> , <a href="#">EDDIE</a> , <a href="#">Enershare</a> , <a href="#">Synergies</a> , <a href="#">Data_cellar</a>
Finance	Procurement under the Digital Europe programme (under development)
Green deal	<a href="#">GREAT</a> , <a href="#">AD4GD</a> , <a href="#">B-Cubed</a> , <a href="#">FAIRCUBE</a> , <a href="#">USAGE</a> , <b>Smart cities and communities</b> <a href="#">DS4SSCC</a> DS4SSCC-DEP (under development)
Health	<b>European Health Data Space:</b> <a href="#">MyHealth@EU</a> <a href="#">HealthData@EU.Pilot</a> <a href="#">Joint Action Towards the European Health Data Space – TEHDAS</a> <b>Cancer images:</b> <a href="#">EUCAIM</a> <b>Genomics:</b> <a href="#">GDI</a>
Language	<a href="#">European language data space</a>
Manufacturing	<a href="#">Data_Space_4.0</a> , <a href="#">SM4RTENANCE</a> , <a href="#">UNDERPIN</a>
Media	<a href="#">TEMS</a>
Mobility	<a href="#">PrepDSpace4Mobility</a> , <a href="#">deployEMDS</a>
Public administration	Legal (under development) <a href="#">QOTS - Once Only Technical System</a> Public procurement: <a href="#">PPDS</a>
Research and Innovation	<a href="#">The European Open Science Cloud (EOSC)</a> , <a href="#">Skills4EOSC</a> , <a href="#">EOSC Focus</a> , <a href="#">FAIR-IMPACT</a> , <a href="#">RDA-TIGER</a> , <a href="#">FAIRCORE4EOSC</a> , <a href="#">AI4EOSC</a> , <a href="#">EuroScienceGateway</a> , <a href="#">FAIR-EASE</a> , <a href="#">RAISE</a> , <a href="#">SciLake</a> , <a href="#">EOSC4Cancer</a> , <a href="#">GraspOS</a> , <a href="#">CRAFT-QA</a> , <a href="#">AquaINFRA</a> , <a href="#">Blue-Cloud 2026</a> , <a href="#">OSCARs</a> , <a href="#">EVERSE</a> , <a href="#">OSTrails</a> , <a href="#">EOSC Beyond</a> , <a href="#">EOSC-ENTRUST</a> , <a href="#">SIESTA</a> , <a href="#">TITAN</a>
Skills	<a href="#">DS4Skills</a> EDGE-Skills (under development)
Tourism	<a href="#">DATES</a> , <a href="#">DEST</a>



## Declaration & Initiative: Cross-border access to genomic data, implementation of genomics-based health

2018

2020

2022

2023

2026

2027

Design & Testing

Scale-up & Sustainability



European  
Genomic Data  
Infrastructure



European Genomic Data Infrastr: x +

gdi.onemilliongenomes.eu

European Genomic Data Infrastructure

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Providing access to genomic data to improve research, policy making and healthcare across Europe

The **Genomic Data Infrastructure (GDI)** project is enabling access to genomic and related phenotypic and clinical data across Europe. It is doing this by establishing a federated, sustainable and secure infrastructure to access the data. It builds on the outputs of the **Beyond 1 Million Genomes (B1MG)** project and is realising the ambition of the **1+Million Genomes (1+MG)** initiative.

**The data**

The project involves **human genomic and related phenotypic and clinical data** held in databases across Europe. The project will focus on the **Genome of Europe** (a network of national reference genome collections), and cancer and infectious disease use cases. "Real" synthetic data will be used for validation before data are available through the infrastructure.

**Who will access it?**

Controlled access will be given to **approved clinicians, scientists in the public and private sector and healthcare policy makers**. Non-sensitive and aggregated data will be openly discoverable through the **European Genome Dashboard** and a federated query system. This system will support genotypic and phenotypic queries in natural language.

**What are the benefits?**

**Who is running it?**

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## Rollout of Common European Data Spaces

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Cultural Heritage	<a href="#">Europeana_pro</a> , <a href="#">Eureka3D</a> , <a href="#">5Dculture</a> , <a href="#">DE-BIAS</a> , <a href="#">A4Europeana</a>
Energy	<a href="#">IntNET</a> , <a href="#">OMEGA-X</a> , <a href="#">EDDIE</a> , <a href="#">Enershare</a> , <a href="#">Synergies</a> , <a href="#">Data_cellar</a>
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Health	<b>European Health Data Space:</b> <a href="#">MyHealth@EU</a> <a href="#">HealthData@EU.Pilot</a> <a href="#">Joint Action Towards the European Health Data Space – TEHDAS</a> <b>Cancer images:</b> <a href="#">EUCAIM</a> <b>Genomics:</b> <a href="#">GDI</a>
Language	<a href="#">European language data space</a>
Manufacturing	<a href="#">Data Space 4.0</a> , <a href="#">SM4RTENANCE</a> , <a href="#">UNDERPIN</a>
Media	<a href="#">TEMS</a>
Mobility	<a href="#">PrepDSpace4Mobility</a> , <a href="#">deployEMDS</a>
Public administration	Legal (under development) <a href="#">QOTS - Once Only Technical System</a> Public procurement: <a href="#">PPDS</a>
Research and Innovation	<a href="#">The European Open Science Cloud (EOSC)</a> , <a href="#">Skills4EOSC</a> , <a href="#">EOSC Focus</a> , <a href="#">FAIR-IMPACT</a> , <a href="#">RDA TIGER</a> , <a href="#">FAIRCORE4EOSC</a> , <a href="#">A4EOSC</a> , <a href="#">EuroScienceGateway</a> , <a href="#">FAIR-EASE</a> , <a href="#">RAISE</a> , <a href="#">SciLake</a> , <a href="#">EOSC4Cancer</a> , <a href="#">GraspOS</a> , <a href="#">CRAFT-OA</a> , <a href="#">AquaINFRA</a> , <a href="#">Blue-Cloud 2026</a> , <a href="#">OSCARs</a> , <a href="#">EVERSE</a> , <a href="#">OSTrails</a> , <a href="#">EOSC Beyond</a> , <a href="#">EOSC-ENTRUST</a> , <a href="#">SIESTA</a> , <a href="#">TITAN</a>
Skills	<a href="#">DS4Skills</a> , <a href="#">EDGE-Skills</a> (under development)
Tourism	<a href="#">DATES</a> , <a href="#">DEST</a>

European Genomic Data Infrastructure	
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Who is involved	
Country	Institute
Belgium	Interuniversity Microelectronics Centre (IMEC) Sciensano (ISCI) VIB VZW
Bulgaria	Medical University of Sofia (MUS) Ministry of Education and Science (MESBG)
Croatia	Ruder Boskovic Institute (RBI)
Cyprus	Ministry of Health (MPHS-MQH) University of Cyprus (UCY)
Czech Republic	Masaryk University (MUNI)
Denmark	Danish National Genome Center (NGC)
Estonia	Ministry of Social Affairs (MSA) University of Tartu (UTARTU)
Finland	Finnish Institute for Health and Welfare (THL) IT Center for Science (ICS) Ministry of Social Affairs and Health (STM) University of Helsinki (UHE)
France	Central Analyser of Data (CAD) joining in 2024 National Centre for Scientific Research (CNRS) National Institute of Health and Medical Research (INSERM)
Germany	Eberhard Karls University of Tübingen (UT) EMPIRICA Federal Ministry of Education and Research (BMBF) Federal Ministry of Health (BMG) German Cancer Research Centre (DKFZ) University Hospital of Aachen (UKA) University of Freiburg Albert Ludwigs (ALU-FL) Albert Ludwigs Universität Freiburg
Hungary	National Institute of Oncology (IOI) National Research, Development and Innovation Office (NKFIH)
Ireland	Royal College of Surgeons in Ireland (RCSI) The Health Research Board (HRB) University College Dublin (UCD) University of Limerick (UL) University of Maynooth (MU)
Italy	Catholic University of the Sacred Heart (UCSC) Giannina Gaslini Institute (GGI) Italian Institute of Technology (IIT) The National Research Council (CNR) Vita-Salute San Raffaele University (UNISR)
International organisations	Biobanks And Biomolecular Resources Research Infrastructure Consortium (BBMR) European Molecular Biology Laboratory – EMBL and EMBL-EBI
Latvia	Latvia Bio Medicine Center for Research and Studies (LBMC) Ministry of Health of the Republic of Latvia (Msh-LV)
Lithuania	National Cancer Institute (NCI) The Hospital of Lithuanian University of Health Sciences Kauno Klinikos (HKL) Vilnius University Hospital Santaros Klinikos (VULSK)
Luxembourg	The Ministry of Higher Education, Research and Innovation (MESRI) PNED OIE
Malta	The Ministry for Health and Active Ageing (MHA)
The Netherlands	Erasmus University Medical Center Rotterdam (Erasmus MC) Health-RI (HRI) The Netherlands Cancer Institute (NKI) University Medical Center Groningen (UMCG)
Norway	Norwegian Directorate of Health (HOD) University of Bergen (UB) University of Oslo (UO)
Portugal	Associação BIP4DAB (BioData.pt) Instituto Superior Técnico (IST) National Health Institute Dr. Ricardo Jorge (INSA) University of Aveiro (UAVER)
Romania	Authority for the Digitalisation of Romania (ADPR) Genomics Research and Development Institute (ICDG)
Slovenia	University of Ljubljana (ULJ) University of Maribor (UM)
Spain	Barcelona Supercomputing Center (BSC) Carlos III Health Institute (ISCIII) Centre for Genomic Regulation (CRG) The National Centre for Genomic Analysis (CNAG)
Sweden	Stockholm University (SU) University of Umeå (UmeU) University of Uppsala (UU) Swedish Governmental Agency for Innovation Systems (VINNOVA)

1+MG

### The vision

In 2018, the **1+Million Genomes (1+MG) initiative** was launched to create a European data infrastructure for genomic data. This would implement common national rules enabling federated data access. Twenty six European countries have signed the declaration. The goal of the initiative is **to enable secure access to genomic and the corresponding clinical data across Europe for better research, personalised healthcare and health policy making.**

B1MG

### Designing and testing

In 2020, the **Beyond 1 Million Genomes (B1MG)** project began. The project developed guidelines on how to implement the 1+MG initiative. Amongst its outputs are blueprints and recommendations for building a federated network of genomic data (the **1+MG Framework**). It also produced tools to help countries self assess their readiness to implement genomics into healthcare systems.

### Scaling up and sustaining

In 2022, the GDI project began. This €40M project is building on the preparatory work of 1+MG working groups, the B1MG project and investments of EU countries. It is **creating and deploying the technical capacity for accessing genomic data**. In this way, it will implement the vision of the 1+MG initiative.

Portugal

Associação BIP4DAB (BioData.pt)

Instituto Superior Técnico (IST)

National Health Institute Dr. Ricardo Jorge (INSA)

University of Aveiro (UAVR)

National Health Institute Doutor Ricardo Jorge	INSA	Portugal
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digital-strategy.ec.europa.eu/en/policies/1-million-genomes

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European '1+ Million Genomes' Initiative

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What is the 1+MG flagship initiative?

What is the benefit for EU citizens?

What are the objectives?

Genome of Europe

Main outcomes and deliverables

The 1+ Million Genomes (1+MG) initiative has the potential to improve disease prevention, allow for more personalised treatments and support groundbreaking research.

What is the 1+MG flagship initiative?

The EU's flagship '1+ Million Genomes' (1+MG) initiative aims to enable secure access to genomics and the corresponding clinical data across Europe to support groundbreaking research and health policy making and incentivise personalised healthcare treatments with the potential to improve disease prevention. This is one of the world's biggest projects on genomics and contributes chiefly to setting global standards in this domain.

Genomics has become increasingly important globally. The European Union places a strong emphasis on citizen-focused and patient-friendly genomic collaboration and research. As part of this commitment, the EU ensures that the highest standards are applied to the usage, access, and storage of genomic data. The 1+ Million Genomes (1+MG) initiative, one of the world's largest projects in this field, plays a pivotal role in setting global standards. Furthermore, its connection to the [European Health Data Space](#) will provide an additional boost to the information potential benefitting researchers, healthcare professionals and, eventually, every citizens.

On April 10, 2018, during the [2018's Digital Day](#) event, 25 EU countries, along with the UK and Norway, signed the Member States' [declaration](#) aimed at strengthening efforts to establish a European data infrastructure for genomic data and implementing common national rules enabling federated data access. The initiative forms part of the EU's agenda for the [Digital Transformation of Health and Care](#) and is aligned with the goals of the [European Health Data Space](#).

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Quick Links

1+MG Framework website

Follow the latest progress and learn more about getting involved.

Follow the Commission's work on eHealth @eHealth\_EU

1+MG

Timeline diagram showing the progression of the 1+MG initiative from 2018 to 2027. Key milestones include: 2018 (Declaration & Initiative: Cross-border access to genomic data, implementation of genomics-based health), 2020 (Design & Testing), 2022 (Scale-up & Sustainability), 2023 (European Genomic Data Infrastructure), 2026, and 2027.

framework.onemilliongenomes.eu

1+MG Framework

1+MG Framework

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The 1+MG Framework is a series of components based on the output of the 1+MG projects that provide guidance on ELSI, data quality, data standards, and technical infrastructure standards and APIs.

Core 1+MG Framework

Technical framework

Data quality & inclusion

Sequence data generation and quality requirements for WGS/WES data to be labelled as 1+MG compliant

Data models, standards & ontologies

1+MG minimal data models for different use cases and recommendations on ontologies and data standards

Technical infrastructure

Stack of standards, open source references implementations, synthetic data and proof of concepts that can be used to establish a 1+MG node

Implementation

Governance and ELSI

Guidance and recommendations on how to address governance and ELSI aspect to ensure data can be made available

Genomics into healthcare

Assessment Maturity Level Model to guide healthcare systems on their journey to implement genomic medicine

National implementation

Find pointers to country specific information resources and national research data management practices

How the project is organised | The 1+MG Framework | Use cases | 1+MG Framework

framework.onemilliongenomes.eu/usecases

# 1+MG Framework

1+MG Framework About Contribute GitHub Search

## 1+MG Framework

- European Project Alignment
- Governance and ELSI
- Data models, standards & ontologies
- Technical infrastructure
- Data quality & inclusion
- Genomics into healthcare
- Use cases**
- Rare diseases
- Cancer
- Common and complex diseases
- Infectious diseases
- Population genomics
- National implementation

# Use cases

This section outlines scenarios in which the project's infrastructure can make a significant impact, and are intended to guide the development of the project's infrastructure and inform its priorities.

Search Type here...

### Cancer

The Cancer Use Case has been the secondary use case to test the 1+MG Infrastructure. Although a work still in progress it has been acknowledged that the architecture largely supports the Cancer Use Case in its current format.

### Common and complex diseases

The Common and Complex Disease Use Case are focussing on the development of a national-focussed decision support software based on Polygenic Risk Scores (PRS) results.

### Infectious diseases

The Infectious Disease Use Case aims to strengthen European preparedness against future pandemics.

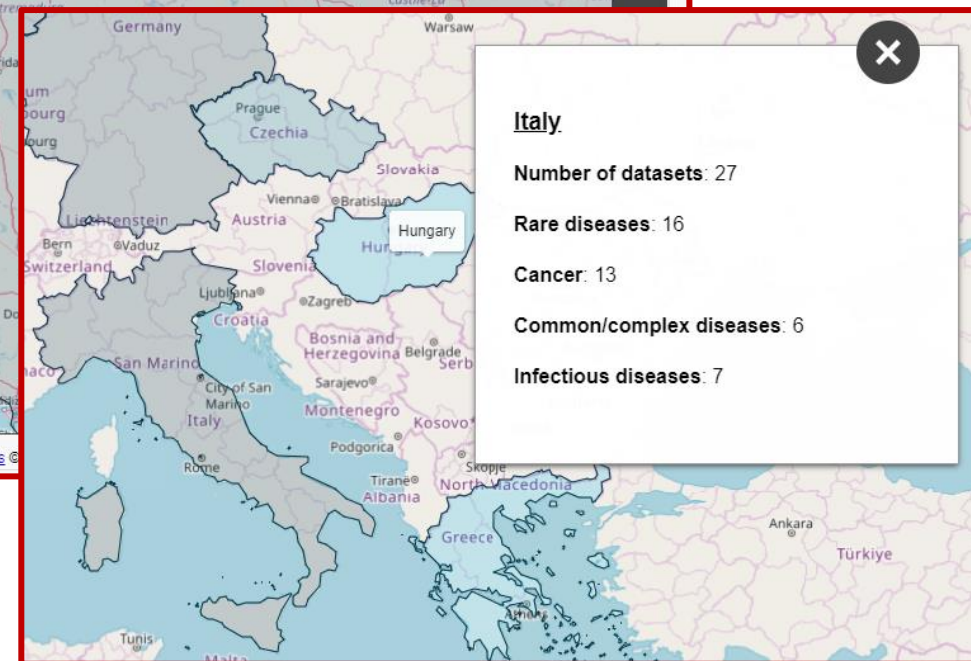
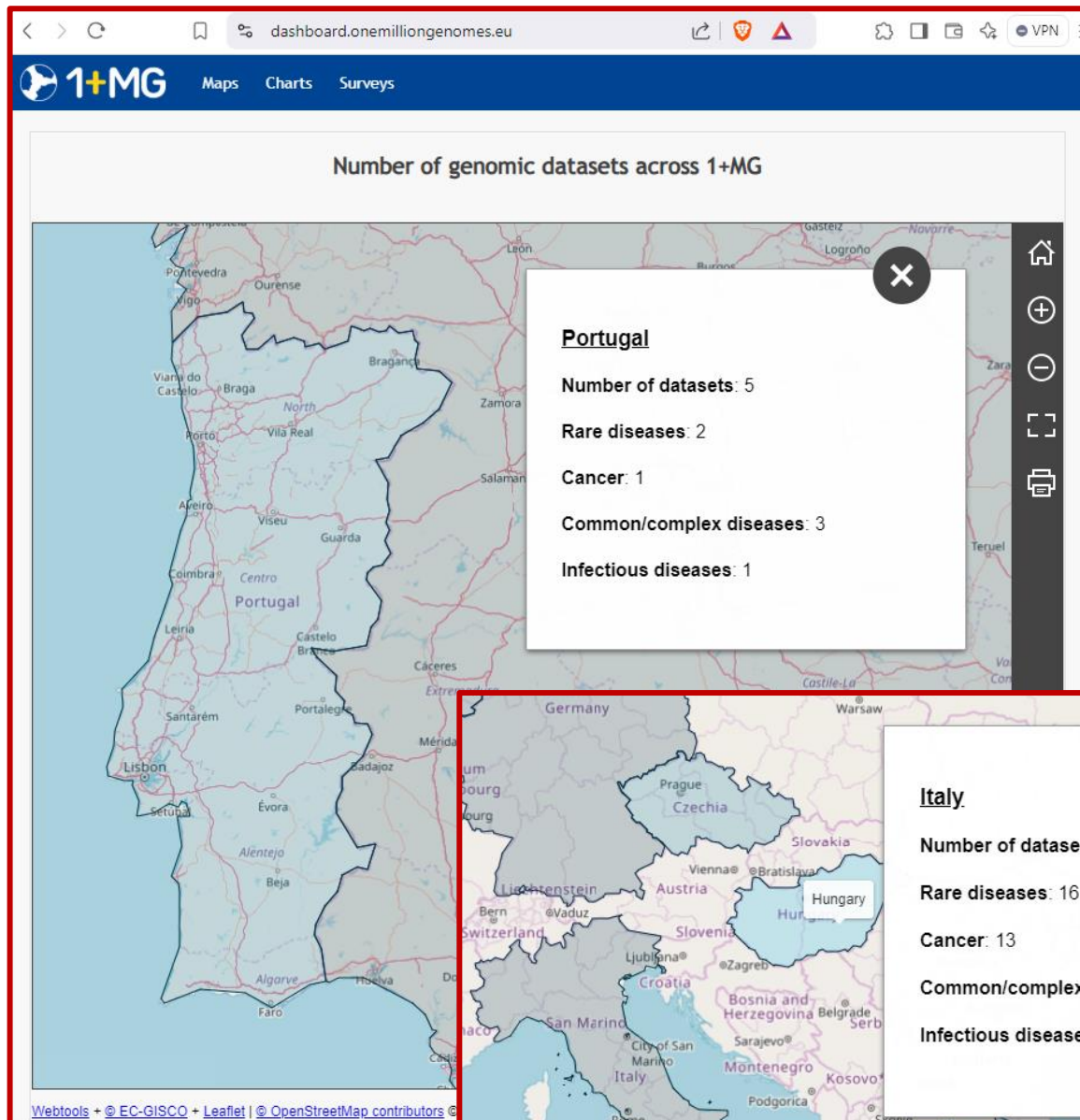
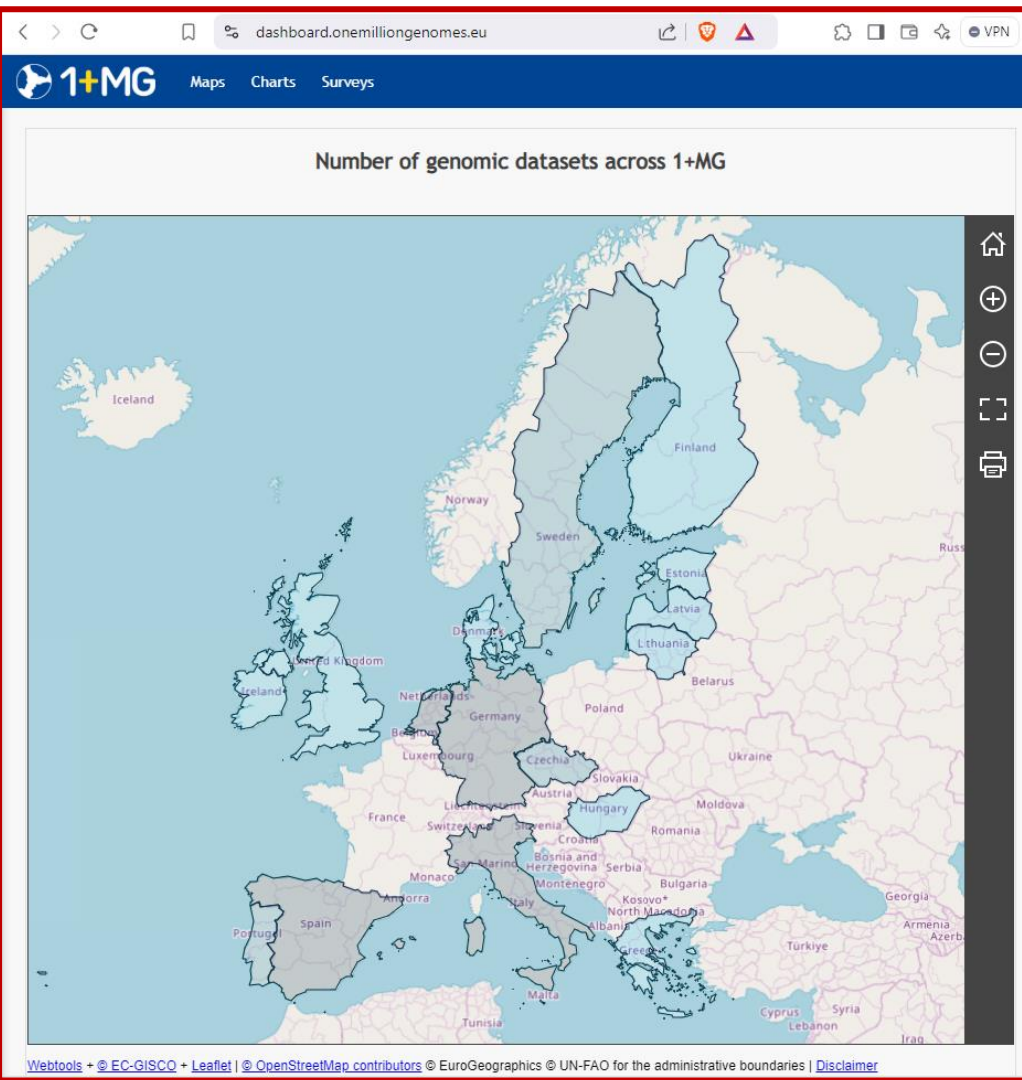
### Population Genomics - Genome of Europe (GoE)

The Genome of Europe project was created to have a Europe-wide collection of subgroup-specific reference genomes to support population genomics and make precision medicine more robust.

### Rare diseases

The rare disease use case has been the central use case demonstrating the 1+MG Infrastructure to date.

...  
*discussões recentes  
na iniciativa têm  
feito emergir o  
interesse em incluir  
nestes “uses cases”  
cenários de  
farmacogenética /  
farmacogenómica*  
...



## COMMONALITIES



### Vision & scope

A node hosting human genomics data and sharing public metadata within the network, thus providing federated discovery and access.



### Software solutions & standards

Interoperable software solutions based on the same GA4GH international standards.



### Key partners

Largely overlapping institutions involved in designing and operating FEGA and GDI nodes.

## DIFFERENCES



### Governance model

FEGA nodes are Data Processors. The DACs are Data Controllers for their own datasets.



### Data inclusion criteria

Almost any omics in need of control access.



### Software stack maturity

FEGA provides a software solution for data and metadata submission, storage, and permissions management.



Federated  
European  
Genome-phenome  
Archive



European  
Genomic Data  
Infrastructure

The EDIC legal entity (part of the EHDS) will be the data controller for all the hosted datasets.

Initially, WES and WGS produced for the Genome of Europe and 1+ Million Genomes initiatives.

GDI is building open source reference implementation for the 5 functionalities covering the full data life cycle.

## Estratégia BioData.pt

Manter os dois serviço, pois cada um poderá melhor servir propósitos específicos:

- FEGA => Academia, I&D, Bioinformática, ...
- GDI => Medicina genómica, ... => ...projeto TEHDAS2 ("cross-border secondary use of health data")

tehdas.eu/project/

Radio AlHara - راديو... OCR - Técnico Lisboa Spent time - Details... Subscriber - Fumaça SketchUp Intranet@INESC-ID

# TEHDAS2 Project

Project Packages Partners Events

The TEHDAS2 joint action is creating concrete guidelines and technical specifications for using health data across country borders. The work involves 29 countries.

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The TEHDAS2 joint action is creating concrete guidelines and technical specifications for using health data across country borders. The work involves 29 countries.

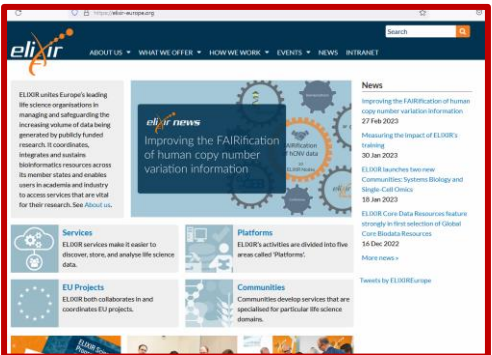
## What is our goal?

Our goal is to develop common guidelines and technical specifications to facilitate smooth access to health data and strengthen European collaboration in using data efficiently. Secondary use of health data enhances competitiveness of European research and innovation in the health sector.

## Portugal

### Serviços Partilhados do Ministério da Saúde

Project partners
Project partners include most partners coordinated by national governments and other public organisations such as hospitals, research centres and universities.
<b>Finland</b> Finnish Institute for Health Data Finnish Institute for Health Data Finnish Institute for Health Data Finnish Institute for Health Data Finnish Institute for Health Data
<b>Austria</b> The Austrian National Public Health Institute
<b>Belgium</b> The Federal Public Service (FPS) Health, Food Chain Safety and Environment Belgium Belgium Health Data Agency
<b>Bulgaria</b> Ministry of Health, Republic of Bulgaria
<b>Croatia</b> Croatian Institute of Public Health
<b>Cyprus</b> National Health Authority, Cyprus Cyprus Cyprus
<b>Czech Republic</b> Ministry of Health of the Czech Republic Research University
<b>Denmark</b> The Danish Health Data Agency Danish Health Data Agency Danish Health Data Agency Danish Health Data Agency
<b>Estonia</b> Ministry of Health and Consumer Affairs of the Republic of Estonia
<b>France</b> Ministry of Health and Prevention, France Health Data Hub
<b>Germany</b> Federal Ministry of Health, Germany Federal Ministry of Health and Medical Research, Germany German Health Data German Health Data
<b>Greece</b> Ministry of Health, Greece National Institute for Research and Technology National Institute for Research and Technology
<b>Hungary</b> National Institute for Research and Technology National Institute for Research and Technology National Institute for Research and Technology National Institute for Research and Technology
<b>Iceland</b> Ministry of Health of Iceland
<b>Ireland</b> Department of Health, Ireland National University of Ireland Galway
<b>Italy</b> Ministry of Health, Italy Ministry of Health, Italy Ministry of Health, Italy Ministry of Health, Italy Ministry of Health, Italy
<b>Latvia</b> Ministry of Health, Latvia National Institute for Research and Technology National Institute for Research and Technology National Institute for Research and Technology
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<b>Luxembourg</b> Ministry of Health, Luxembourg National Institute for Research and Technology National Institute for Research and Technology
<b>Malta</b> Ministry of Health and Medical Services, Malta
<b>Netherlands</b> Ministry of Health and Welfare, Netherlands National Institute for Research and Technology National Institute for Research and Technology
<b>Norway</b> The Norwegian Directorate of Health Norwegian Directorate of Health Norwegian Directorate of Health Norwegian Directorate of Health
<b>Poland</b> The Ministry of Health of the Republic of Poland Health Data Hub
<b>Portugal</b> Serviços Partilhados do Ministério da Saúde
<b>Romania</b> Institute of Health and Consumer Affairs of the Republic of Romania
<b>Slovakia</b> National Health Information Centre
<b>Slovenia</b> Zdravstveno informacijski center National Institute for Research and Technology National Institute for Research and Technology
<b>Spain</b> Ministry of Health, Spain National Institute for Research and Technology National Institute for Research and Technology
<b>Sweden</b> National Health Data Agency National Health Data Agency National Health Data Agency National Health Data Agency



**2010** - 1st proposal to Portuguese ELIXIR node (iBET, IGC, INESC-ID, ITQB)

**2011** - Bioinformatics platform about woody plants in ELIXIR's scope (CEDOC, FCCN, iBET, IGC, INESC-ID, ITQB)

**2012** - Portuguese node submission (CEBAL, FCCN, iBET, IGC, INESC-ID, INIAV, ITQB)

**2013** - Creation of BioData.pt  
Coordinated by IGC  
ELIXIR foundation lead by EMBL-EBI

**2014** - Portugal joins ELIXIR (FCT)

**2016** - Foundation of ELIXIR PT (iBET, IGC, INESC-ID, ITQB)

**2017** - BioData.pt project

**2018** - ELIXIR PT and BioData.pt fusion and IST-ID integration

**2021** - BioData.pt Association



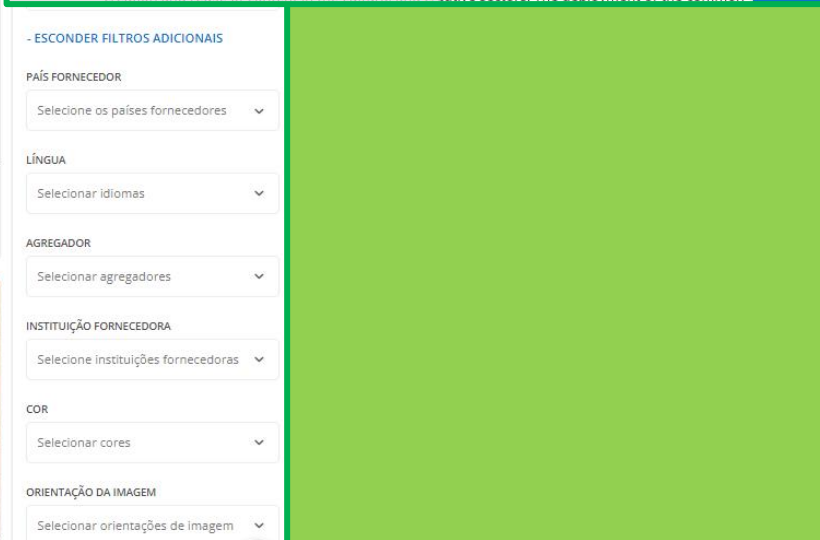
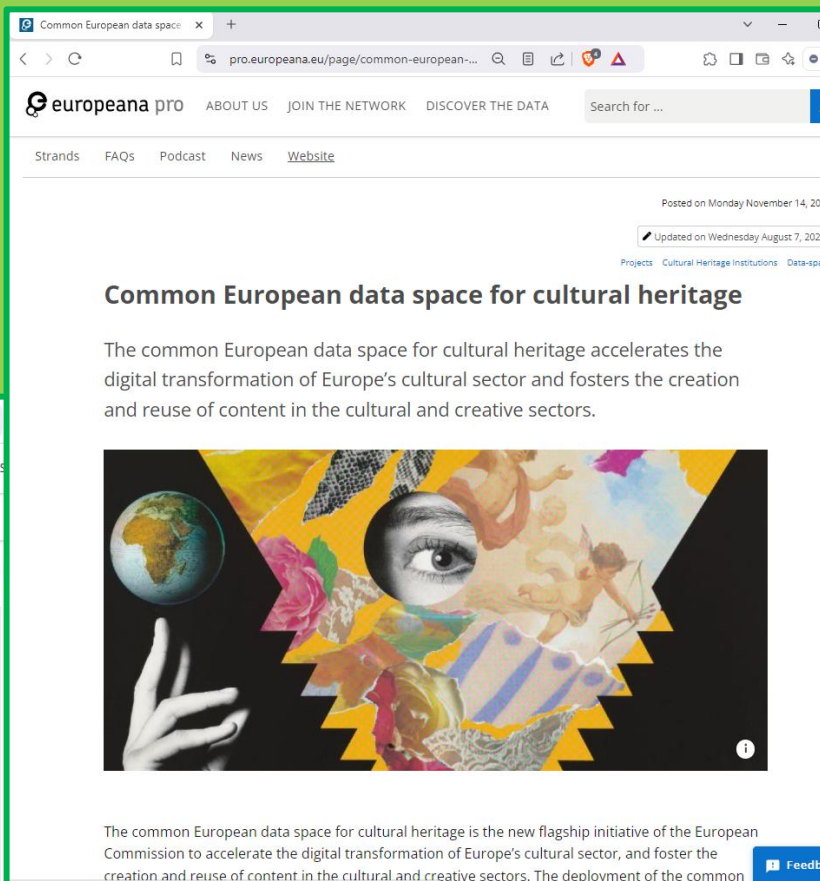
### OUR ASSOCIATES



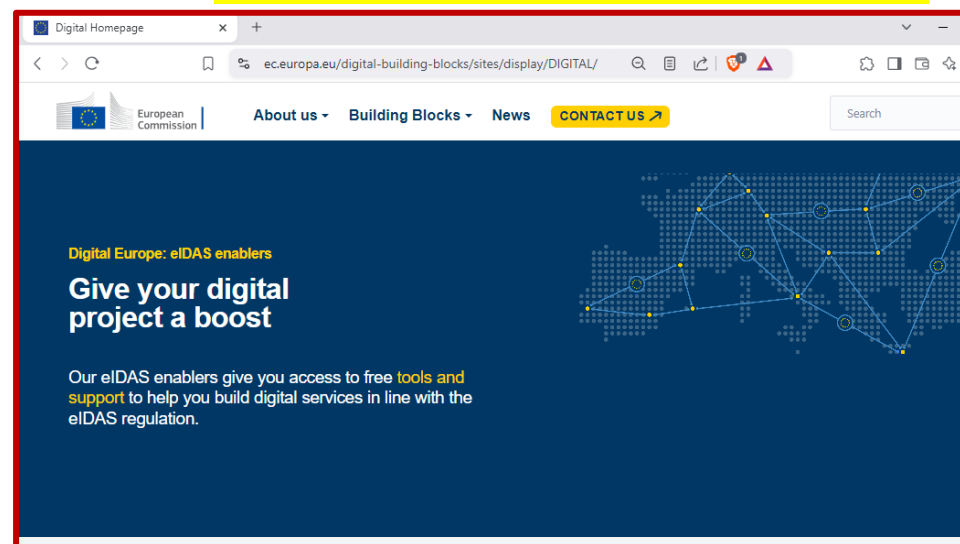
Universidade do Minho



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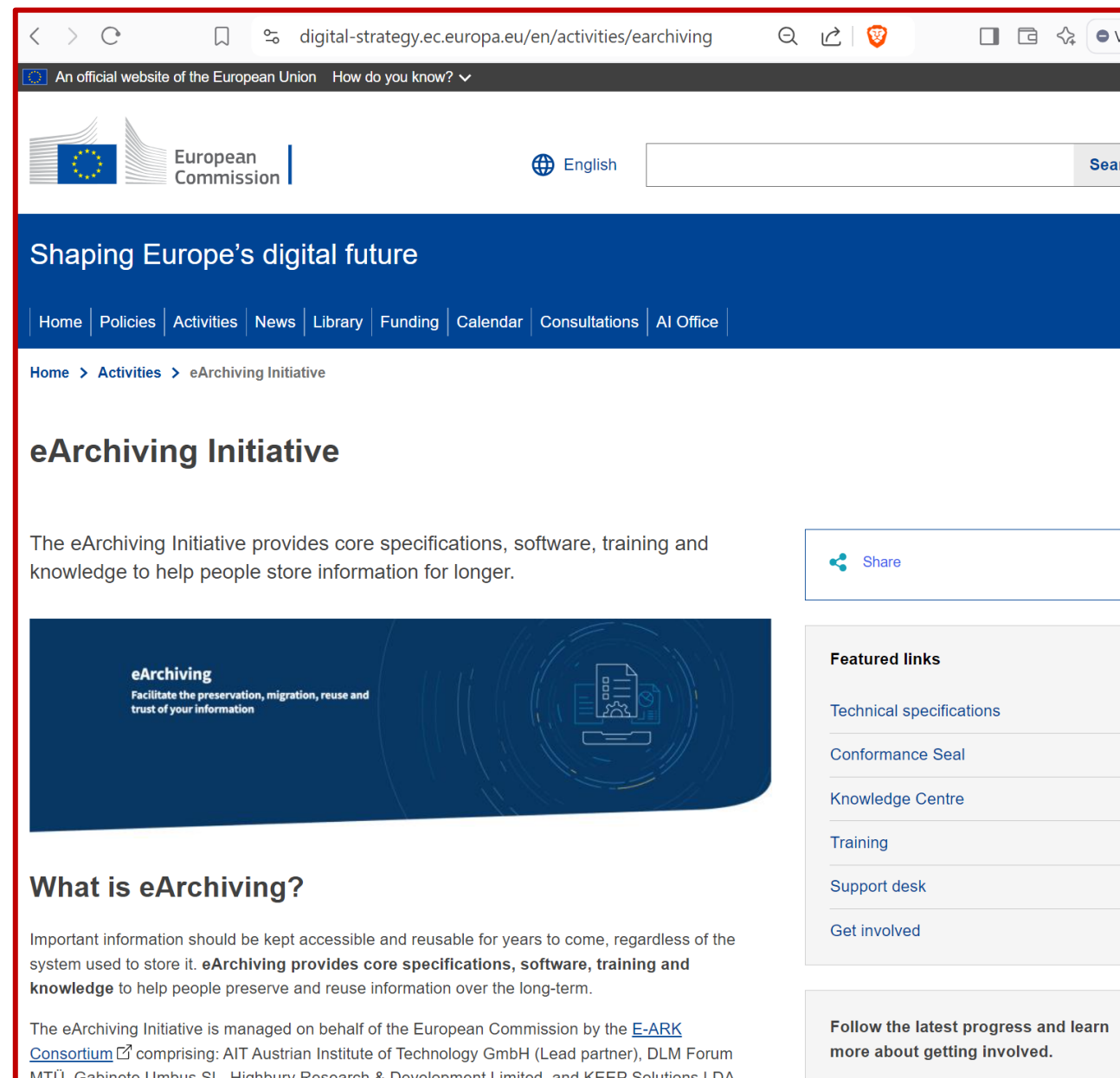


Rollout of Common European Data Spaces	
Common European Data Spaces are currently being developed across 14 sectors/domains. Additional updates (including links) will be published when they become available.	
Agriculture	<a href="#">AgriDataSpace</a> , <a href="#">Divine</a> , <a href="#">CrackSense</a> , <a href="#">ScaleAgData</a> , <a href="#">AoDataValue</a> , <a href="#">4Growth</a> , <a href="#">Dig4Live</a>
Cultural Heritage	<a href="#">Europeana pro</a> , <a href="#">Eureka3D</a> , <a href="#">5Dculture</a> , <a href="#">DE-BIAS</a> , <a href="#">AI4Europeana</a>
Energy	<a href="#">IntNET</a> , <a href="#">OMEGA-X</a> , <a href="#">EDDIE</a> , <a href="#">Enershare</a> , <a href="#">Synergies</a> , <a href="#">Data cellular</a>
Finance	Procurement under the Digital Europe programme (under development)
Green deal	<a href="#">GREAT</a> , <a href="#">AD4GD</a> , <a href="#">B-Cubed</a> , <a href="#">FAIRICUBE</a> , <a href="#">USAGE</a> , <a href="#">DS4SSCC</a> , <a href="#">DS4SSCC-DEP</a> (under development)
Health	<b>European Health Data Space:</b> <a href="#">MyHealth@EU</a> <a href="#">HealthData@EU Pilot</a> <a href="#">Joint Action Towards the European Health Data Space – TEHDAS</a> <b>Cancer images:</b> <a href="#">EUCAIM</a> <b>Genomics:</b> <a href="#">GDI</a>
Language	<a href="#">European language data space</a> <a href="#">Data Space 4.0</a>
Manufacturing	<a href="#">SM4RTENANCE</a> , <a href="#">UNDERPIN</a>
Media	<a href="#">TEMS</a>
Mobility	<a href="#">PrepDSpace4Mobility</a> , <a href="#">deployEMDS</a>
Public administration	Legal (under development) <a href="#">OOTS - Once Only Technical System</a> Public procurement: <a href="#">PPDS</a>
Research and Innovation	<a href="#">The European Open Science Cloud (EOSC)</a> , <a href="#">Skills4EOSC</a> , <a href="#">EOSC Focus</a> , <a href="#">FAIR-IMPACT</a> , <a href="#">RDA TIGER</a> , <a href="#">FAIRCORE4EOSC</a> , <a href="#">AI4EOSC</a> , <a href="#">EuroScienceGateway</a> , <a href="#">FAIR-FASE</a> , <a href="#">RAISE</a> , <a href="#">SciLake</a> , <a href="#">EOSC4Cancer</a> , <a href="#">GraspOS</a> , <a href="#">CRAFT-OA</a> , <a href="#">AqualNFERA</a> , <a href="#">Blue-Cloud 2026</a> , <a href="#">OSCARs</a> , <a href="#">EVERSE</a> , <a href="#">OSTrails</a> , <a href="#">EOSC Beyond</a> , <a href="#">EOSC-ENTRUST</a> , <a href="#">SIESTA</a> , <a href="#">TITAN</a>
Skills	<a href="#">DS4Skills</a> , <a href="#">EDGE-Skills</a> (under development)
Tourism	<a href="#">DATES</a> , <a href="#">DEST</a>

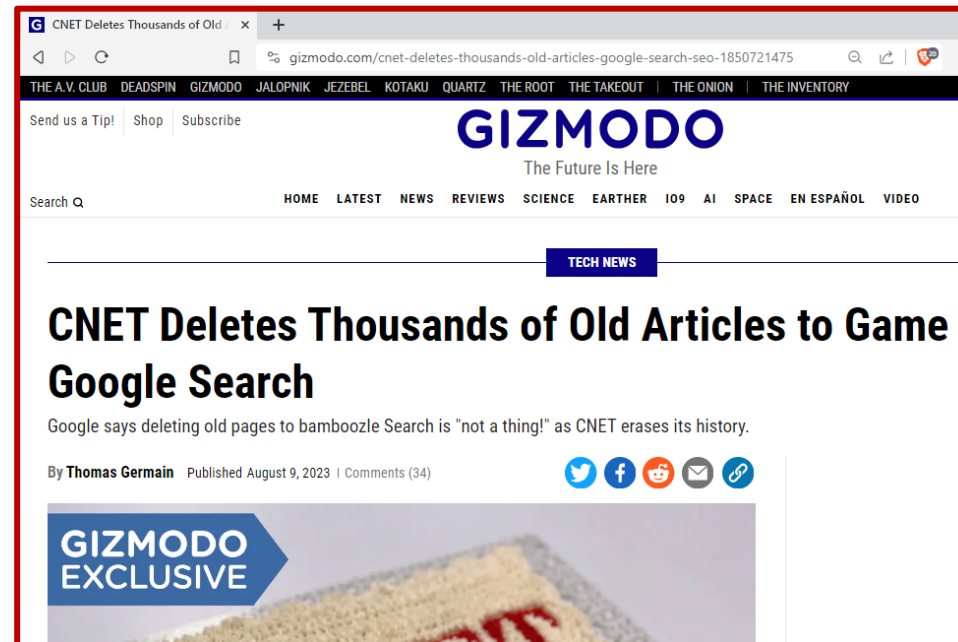
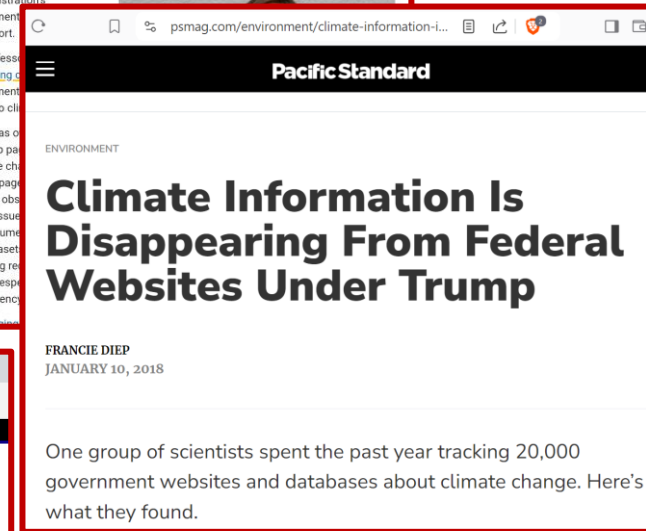
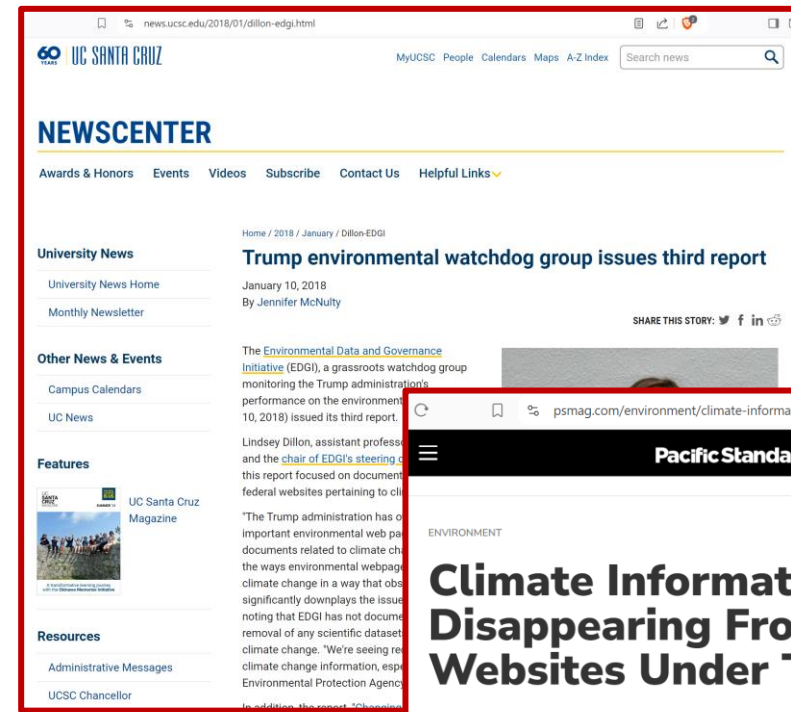
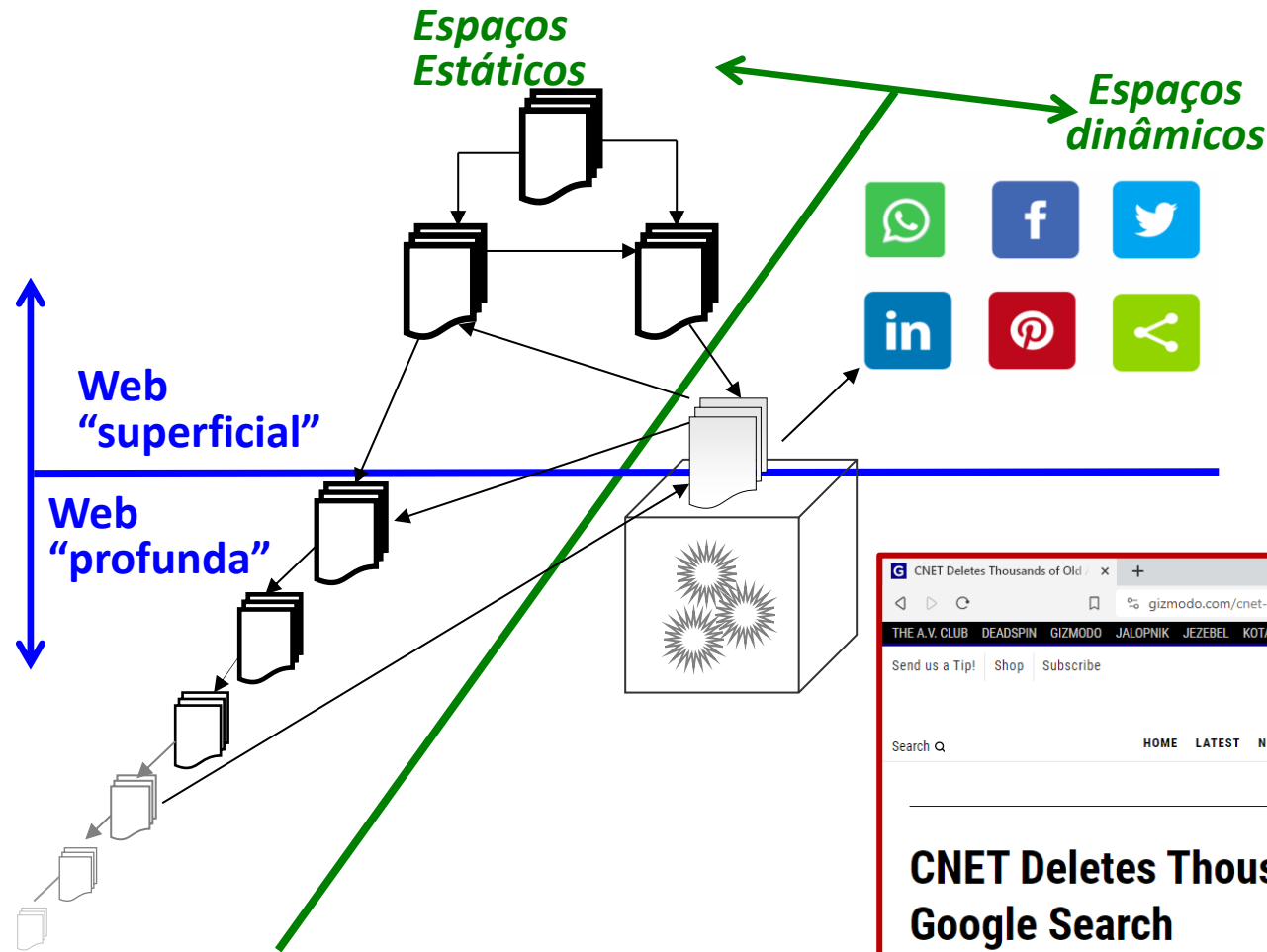


# eArchiving Initiative

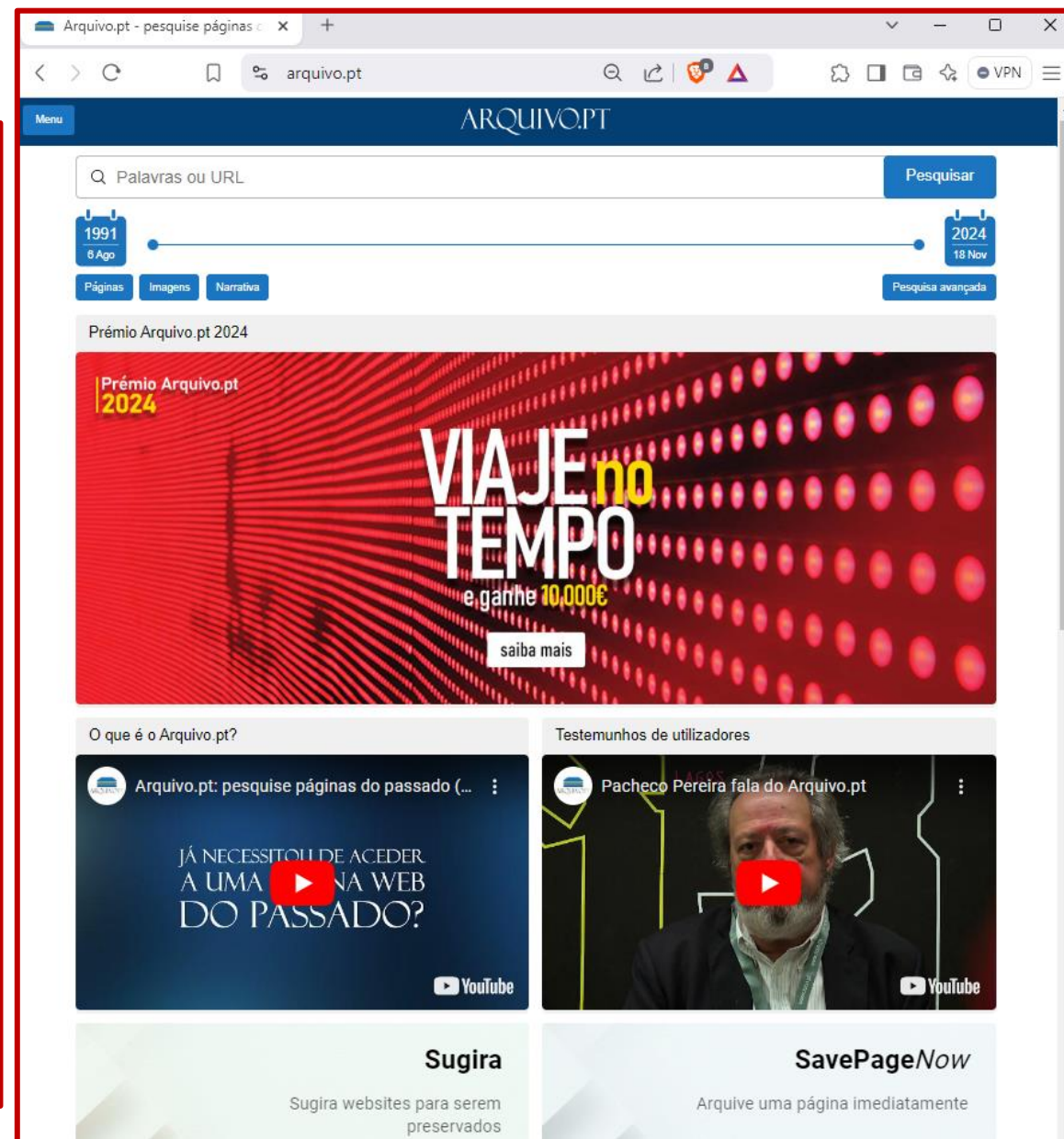
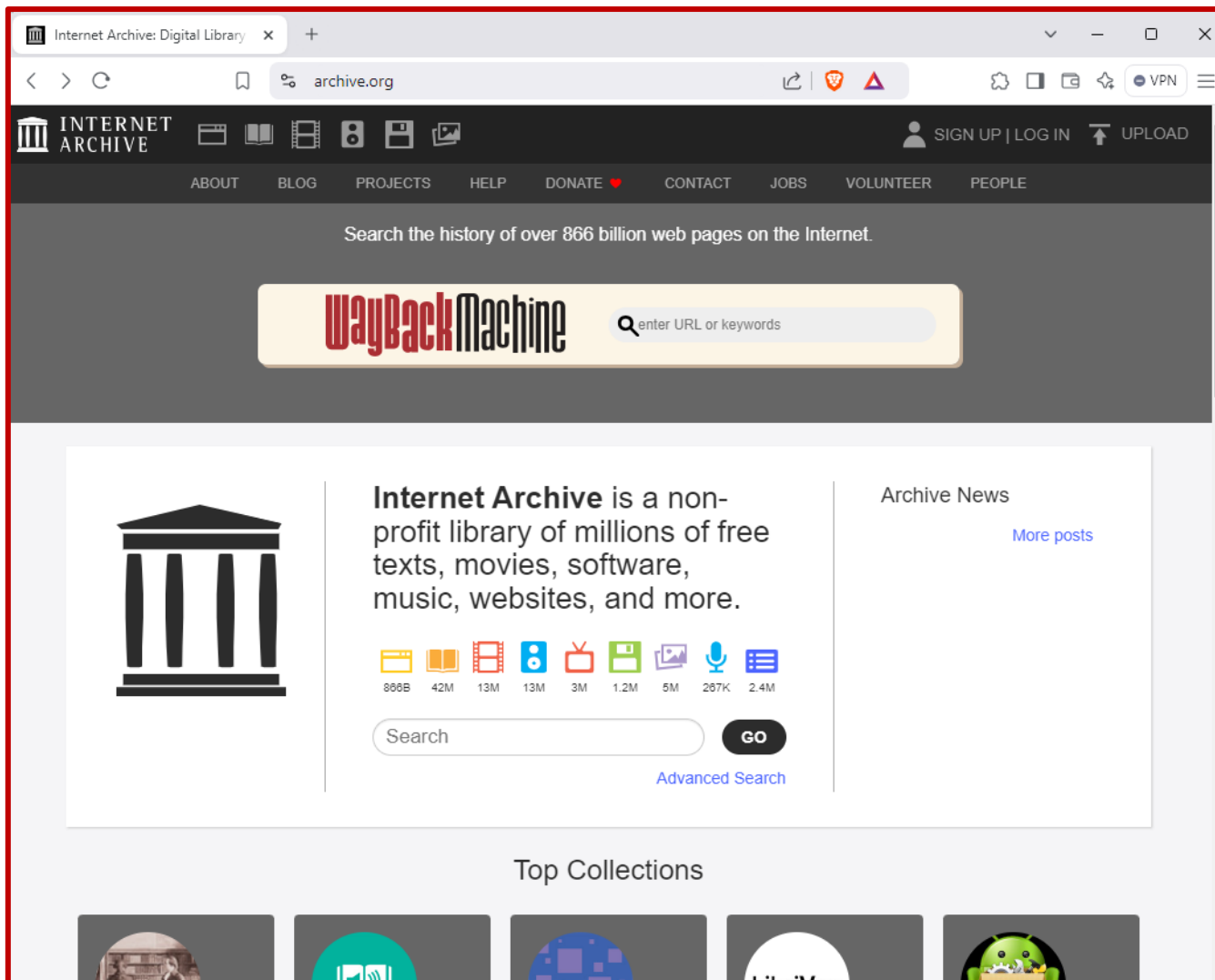
<https://digital-strategy.ec.europa.eu/en/activities/earchiving>



# “preservação digital”



# Archive.org => Arquivo.pt ...



# O INFARMED pela primeira vez na “web” em 1996 (?), e com “I Jornadas” em 1997 (?)... ;-)

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infarmed.pt:80 18 Dezembro às 21h48, 1996

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... ..  
para  
pensar  
... ..

# Autenticação Gov

AMA, IP

2,1★  
4,94 mil críticas

1 M+  
Transferências

PEGI 3

Instalar

Acerca desta app →

Com a aplicação autenticacao.gov.pt o cidadão pode ativar a Chave Móvel Digital (CMD) com um vídeo-selfie e com a validação do cartão de cidadão. Consegue também nesta aplicação gerar um código de segurança temporário, ou usar validação biométrica do seu telemóvel, em alternativa ao código por SMS, para se autenticar com CMD em portais públicos ou privados. Dispõe ainda de um serviço de gestão de autorizações de acesso aos seus dados e de assinatura...

# id.gov.pt

AMA, IP

2,9★  
5,76 mil críticas

1 M+  
Transferências

PEGI 3

Instalar

Acerca desta app →

Aplicação da Administração Pública que lhe permite guardar, consultar e partilhar os seus cartões (Ex: cartão de cidadão, carta de condução, cartão ADSE) em qualquer momento e em qualquer lugar recorrendo à sua Chave Móvel Digital. Dispõe ainda de um serviço de gestão de autorizações de acesso aos seus dados.

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# Give your digital project a boost

Our eIDAS enablers give you access to free **tools and support** to help you build digital services in line with the eIDAS regulation.

### Spotlight

#### What can eID do for you?

The Future of cross-border digital services is here. Whether you are a public sector visitor, a new mover or already a resident, eID allows you to access services you need.

[DISCOVER EID CROSS-BORDER](#)

## A digital ID and personal digital wallet for EU citizens, residents and businesses

EU Digital Identity Wallets will provide a safe, reliable, and private means of digital identification for everyone in Europe. Every Member State will provide at least one wallet to all its citizens, residents, and businesses allowing them to prove who they are, and safely store, share and sign important digital documents.

[Discover the wallet >](#)

Your personal data tells your life's story: **you should be the one to control it.**

Obrigado pela atenção!