PRESS RELEASE

Europe Builds a New Data Space to Fortify Environmental Data Privacy and Traceability

- Data sovereignty is the backbone of the newly defined architecture of the Green Deal Data Space.
- Businesses and policymakers will be able to monitor, report and enforce compliance with European environmental legislation based on accurate data that was previously inaccessible.
- This is a major step toward building a European data space that supports Europe's green transition with secure access to information on biodiversity, climate adaptation, circular economy and zero pollution.

BARCELONA. March 25, 2026. To transform Europe into a climate-neutral, competitive, and resource-efficient economy by 2050, businesses, governments and scientists need to access and combine a wide range of multi-sectoral data, respecting confidentiality as required. However, this data remains highly scattered and unreachable and the risks of sharing sensitive data through traditional cloud systems continue to increase. To remove these risks, the core architecture of the Green Deal Data Space (GDDS) has now been defined grounded in data quality, sovereignty and interoperability. This is a major step towards creating a fully operational GDDS, which will provide secure, trusted and interoperable access to thousands of data sets related to biodiversity, climate adaptation, circular economy and zero pollution targets. CREAF has led the creation of this architecture with contributions from other partners in the framework of SAGE, a Digital Europe project comprising 40 partners from 12 European countries and coordinated by IDC.

The architecture of a data space is like the blueprint of a building. For the GDDS, the backbone is data sovereignty: enabling participants to confidently share data with approved recipients while keeping full control of its use. This enables also to safely exchange sensitive data such as personal information protected under GDPR, the location of endangered species or private corporate data. In SAGE, this is made possible through a federated platform that integrates the Data Space Connector technology with robust user authentication and access control systems, along with tools that ensure traceability, accountability and compliance across the data space.

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The GDDS architecture allows protected data to be combined with open data, enriching the private data, while always maintaining the conditions of use and privacy of each type of data. Interoperability is also guaranteed by leveraging metadata catalogues, shared dictionaries, standards and vocabularies. This means that data sets considered of high priority will become accurately interconnected, serving to ensure compliance with the European Green Deal targets. Altogether, the GDDS will facilitate that researchers, policymakers and businesses discover and create new data products using data from Earth observation, research infrastructures, facilities under the European Strategy Forum on Research Infrastructures (ESFRI), digital twins and, at a later stage, connecting with other thematic European common data spaces.

On top, the architecture links with strong governance and trust frameworks to ensure the smooth operation of the data space, enforcing agreed-upon rules and fostering a transparent and collaborative relationship among participants.

> *"SAGE is deliberately ambitious. We are building a scalable, extensible and sustainable data space that allows our ten use cases to work together in the same technical infrastructure, to be joined by many other use cases that are important for the EU Green Deal. The GDDS must allow holders of restricted data to confidently manage who uses their data for what. It must bring together a wide range of data from many sources, along with tools to help use cases create new data products that will help them meet their objectives." Mark Dietrich, technical coordinator of SAGE.*

A four-story structure

In simple terms, the GDDS architecture defined by SAGE is organised into four modular layers, ensuring flexibility and interoperability of all the components. It includes elements to ensure governance, proper operational control, secure data management and other services.

> *"The GDDS does not function as a data storage facility or a computing infrastructure; instead, it acts as an enabler of secure access to existing data and metadata, helping to mobilise the European data economy while safeguarding data security and sovereignty." Joan Masó, technical lead of the GDDS architecture and CREAF researcher.*

In more detail, the **Consumer Plane** ensures that data can be discovered, accessed, and exchanged according to established rules. The **Data Plane** guarantees

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interoperability and consistency. The SAGE project added a **Consumer Layer** which includes all elements that enable both human and machine actors to interact with data and metadata, whether as consumers, providers, or intermediaries. This layer also incorporates essential features such as marketplaces, graphical user interfaces, and feedback mechanisms, along with the governance components. At the foundation, the **Backend Layer** powers critical processes that underpin the reliability and usability of the system, such as data and metadata harmonization, semantic annotation, data enrichment, quality assurance, anonymization and other trusted operations.

Bringing data architecture to life

With the core architecture now agreed upon, the SAGE project has launched a series of intensive **code sprints** led by CREAF to bring the GDDS to life. Dedicated working groups have already met online and in-person in Barcelona and Poznan collaborating closely to accelerate the implementation and maturation of this innovative platform.

The sprints also focus on advancing the ten strategic **use cases** of SAGE. A standout example is the textile value chain, where SAGE reduces the complexity and time of data exchange for important circular economy enablers such as Digital Product Passports and Extended Producer Responsibility systems. The GDDS improves traceability, scales up digitization and helps European and national authorities monitor sustainability and compliance with existing legislation while supporting more efficient and profitable circular business models.

Other use cases explore applications of the GDDS for forestry, pollinator monitoring, soil circularity, building-related CO_2 emissions, zero-defect manufacturing, global environmental exposure, nature and ecosystem services trade-offs, as well as air quality and public health.

> *"The SAGE use cases were selected to showcase how shared, interoperable data can address concrete challenges across key European Green Deal priorities. Each case targets a high-impact domain – including biodiversity, pollution reduction, circular economy and sustainable manufacturing – where better access to data directly supports informed decision-making. Together, they demonstrate how the federated Green Deal Data Space turns complex environmental data into actionable insights that will accelerate Europe's green transition." Trine Børve, SAGE project coordinator.*

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The SAGE architecture will be integrated into the initial proof-of-concept version of the GDDS and validated by the use case teams. Then, an improved version of the data space will support the operational implementation of the SAGE use cases and potential new ones. The SAGE platform and related operating and governance entities will be established on a sustainable basis and continue to operate after the project finishes in early 2028.

The SAGE project

SAGE (the Data Space for a Sustainable Green Europe) is a Digital Europe co-funded project that will implement an operational, federated, secure, and interoperable Green Deal Data Space by 2028.

The project consortium is led by IDC bringing together a solid scientific and technical expertise and robust long-term sustainability perspectives. The GDDS implemented by SAGE and the related operating and governance entities will continue to operate after the project finishes.

SAGE aligns with the Digital Europe Programme's strategic focus on AI, cybersecurity, advanced computing, and data infrastructure. It builds directly upon the GREAT project community and results, also leveraging outcomes from the European Strategy for Data and research facilitated by other Horizon Europe projects like AD4GD, USAGE, FAIRICUBE or B3.

For more information, visit the SAGE website at https://www.greendealdata.eu/ or subscribe to SAGE's newsletter at https://go.egi.eu/SAGEDSNewsletter.

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