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# INTRODUCCIÓN A ESPACIOS DE DATOS

Ángel Luis Rubio García

Seminario de Informática “Mirian Andrés”

30 de junio de 2025

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# ÍNDICE

1. Previos/Contexto
  2. Origen y Normativas
  3. Definición
  4. Interacciones,  
Estructuras y Actores
  5. Aspectos Técnicos
  6. Mirada Crítica
  7. Conclusiones y más
  8. Debate
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# GERRYMCGOVERN.COM/ DATA CENTERS CONTAIN 90% CRAP DATA



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«Senior management is full to overflowing with Big Tech groupies chanting about the latest tech miracle that's going to magically transform and supercharge their careers. Having to deal with senior managers has always been the most unsavory part of my job, because when it comes to technology, these managers exist on a whole other level of stupid vanity and narcissistic pursuit of their own selfish agendas. »



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# GERRYMCGOVERN.COM/ DATA CENTERS CONTAIN 90% CRAP DATA

«La alta dirección está llena a rebosar de fanáticos de las Grandes Tecnológicas alabando el último milagro tecnológico que va a transformar y modernizar de forma mágica sus carreras. Tener que tratar con altos directivos siempre ha sido la parte más desgradable de mi trabajo, porque cuando se trata de tecnología, estos directivos están en otro nivel de estúpida vanidad y búsqueda narcisista de sus propias agendas egoísticas.»



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CASI NADA

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## Buzzword

A word or phrase which has become fashionable or popular, or sounds technical or important and is used to impress people.



## CONTRATACIÓN PÚBLICA

## › Licitaciones

- › Consulta expedientes
- › Presentación de ofertas
- › Planes anuales de contratación
- › Entidades y sus Mesas de contratación
- › Protección de Datos Personales
- › Registro de Licitadores (ROLECE)
- › Consultas
- › Normativa y documentos

[Inicio](#) / [Contratación Pública](#) / [Licitaciones](#)

## Consulta expedientes

## Expediente nº.71-7-2.01-0004/2025 - Pendiente de adjudicación

ID de publicación en TED	c6fd9fab-3dc1-4eac-9e8e-eefe483cc62f					
Consejería u Organismo	Fundación para la Transformación de La Rioja					
Nº. Expediente	71-7-2.01-0004/2025 (Procedimiento abierto con varios criterios de adjudicación)					
	› Presentación de ofertas					
Descripción	Contratación de servicios y suministros para el desarrollo del espacio de datos de la Nueva Economía de la Lengua y de la incubadora de proyectos emergentes en Inteligencia Artificial (IA) y Tecnologías del Lenguaje en Español y servicio de asistencia técnica (por lotes)  Plan de Recuperación Transformación y Resiliencia España Puede (PRTR). - Componente 12. Inversión 1 (C12.I1) - Componente 13. Inversión 1 (C13.I1)					
CPV	30211100-2, 48820000-2, 71356200-0, 72000000-5, 72200000-7, 72212460-1, 72220000-3, 72222000-7, 72224000-1, 72224100-2, 72263000-6					
Plazo ejecución	12 meses	Fecha inicio ejecución				
Pub. Boletines	<input checked="" type="checkbox"/> DOUE					
P. Contrata (con IVA)	14.583.525,00 €	Fecha Fin Plazo	27-05-2025 23:59	Fecha Apertura Sobre "A"	29-05-2025 14:00	Fecha Apertura Sobre "C" 02-06-2025 10:00
Valor estimado	14.414.868,02 €					
Enlaces	› Obtener Pliegos y otros documentos y Suscribirse a este expediente					



“

Data is the **new oil.**

**Clive Humby**

(2006)



[www.humbyanddunn.com](http://www.humbyanddunn.com)

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[davidmccandless.com](http://davidmccandless.com)  
[informationisbeautiful.net](http://informationisbeautiful.net)

Data is the new oil? No: Data is the new soil.

— *David McCandless* —

(2012)

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# LOS DATOS SON (EL NUEVO) OBJETO DE DESEO

- Big data
- Analítica
- Ciencia de datos
- Entrenamiento de modelos
- ...



Un tranvía llamado deseo (1951)

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- Big data
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Ursula Von der Layen y Pedro Sánchez (2022)

## European data strategy

(2020)

Making the EU a role model for a society empowered by data



The European data strategy aims to make the EU a leader in a data-driven society. Creating a single market for data will allow it to flow freely within the EU and across sectors for the benefit of businesses, researchers and public administrations.

<https://commission.europa.eu/european-data-strategy>

# NORMATIVAS

2016



2022



2023



2024



## Data sharing in the EU – common European data spaces (new rules)

Have your say - Public Consultations and Feedback > Published initiatives > Data sharing in the EU – common European data spaces (new rules)

### Public consultation

Consultation period

20 February 2020 - 03 June 2020

Feedback: Closed

### Roadmap

Feedback period

03 July 2020 - 31 July 2020

Feedback: Closed

### Commission adoption

Feedback period

25 November 2020 - 08 February 2021

Feedback: Closed

## About this initiative

### Summary

The Commission aims to create a single market for data, where data from public bodies, business and citizens can be used safely and fairly for the common good.

This initiative will draw up rules for common European data spaces (covering areas like the environment, energy and agriculture) to:

- make better use of publicly held data for research for the common good
- support voluntary data sharing by individuals
- set up structures to enable key organisations to share data.

Digital economy and society

### Type of act

Proposal for a regulation

## Public consultation

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# DEFINICIÓN – EL “VIEJO” CONCEPTO

SIGMOD Record, Vol. 34, No. 4, Dec. 2005

## From Databases to Dataspaces: A New Abstraction for Information Management

Michael Franklin

University of California, Berkeley

Alon Halevy

Google Inc. and U. Washington

David Maier

Portland State University

### Abstract

The development of relational database management systems served to focus the data management community for decades, with spectacular results. In recent years, however, the rapidly-expanding demands of “data everywhere” have led to a field comprised of interesting and productive efforts, but without a central focus or coordinated agenda. The most acute information management challenges today stem from organizations (e.g., enterprises, government agencies, libraries, “smart” homes) relying on a large number of diverse, interrelated data sources, but having no way to manage their *dataspaces* in a convenient, integrated, or principled fashion. This paper proposes dataspaces and their support systems as a new

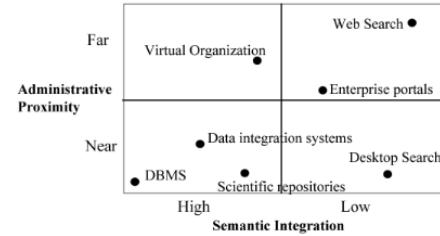


Figure 1. A space of data management solutions.

# DEFINICIÓN – EL “VIEJO” CONCEPTO

A dataspace should contain all of the information relevant to a particular organization regardless of its format and location, and model a rich collection of relationships between data repositories



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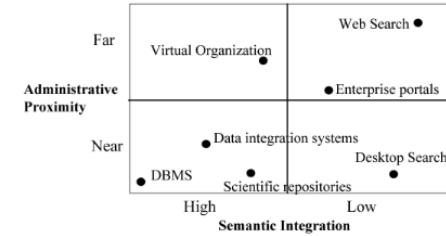


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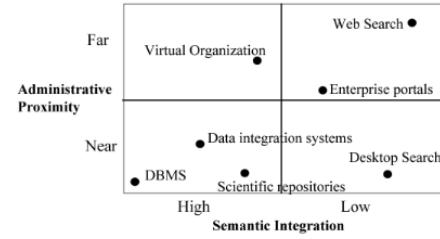


Figure 1. A space of data management solutions.

Data Warehouse

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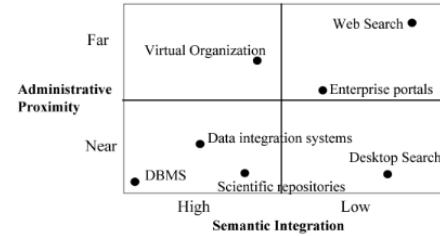


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Data Warehouse

Data Lake

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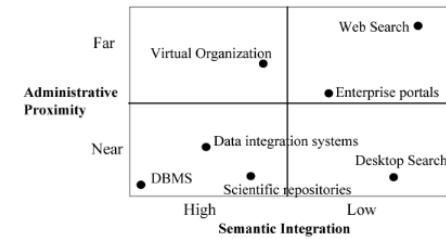


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Data Warehouse

Data Lake

Data Lakehouse

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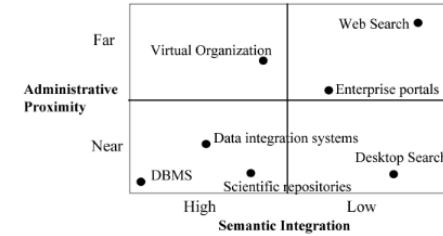


Figure 1. A space of data management solutions.

Data Warehouse

Data Lake

Data Lakehouse

Data Mesh

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# DEFINICIÓN

A Data Space is

[https://language-data-space.ec.europa.eu/help/faq/what-data-space\\_en](https://language-data-space.ec.europa.eu/help/faq/what-data-space_en)

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# DEFINICIÓN

A Data Space is a framework that supports data sharing within a data ecosystem. It provides a clear structure for participants to share, trade, and collaborate on data assets in a way that is compliant with relevant laws and regulations and ensures fair treatment for all involved.

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[https://language-data-space.ec.europa.eu/help/faq/what-data-space\\_en](https://language-data-space.ec.europa.eu/help/faq/what-data-space_en)

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# [INCISO]

# SE NOS ROMPIÓ EL SOFTWARE (de tanto usarlo)



ÁNGEL LUIS RUBIO GARCÍA

Seminario de Informática "Mirian Andrés"

8 de febrero de 2022

## Reverse Engineering Software Ecosystems



Doctoral Dissertation  
presented by  
**Mircea F. Lungu**  
October 2009

A software ecosystem is a collection of software projects which are developed and co-evolve in the same environment.



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# INTERACCIONES

Políticas  
Legislativas  
Económicas  
Sociales  
Técnicas

Projected figures 2025



530%  
increase of global  
data volume  
from 33 zettabytes in  
2018 to 175 zettabytes



€829 billion  
value of data  
economy in the EU27  
from €301 billion (2.4%  
of EU GDP) in 2018



10.9 million  
data professionals in  
the EU27  
from 5.7 million in 2018



65%  
Percentage of EU  
population with basic  
digital skills  
from 57% in 2018

<https://commission.europa.eu/european-data-strategy>

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# ESTRUCTURAS

European  
Digital  
Infrastructure  
Consortium

“legal framework aiding Member States to set up  
and implement multi-country projects”

<https://digital-strategy.ec.europa.eu/en/policies/edic>

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<https://digital-strategy.ec.europa.eu/en/policies/edic>

1. Alliance for **Language Technologies** EDIC

<https://alt-edic.eu/>

# ESTRUCTURAS

## European Digital Infrastructure Consortium

“legal framework aiding Member States to set up and implement multi-country projects”

<https://digital-strategy.ec.europa.eu/en/policies/edic>

1. Alliance for **Language Technologies** EDIC  
<https://alt-edic.eu/>
2. Networked **Local Digital Twins** towards the CitiVERSE EDIC  
<https://digital-strategy.ec.europa.eu/en/factpages/citiverse>

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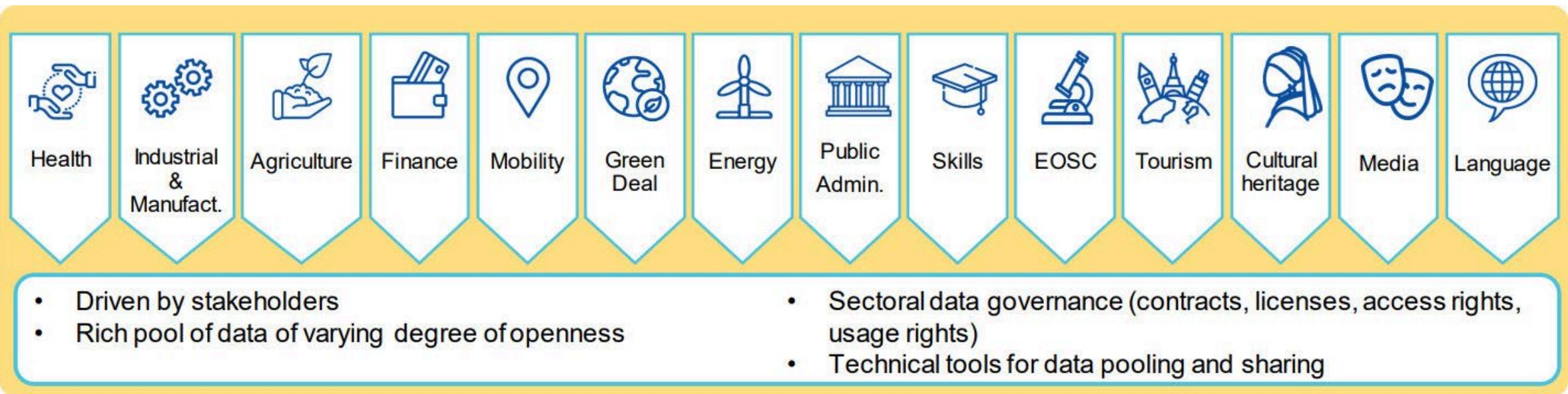
2. Networked **Local Digital Twins** towards the CitiVERSE EDIC

<https://digital-strategy.ec.europa.eu/en/factpages/citiverse>

3. EDIC for European Blockchain Partnership and **European Blockchain Service Infrastructure** (EUROPEUM-EDIC) <https://digital-strategy.ec.europa.eu/en/news/blockchain-creation-europeum-edic>

# ESTRUCTURAS

## 14 Sectores en los que crear Espacios de Datos Comunes Europeos

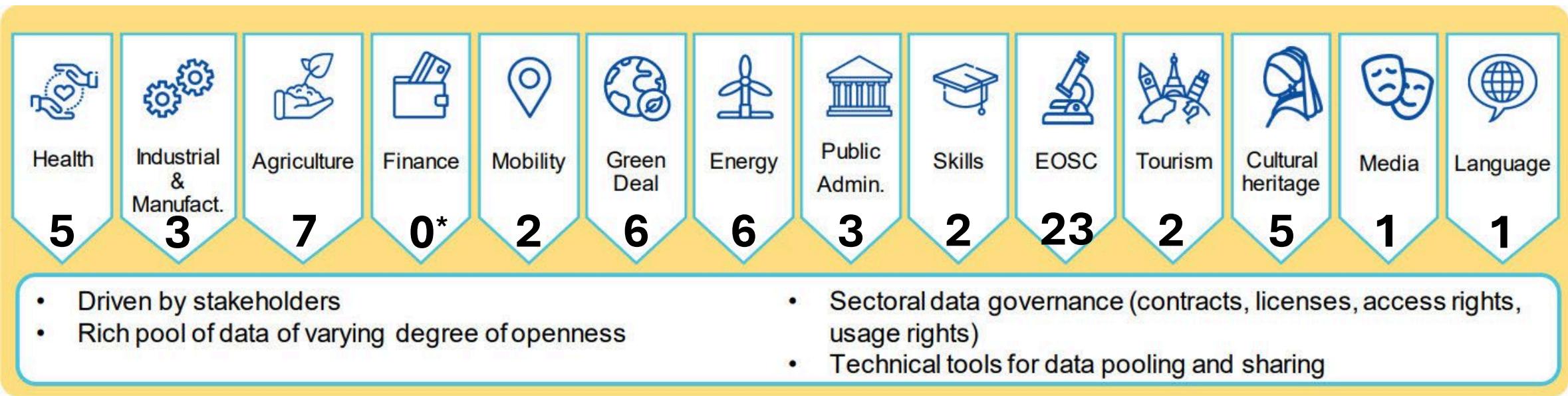


© European Commission

<https://digital-strategy.ec.europa.eu/en/policies/data-spaces>

# ESTRUCTURAS

**66 Espacios de Datos Comunes Europeos ya definidos o previstos**



© European Commission

<https://digital-strategy.ec.europa.eu/en/policies/data-spaces>

# ALGUNOS EJEMPLOS



[https://language-data-space.ec.europa.eu/index\\_en](https://language-data-space.ec.europa.eu/index_en)



<https://cancerimage.eu/>

# ALGUNOS EJEMPLOS



The screenshot shows the European legal data space landing page. At the top left is a blue icon of a classical building labeled "Public Admin.". The top navigation bar includes "Home" and "European legal data space". The main title "European legal data space" is displayed above a large purple banner with white text that reads "EUROPEAN LEGAL DATA SPACE". Below the banner, a text box states: "This is a first version of the landing page for the European legal data space, giving links to common standards, access methods and data on justice systems."

<https://data.europa.eu/en/ELDS>



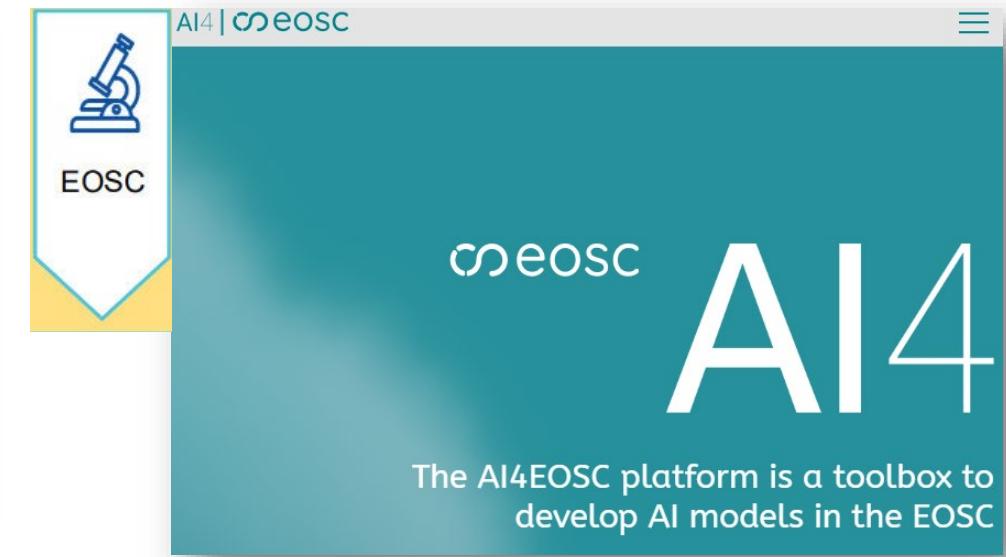
The screenshot shows the DS4Skills Data Space for Skills landing page. At the top left is a blue icon of a graduation cap labeled "Skills". The top right features the "DS4Skills" logo with the tagline "Data Space for Skills" and a small cube icon. The main heading "WELCOME TO THE DATA SPACE FOR SKILLS" is followed by the subtext "Building a human-centric and trusted ecosystem to share and access skills data". Below this, a paragraph explains the project's purpose: "We prepare the ground for the future deployment of the first-time-ever European Data Space for Skills that will offer practical benefits to organisations and individuals in the digital age."

<https://www.skillsdataspace.eu/>

# ALGUNOS EJEMPLOS



<https://www.ds4sscc.eu/>



<https://ai4eosc.eu/>

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# ACTORES

- Gobiernos (nacionales, regionales, locales)
- Universidades
- Centros de investigación
- Empresas
- Consorcios de empresas

---

# ACTORES

- Gobiernos (nacionales, regionales, locales)
- Universidades
- Centros de investigación
- Empresas
- Lobbies ~~Consorcios~~ Consorcios de empresas

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# ACTORES

- Gobiernos (nacionales, regionales, locales)
- Universidades
- Centros de investigación
- Empresas
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[gaia-x.eu](http://gaia-x.eu)



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**The Data Spaces Business Alliance**

Unleashing the European Data Economy



[gaia-x.eu](http://gaia-x.eu)



[bdva.eu](http://bdva.eu)



[www.fiware.org](http://www.fiware.org)



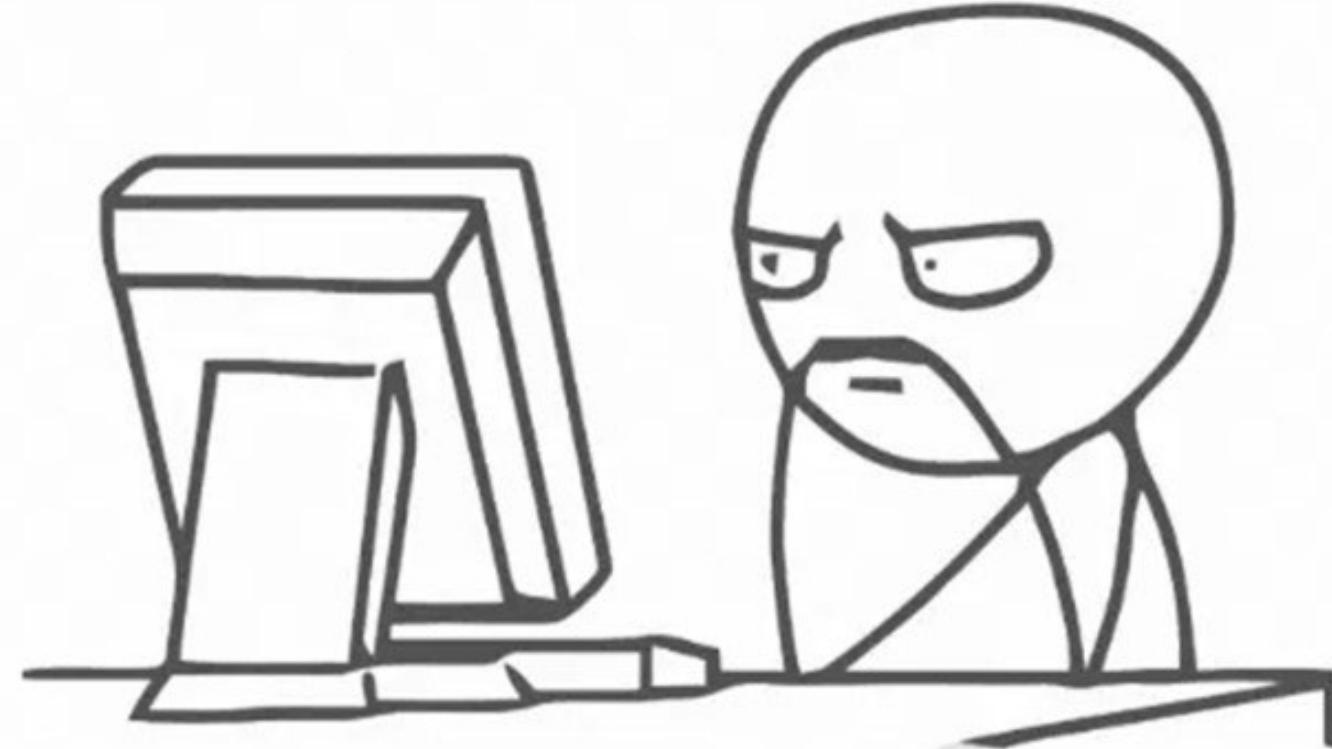
[internationaldataspaces.org](http://internationaldataspaces.org)

[data-spaces-business-alliance.eu](http://data-spaces-business-alliance.eu)

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## ASPECTOS TÉCNICOS

POR FIN

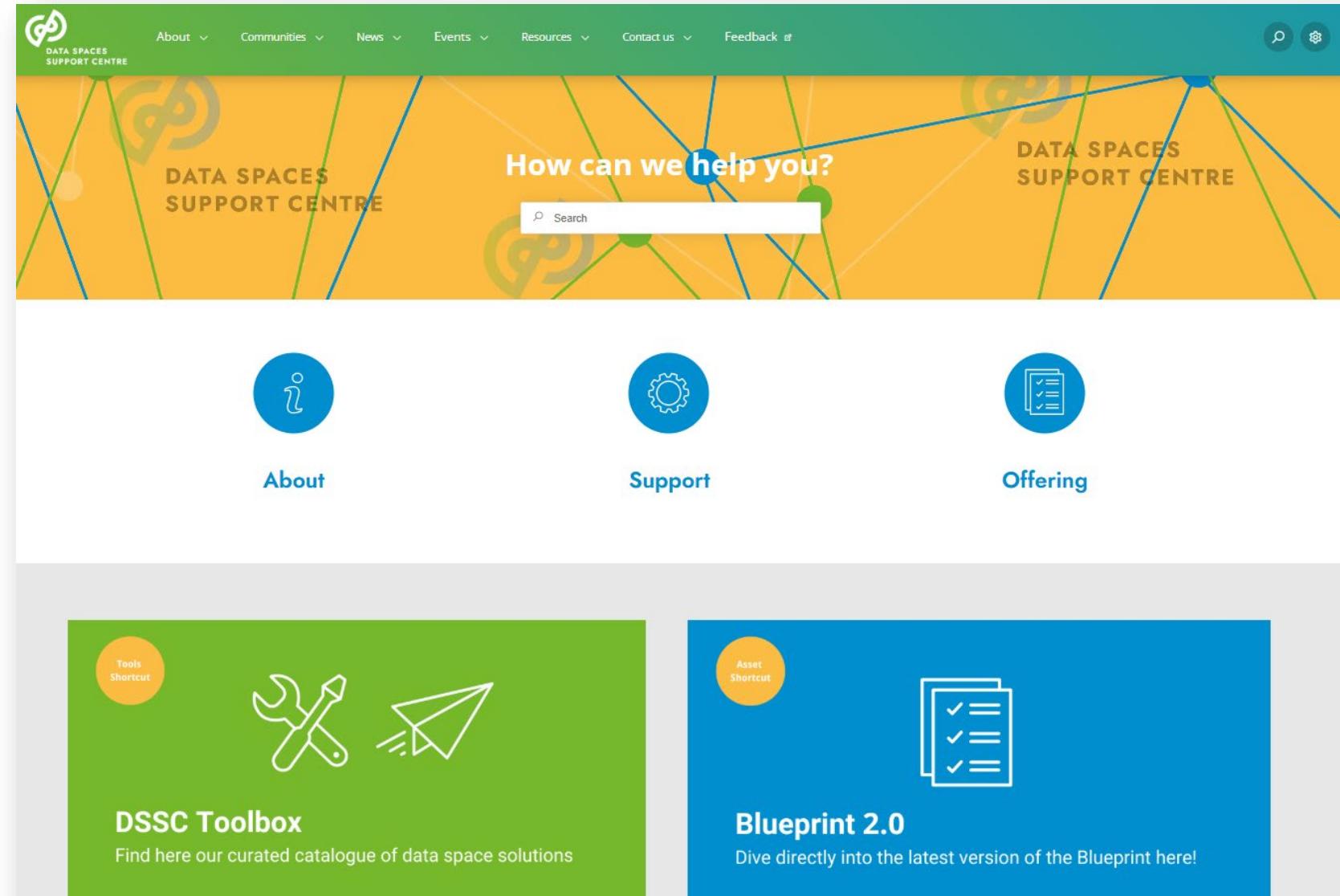


ALGO DE INFORMÁTICA

imgflip.com

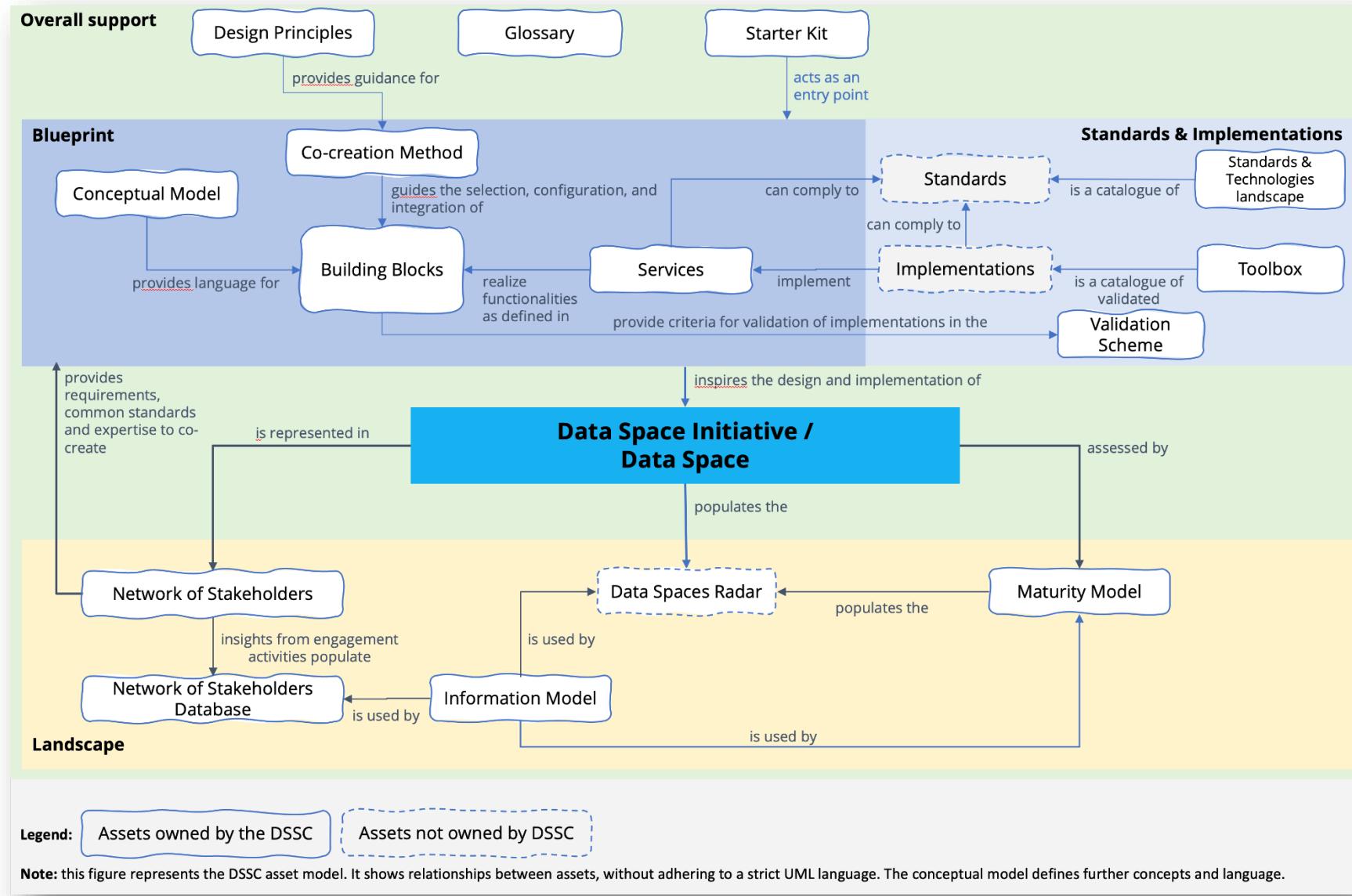
# DATA SPACES SUPPORT CENTRE (DSSC)

<https://dssc.eu/>



# DSSC ASSET-BASED APPROACH

[https://dssc.eu/space/  
BVE2/1071252365/  
Work+With+Us](https://dssc.eu/space/BVE2/1071252365/Work+With+Us)



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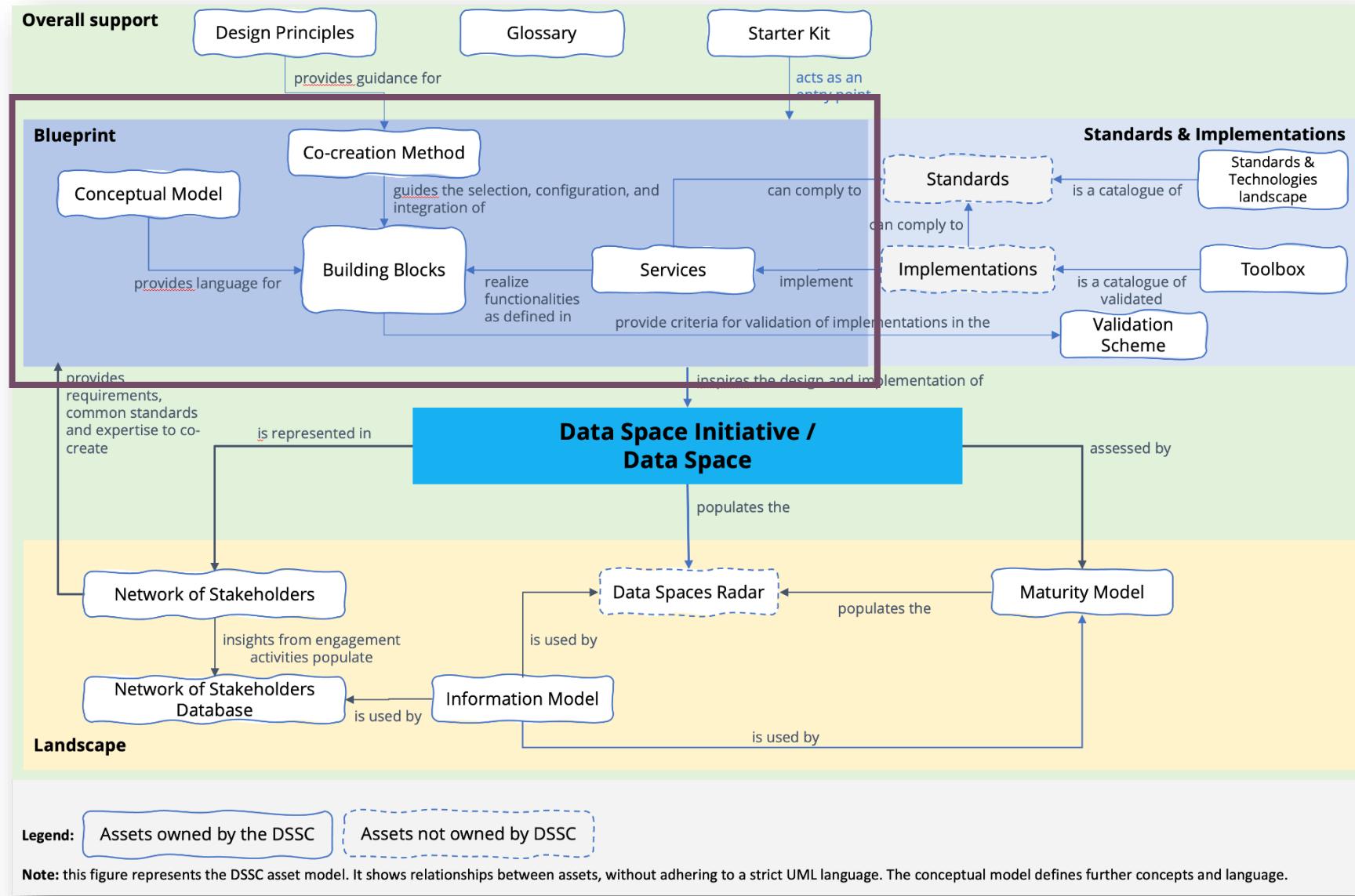
## [OTRO INCISO: NOTA CULTURAL]

**BLUEPRINT =  
CIANOTIPO =  
PLANO/PROYECTO**

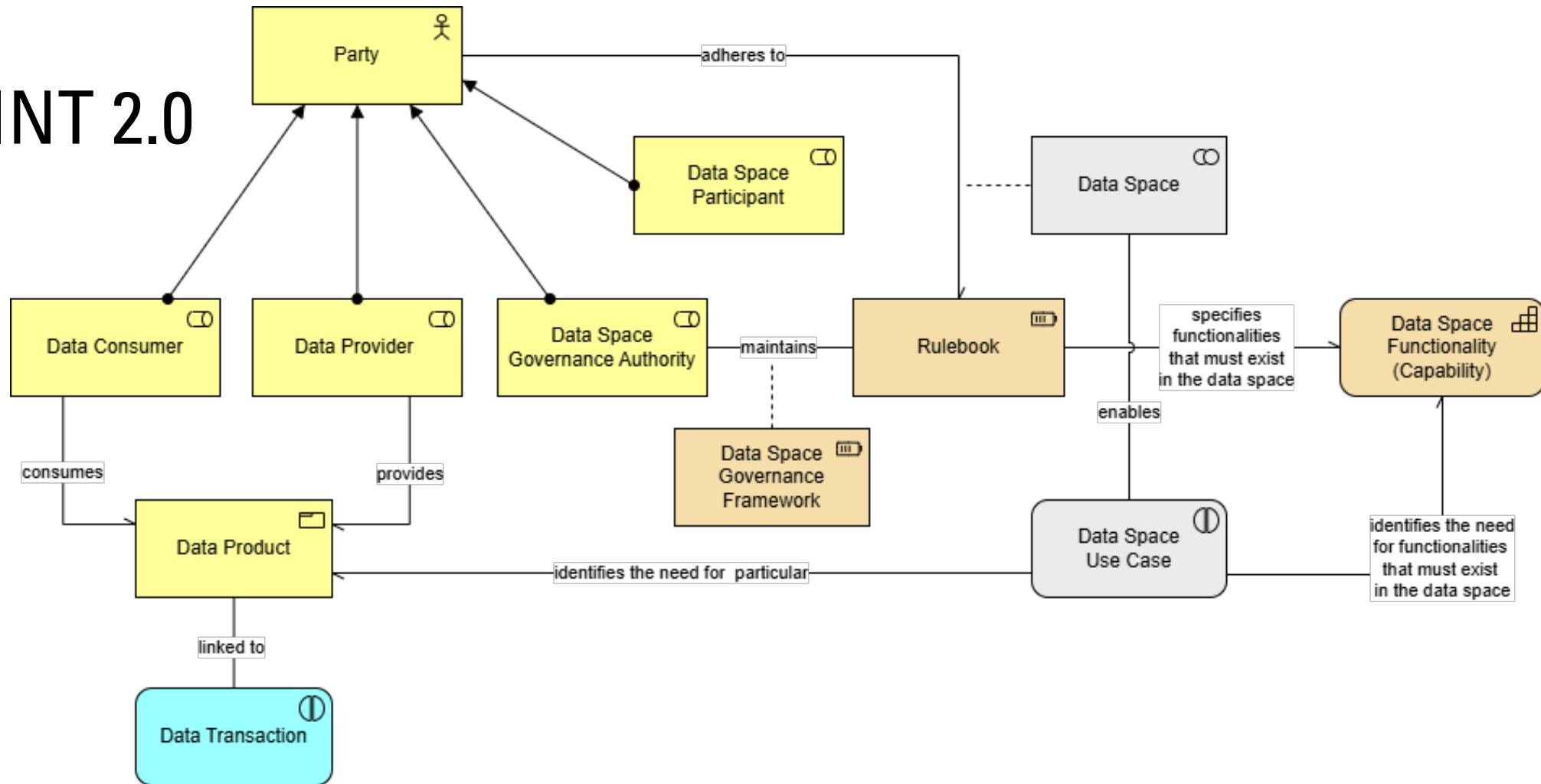


# DSSC ASSET-BASED APPROACH

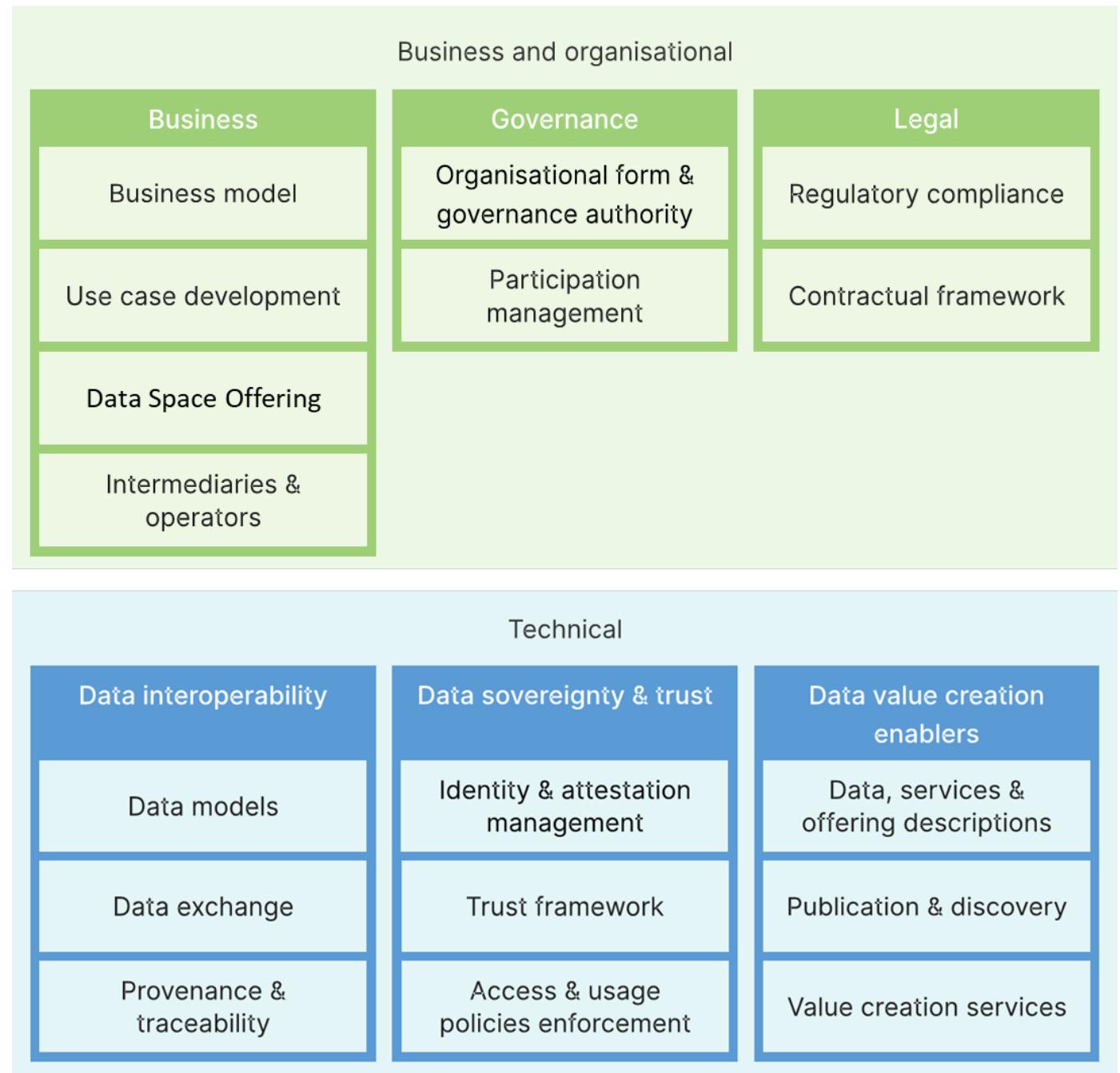
[https://dssc.eu/space/  
BVE2/1071252365/  
Work+With+Us](https://dssc.eu/space/BVE2/1071252365/Work+With+Us)



# DSSC BLUEPRINT 2.0



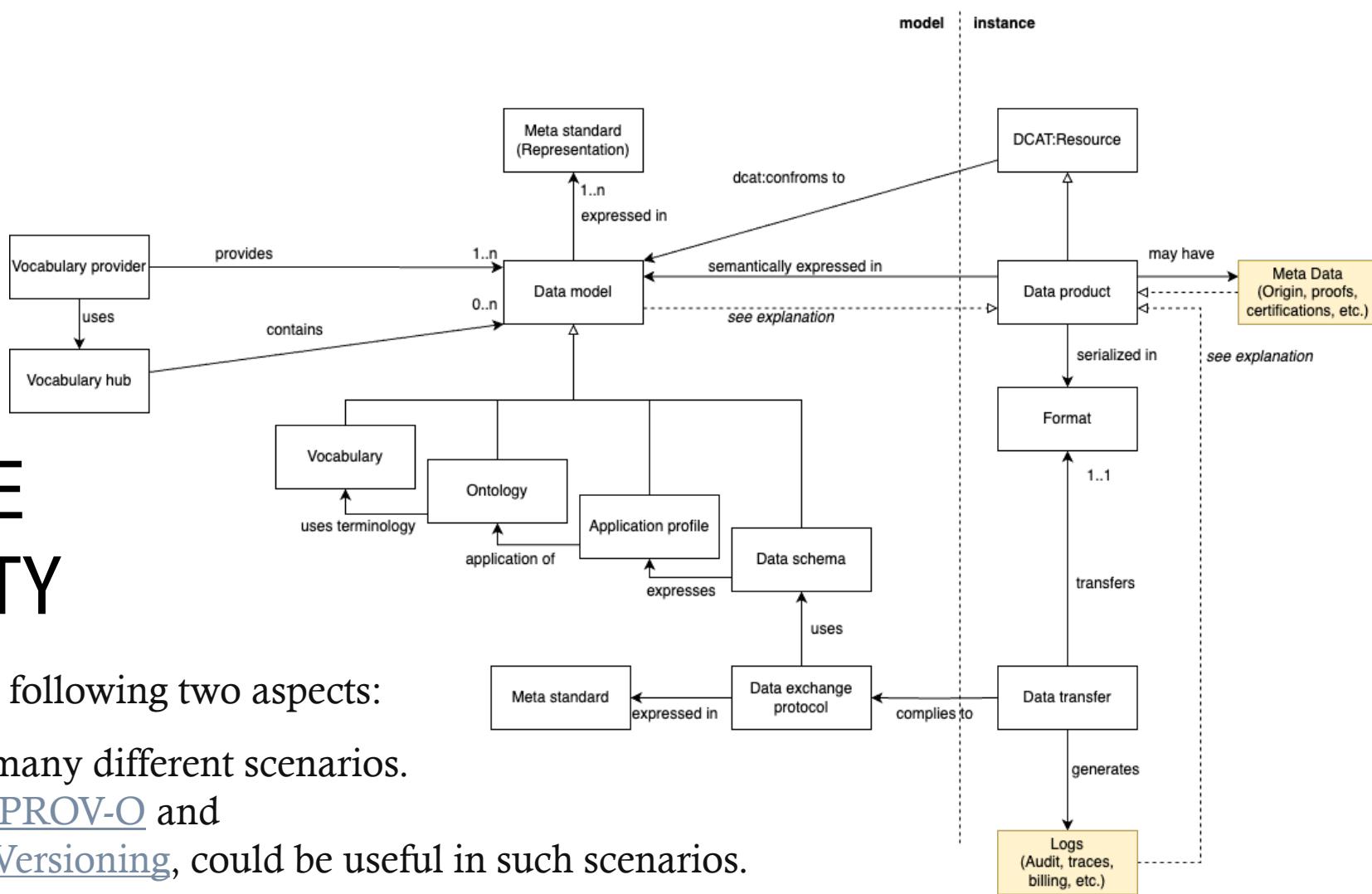
# DSSC BUILDING BLOCKS



# DSSC CONCEPTUAL MODEL FOR PROVENANCE AND TRACEABILITY

“These data models could consider following two aspects:

- **Generic aspects:** which apply in many different scenarios.  
Common ontologies such as [W3C PROV-O](#) and [PAV - Provenance, Authoring and Versioning](#), could be useful in such scenarios.
- **Data spaces specific aspects:** which apply in specific scenarios stemming from data space specific requirements. These could be modelled as an extension to either PROV-O or PAV. Some data spaces choose to model ‘events’ which take place in the data space. An example of an approach for this is [CloudEvents](#).“



# ECLIPSE DATASPACE COMPONENTS (EDC)

<https://eclipse-edc.github.io/>  
<https://dataspace.eclipse.org/>

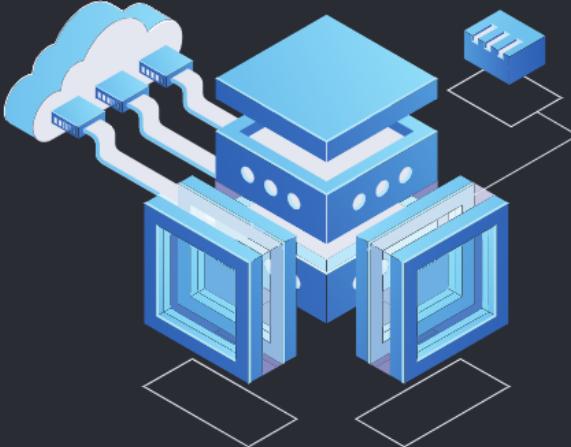
 EDC

Documentation Community ☰ Search this site...

## Data-sharing at scale

[Learn More](#)  GitHub 

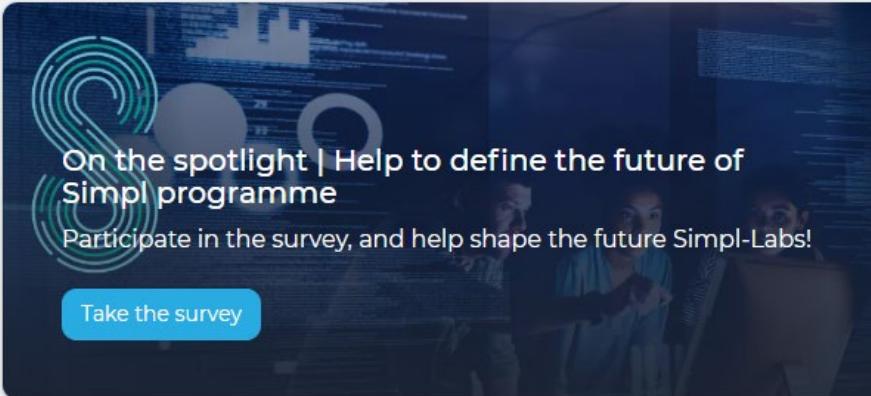
EDC is an open source framework hosted by the Eclipse Foundation for building secure, globally-scalable data-sharing services. EDC provides highly customizable components for creating control planes, data planes, decentralized identity systems, and federated data catalogs. Backed by leading companies and cloud providers, EDC gives developers the tools they need to deliver innovative solutions for data exchange networks.



# SIMPL

**Simpl Programme**

Home Community Development Publications Annual Event About 

  
On the spotlight | Help to define the future of Simpl programme  
Participate in the survey, and help shape the future Simpl-Labs!  
[Take the survey](#)

**About Simpl**  
Simpl is an open source, secure middleware that supports data access and interoperability in European data initiatives. It provides multiple compatible components, free to use, that adhere to a common standard of data quality and data sharing. A future where reliable, updated data are available across industries is possible with Simpl.  
[Read more](#)

<https://simpl-programme.ec.europa.eu/>

Code development platform for open source projects from the European Union Institutions

Explore Sign in

 Simpl

**S Simpl**

Subgroups and projects Shared projects Shared groups Inactive

 Search (3 character minimum)  Name 

Subgroup	Count	Created
PSO	2 0 4	8 months ago
Simpl Contributions	5 1 0	8 months ago
Simpl-Open	4 2 20	8 months ago
About Simpl	0	1 month ago

 README.md

**Smart Middleware Platform (Simpl) for Cloud-to-Edge Federations and Data Spaces**

**Overview**

This is a group where we develop the [Simpl project](#). Simpl is Smart Middleware Platform designed to federate data, software, and infrastructure across the European Union, fostering collaboration between public and private sectors, including research institutions across various industries.

<https://code.europa.eu/simpl>

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**VALE, TODO ESTO ESTÁ MUY BIEN  
PERO...¿FUNCIONA EN LA PRÁCTICA?**

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PERO...¿FUNCIONA EN LA PRÁCTICA?**



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VALE, TODO ESTO ESTÁ MUY BIEN  
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# Seguridad y Privacidad en Espacios de Datos Colaborativos

Luis Alberto Perafan Llanos

**Dirigido por:** Ángel Luis Rubio García

**Máster:** Máster universitario en Ciencia de Datos y Aprendizaje Automático

**Curso académico:** 2023-24

**Universidad de defensa:** Universidad de La Rioja

**Tipo:** Trabajo Fin de Máster

**Repositorio institucional:**



ACCESO ABIERTO

EDITOR

## Arsys Lab: plataforma de proyectos e innovación de Arsys

**PONENTE:** Sara Madariaga Merino (Directora de Arsys Lab, Arsys, <https://www.arsys.net/about/innovation>).

**LUGAR:** Seminario Mirian Andrés (Edificio CCT).

**HORA:** miércoles 20 de diciembre de 2023, 12:00.

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# CONCLUSIONES

Los **Espacios de Datos** son  
una **potente (€€€€)** iniciativa digital europea  
con **objetivos ambiciosos (y algo idealistas)**  
que se van **concretando en propuestas tangibles**  
gracias (en parte) a contar con **una base técnico/informática  
común y consistente.**

A pesar de todo, es probable que tengan **más futuro en lo público  
que en lo privado** (por la desconfianza entre los participantes)

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# [BOLA EXTRA]

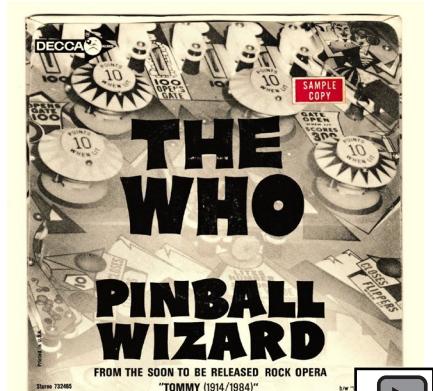


# [BOLA EXTRA]

En esta charla SOLO se ha nombrado DOS VECES



el término  
inteligencia artificial  
(tres con esta)



(1969)



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# INTRODUCCIÓN A ESPACIOS DE DATOS

## DEBATE

Ángel Luis Rubio García

Seminario de Informática “Mirian Andrés”

30 de junio de 2025

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