DSBA Technology Convergence

Presented by:

Juanjo Hierro, FIWARE Foundation

BDV BIG DATA VALUE ASSOCIATION

FIWARE FOUNDATION

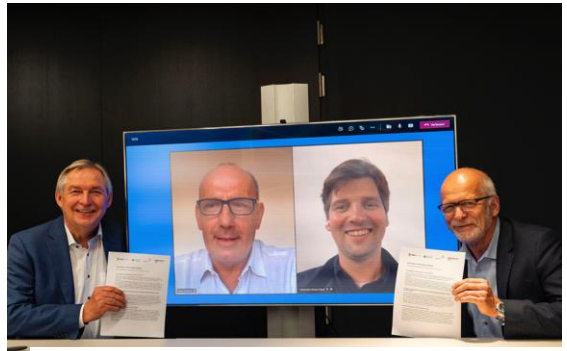
gaia-x

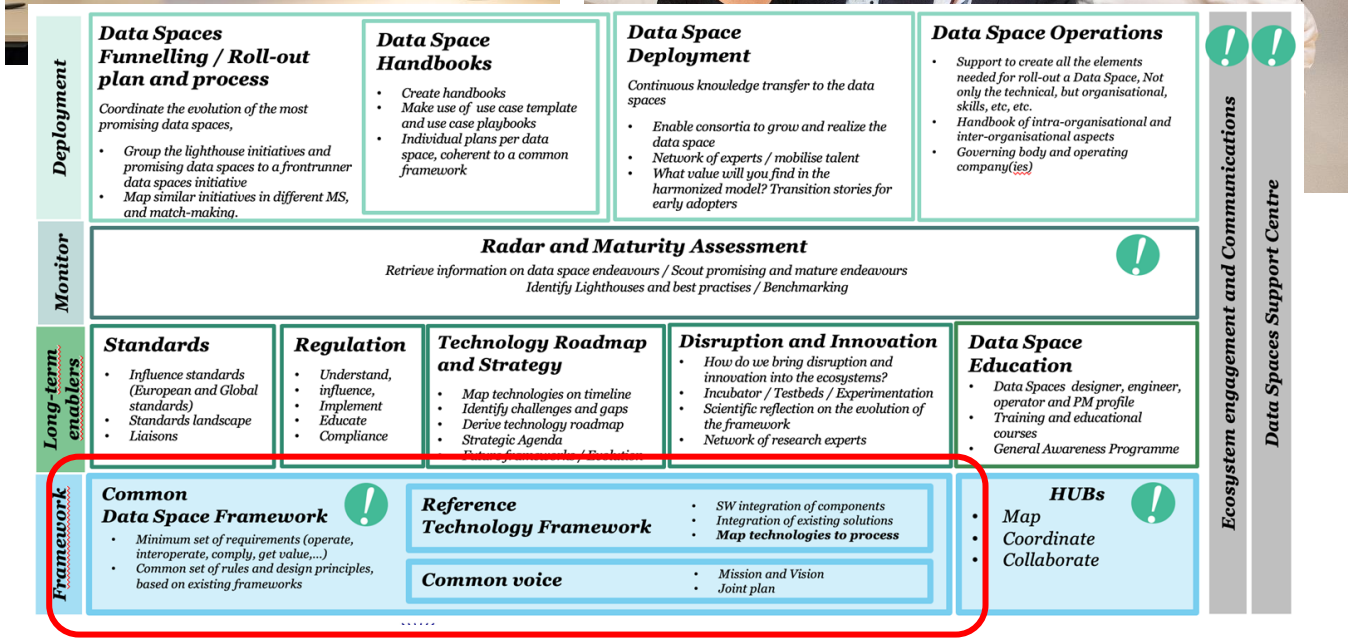
INTERNATIONAL DATA SPACES ASSOCIATION

Data Spaces Business Alliance (DSBA): joining forces

BDVA, FIWARE, GAIA-X and IDSA launched the Data Spaces Business Alliance (DSBA) to accelerate Business Transformation in the Data Economy (Sep 23rd, 2021)

- **One voice and a common framework** to make **interoperable Data Spaces** happen;
- Together, **the Alliance's founding organisations represent 1,000+ leading key industry players**;
- With its combined **cross-industry expertise, resources and know-how**, the Alliance drives awareness and rely on **more than 100 Hubs** for dissemination
- Technical Convergence discussions towards common reference technology framework for creation of Data Spaces:
  - Agile approach based on delivery of subsequent versions of a Minimum Viable Framework (MVF) specification where we do not only identify standards and target components but how to integrate them
  - Once alignment on relevant topics within several of the ongoing workstreams is achieved, the publication of a new version of the DSBA Technology Convergence document will be published to incentivize development of compliant implementations





Data Spaces Business Alliance (DSBA): joining forces

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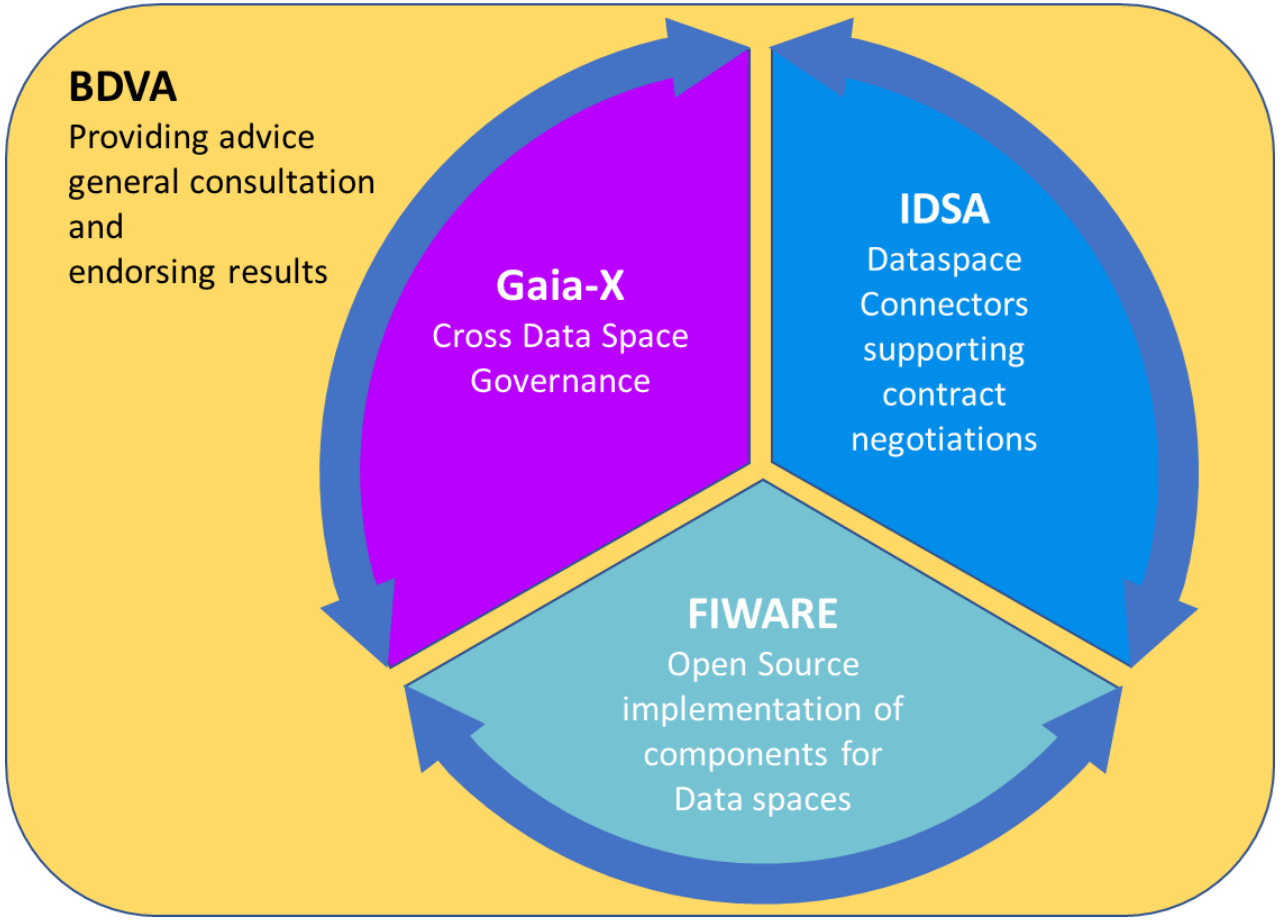

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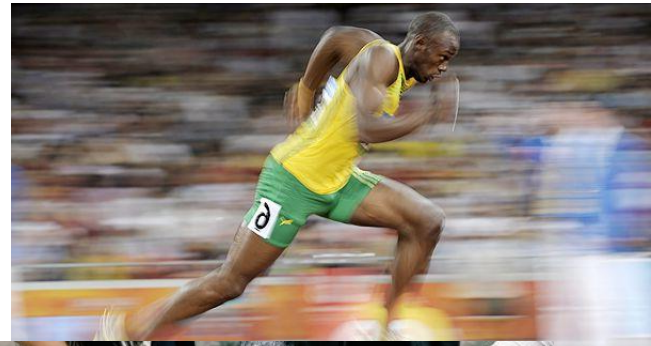
DSBA Technology convergence: agile approach

- Parallel workstreams launched to address a concrete aspect in depth:
  - **Workstream 1**: Incorporation of Decentralized Identifiers (DIDs) and Verifiable Credentials / Presentations (VC/VPs) in IAM framework, Trust Anchor services aligned with Gaia-X
  - **Workstream 2**: Incorporation of IDS Connector functions and support to ODRL for access control
  - **Workstream 3**: Integration of Federated Marketplace services with Catalog and Data Exchange Services as well as Data Publication services
  - **Workstream 4**: Incorporation of IDS Connector functions for usage control
  - **…**
- Agile approach based on delivery of subsequent versions of a Minimum Viable Framework (MVF) specification where we do not only identify standards and target components but how to integrate them
- Once alignment on relevant topics within several of the ongoing workstreams is achieved, the publication of a new version of the DSBA Technology Convergence document describing the proposed MVF will be published, and development of compliant implementations are encouraged

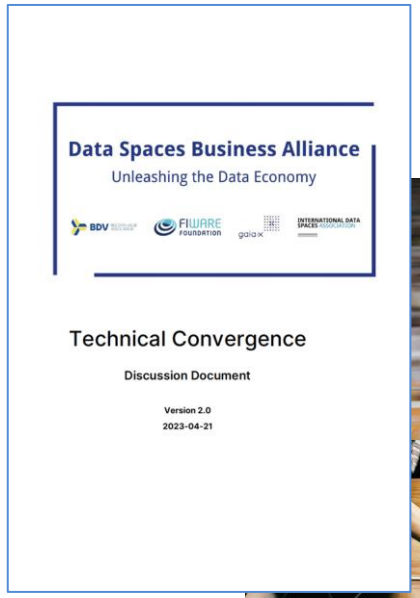


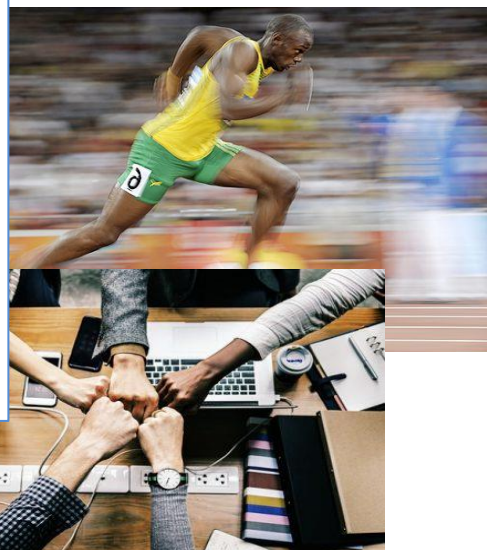
DSBA Technical Convergence version 2.0

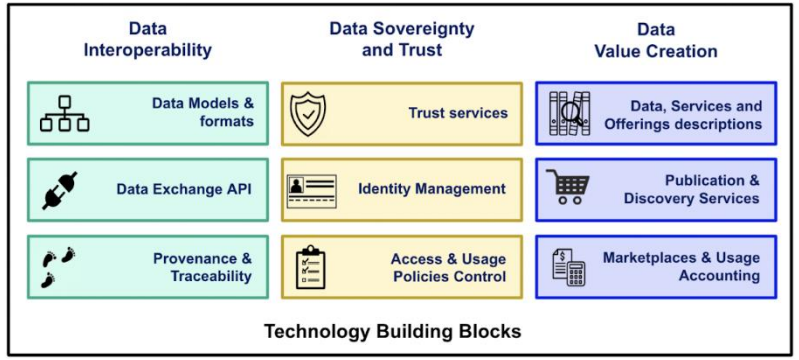
- The DSBA Technical Convergence (TC) delivers a Minimum Viable Framework (MVF) enabling the creation of data spaces
- This MVF is based on the convergence of existing architectures and models, leveraging each other's efforts on specifications and implementations.
- A new edition of the DSBA TC (version 2.0) was released on April 21st - Major highlights
  - Description of common vision and conceptual model
  - Identification of major standards per technology pillar and specifications of how they get integrated
- Some initiatives committed to follow DSBA technical recommendations (others welcome to do the same!):
  - FIWARE Data Space Connector
  - iSHARE Trust Framework

  } Working to integrate results under i4Trust collaboration program

  - DOME project under Digital Europe Programme







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Data Spaces (functional) Building Blocks

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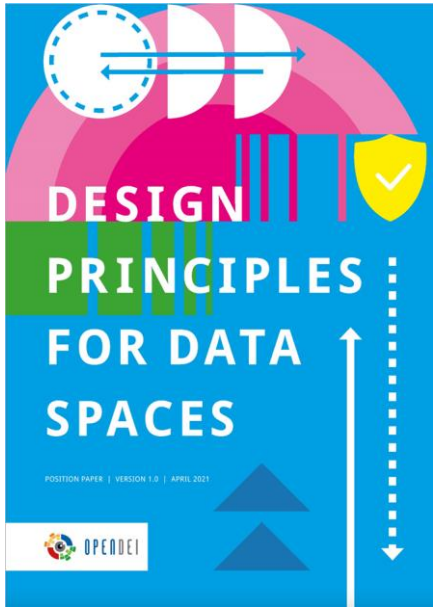

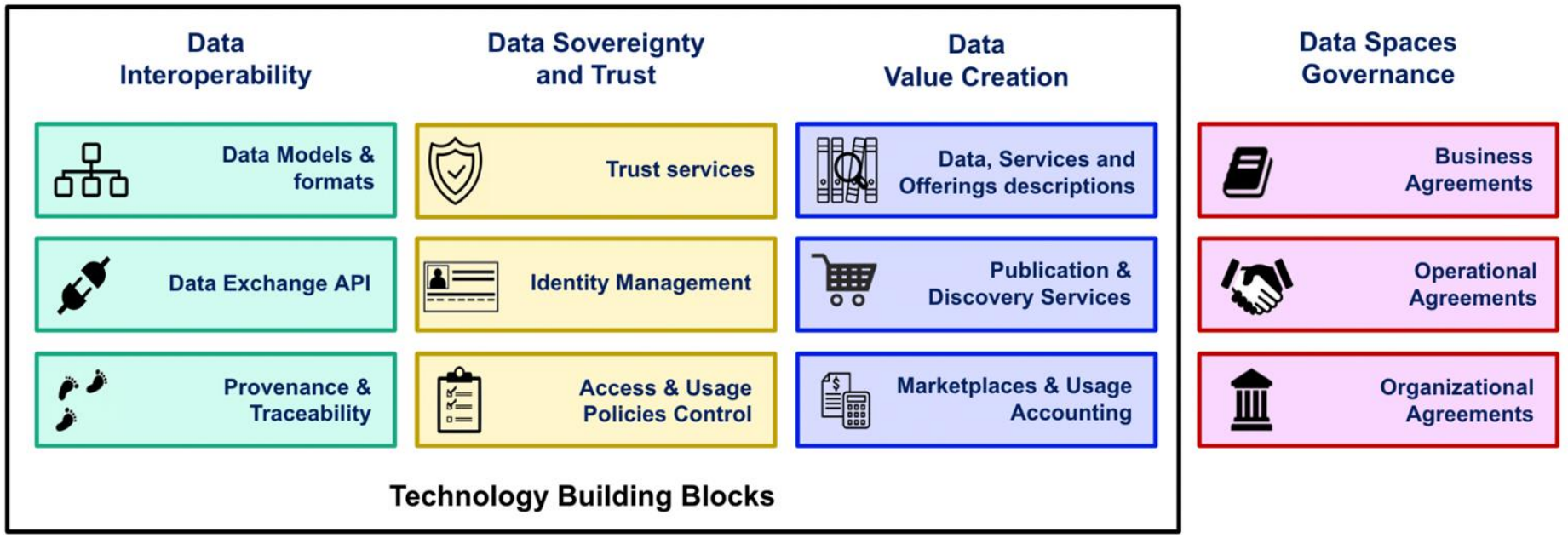

OPENDEI

DSBA RELIES ON PREVIOUS CONSENSUS REACHED UNDER OPEN DEI BUT GOES A STEP BEYOND MATERIALIZING DATA SPACES REQUIRES TO TAKE CHOICES AND ADOPT A MINIMUM BUT ENOUGH SET OF TECHNOLOGY STANDARDS

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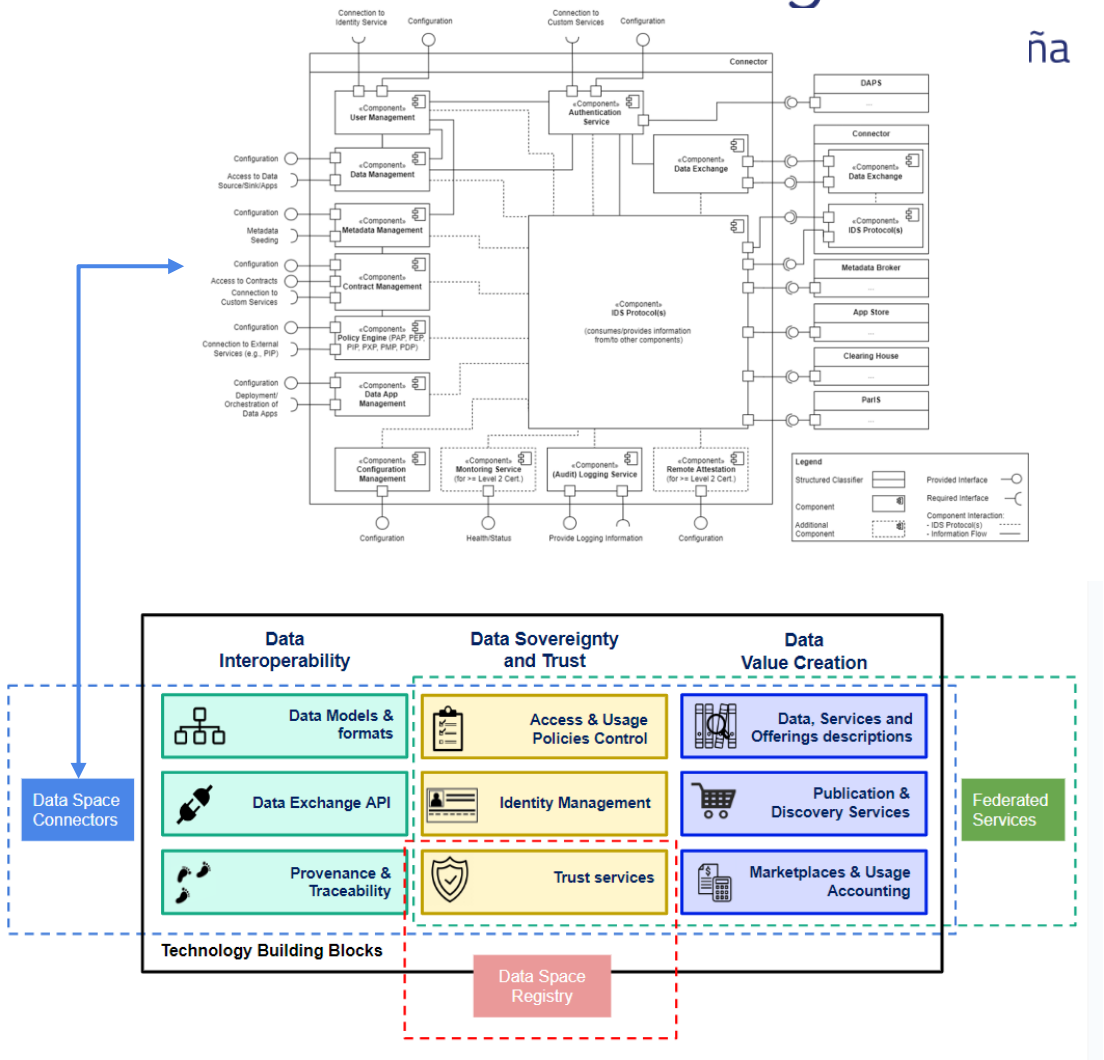
Evolution of Data Space Connector concept

- The concept of Data Space Connector has evolved to match the idea of an integrated suite of components every organization participating in a data space should deploy to “connect” to the data space
- These components would be deployed and configured in controlled environments (e.g., a Kubernetes cluster) and implement a number of services which may be required for an organization to connect in its role as provider of data services, consumer of data services
  or both:
  - Authentication (including the interface to trust services)
  - Authorization (policy enforcement)
  - Connection to Data Exchange APIs
  - Data resources publication (Metadata Management)
  - Contract Management
  - Logging
  - Remote Attestation
  - …
- The concept of Data Space Connector in IDS RAM 4.0 has evolved to support this vision



Data Spaces systems

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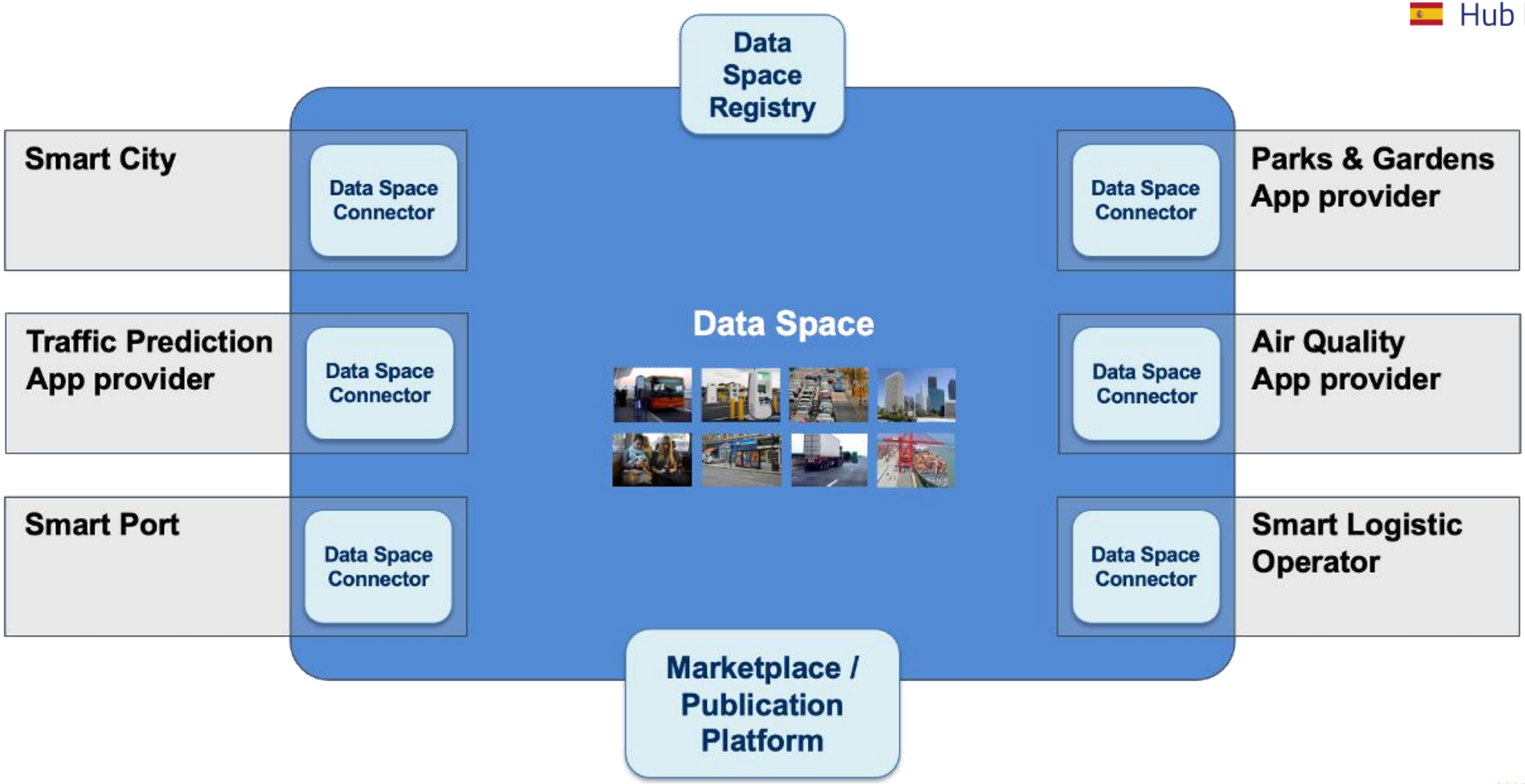

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Some key concepts: Products, Services, Resources

- A Participant of the Data Space can play the role of a Provider or Customer (or Consumer) of (Data) Products
- A (Data) Product is realized as a combination of Services and/or Resources:
  - Services provide access to data or perform processing of data
  - Resources typically required for the execution of the Services
- Products (and corresponding services and resources) are provisioned and activated for a particular Customer:
  - Provision and activation may take days: not all automatically!
  - Not everything runs on the Cloud: cloud-to-edge products
- Example: Air Quality Monitoring Product
  - Comprises a number of Services (e.g., web portal, REST services endpoints, etc) some of which bring access to data (air quality measures) or perform processing of data (air quality predictions)
  - It requires that IoT devices are deployed in the field and some computing capacity provisioned on the cloud (resources)

Some key concepts: Products, Services, Resources

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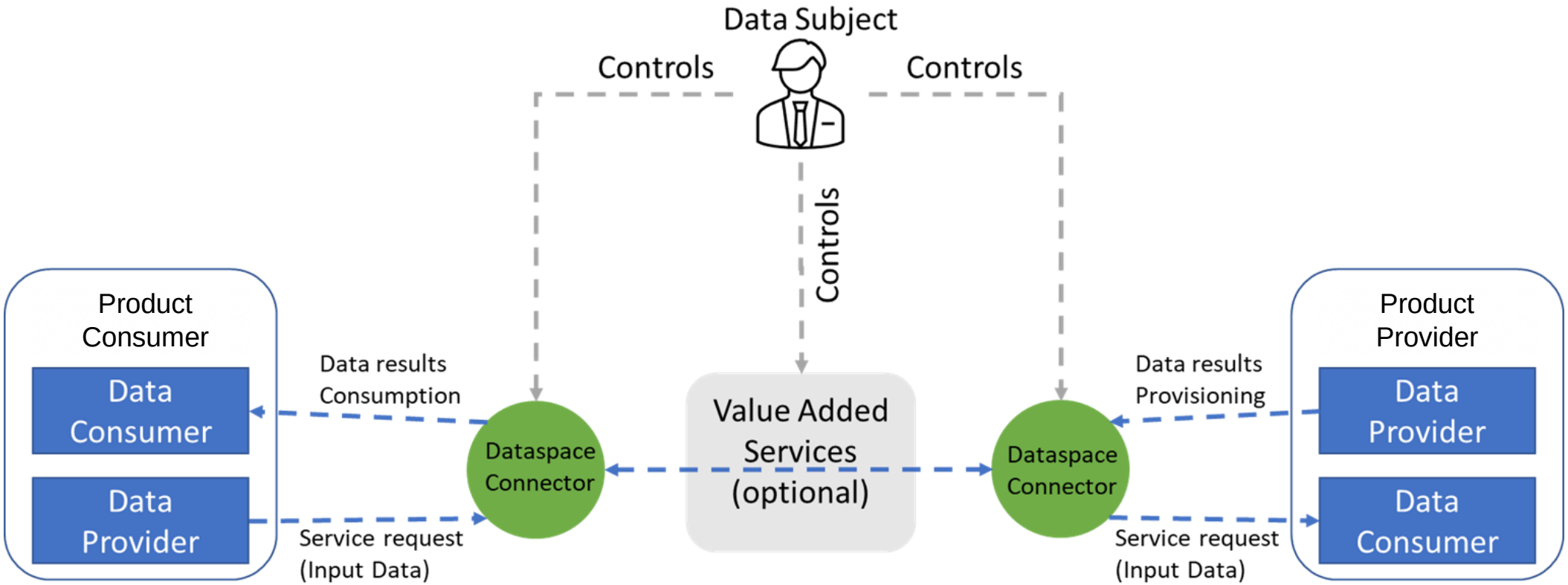

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Some key concepts: Verifiable Credentials

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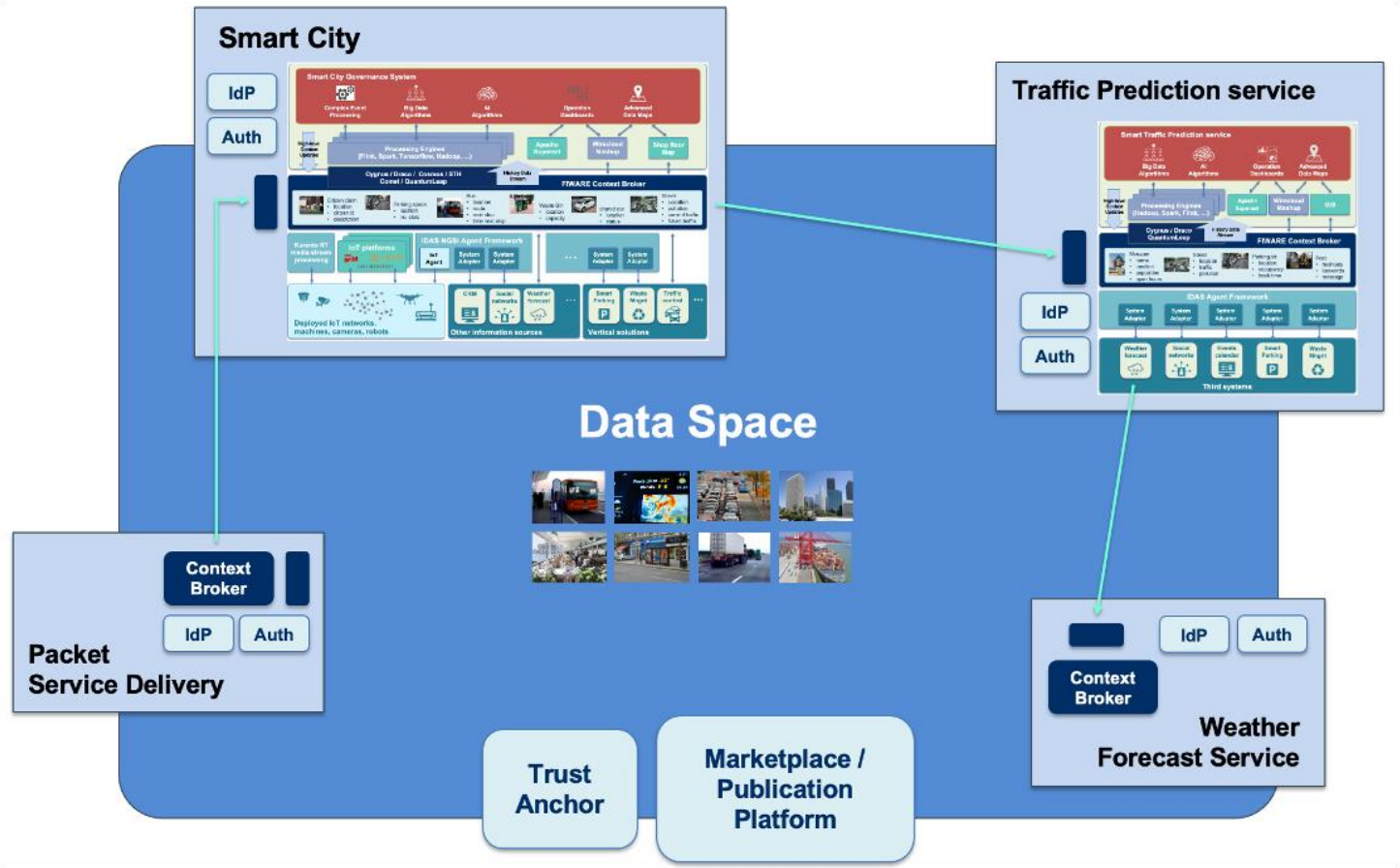
Use the model of physical credentials in the digital world

- Copy the good things of the physical world
- Augment with digital powers
- Preserving privacy, decentralisation, scalability
- Adapted to the current legal framework, but prepared for the future eIDAS2

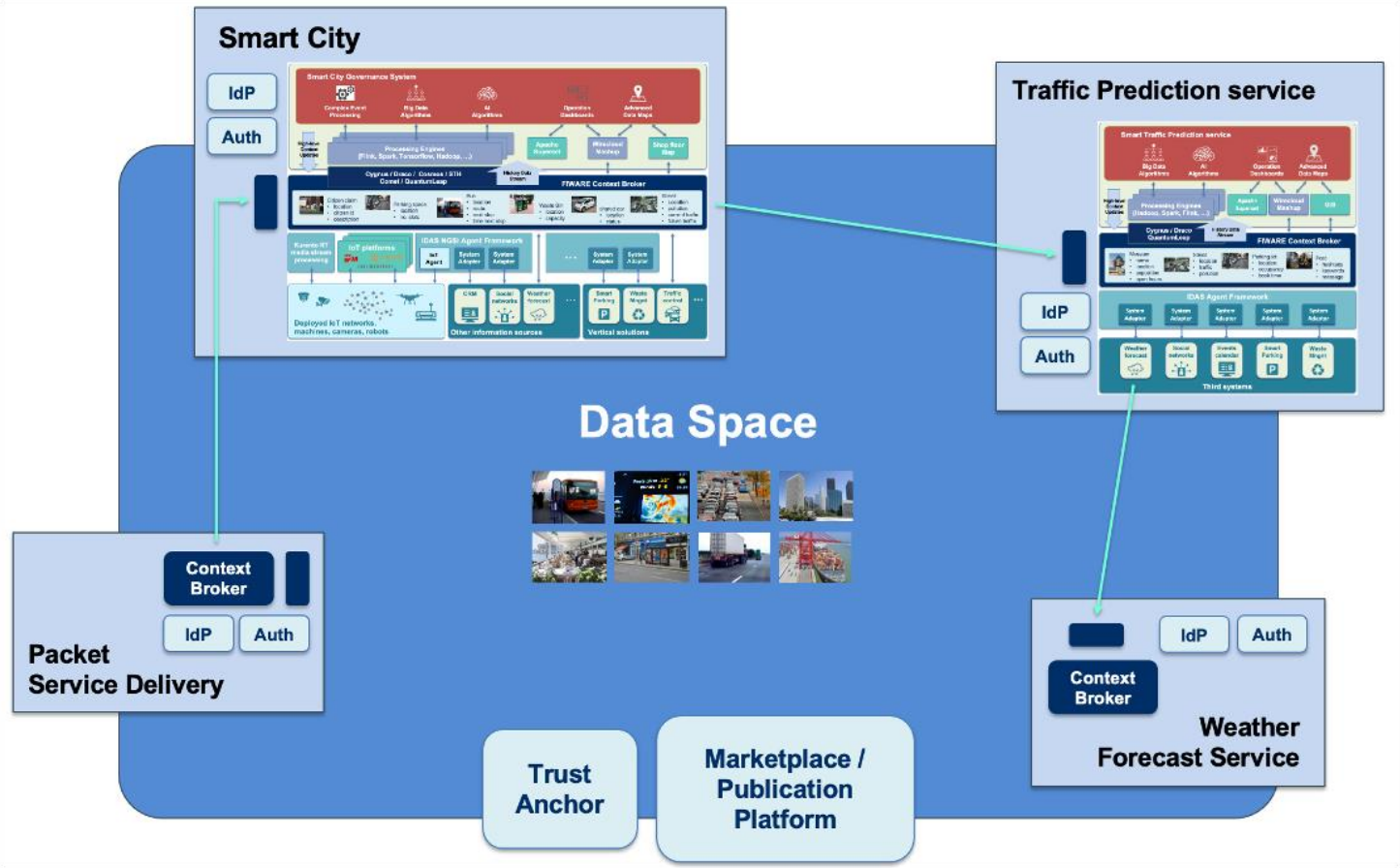
Some key concepts: Verifiable Credentials

- VCs will be used to describe participants in data spaces
- VCs will be used to describe products offered by participants, e.g.:
  - issued by certification agencies, describing compliance with certain regulations (e.g., GDPR compliance) recommendations (e.g., low carbon emissions) or technical compliance (e.g., NGSI-LD compatible interface).
  - provided by the own service provider describing aspects of the service (e.g., access policies, technical standards supported, etc)
- VCs will be used to support Attribute Based Access Control (ABAC) by the service provider:
  - claims linked to VCs will map to attributes (roles) meaningful to assign to service users
  - policies will map to rules expressed over those claims and other potential environment attributes



What it means acquiring rights to use a product/service?

- Organizations that acquire rights to use a product (data service):
  - become trusted issuers of VC including claims relevant for data service access
  - They can issue such VCs for users within the organization
- Authentication and Authorization is then performed at several levels:
  - Verifying whether participants can be trusted (Trust service)
  - Verifying whether access rights were properly acquired (e.g., via some marketplace or directly) → whether the organization performing the request is a trusted issuer of the VCs connected to access policies
  - Verifying that the given VCs presented by the requesting application/user allow to perform the requested operation



DSBA Technical Convergence: Conceptual Model

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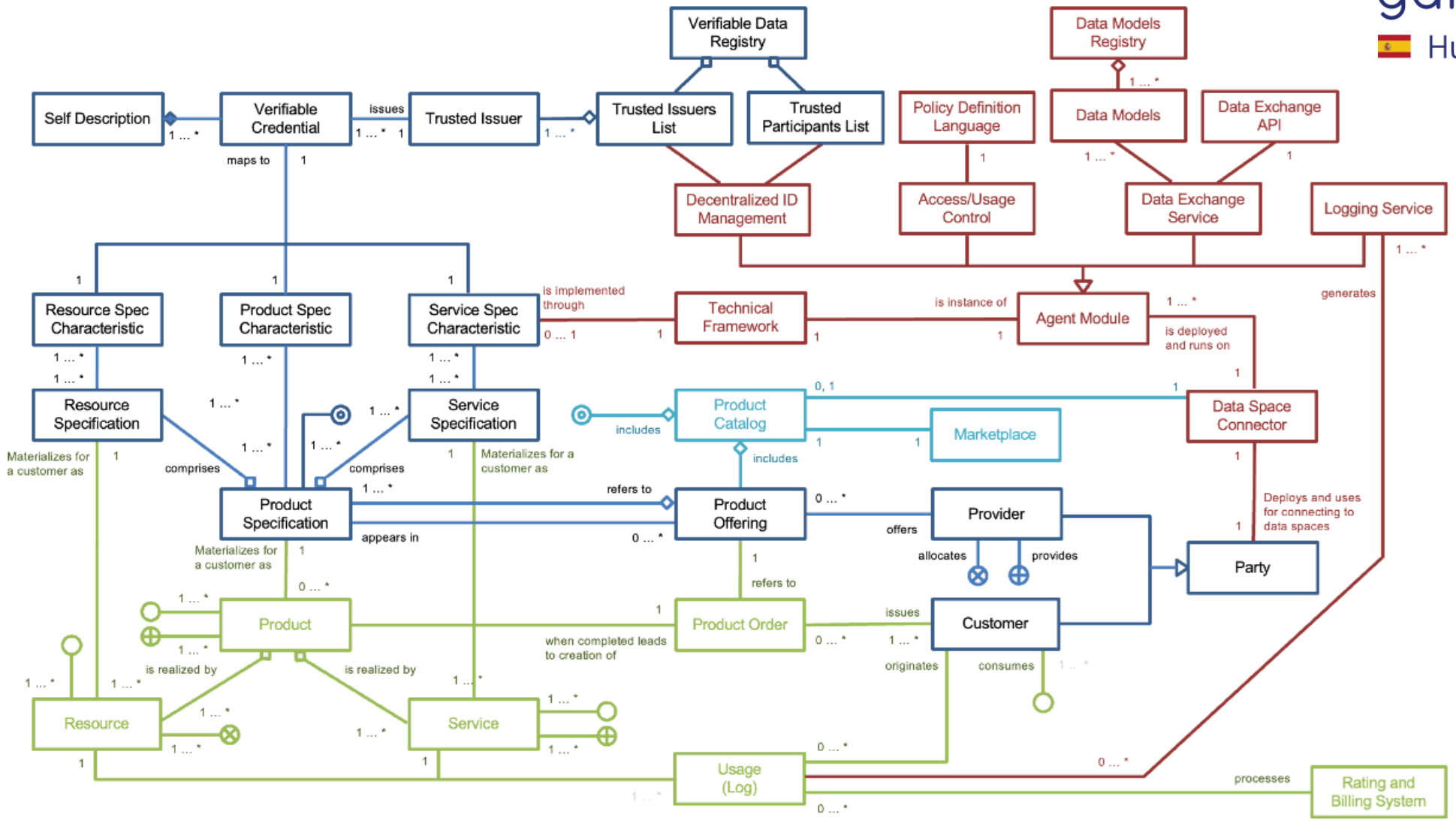

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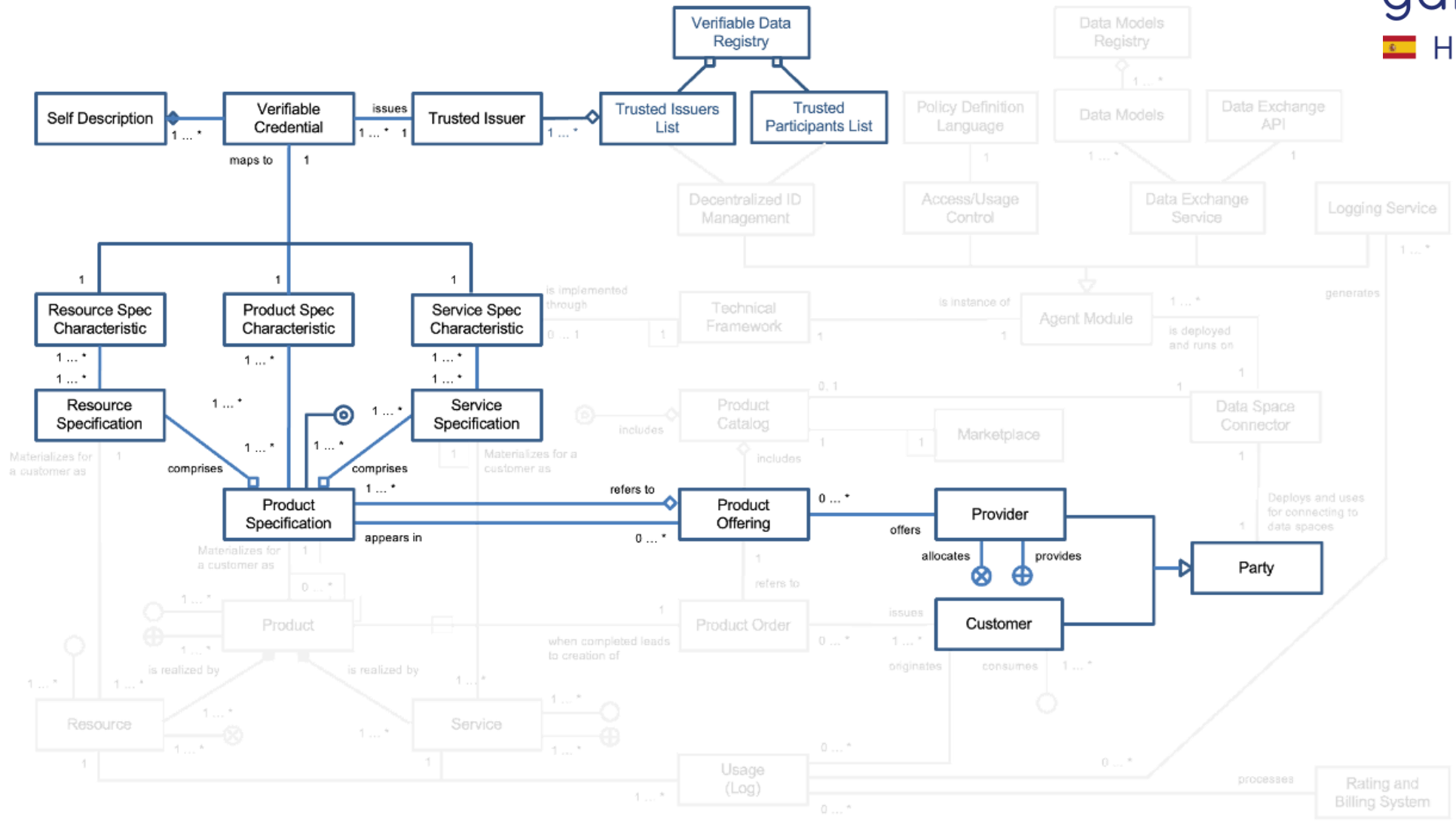

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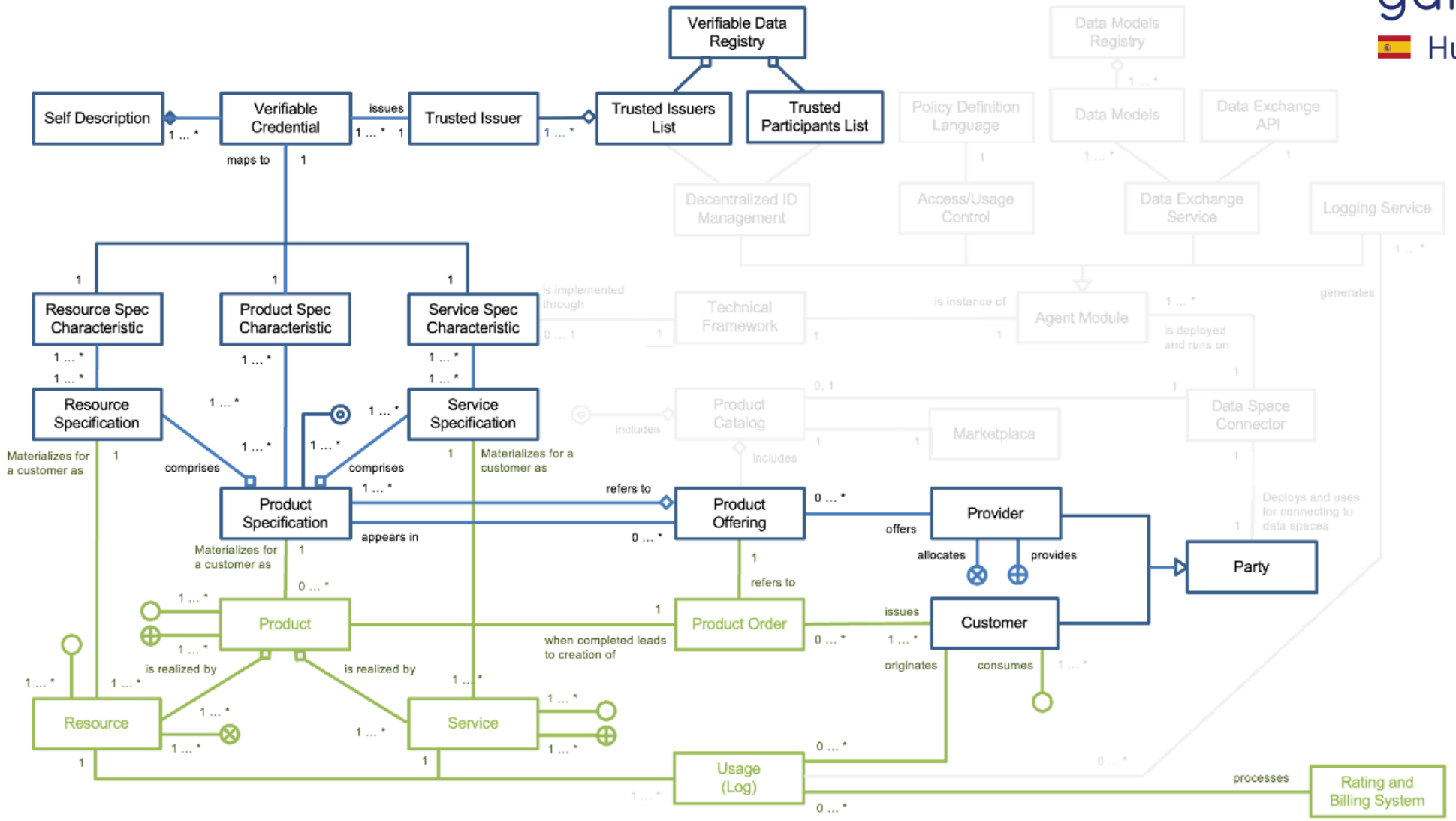

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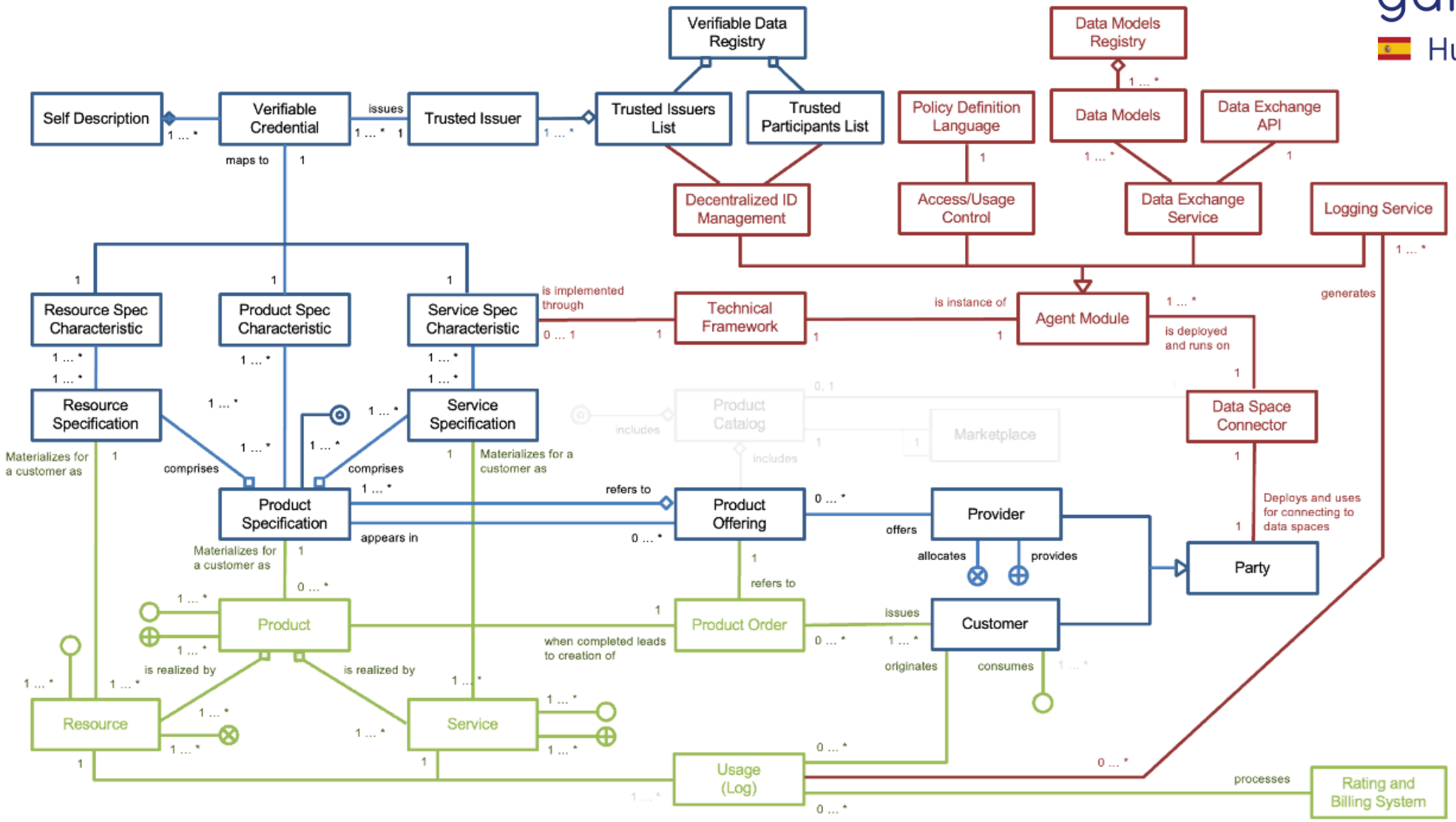

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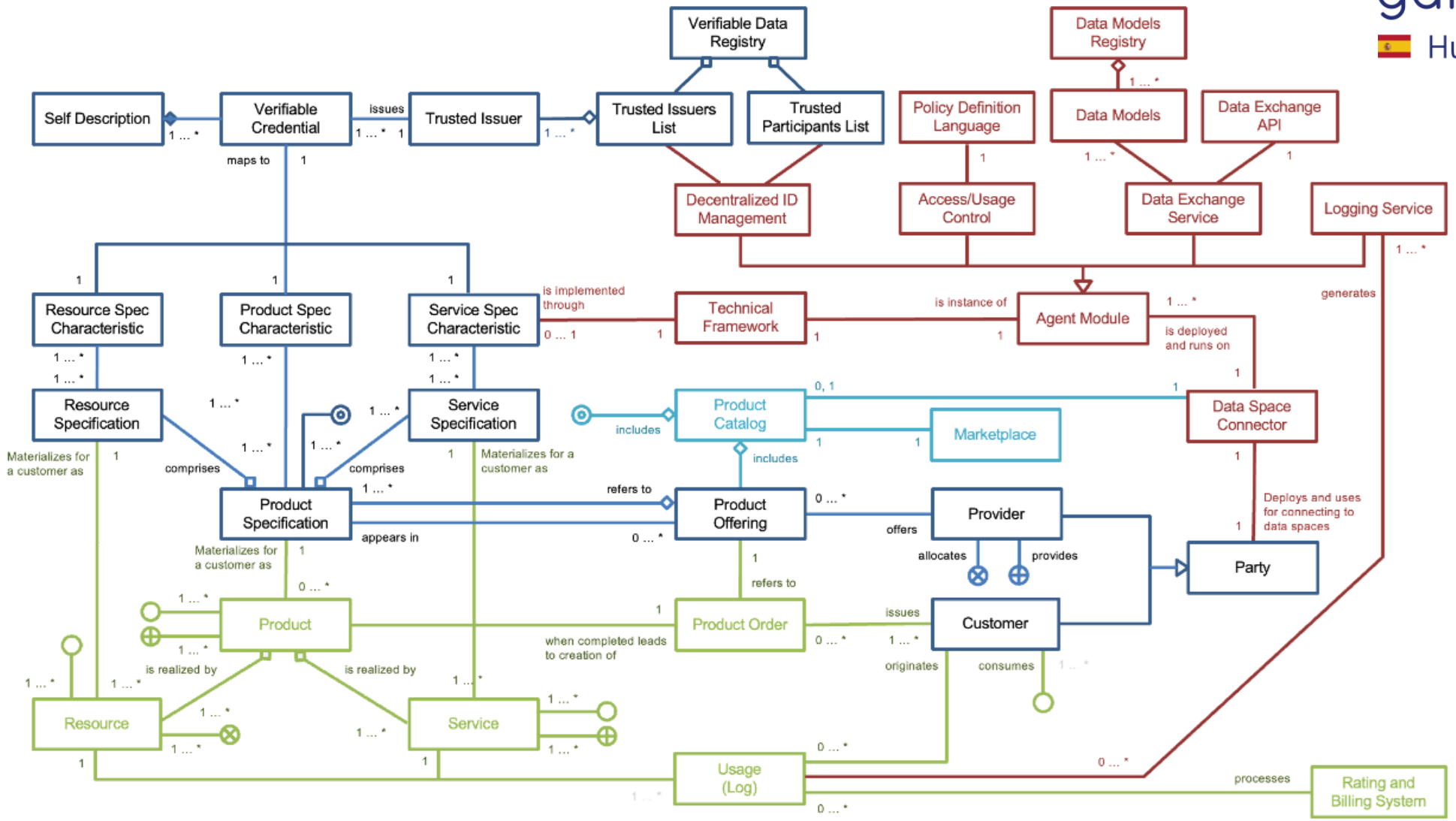

DSBA Technical Convergence: Technology Building Blocks

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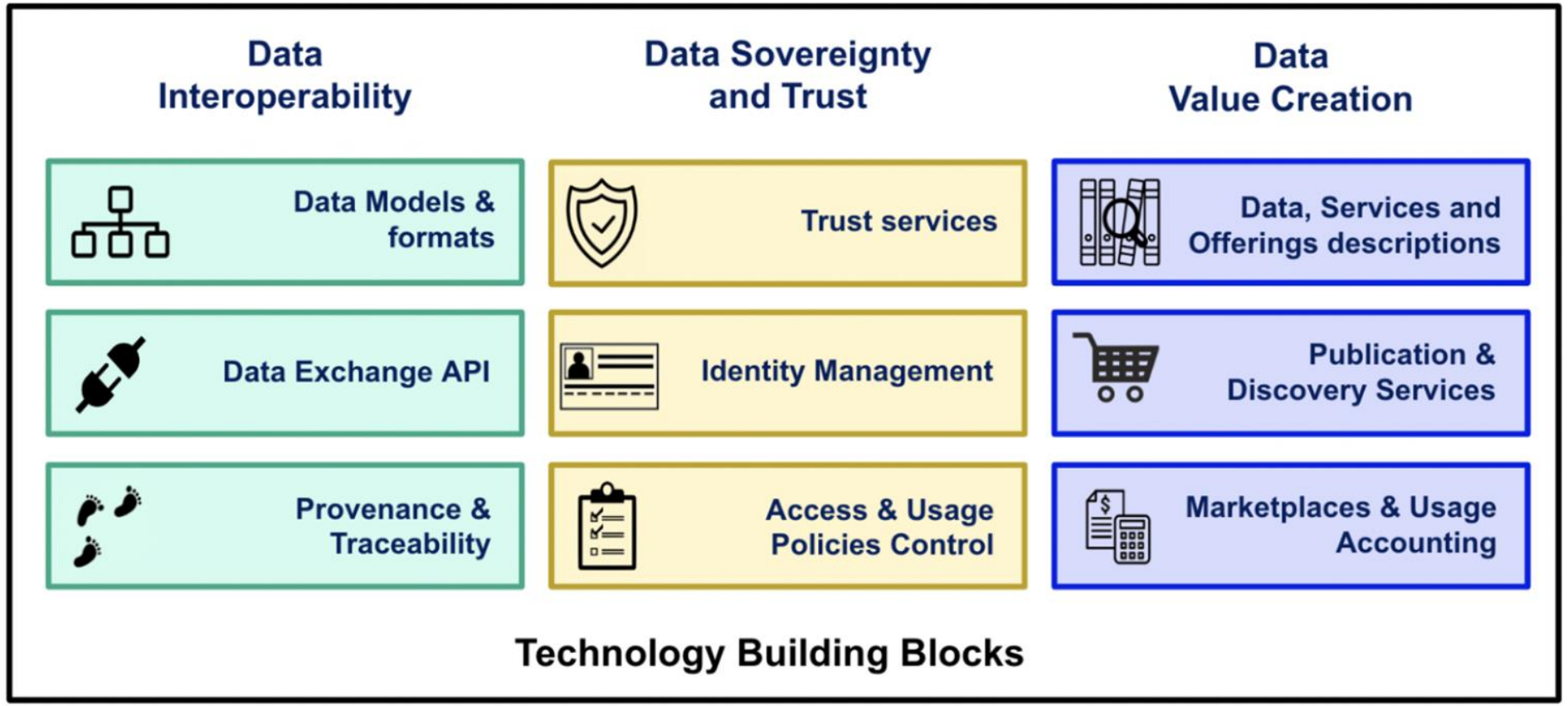

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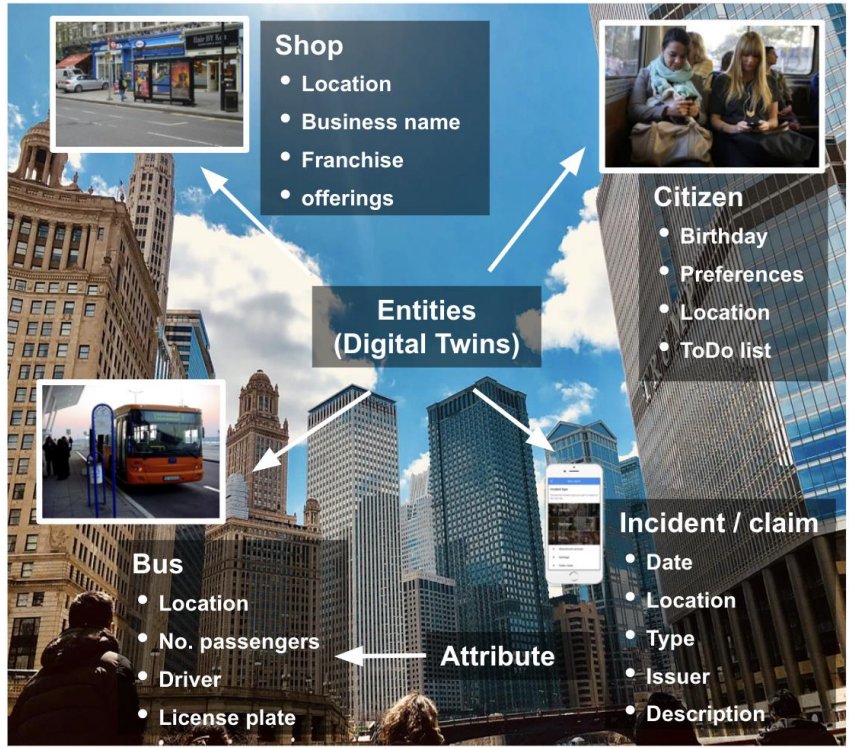
Data interoperability

- Providers of data products within data spaces must be able to offer data services at well defined endpoints knowing that customers, unknown by them a priori, will know how to consume their data services through those endpoints.
- This means that all participants in data spaces should ‘speak the same language’, addressing interoperability at several levels (see ISO/IEC 21823-1):
  - transport and syntactic level → common APIs
  - semantic level → common data models/vocabularies
- DSBA proposes NGSI-LD for transfer of digital twin data and Dataspace Connector Protocols for the Control of data transfer
- Adoption of common data models is encouraged and there are multiple references that may consider (ISO/IEC CIM for Energy, SHAREF, …) - the Smart Data Models initiative brings a hub that solves how different data models are mapped into JSON, JSON-LD and othe data serialization formats
- In some data spaces, it may be necessary to make the data sharing process observable - to be addressed in future versions



Data sovereignty and trust

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- Any data space requires a Trust Framework bringing
  - Mechanisms for verifying legal identity
  - Mechanisms for verifying compliance with data space participation rules
  - Mechanisms for verifying trustworthiness of credential issuers
- On the other hand, it requires a decentralized Identity and Authorization Management (IAM) framework through which manage authentication and the enforcement of access/usage policies
- DSBA proposes a decentralized Trust framework compatible with the EU DID Wallet Architecture and EBSI
- Decentralized IM based on latest W3C and OIDC standards:
  - W3C DID (Decentralized Identifiers), Verifiable Credentials (VC)
  - Verifiable Credentials Issuance Protocols: OIDC4VCI
  - Self-Issued OpenID Provider: SIOPv2
  - Verifiable Credentials Exchange Protocols: OIDC4VP
- Authorization framework following PEP-PDP-PIP and PRP/PAP architecture for ABAC (attributes ⇔ claims in VCs), and adopting ODRL as Policy Definition Language

W3C OpenID

ebsi European Blockchain

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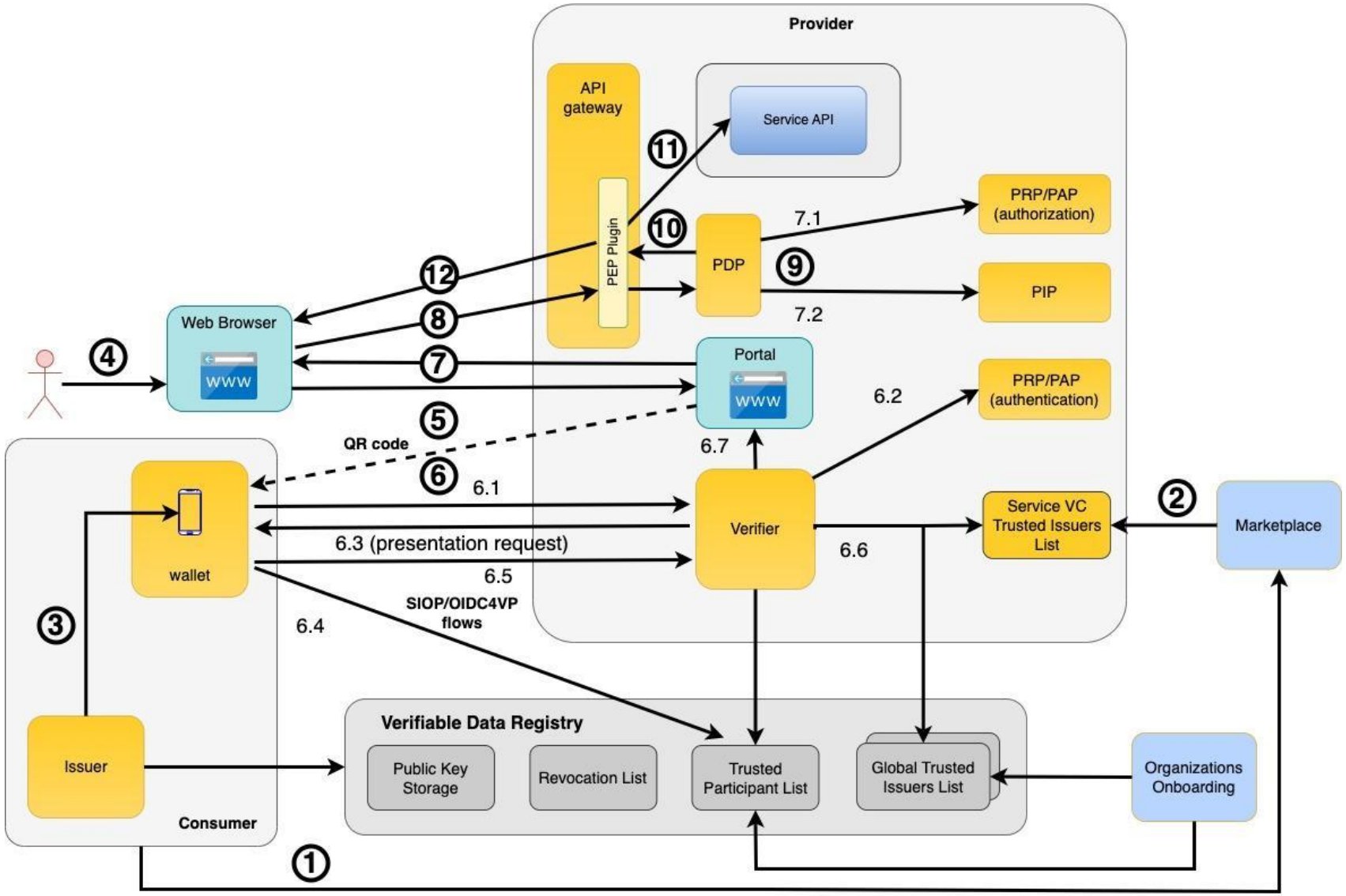
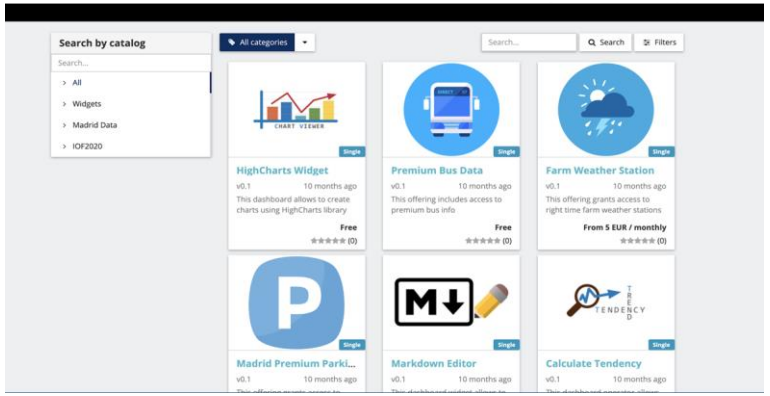
Steps

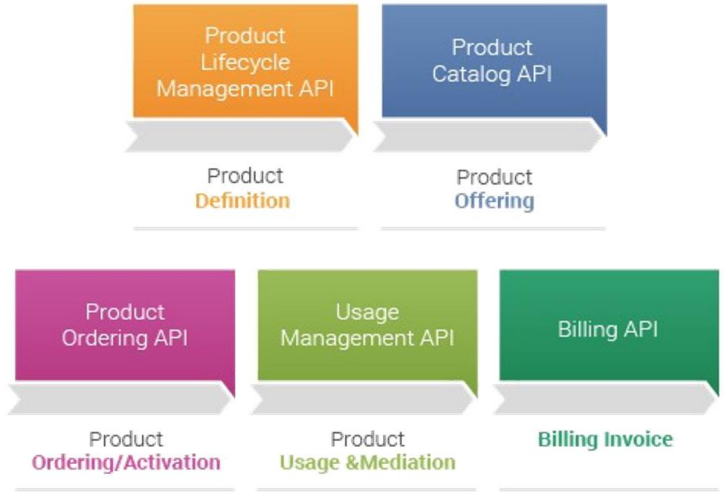


1. Consumer acquires rights to use Data Service by Provider X (e.g., through a marketplace)
2. As a result, Consumer organization is registered as trusted issuer of VCs used for access control to the Data Service
3. Consumer organization issues proper VCs to its end users (e.g., employees, customers)
4. A given end user access the portal through which the Data Service API will be invoked and select VCs as the form for authentication
5. The portal sends a QR code that the end user scans with his mobile device, as a result
6. SIOPv2/OIDC4VP flows take place:
    1. the verifier gets contacted, which
    2. obtains the list of VCs users should present
    3. and sends a presentation request to the end user wallet with info about VCs to present
    4. the wallet verifies that the presentation request was issued by a trusted participant
    5. and sends the requested VCs to present
    6. which are verified against trusted issuers lists
    7. to create an access token
7. the access token is sent to the end user application for the invocation of operations
8. when a request to an operation arrives, the PEP plug-in extracts the claims from the VCs in the access token, sending them to the PDP
9. the PDP verifies that a user with the given claims and under the environment conditions translated by the PIP can perform the request
10. if so, it returns ok
11. if ok, the PEP plug-in forwards the request to the service API and
12. return results to the requesting application

Data value creation

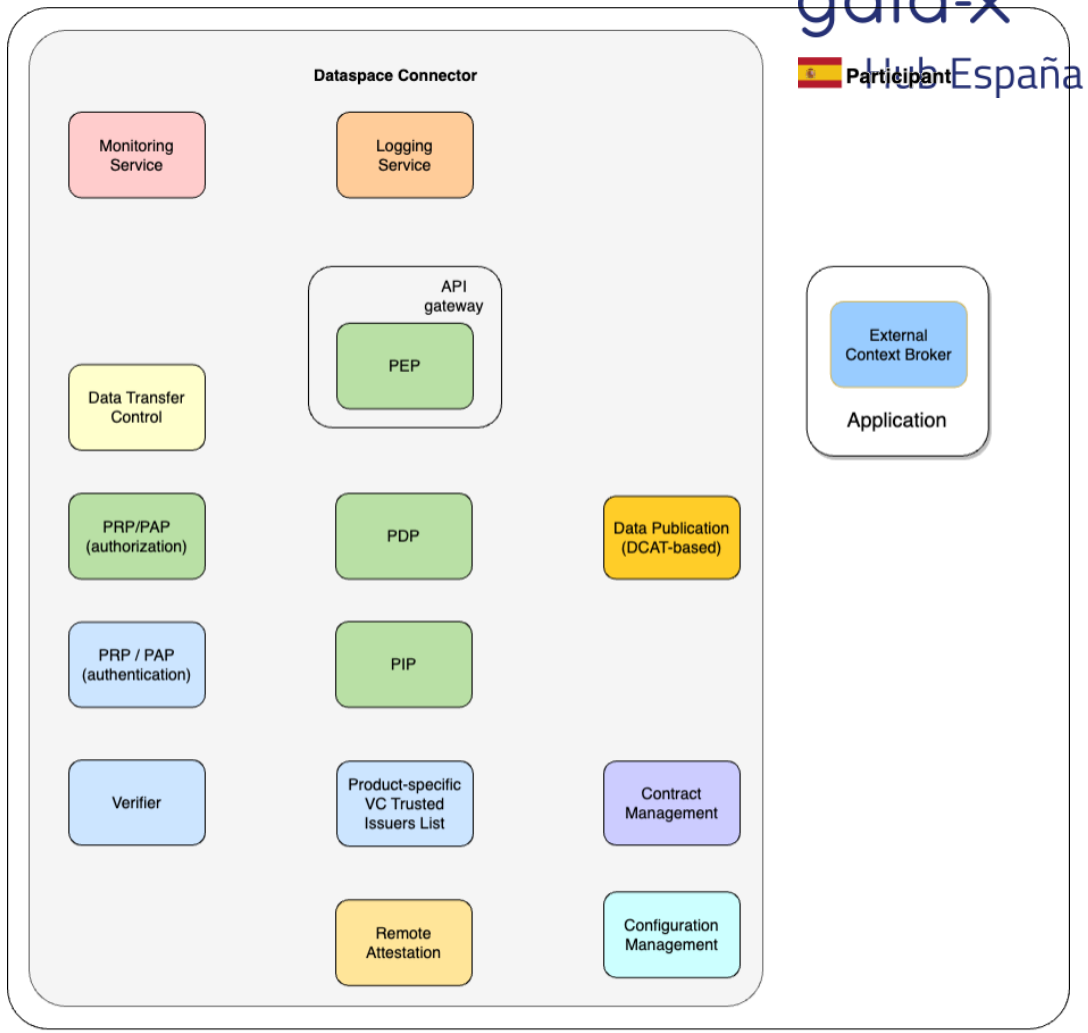
- Creating value out of data based on data sharing is the ultimate goal in data spaces.This follows basically the steps to:
  - Describe data, services, resources, products, offerings in an interoperable manner
  - Include data and service publication services to discover offerings facilitating connection of providers and consumers
  - Support contract negotiation peer-to-peer or through value–added services such as marketplaces
- Providers will be able to self-issue Verifiable Credentials linked to descriptions of their products/services/resources/data → goal is to align on common specifications for future editions
- Descriptions will be available through catalogs at connector level (supporting DCAT v3) or at data space level (Metadata Brokers or Marketplaces)
- TM Forum APIs bring the basis for managing offerings and support contract negotiation via marketplaces → goal is to align on how to support them at connector level





Compliance of Data Space Connectors with DSBA recommendations

- Aligning with DSBA recommendations would have several implications:
  - Authentication should be based on W3C DID + VC/VP standards and SIOPv2/OIDC4VP protocols and implement the connection to trust services
  - Authorization should implement a P*P architecture implementing ABAC using ODRL as policy language
  - Compatibility with NGSI-LD as data exchange API
- How to implement Contract Management is under analysis since there are two aspects to reconcile:
  - In principle, TM Forum APIs would be a good candidate for Contract Management API
  - There has been some initial work in IDS RAM 4.0 regarding specification of a Contract Negotiation protocol



Conclusions and next steps

- High-level vision and design principles are important but we need to achieve concreteness to make data spaces happen!
- That is why the DSBA Technology Convergence **work will continue**
  - The Discussion Paper will be updated and new versions will be created based on the results of the Workstreams
  - The Data Space Support Center CSA and rest of DS CSAs are encouraged to use the results and may contribute to this work
- Some concrete **topics** are in current focus:
  - Details about products, services, resources, data descriptions and how to map them into Verifiable Credentials
  - Support to TM Forum APIs at connector level for peer-to-peer contract negotiation
  - Further development of some concepts: Observability, Vocabulary Hubs, Metadata Broker functions, …

Thank you!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GAIA X – TECNOLOGÍA

Javier Esteve (Oficina del Dato)

21 de septiembre de 2023 - Greencities

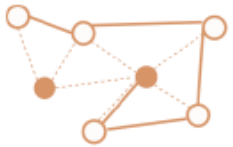
Oficina del Dato

GOBIERNO DE ESPAÑA
VICEPRESIDENCIA PRIMERA DEL GOBIERNO
MINISTERIO DE ASUNTOS ECONÓMICOS Y TRANSFORMACIÓN DIGITAL
SECRETARÍA DE ESTADO DE DIGITALIZACIÓN E INTELIGENCIA ARTIFICIAL

España

Misión de Gaia-X:

*«Creación de **ecosistemas federados, abiertos, seguros** y transparentes donde los **datos y los servicios asociados** cumplen un conjunto de **reglas comunes** que permiten compartirlos, crearlos y recopilarlos»*



Ecosistemas federados (*federación*)

Comunidades de proveedores y consumidores de servicios que compiten y colaboran en la provisión y consumo de servicios mediante relaciones de igual a igual y que actúan de forma autónoma.

Abiertos

Varios sentidos:

- Abiertos a todo tipo de participantes (Bajas barreras de entrada)
- Software open source
- Interoperables con otros ecosistemas, evitando silos

Seguros

Mecanismos para garantizar la confianza en las credenciales

Etiquetado del nivel de confianza de los servicios (labels)

Para servicios de datos y asociados

- Servicios de compartición de datos
- Aplicaciones para su explotación
- Recursos computacionales en la nube

Gaia-X denomina a los espacios de datos **«infraestructuras de datos»**

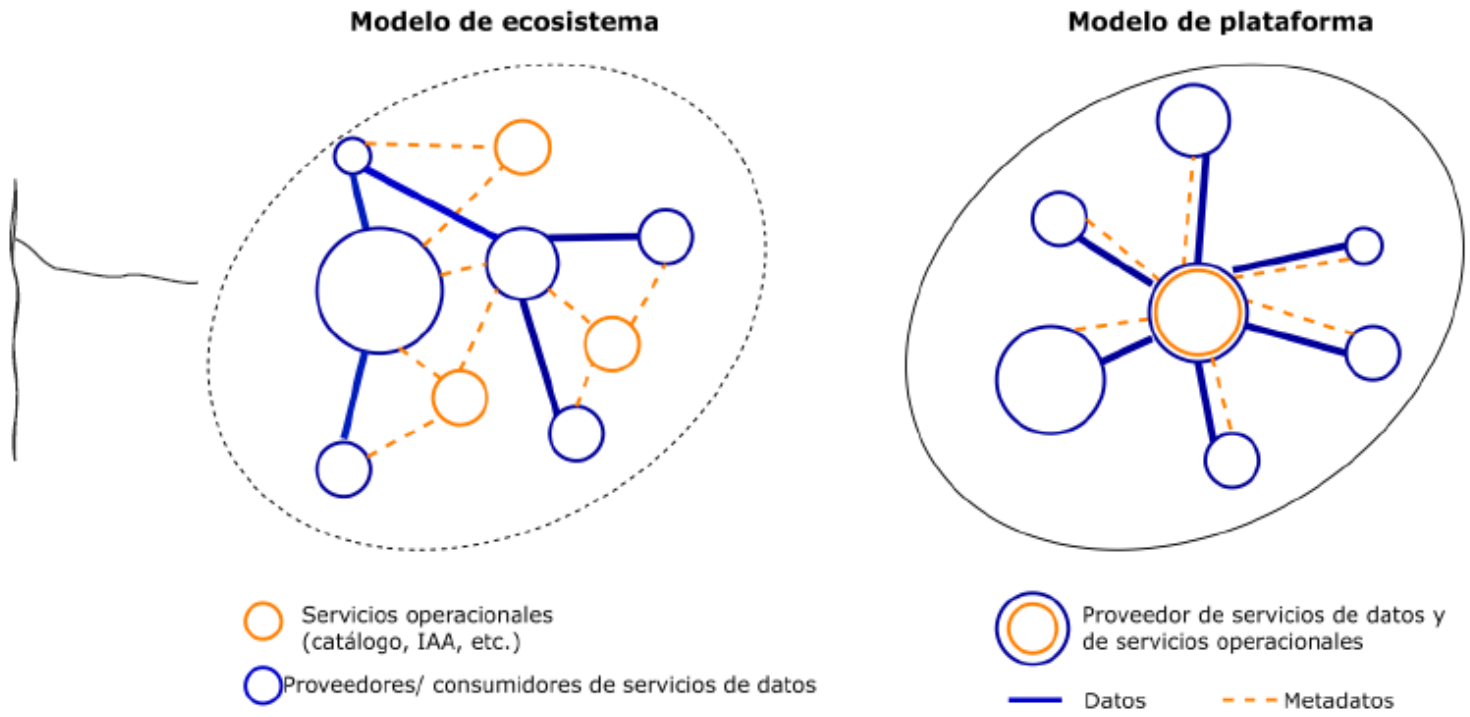
Con reglas comunes

Reglas de interoperabilidad basadas en especificaciones abiertas y estándares

- Legales
- Organizativas
- Semánticas
- Técnicas

Ecosistema frente a plataforma

El ecosistema es el modelo preferencial de la CE para los datos



«Los espacios de datos han de fomentar un ecosistema (de empresas, de la sociedad civil y de particulares) que cree nuevos productos y servicios basados en datos más accesibles»

Comisión Europea. *Una estrategia europea para los datos*

Justificación de la iniciativa Gaia-X

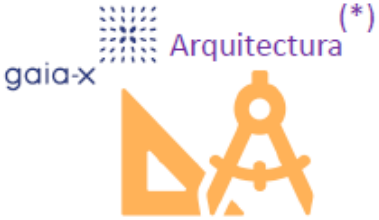
Mercado

«Necesidad de mercado de reducir barreras para la adopción de servicios en la nube impulsando la confianza y la capacidad de elección»

Economía del dato

«Necesidad de soluciones tecnológicas innovadoras, seguras y confiables para el establecimiento de una economía del dato pujante»

¿Qué es lo que entrega Gaia-X?



Modelo de **arquitectura** de federación (ecosistema)

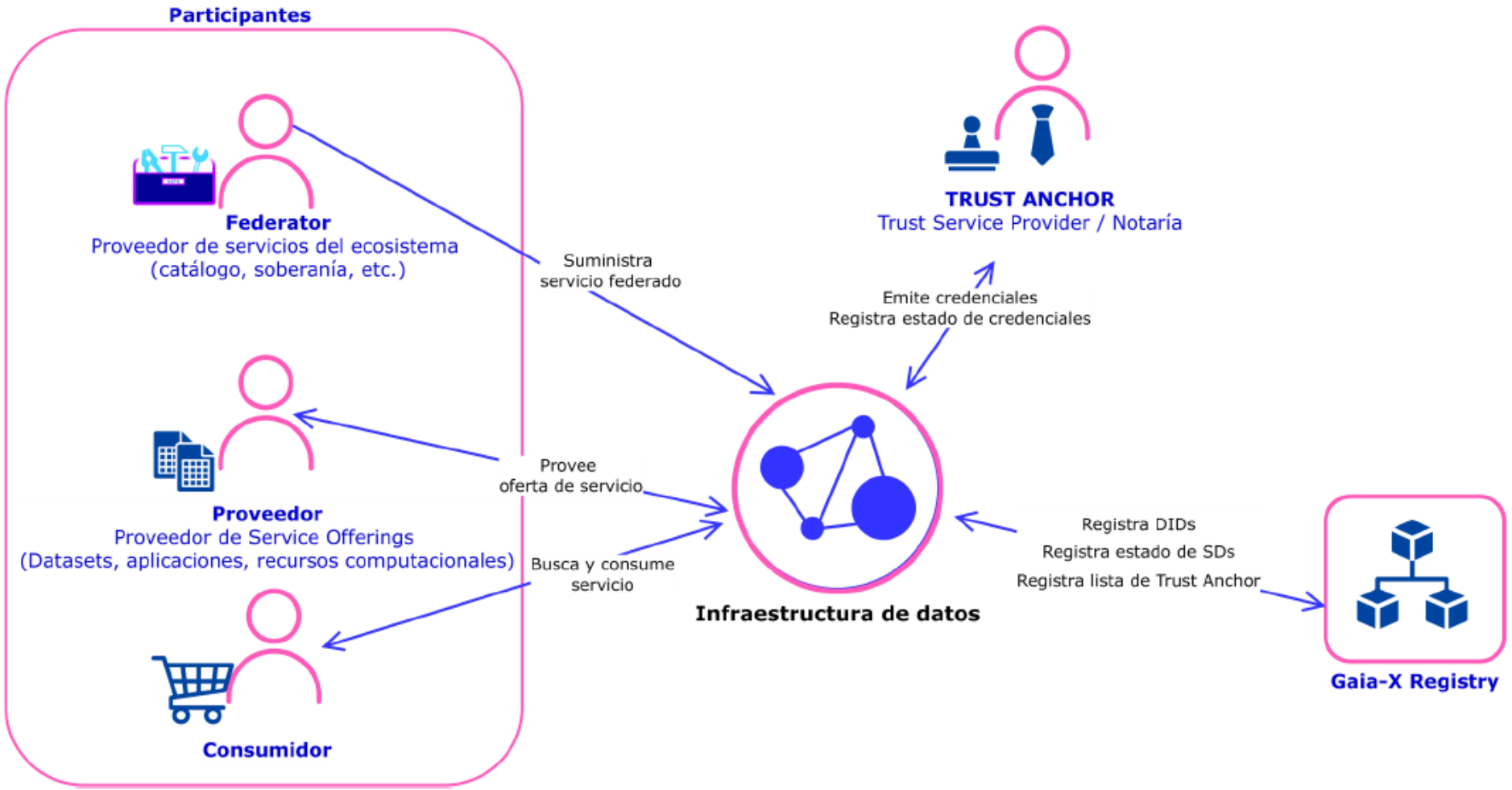
Un **marco de interoperabilidad** para la creación de redes descentralizadas de ecosistemas (Gaia-X Ecosystem)

Componentes software para construir ecosistemas/federaciones (GXFS)

Gaia-X es un proyecto para la construcción de federaciones de proveedores y consumidores de servicios de datos abiertas y seguras, mediante la entrega de un modelo de arquitectura, unas reglas de interoperabilidad y unos componentes software de referencia

(*) Gaia-X AISBL (**) Eclipse XFSC (Cross Federation Services Components), antiguamente GXFS

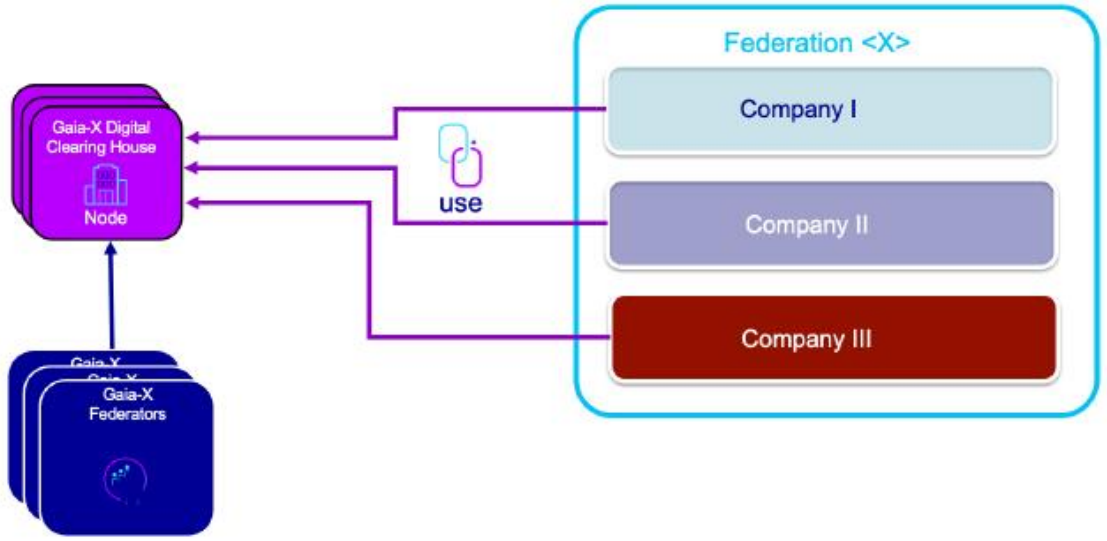
Arquitectura general de Gaia-X: roles



¿Qué es el Gaia-X *Digital Clearing House* (GXDCH)?

1. Es un nodo de verificación de la conformidad con las reglas de Gaia-X

2. El «*el lugar al que ir*» para obtener la conformidad (*compliance*) de Gaia-X y formar parte del ecosistema Gaia-X



Servicios del GXDCH

Oficina del Dato

GOBIERNO DE ESPAÑA
VICEPRESIDENCIA PRIMERA DEL GOBIERNO
MINISTERIO DE ASUNTOS ECONÓMICOS Y TRANSFORMACIÓN DIGITAL
SECRETARÍA DE ESTADO DE DIGITALIZACIÓN E INTELIGENCIA ARTIFICIAL

I-X España

Servicios obligatorios del GXDCH

Gaia-X Registry

Gaia-X Compliance

Servicios recomendados del GXDCH

Gaia-X Catalog

Gaia-X Credential Manager (e-Wallet)

Wizard

Notary

Gracias

https://www.gaiax.es

Si estás interesado en ser miembro de Gaia-X Spain, ponte en contacto con nosotros escribiendo un correo electrónico a:

administracion@gaiax-spain.com

FIWARE Data Space Connector

Juanjo Hierro
CTO
FIWARE Foundation
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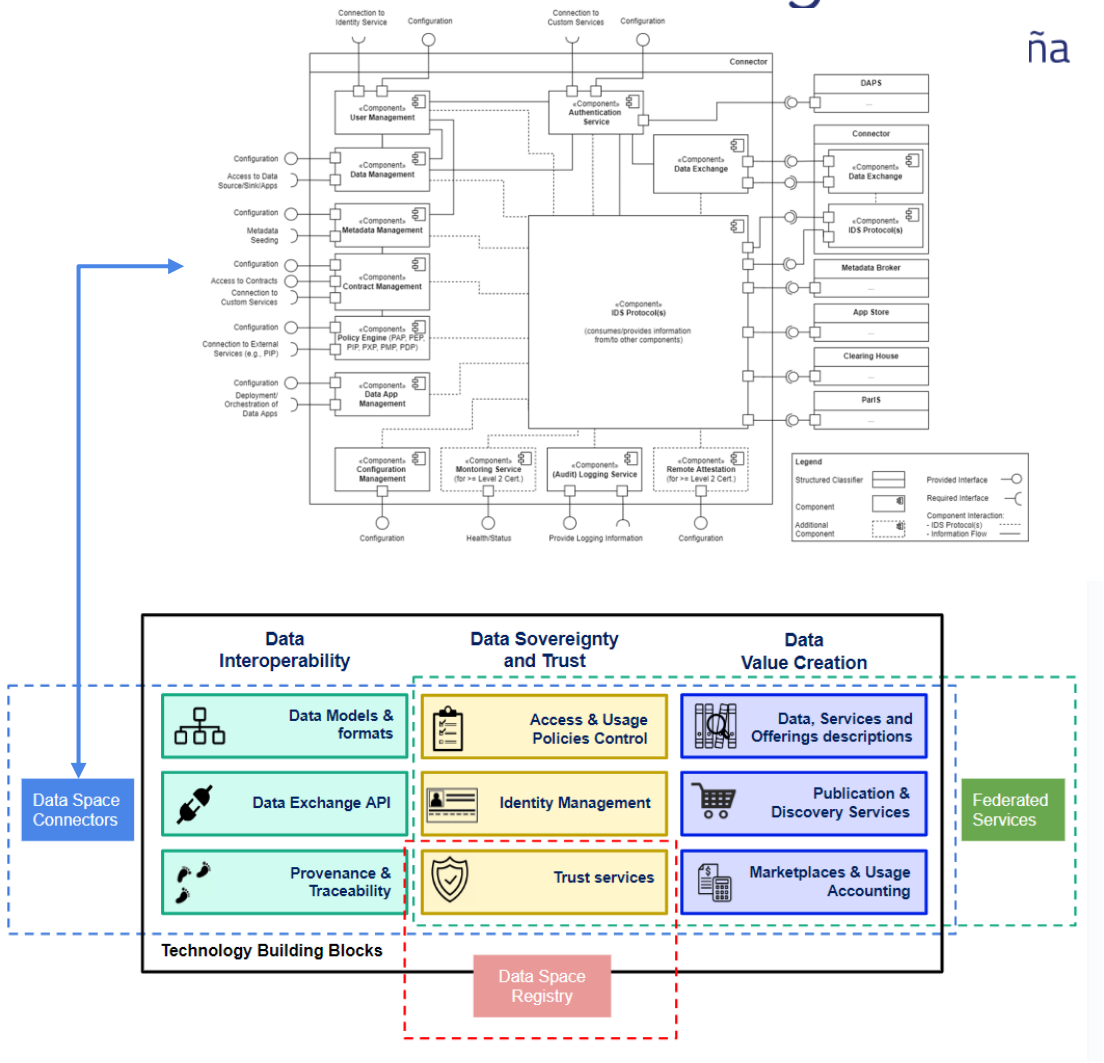
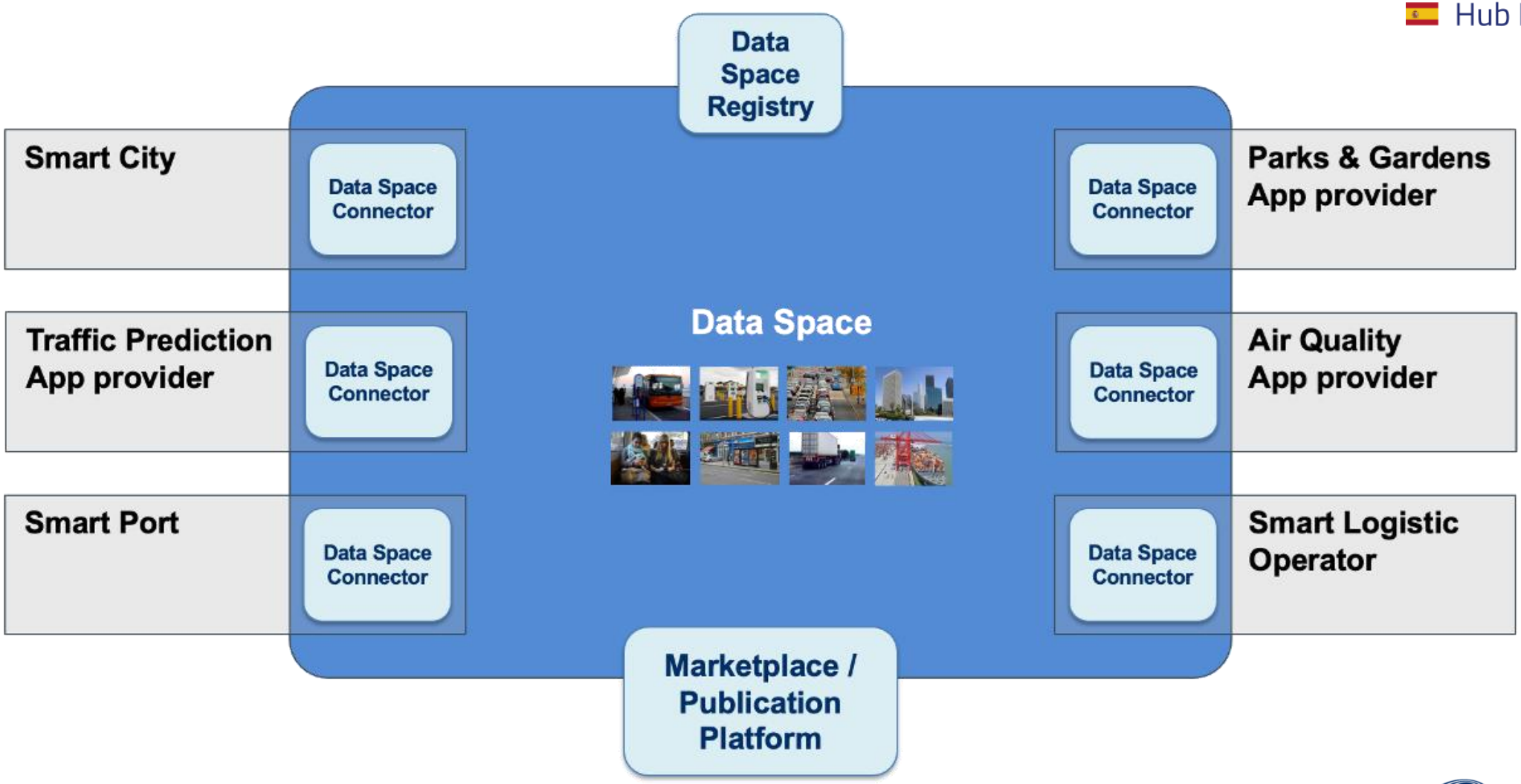
FIWARE

Evolution of Data Space Connector concept

- The concept of Data Space Connector has evolved to match the idea of an integrated suite of components every organization participating in a data space should deploy to “connect” to the data space
- These components would be deployed and configured in controlled environments (e.g., a Kubernetes cluster) and implement a number of services which may be required for an organization to connect in its role as provider of data services, consumer of data services or both:
  - Authentication (including the interface to trust services)
  - Authorization (policy enforcement)
  - Connection to Data Exchange APIs
  - Data resources publication (Metadata Management)
  - Contract Management
  - Logging
  - Remote Attestation
  - …
- The concept of Data Space Connector in IDS RAM 4.0 has evolved to support this vision

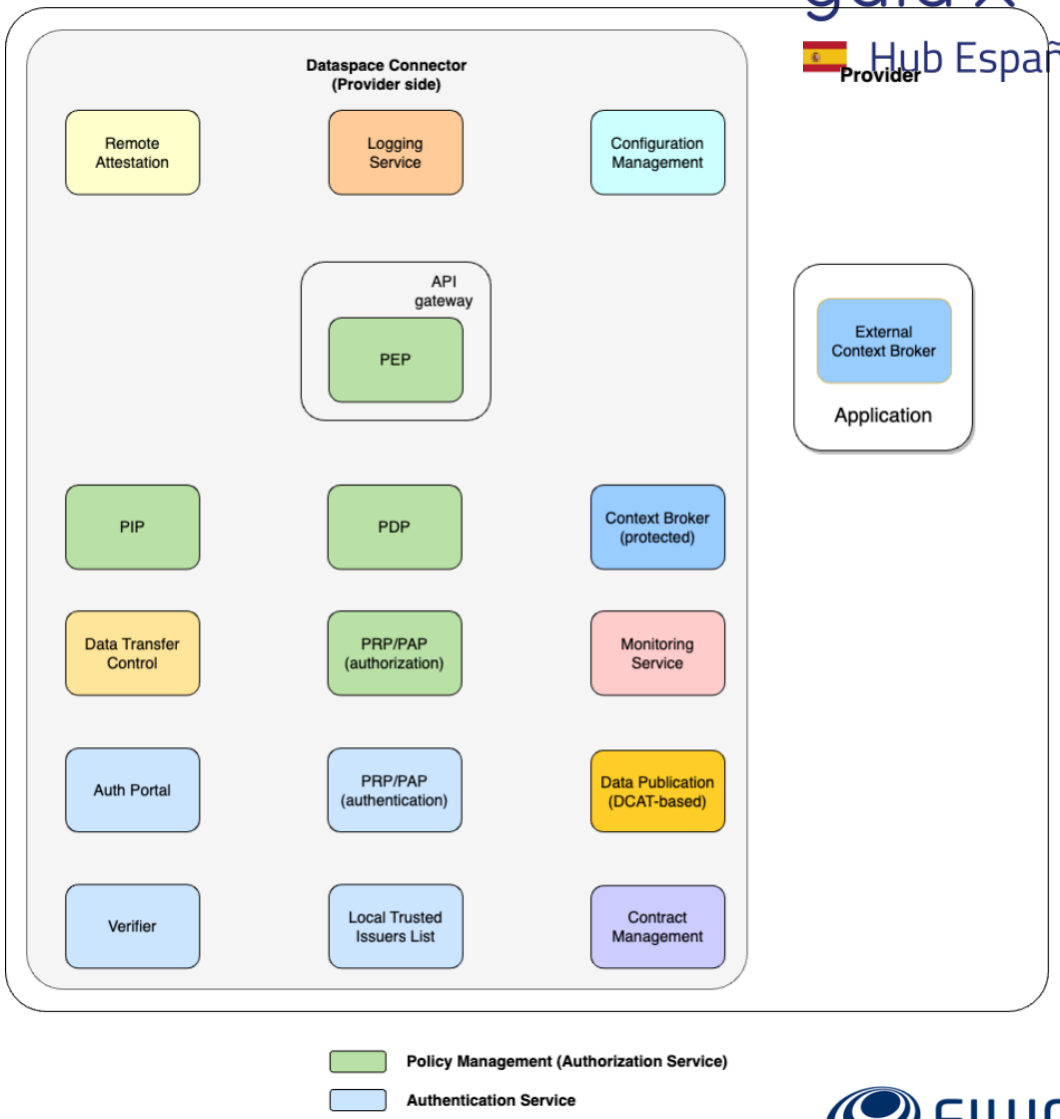


Data Spaces systems



Compliance of Data Space Connectors with DSBA recommendations

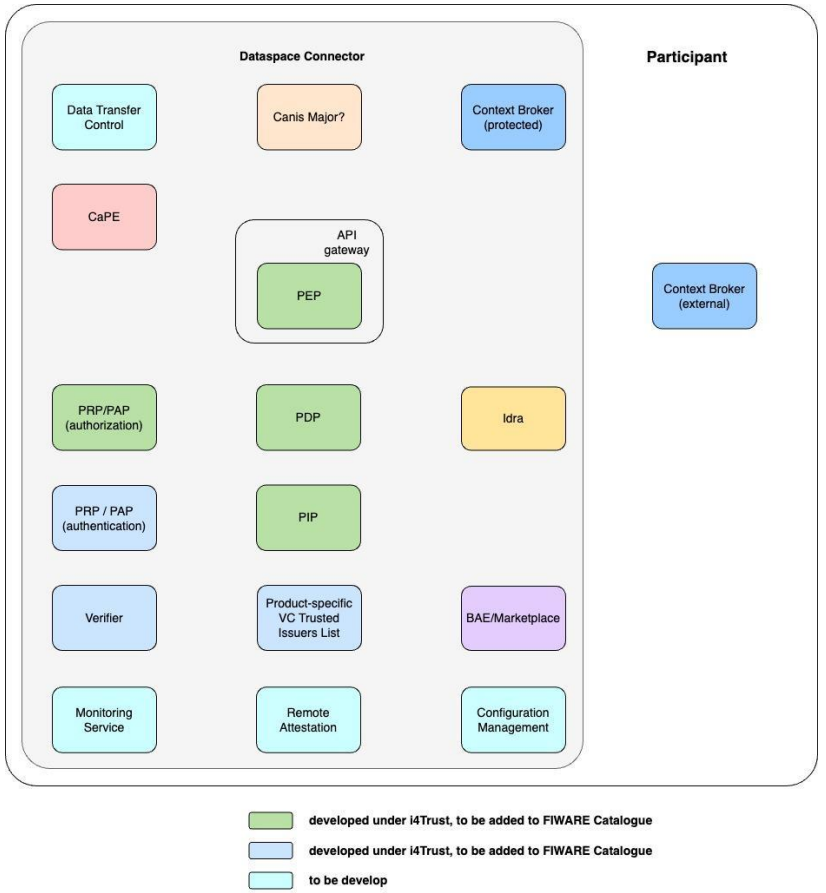
- Aligning with DSBA recommendations would have several implications:
  - Interface with Trust Services should align with EBSI specifications (DID-Registry, Trusted-Issuers-Registry APIs but extended to support authentication based on VCs)
  - Authentication should be based on W3C DID + VC/VP standards and SIOPv2/OIDC4VP protocols and implement the connection to trust services
  - Authorization should implement a P*P architecture implementing ABAC using ODRL as policy language
  - Compatibility with NGSI-LD as data exchange API
- How to implement Contract Management is under analysis since there are two approaches to reconcile:
  - In principle, TM Forum APIs would be a good candidate for Contract Management API
  - There has been some initial work in IDS RAM 4.0 regarding specification of a Contract Management protocol



FIWARE Data Space Connector

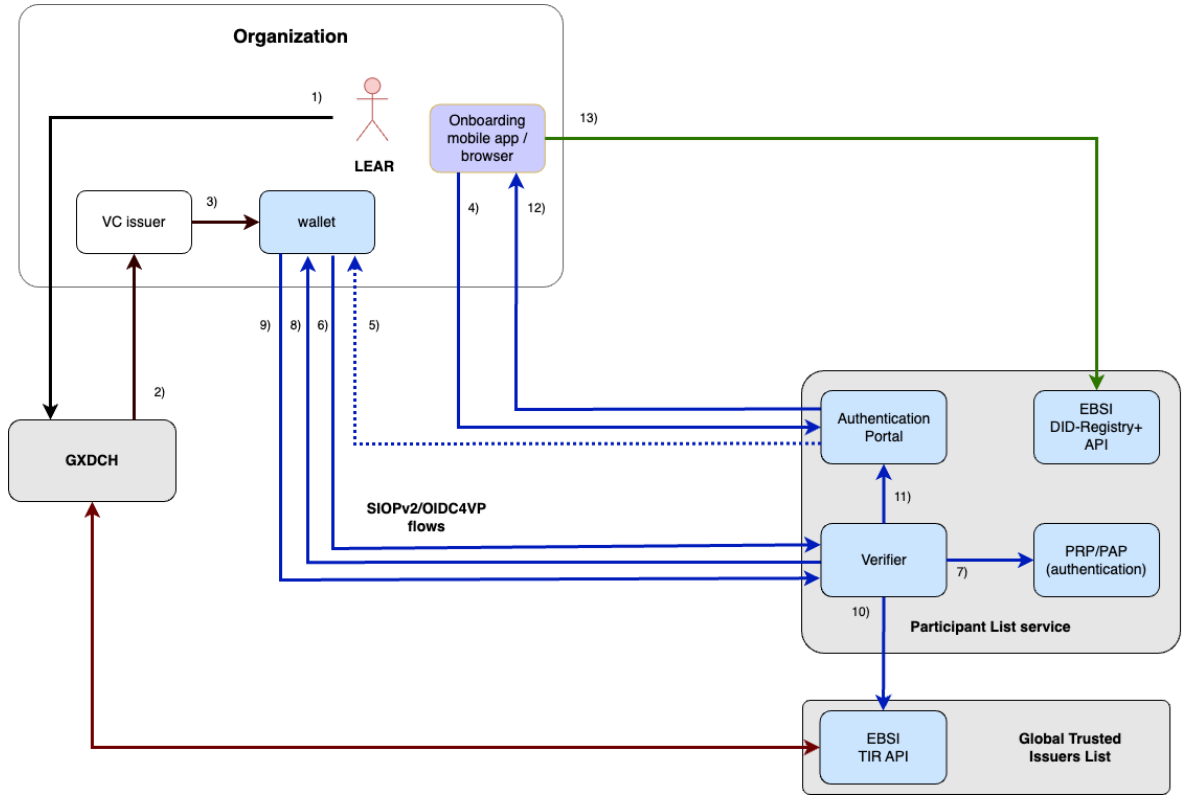
- A first release of FIWARE Data Space Connector components together with recipes for their deployment has been released on the basis of combining the following components which already align with DSBA TC recommendations:
  - Context Broker technology for Data Exchange/Transfer
  - Trust and IAM components implementing W3C DID + VC/VP standards, SIOPv2/OIDC4VP protocols and interface to trust services based on extended EBSI APIs (DID-registry, Trusted Issuers Registry)
  - BAE modules implementing TM Forum APIs for contract negotiation
- For future releases, following modules will be incorporated:
  - Personal Data Consent Management modules (based on CaPE product from Engineering).
  - Idra product from Engineering as DCAT-compliant data resources catalog function for Metadata Management
  - logging modules based on either BAE/marketplace functions for logging or, if we want to rely on blockchain, Cannis Major
- The FIWARE Data Space Connector will be the best aligned with DSBA recommendations available in the market

https://github.com/FIWARE/data-space-connector



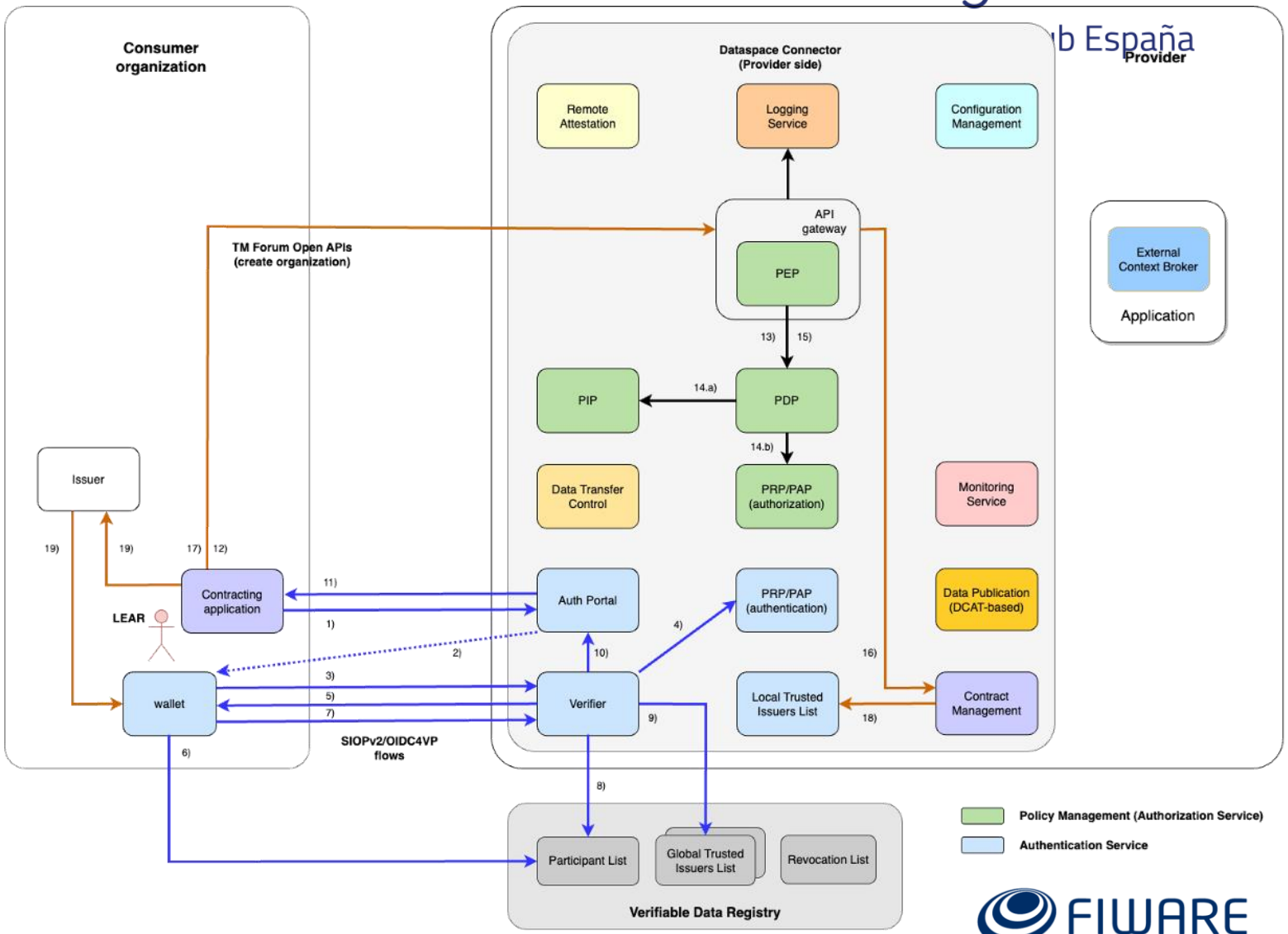
Onboarding of an organization in the data space

- The organization validates that the VC containing its description as organization is compliant with Gaia-X specifications using the services of a Gaia-X Digital Clearing House (GXDCH) - as a result, a VC is issued by the GXDCH (steps 1-2). That VC will end stored in the wallet of the LEAR either as part of the same process (once the GXDCH implements the OIDC4VCI) or via an issuer of VCs that exists inside the organization (step 3)
- The API for registering the organization is inspired in the DID-Registry API defined by EBSI but extending it to allow:
  - creation, update and deletion of entries beyond read(ing) of entries
  - authentication with VCs (including the VC issued by a GXDCH)
- Using an onboarding application (or a web portal) the organization's LEAR requests the authentication into the Participant Lists service which ultimately translates into a request to the Verifier (step 4-6)
  - a page is accessed where a QR for authentication is displayed (step 4)
  - the QR code is scanned through the wallet (step 5) which translates
  - into a request to the verifier (step 6)
- The verifier checks in the PRP/PAP what VCs it has to request to the wallet (step 7). In principle it will find the following VCs to be requested: a) the LEAR VC accrediting the user as LEAR of the organization, b) the VC containing the description of the organization, and c) the VC issued by some GXDCH acredditing that the previous VC is Gaia-X compliant
- The verifier responds to the previous request sending a VP request to the wallet which responds with the requested VCs (steps 8-9)
- The verifier checks that the LEAR VC has been signed using proper eIDAS certificates and that the GXDCH VC has been issued by a trusted GXDCH (step 10). It finally produces an access token (steps 11-12) which the onboarding application can then use to invoke the EBSI DID-Registry+ API in order to register the organization as data space participant (step 13)



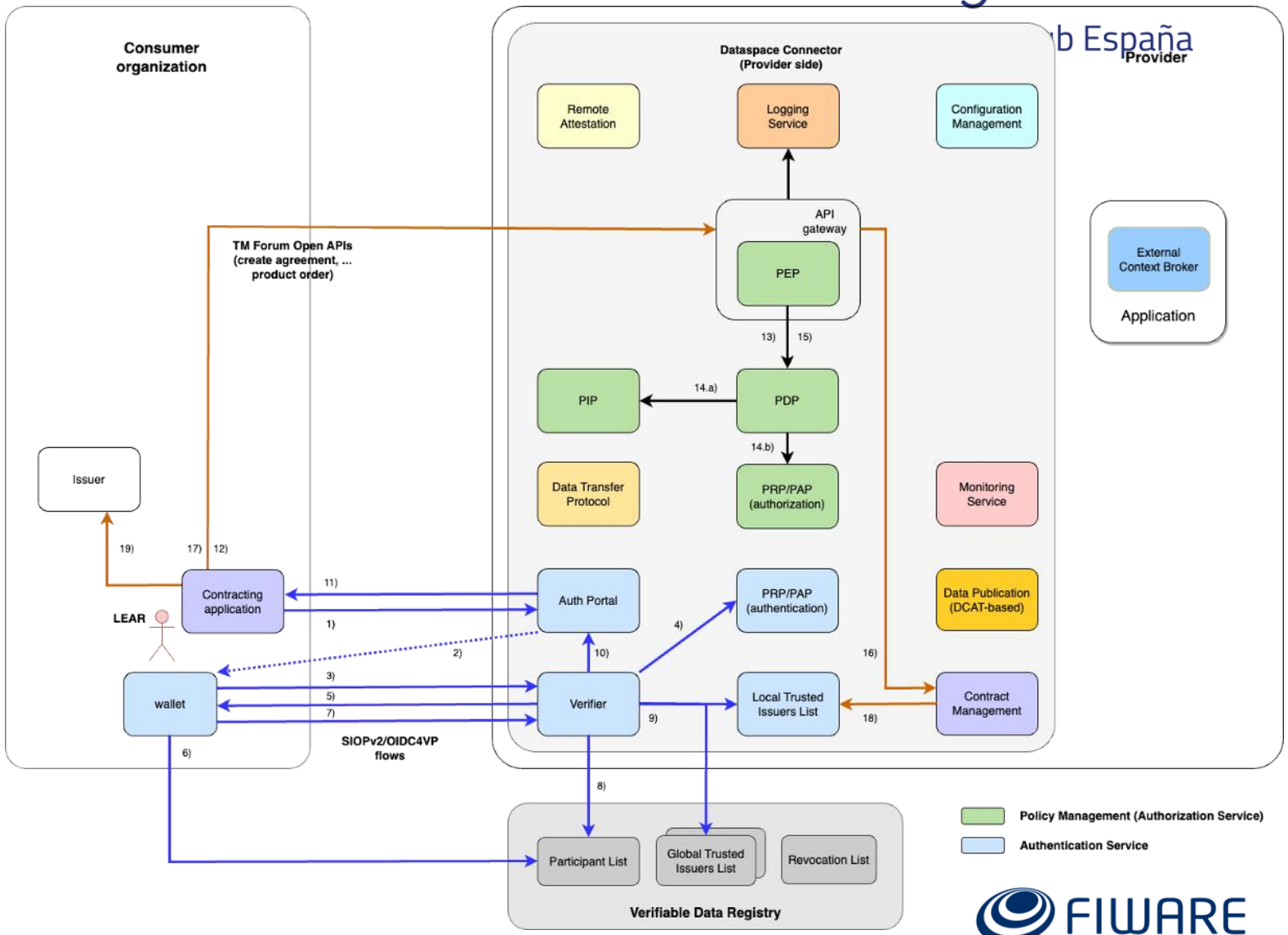
Consumer registration at Connector Level using TM Forum APIs

- Using a contracting app (or a web portal), a LEAR of the consumer organization will request authentication into the connector of the service provider (steps 1-3 involving scanning of QR code using the wallet)
- The Verifier will request from the user's wallet a VC that acredits him/her as LEAR of the organization, eventually other VCs (steps 4-5). The wallet will check whether the verifier belongs to a participant in the data space (step 6) and return the requested VCs (step 7)
- The Verifier checks whether the LEAR's VC was issued by a trusted participant of the data space (step 8), and also checks whether other VCs required were issued by trusted issuers (step 9)
- If verifications were ok, it issues a token (step 10) that is transmitted to the user (step 11)
- Using the returned token, the user invokes TM Forum API to register the consumer organization at the Connector (steps 12-17) establishing the necessary access control (steps 12-14)
- Once the organization is registered and fulfills all the necessary information (which may take some time), the organization is registered in the local trusted issuers list as trusted issuer of VCs which include claims as buyer of products in the connector (step 18)



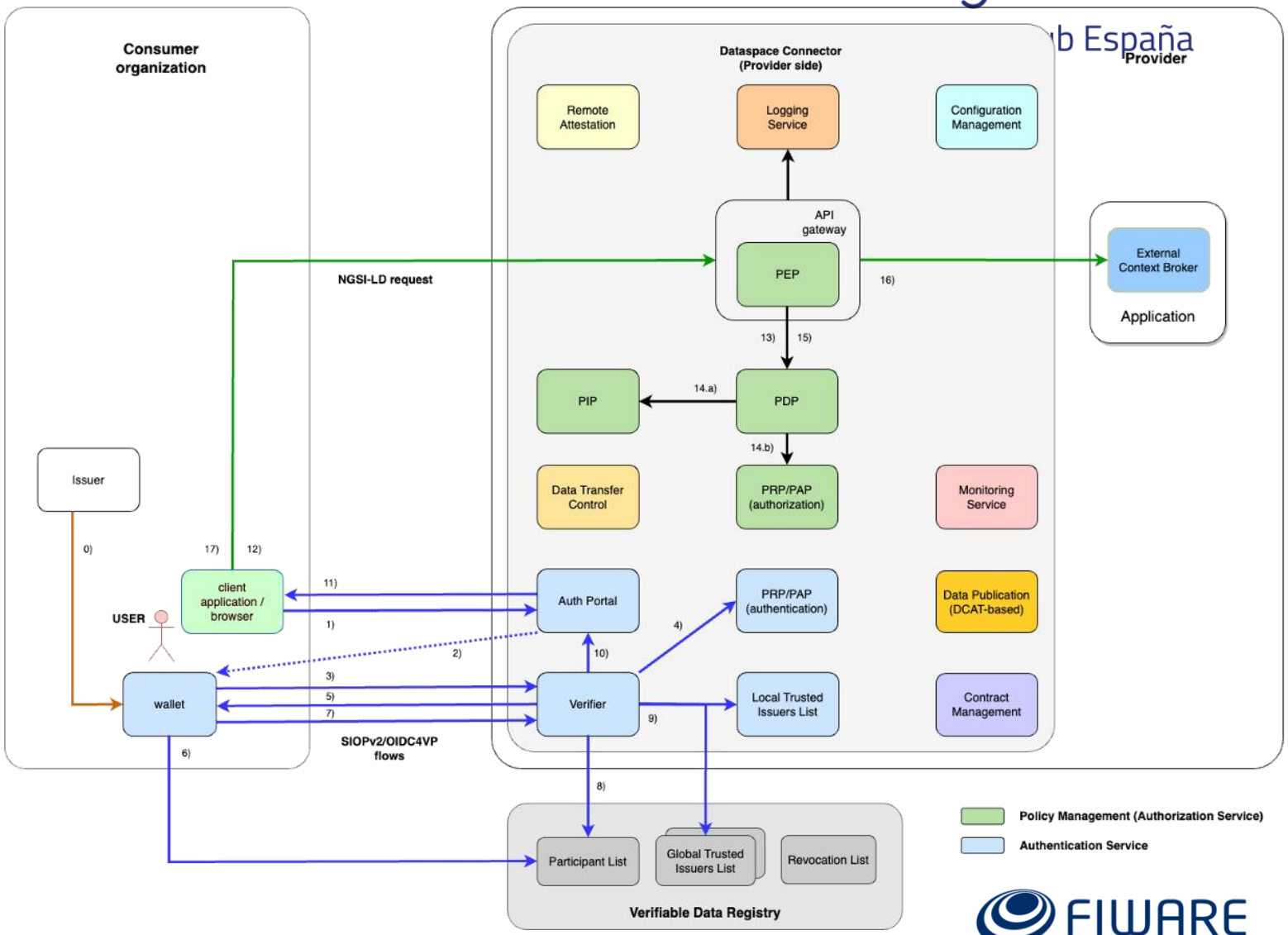
Contract Management at Connector Level using TM Forum APIs

- A LEAR of the consumer organization will start authentication into the contract negotiation module of the connector of a service provider (steps 1-3 involving scanning of QR code using the wallet)
- The Verifier will request to the user (via his/her wallet) for VCs that acredit a) the user is a LEAR of the organization, b) (s)he owns credentials connected to roles meaningful for contract negotiation that the organization issued to the user and c) some other VCs (steps 4-5). The wallet will check that the verifier belongs to a participant in the data space (step 6) and return the requested VCs (step 7)
- The Verifier checks whether the LEAR's VC was issued by a trusted participant of the data space (step 8), and rest of VCs required were issued by trusted issuers (step 9). Note that the VC for accessing contract negotiation functions requires that the organization were previously registered in the contract negotiation module, otherwise it will not be found in local trusted issuers registry
- If verifications were ok, it issues a token (step 10) that is transmitted to the user (step 11)
- Using the returned token, the user invokes TM Forum API to perform operations on the contract negotiation module (steps 12-17) establishing the necessary access control (steps 12-14)
- Once the organization is registered and fulfills all the necessary information (which may take some time), the organization is registered as trusted issuer of VCs which include claims as valid user of products accessible via the connector (step 18)



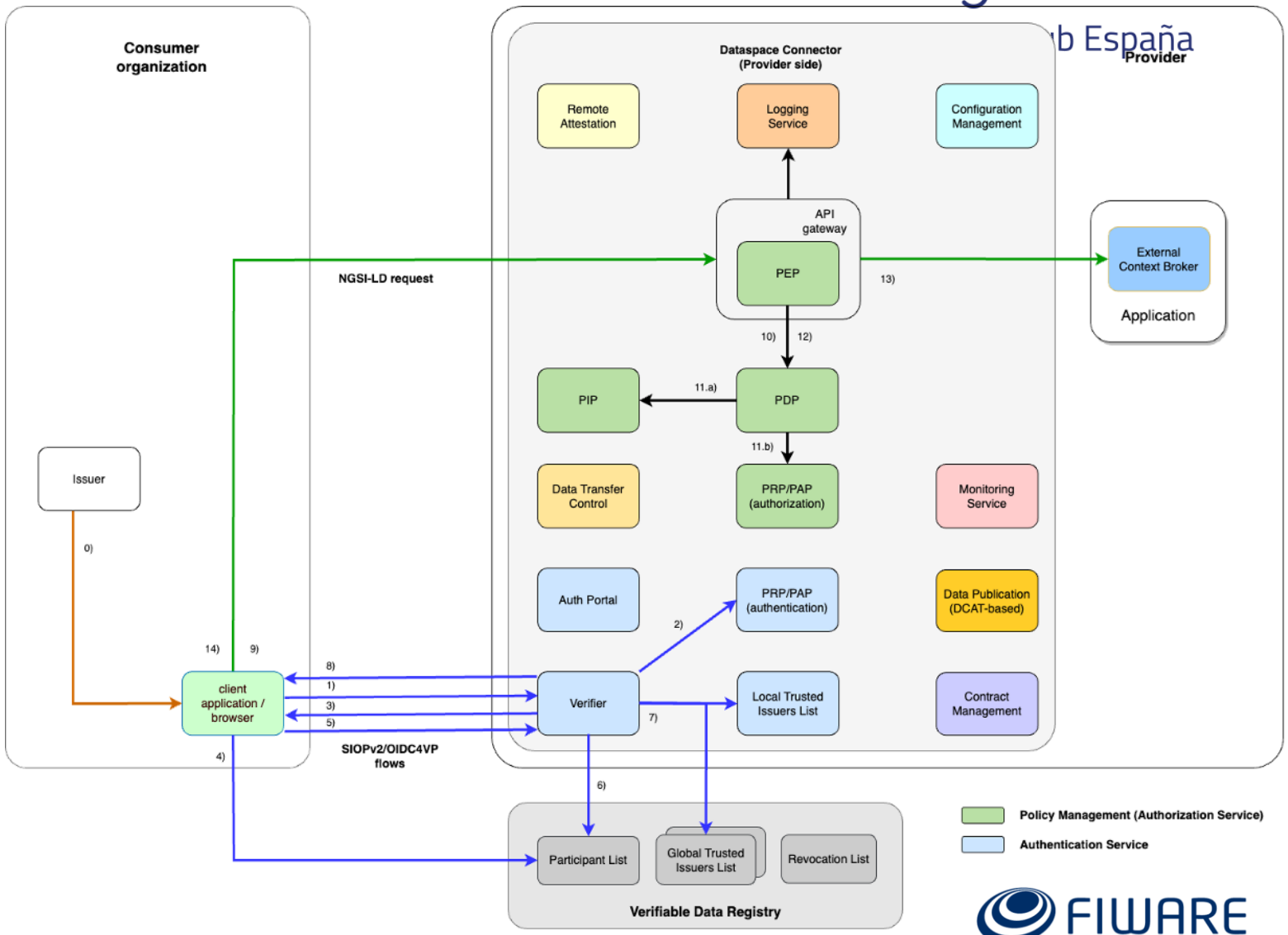
Interaction once procurement has been completed (user involved)

- A user of the product (employee or customer of the consumer oganization that was issued a VC in step 0 that acredits him/her as user playing a role relevant to the business logic of the product) request authentication in the connector (steps 1-3 involving scanning of QR code using the wallet)
- The Verifier will request to the user (via his/her wallet) for VCs that acredit a) the user owns credentials connected to roles meaningful for the given product/application and b) some other VCs (steps 4-5). The wallet will check that the verifier belongs to a participant in the data space (step 6) and return the requested VCs (step 7)
- Verifier verifies whether the VC was issued by an organization that a) is a trusted participant of the data space (step 8) and b) is a trusted issuer of the VCs meaningful for the application (that is, VCs only organizations that ordered the product can issue), also checks whether other VCs required were issued by trusted issuers (steps 9)
- If verifications were ok, it issues a token (step 10) that is transmitted to the user (step 11)
- Using the returned token, the user invokes services of the product (step 12)
- The PEP proxy will verify whether a user with the claims (attributes) included in the VCs extracted from the token is authorized to perform the given request (steps 13-15)
- If authorization is ok, the request is forwarded (step 16) and a response returned to the user (step 17)

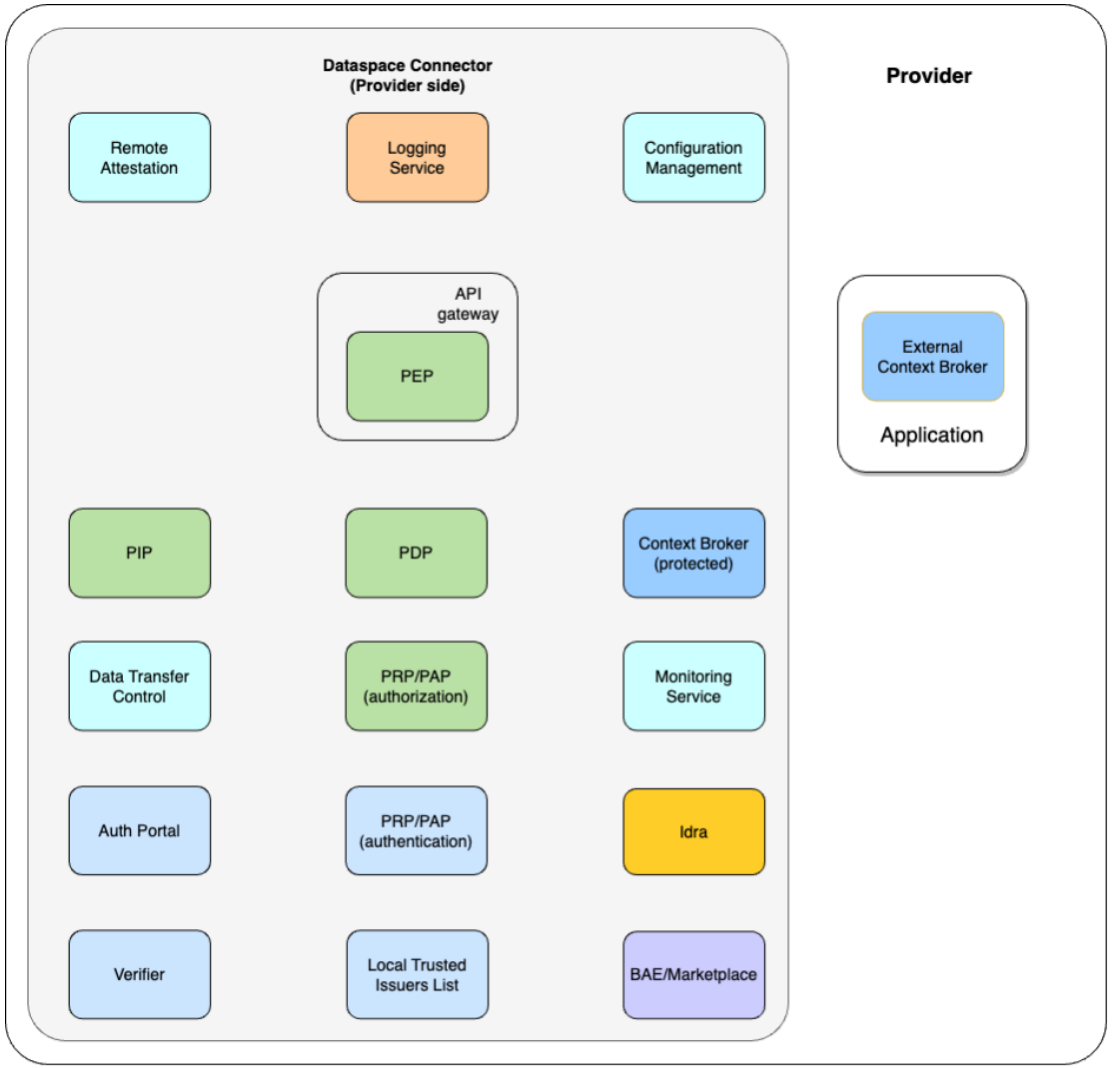


Interaction once procurement has been completed (M2M)

- An application from the consumer organization that acquired rights to use a product requests its authentication in the connector (steps 1)
- The Verifier will request to the application for VCs that acredit a) the application owns credentials connected to roles meaningful for the given product/application and b) some other VCs (steps 2-3). The wallet will check that the verifier belongs to a participant in the data space (step 4) and returns the requested VCs (step 5)
- Verifier verifies whether the VC was issued by an organization that is a trusted participant of the data space (step 6) and is a trusted issuer of the VCs meaningful for the application (that is, VCs that only organizations that ordered the product can issue), also checks whether other VCs required were issued by trusted issuers (steps 7)
- If verifications were ok, it issues a token that is transmitted to the application (steps 8)
- Using the returned token, the application invokes services of the product (step 9)
- The PEP proxy will verify whether the application with the claims (attributes) included in the VCs extracted from the token is authorized to perform the given request (steps 10-12)
- If authorization is ok, the request is forwarded (step 13) and a response returned to the app (step 14)



DSBA-compliant FIWARE Data Space Connector



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Sounds nice? - Contact us!

http://fiware.org
Follow @FIWARE on Twitter

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FIWARE Foundation CTO
juanjose.hierro@fiware.org

FIWARE

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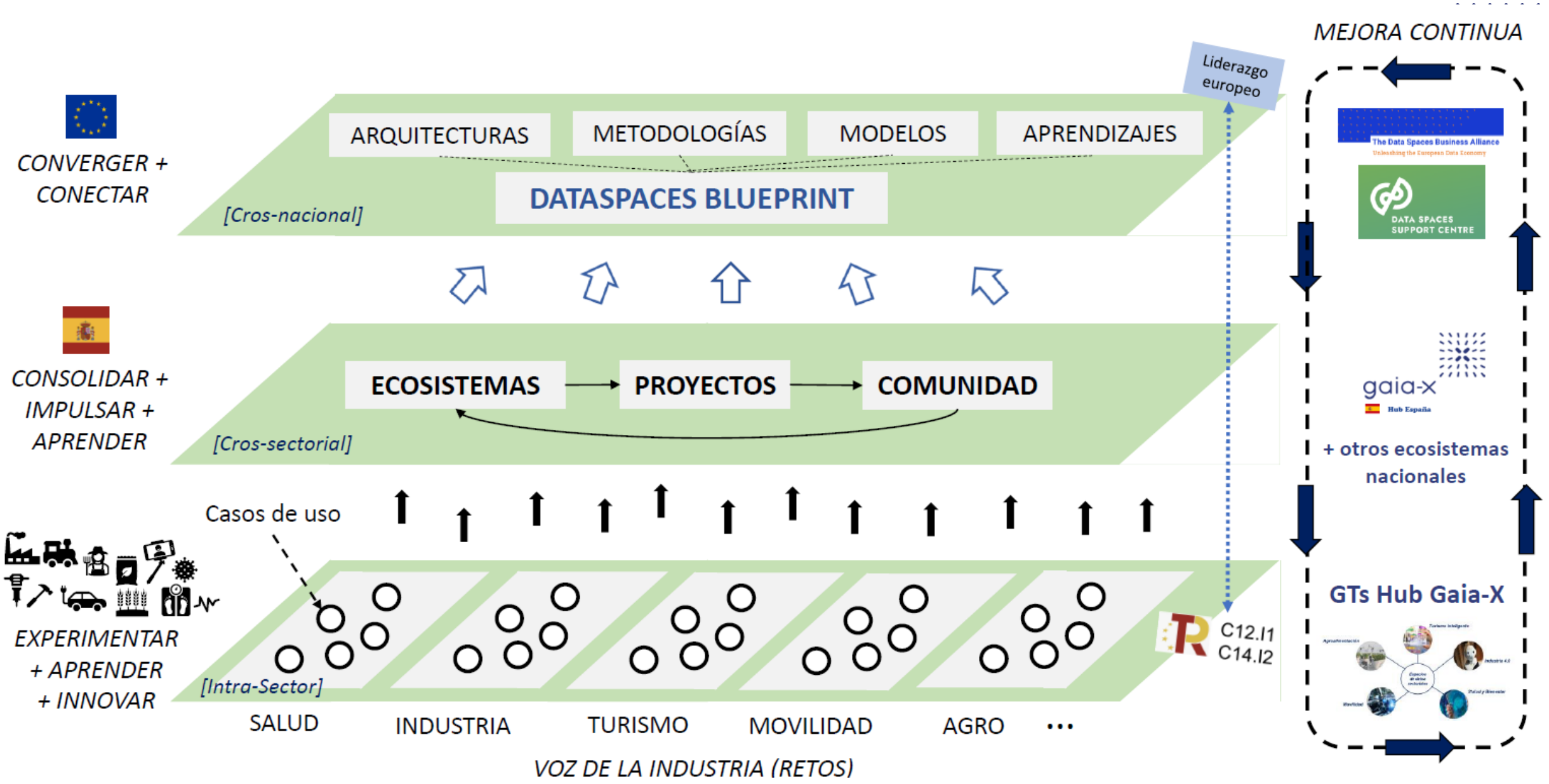
GAIA X ESPAÑA – ACTIVIDADES

Francisca Rubio (Gaia X España)

21 de septiembre de 2023 - Greencities


MEJORA CONTINUA
Liderazgo europeo
CONVERGER + CONECTAR
ARQUITECTURAS
METODOLOGÍAS
MODELOS
APRENDIZAJES
DATASPACES BLUEPRINT
[Cros-nacional]
The Data Spaces Business Alliance
DATA SPACES SUPPORT CENTRE
CONSOLIDAR + IMPULSAR + APRENDER
ECOSISTEMAS
PROYECTOS
COMUNIDAD
[Cros-sectorial]
gaia-x
Hub España
+ otros ecosistemas nacionales
Casos de uso
EXPERIMENTAR + APRENDER + INNOVAR
[Intra-Sector]
C12.I1
C14.I2
GTs Hub Gaia-X
SALUD
INDUSTRIA
TURISMO
MOVILIDAD
AGRO
...
VOZ DE LA INDUSTRIA (RETOS)

GRUPOS DE TRABAJO

gaia-x
ub España

Agroalimentario

Industria

Turismo

Movilidad

Salud

Comercio

Tecnologías habilitadoras

Sostenibilidad social y ética

Legal

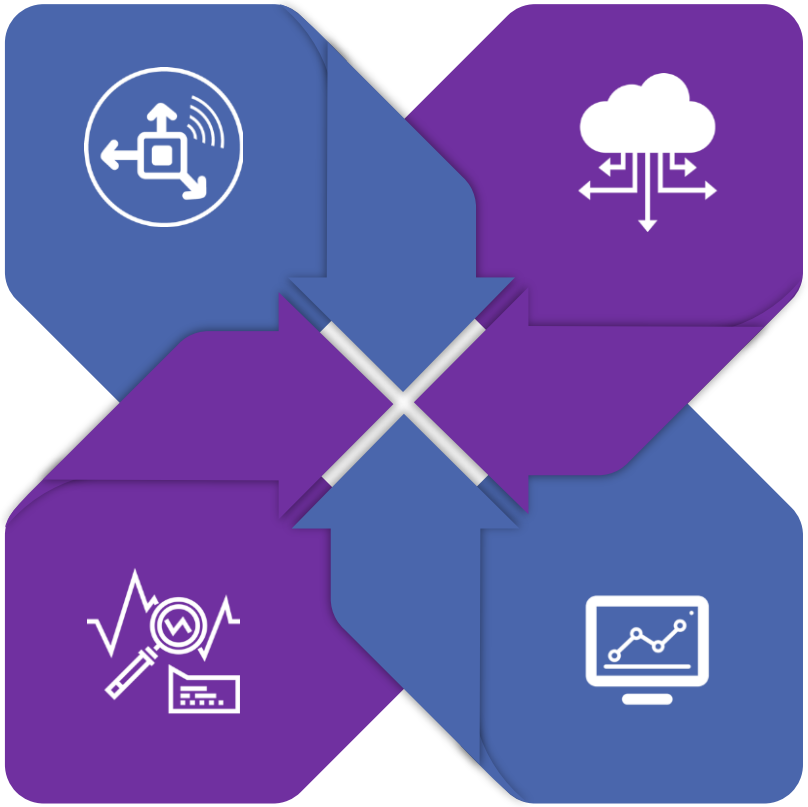
METAS

GAIA-X España

Afianzar la economía del dato en España

Posicionar al Hub español como punto de **referencia** nacional e internacional en el fomento de la economía del dato, innovando la tecnología en el ámbito de la nube y la IA, e impulsando redes colaborativas entre actores tanto de sector público como del privado, dentro y fuera de España favoreciendo su permeabilidad

Difusión, promoción, concienciación y formación
en torno al dato conforme a los valores Gaia-X (federado, seguro, y soberano), generando comunidad mediante documentación técnico-funcional, jornadas de impulso, y diferentes programas formativos



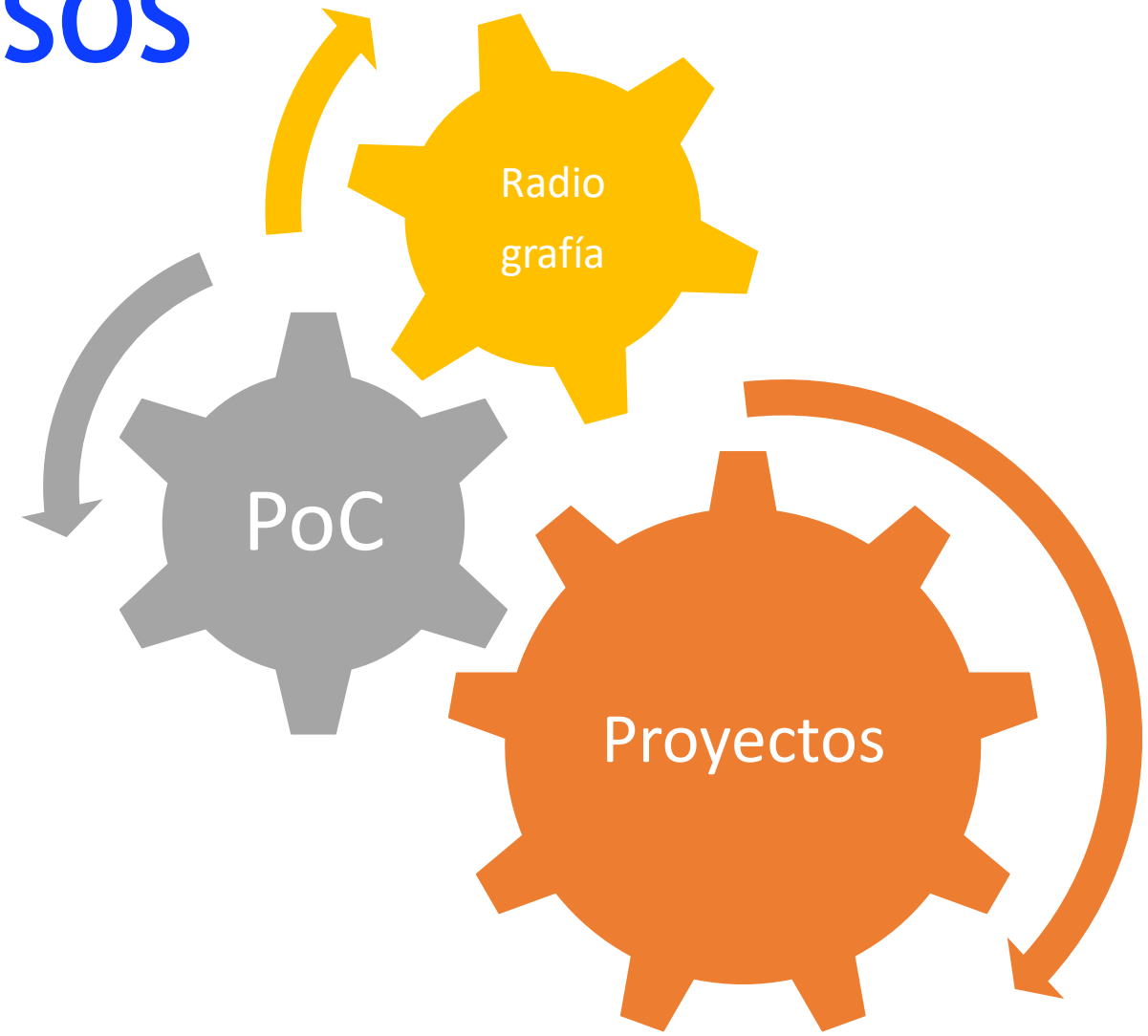
Realización de estudios en el ámbito de la economía del dato,

buscando la caracterización de los diferentes ecosistemas sectoriales de compartición y explotación de dato, como germen para la creación y promoción de nuevos casos de uso.

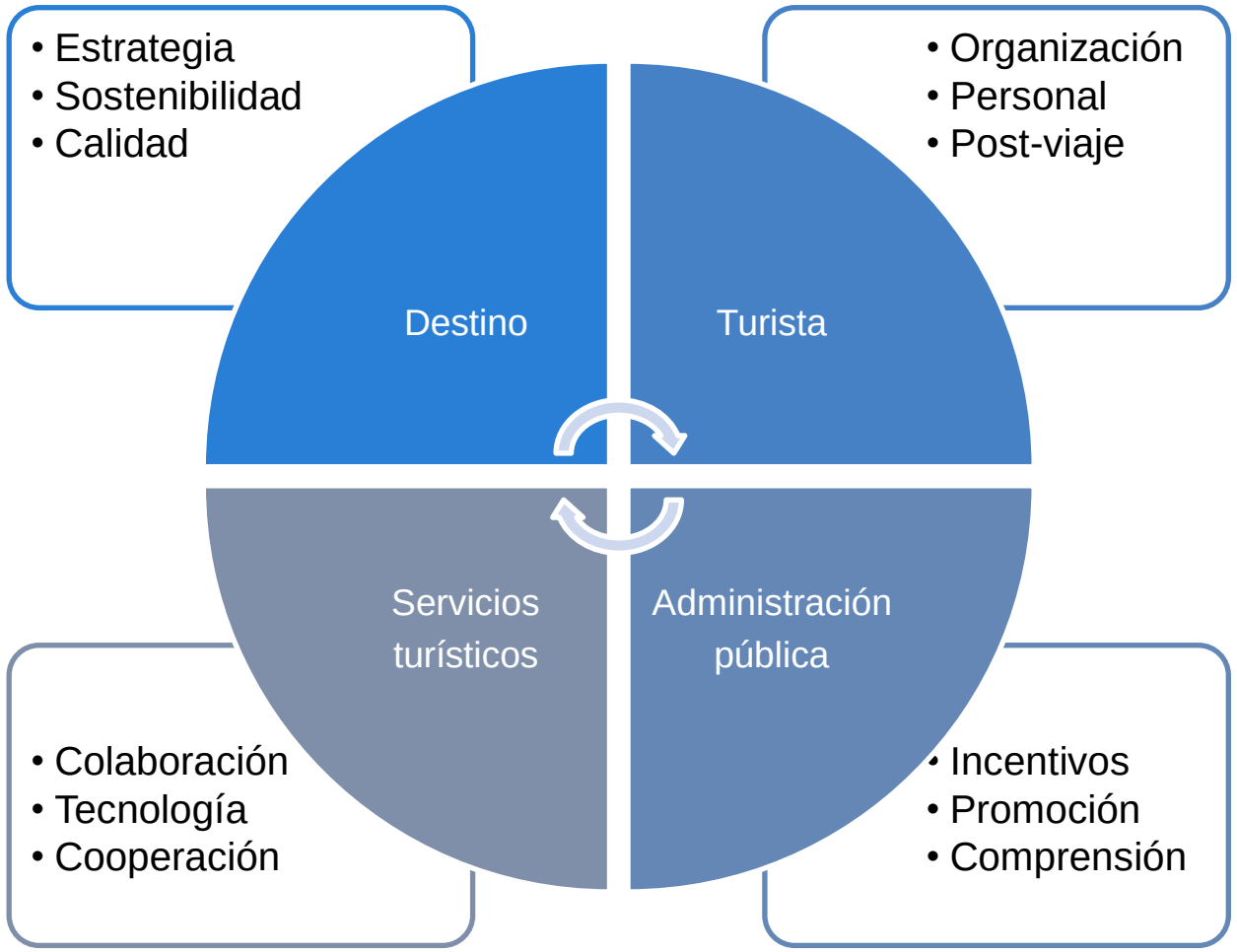
La generación de pilotos demostradores
tecnológicos, el desarrollo de entornos de experimentación y la puesta en marcha de un nodo Gaia-X Digital Clearing House son algunos de nuestros retos.

PROXIMOS PASOS

gaia-x Hub España



RADIOGRAFÍAS



PROXIMOS PASOS

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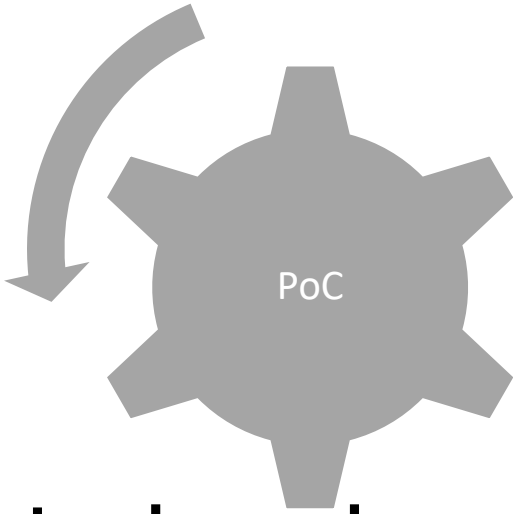

- Pequeños demostradores de un caso de uso que sirvan de semilla para proyectos posteriores
- Sin financiación externa
- Cualquier tecnología de demostración con preferencia demostrador Gaia X

PROXIMOS PASOS

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- Construcción de grandes proyectos que sirvan de lighthouse posterior o puedan ir a una convocatoria
- Idealmente que surja de la Semilla del PoC

ACTIVIDADES

gaia-x Hub España

EVENTOS

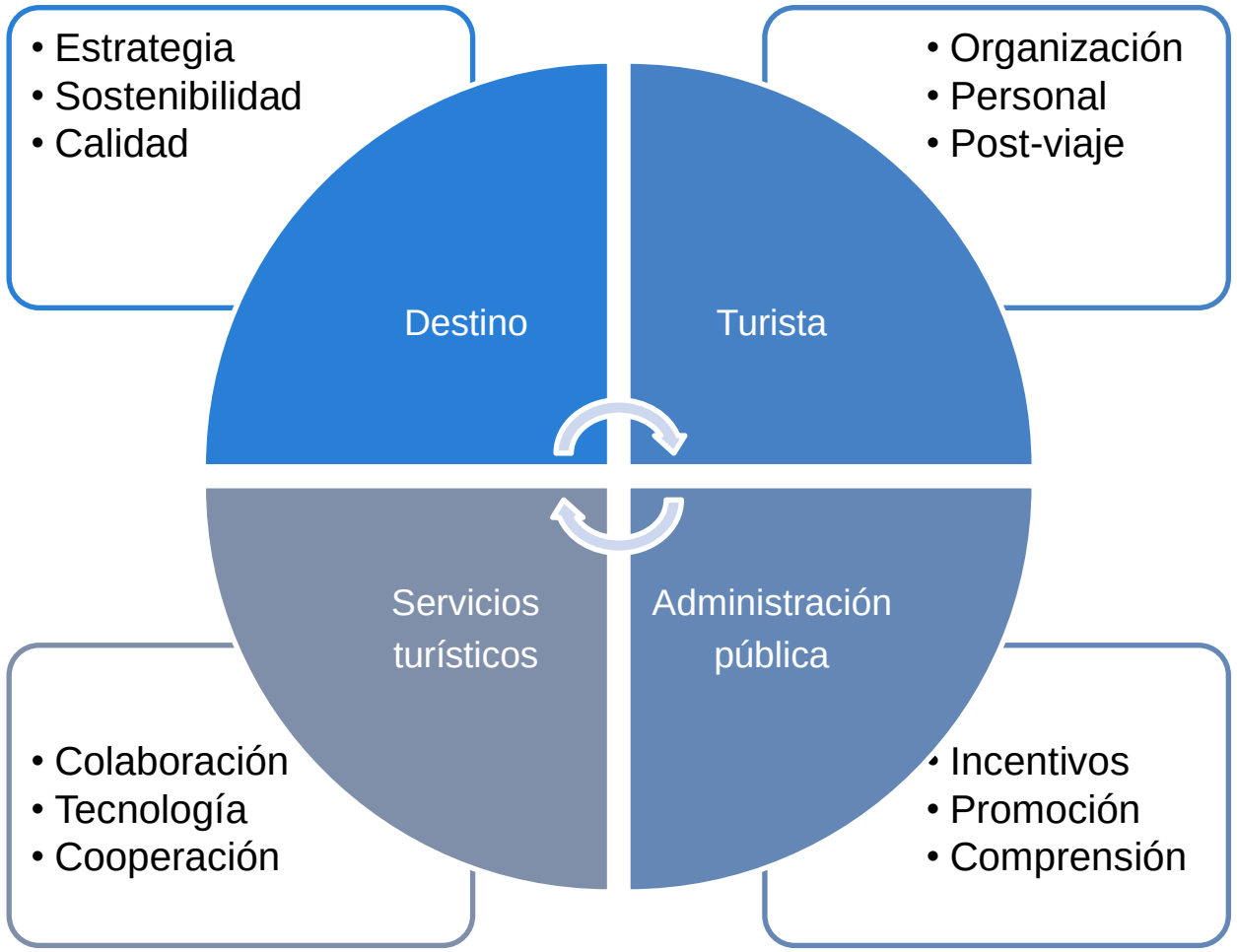
PROMOCIÓN
PROYECTOS
COLABORACIÓN

SOPORTE
TÉCNICO

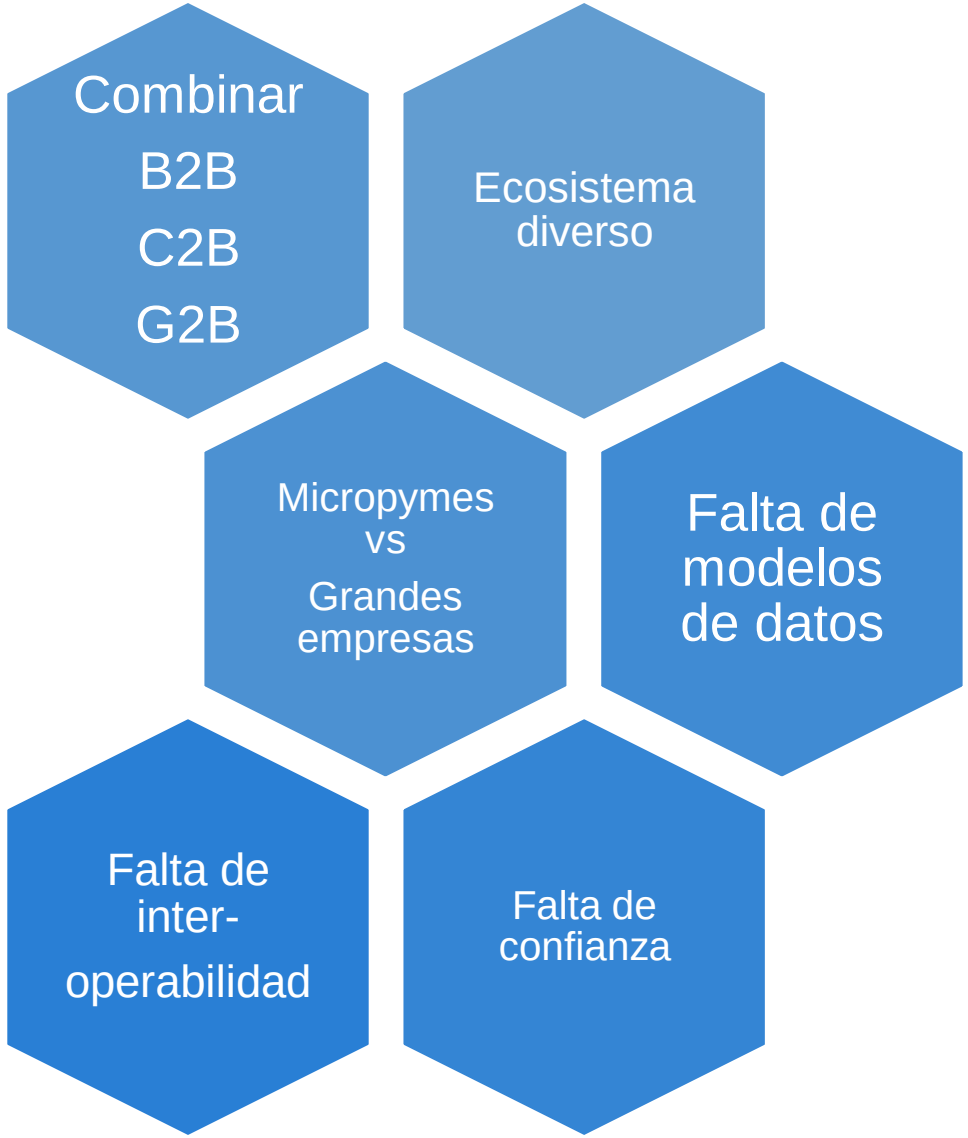
HACKATON

DEMOSTRADOR

TURISMO: RADIOGRAFÍA



PROXIMOS PASOS



gaia-x
Hub España

INDUSTRIA

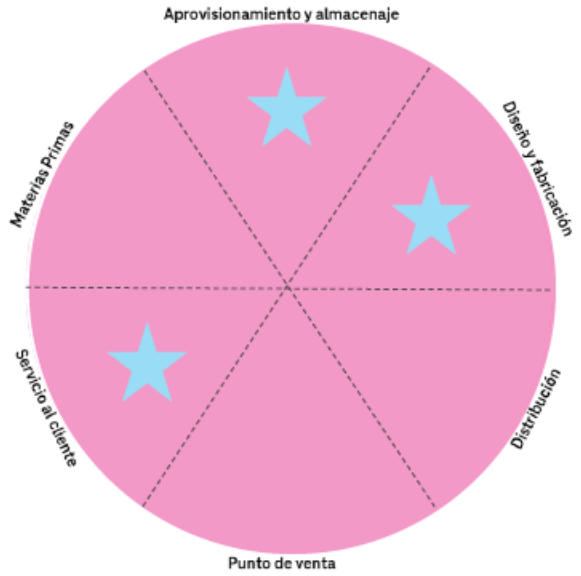
Patrón de industria

Personalización masiva

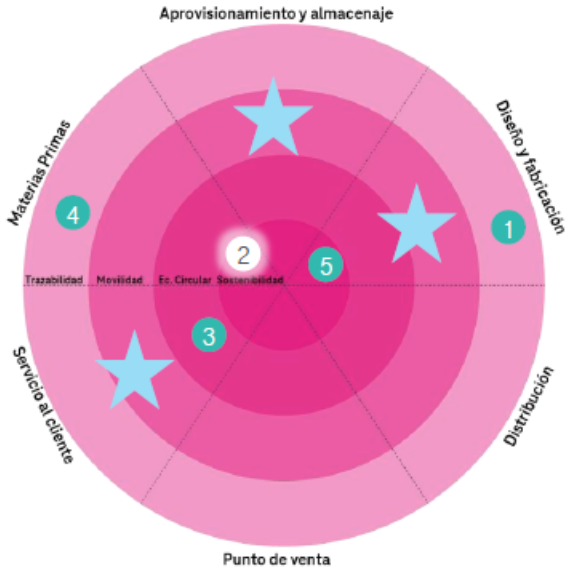
Automoción

2 Grupos representativos formados por 10 asistentes de 5 empresas, 2 centros tecnológicos y 1 organismo institucional

Dimensiones priorizadas



Priorización de casos de uso



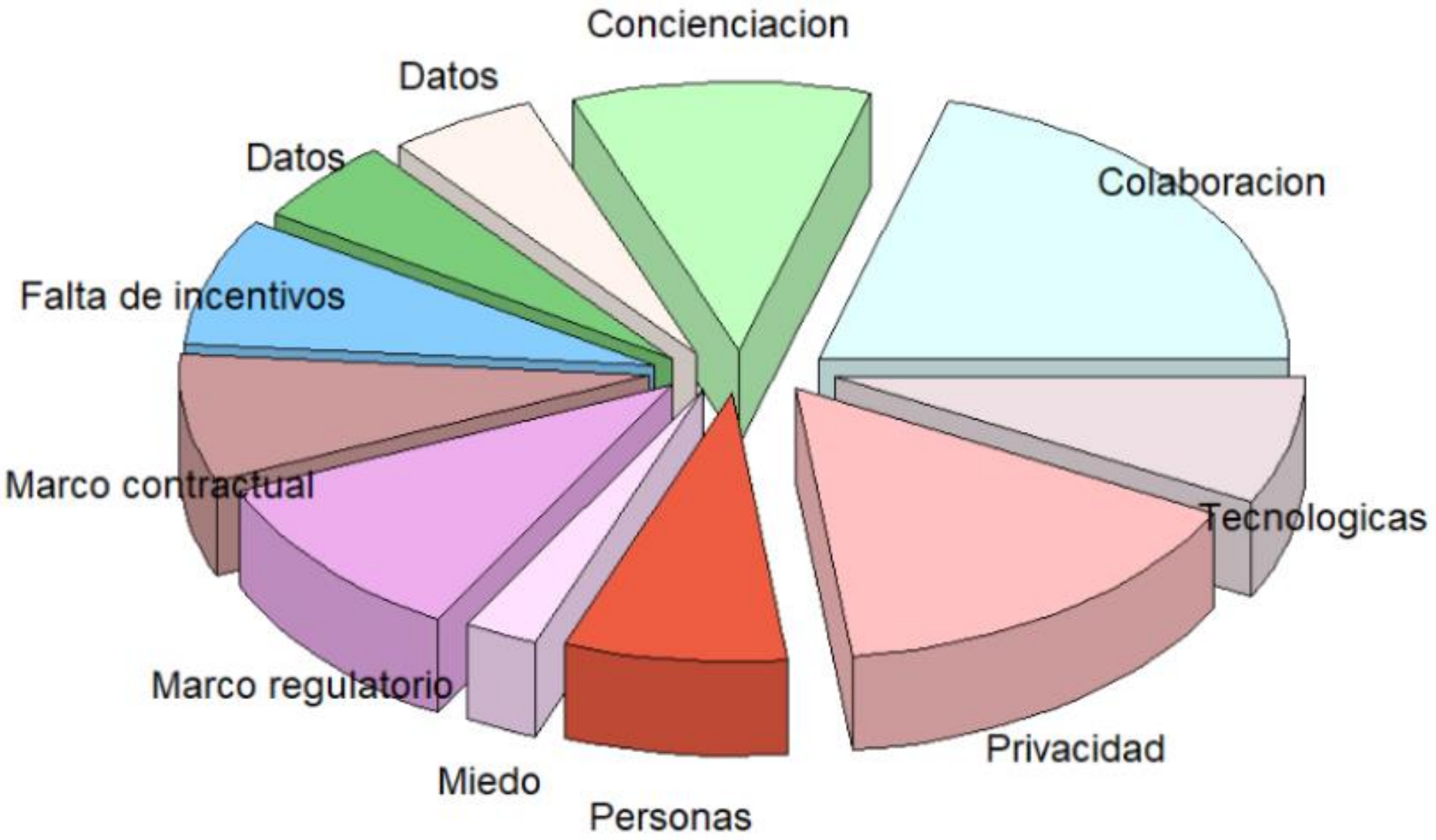
TOP CASOS DE USO:

1. Servicios de diseño conectado con material y normativa cliente-lecciones aprendidas
2. Predicción inteligente de demanda
3. Gestión de pago por uso
4. Impacto de variaciones de precio de materia prima en el producto final
5. Optimización del consumo energético mediante ML

Caso de uso seleccionado

Predicción inteligente de la Demanda

INDUSTRIA: RETOS



MOVILIDAD

Escenarios de Transporte y Logística

Análisis/optimización de las rutas y flujos de movimiento de la mercancía con precisión basada en la demanda (identificación de las necesidades de productos y usuarios), a través de la cooperación entre todos los actores (ej. operadores logísticos pequeños y grandes).

Actores en la cadena de valor:

- Ciudades: AAPP, entes municipales como AMB. ayuntamientos, entes nacionales o europeas
- Operadores: operadores de transporte y operadores logísticos
- Usuarios
- Otros: consultoras, universidades y centros de investigación que proponen y avanzan las soluciones

Datos implicados en casos de usos relacionados:

- Demanda de la flota de los vehículos para cada operador involucrado en la implementación de los servicios
- Datos sobre las flotas de vehículos, incluyendo características, número de vehículos, tipología de vehículo, energía de los vehículos etc
- Flujos de tráfico en las rutas de la entrega de mercancías
- Red de infraestructura de la área de implementación de los servicios identificados
- Políticas locales sobre la distribución urbana de mercancías y la logística
- Caracterización de datos:
  - Actualmente los datos a disposición no son suficientes para llevar a cabo una implementación eficiente de los servicios identificados
  - Para los datos de 'mobility patterns' de los ciudadanos, se puede evaluar la posibilidad de hacer encuesta o entrevistas
  - La identificación de los diferentes tipos de usuarios así como la información sobre las entregas es relevante

Beneficios y retorno:

Para las AAPP:

- Optimización de procesos y recursos
- Reducción de las externalidades
- Mejora del espacio público
- Impacto positivo en salud
- Aumento de la participación ciudadana Para

los actores privados:

- Reducción de costes de las operaciones y posibilidad de involucrarse en políticas locales, nacionales y internacionales
- Mejora de la experiencia del usuario
- Mejora de la eficiencia y de los recursos
- Requerimiento de inversión por parte de los actores públicos

Barreras y riesgos:

- Sensibilidad a nivel de negocio
- Privacy de los datos a la hora de compartir
- Falta de confianza por parte de los actores involucrados
- Competencia entre los diferentes actores y reticencia al compartir datos
- Falta de definición de la metodología de acceso a los datos, quién tendrá acceso, cómo/quién decide y quién gestiona.
- Falta de datos reales para la implementación de los servicios
- Importante tener en cuenta el impacto de covid en el transporte

SALUD

7. Elaboración de Modelos Predictivos Federados sobre la evolución de grupos poblacionales respecto al consumo de recursos

DESCRIPCIÓN CASO DE USO

Predicción de la demanda de recursos sanitarios que los distintos grupos poblacionales tendrán a medio y largo plazo.

Posibilidad predictiva no sólo para la población cubierta por la tarjeta sanitaria sino también el impacto de la **población turística** en las localidades con mayor demanda internacional.

Parametrización de la demanda de servicios asistenciales, diferenciando tanto la que se genera como consecuencia de enfermedades, como aquella que se deriva de accidentes de tráfico, politraumatismos derivados de actividades educativas, deportivas, etc.

Identificación de aquellos **consumos de recursos que puedan ser facturables a terceros**, y los que no corresponden a la Comunidad Autónoma impactada.

Predicción del consumo de recursos que genera esta demanda asistencial (número y coste de consultas, pruebas diagnósticas, procedimientos terapéuticos, atención urgente, etc).

Se utilizan modelos predictivos y Escenarios de Sensibilidad para favorecer la planificación y toma de decisiones para el desarrollo de estrategias en el ámbito asistencial, ya sean relacionados con alternativas organizacionales, modalidades de atención médica y asignación de recursos.

La precisión del modelo se incrementa mediante el autoaprendizaje, según se va midiendo la evolución en el consumo de recursos de distintos grupos poblacionales.

TRL 6

Cronograma: **20 meses**

Presupuesto **299,2K€ (solo costes personal)**

Dispuesto a proyecto conjunto: SI

La Administración impulsa la innovación mediante Contratos de suministro, Contratación pública innovadora y Colaboración publico privada

Datasets y requisitos de cálculo: sin determinar

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Gracias

https://www.gaiax.es

Si estás interesado en ser miembro de Gaia-X Spain, ponte en contacto con nosotros escribiendo un correo electrónico a:

administracion@gaiax-spain.com