XR2INDUSTRY

Tailoring eXtended Reality to Industry's Needs

The XR2INDUSTRY project focuses on developing fundamental blocks for a reference XR European platform

This project has received funding from the European Union's Horizon Europe Innovation Actions programme under the grant agreement number 101135547

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Federated XR Content Repositories

Building a Future-Proof XR Content Ecosystem

erwin.de.ley@supportsquare.io

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XR CONTENT

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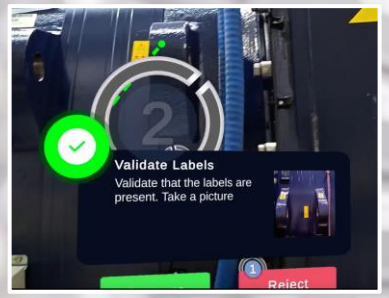

XR Content

**3D models, XR apps,
VR training scenarios,
MR guideance,
virtual workplaces,
supporting media**

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XR CONTENT

- Rich interactive models
- Heavy/large files with complex formats
- May contain proprietary or sensitive information
- May require specific devices
- Require significant effort to create and maintain

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EXAMPLE
USE CASES

XR TWIN CREATION

Corporation hires an XR developer to create a workplace XR twin.

This can be a mix of generic scenes/models with some specific proprietary elements.

Scanning or modeling everything is a waste of time and budget, would be better to find and use relevant existing 3D models.

How to ensure correct IP & license conformance?
Where to look for the models?

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VR TRAINING

L&D is looking to improve the training program, after having identified some critical competences that are not sufficiently covered in an organization's team.

Besides some introductory e-learning material, VR training is perceived as a valuable extension for practice sessions as part of a blended learning path.

Developing VR content is expensive, let's first try to find existing VR material that might be relevant...

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VET SCHOOL & MANUFACTURER

Manufacturers build AR-supported safety guidance for their equipment customers.

VET schools and manufacturers collaborate to improve graduates's readiness for technical jobs.

Manufacturers want to share AR safety guidance with schools using their equipment in technical workshops, while monetizing the same content towards customers.

VET schools want to easily discover available innovative edtech.

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CURRENT LANDSCAPE

XR CONTENT lives in SILOS

Vendors have closed platforms
Unity Asset Store, SketchFab, Meta Store, …

Industry creates custom internal repositories

Research projects produce valuable assets,
but they vanish after funding ends

Access, reuse, and interoperability are blocked by technical, organizational, and legal boundaries.

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CHALLENGES

Discoverability

Hard to find relevant, high-quality content

Many disparate sources
Lack of unified search
Closed internal systems

Reusability

Format mismatch / technical friction

Licensing and legal uncertainties
Missing context & metadata

Integration

Difficult to pull assets from many sources in one content production workflow

Unclear engine/device dependencies

Sustainability

Finished projects, reorganizations etc lead to forgotten or orphaned assets, technical rot

Lack of incentives to maintain public access

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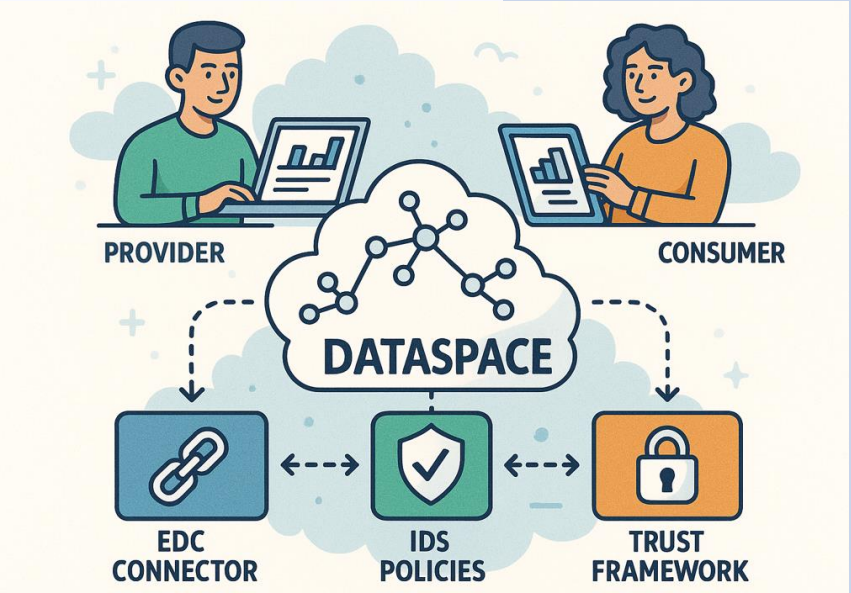
VISION & APPROACH

VISION

Creating an open and fair space for content sharing



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VISION

Discoverability

Network of connected content providers

Standardized aggregated catalog protocol

Reusability

Shared metadata

Defined access & usage policies

Integration

Easily find & obtain content from many providers

Access via API's and connectors

Unified dependency information

Sustainability

Maintain provider sovereignty and incentives

Digital agreements and usage tracking

Federated platform "ownership",
no single point of failure nor lock-in

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BENEFITS

- Providers maintain control of content and licensing
  (not a centralized platform owner)
- Consumers access up-to-date, high-quality and diverse content
  (with easy and unified access)
- Enables differentiated business models
  (free, pay-per-use, … based on traceable licensing)
- Pluggable policies & contract negotiations in unified workflow
- Less duplication, more reuse and collaboration

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EXAMPLE PROCESS

- A developer/designer of an XR experience identifies all needed content and looks around for matching existing assets.
  - Browse/discover content from different sources, as well internal to the organization as from external sources
  - The conditions of use can be consulted and agreed upon
  - A contract is setup for the use
- The developer/designer gets the digital assets for the needed content and integrates them in the XR experience assembly/application.
- The application and content are stored in the organization's own platform, ready to be used by XR users on their XR devices as needed for their XR activities.
  - A subset of the organization's content is also "published" via their marketplace catalog for reuse by partner/other organizations.
- An end-user starts a planned XR experience on an XR device, with the appropriate content

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APPLYING DATASPACE CONCEPTS

Main relevant concepts :

- **Identification** of **Participants** and content
- **Catalogues** to find existing content **Offers**
  - **Metadata** to describe content items
  - **Policies** describing the access (!) and usage terms
  - Protocol to browse/query catalogues
- Contract **negotiation** resulting in **agreement** between provider and consumer about policy-compliant content usage
- **Connectors** to support all steps in a standard digitalized process

Apply technical building blocks and standards in a pragmatic way…

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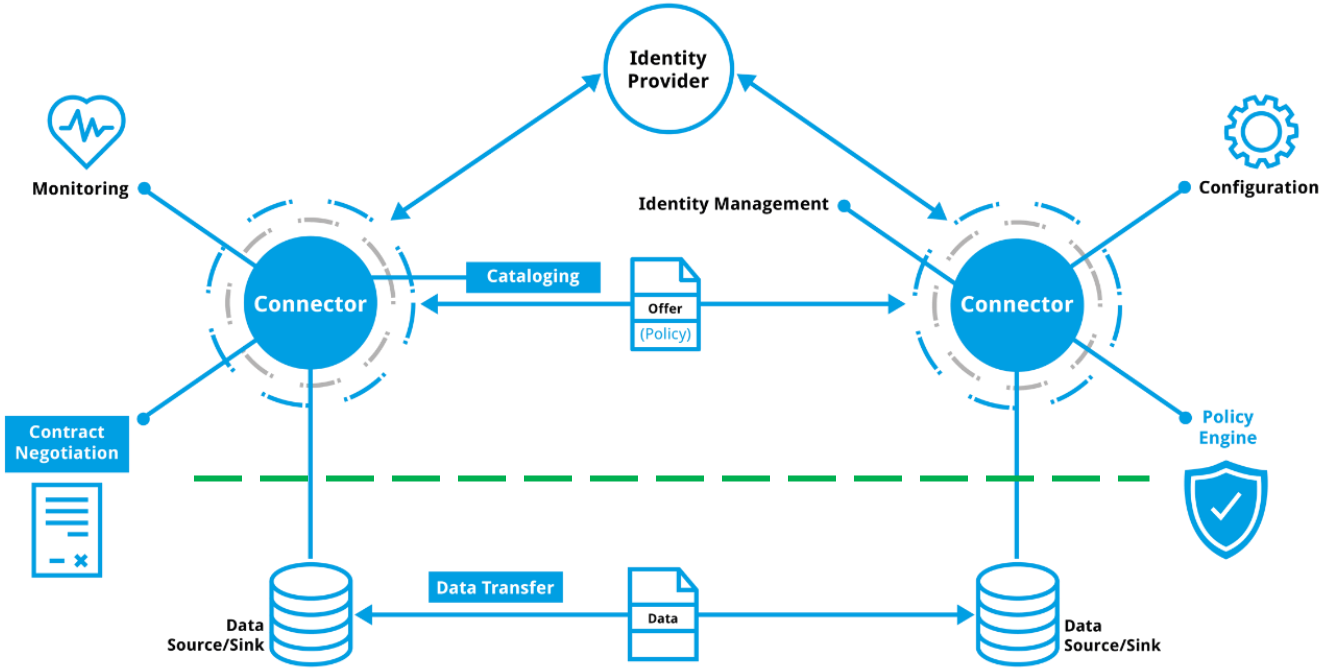
APPLYING DATASPACE CONCEPTS



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DESCRIBING XR CONTENT

Meta data design :

- XR2Industry will use minimal set to support our demonstrator
- Combining some elements from related specs :
  - General assets/ resources : Dublin Core
  - Learning objects : IEEE LOM
  - Industrial application domains : ESCO

Looking for collaborations to improve on this!

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RELATED STANDARDS

Links to some related standards :

- **DCAT :** https://www.w3.org/TR/vocab-dcat-3/
- **ODRL :** https://www.w3.org/TR/odrl-model/
- **DID :**
  - https://www.w3.org/TR/did-core/
  - https://w3c-ccg.github.io/did-method-web/

- **IEEE LOM :** https://ieeexplore.ieee.org/document/9262118
- **Dublin Core :** https://www.ietf.org/rfc/rfc2413.txt
- **ESCO :** https://esco.ec.europa.eu/en

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WHAT’s NEXT

VISION FORWARD

XR content is too valuable to remain silo-ed

Federated & interoperable approach gives us scalability, flexibility, sovereignty & sustainability

Governance

Dataspace Authority?

Community

Find and connect interested participants.

Metadata

Join forces with experts on XR & content sharing.

Create a profile for XR content.

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MORE INFO

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

https://ncpflanders.be/news/data-spaces-explained

https://docs.internationaldataspaces.org/ids-knowledgebase/dataspace-protocol

https://eclipse-edc.github.io/

https://gitlab.eclipse.org/eclipse/xfsc/cat/fc-service

https://gaia-x.gitlab.io/data-infrastructure-federation-services/cat/architecture-document/architecture/catalogue-architecture.html

https://tems-dataspace.eu/

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THANKS

Does anyone have any questions?
Follow the project updates:
xr2industry.eu

Mariano Alcañiz – Coordinator
malcaniz@hetch.upv.es
Paz Sebastiá – Project Management
pseblun@hetch.upv.es

Shad Benseghir-vergnault - Communication
shad@lynx-r.com

UNIVERSITAT POLITÈCNICA DE VALÈNCIA

LYNX-R

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