

PLEIADES

Smarter Plant Decommissioning



PLEIADES project overview

Platform based on Emerging and Interoperable Applications for
enhanced Decommissioning processES

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DigiDecom 2022 - Halden

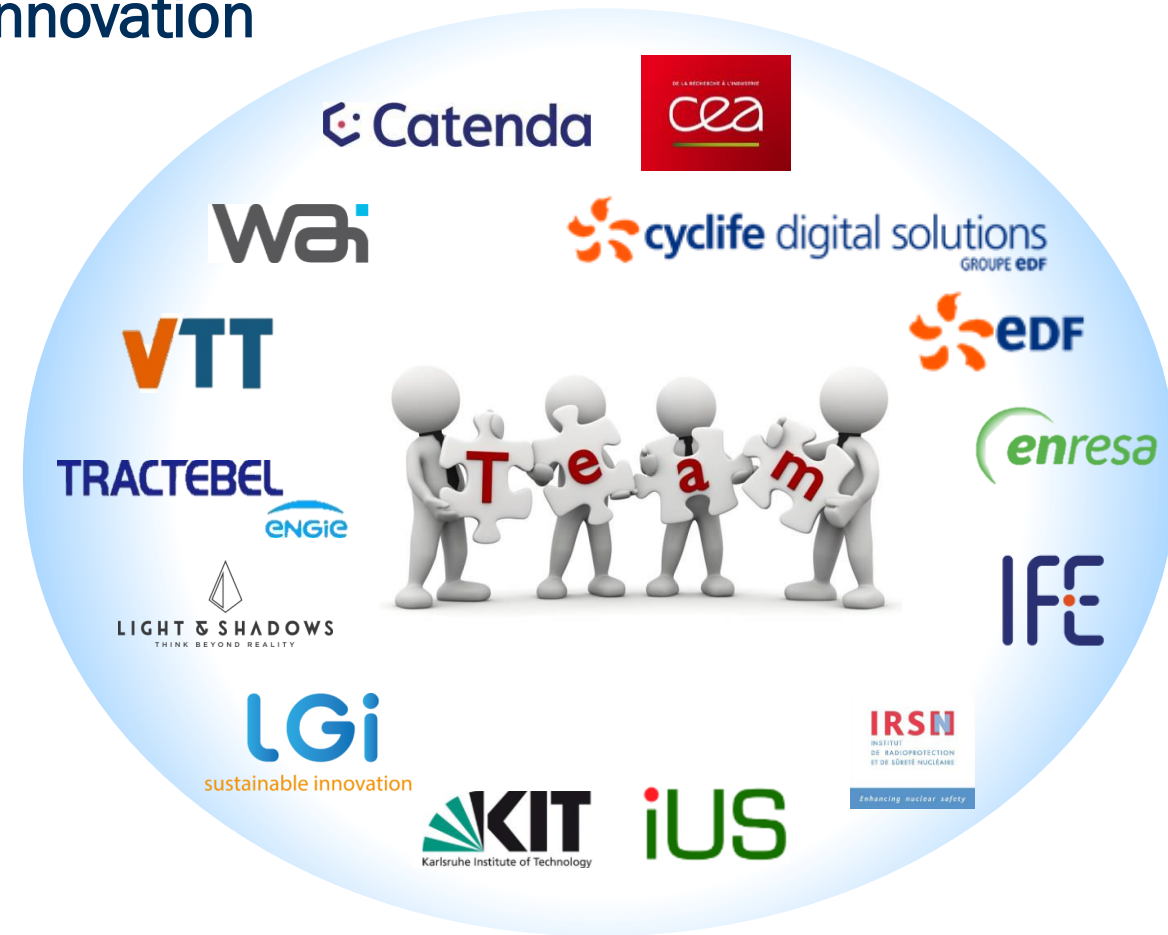
18-20 October 2022



This project has received funding from the EURATOM Research & Training Programme 2014-2018 under the Grant Agreement n° 899990. The content of this document reflects only the author's view. The European Commission is not responsible for any use that may be made of the information it contains.

PLEIADES Facts

- **Call:** H2020 NFRP-2019-09 – “Fostering innovation in decommissioning of nuclear facilities”
- **Duration:** 3 years (1/10/2020 - 30/09/2023)
- **Consortium:** 14 partners
 - 7 countries: FR (6), DE (2), NO (2), ES (1), FI (1), BE (1), SK (1)
 - 4 academic/research organisations,
1 TSO, 4 industrial companies, 5 SMEs

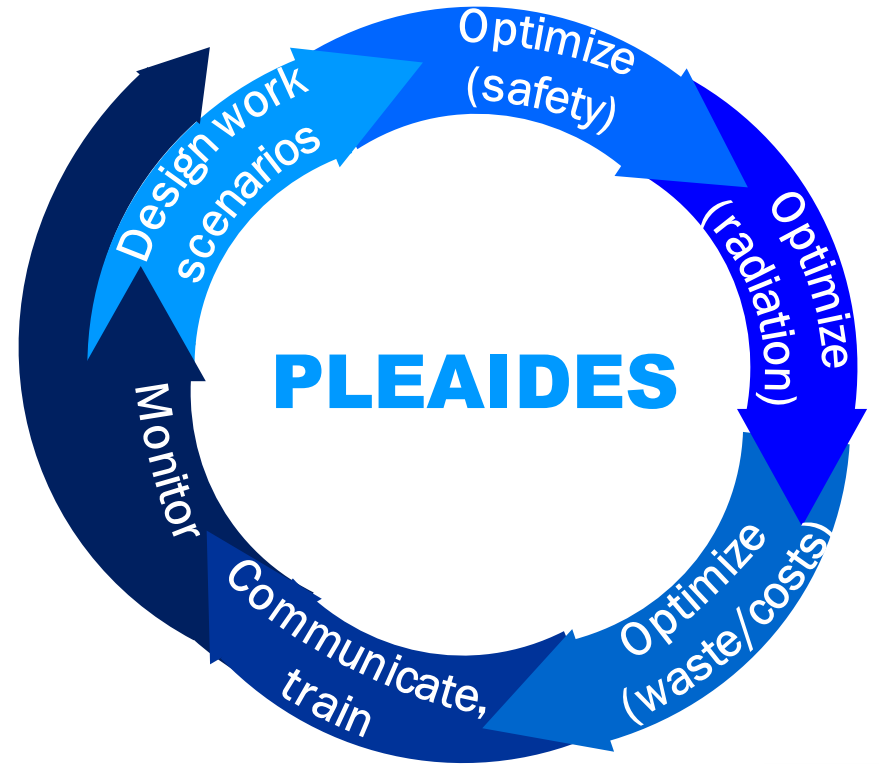


PLEIADES Objectives

Demonstrate a *modular* software *ecosystem* based on interconnection of front-line support tools through a decommissioning specific *ontology* building upon *open BIM**

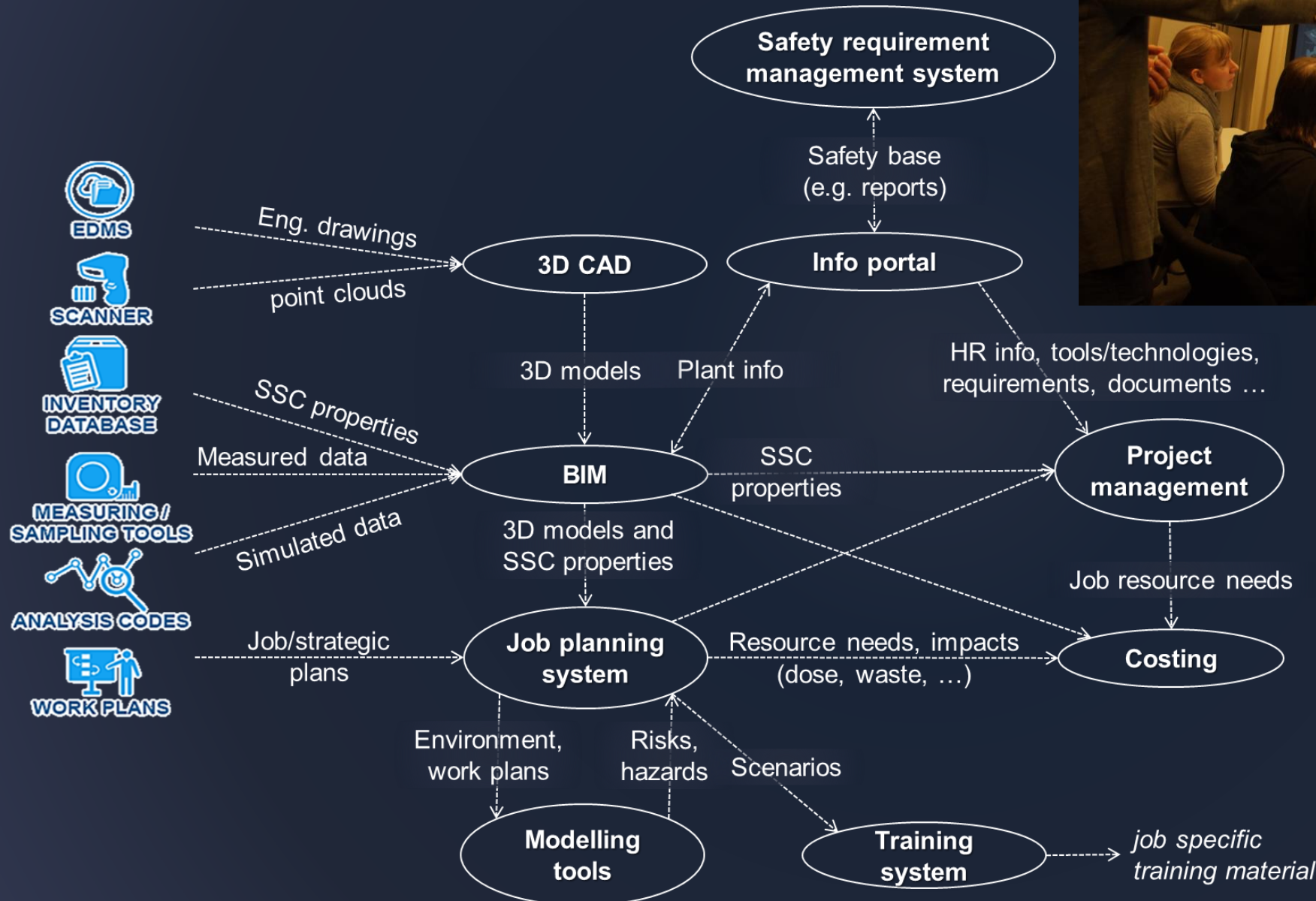


*BIM: Building Information Modelling



Holistic system concept

LiveDecom project



PLEIADES: Objectives

BIM (*Building Information Modelling*) approach to **design scenario**, **improve safety**, **minimize radiation exposure**, **optimize costs and planning**, **communicate**

- 3D modelling & simulation
- “multi-dimensional modelling”: **3D model**, **time**, **dose**, **feasibility studies**, **waste** and **costs**
- Software **integration** and **interoperability**

Data/info
acquisition and
management

Characterization
and Job planning

Decisions, Costing,
Waste management

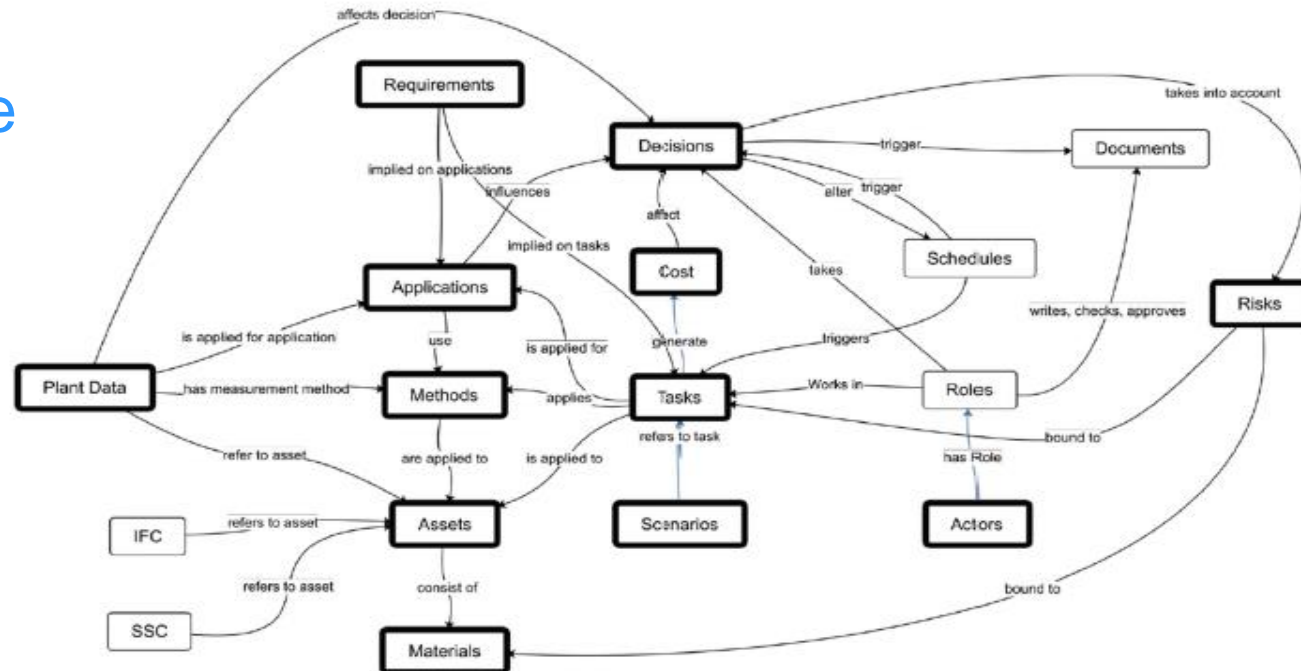
Demonstration
and Training

1. **3DScanPF (KIT)**: Robotic platform for 3D scans and imaging
2. **DIM (EDF)**: Dismantling Info Modelling system for storing all facility data
3. **Bimsync (CATENDA)**: IFC¹ compatible BIM platform used in construction
4. **iUS IMS (iUS)**: Semantic wiki based nuclear info system
5. **RadPIM (IFE)**: Radiological characterisation tool (part of VRdose family)
6. **VRdose (IFE)**: Detailed job planning tool with a radiological model library
7. **DEMplus (CYCLIFE DS)**: Decision-support tool combined with 3D simulation
8. **Aquila costing (WAI)**: ISDC² compatible client-server based costing tool
9. **iDROP (CEA)**: VR dismantling simulation with collision & radiological modelling
10. **LLWAA-DECOM (Tractebel)**: Low Level Waste Activity Assessment tool
11. **ALVAR (VTT)**: AR³ training platform with advanced tracking capabilities
12. **INTERACT (LS)**: XR⁴ platform with physics engine

PLEIADES: Objectives

- Propose an **ontology** for an international standard:
- decommissioning specific terminology / vocabulary definition
 - concepts relationships identification
 - common understanding
 - common knowledge modeling

Harmonization of knowledge management within nuclear decommissioning



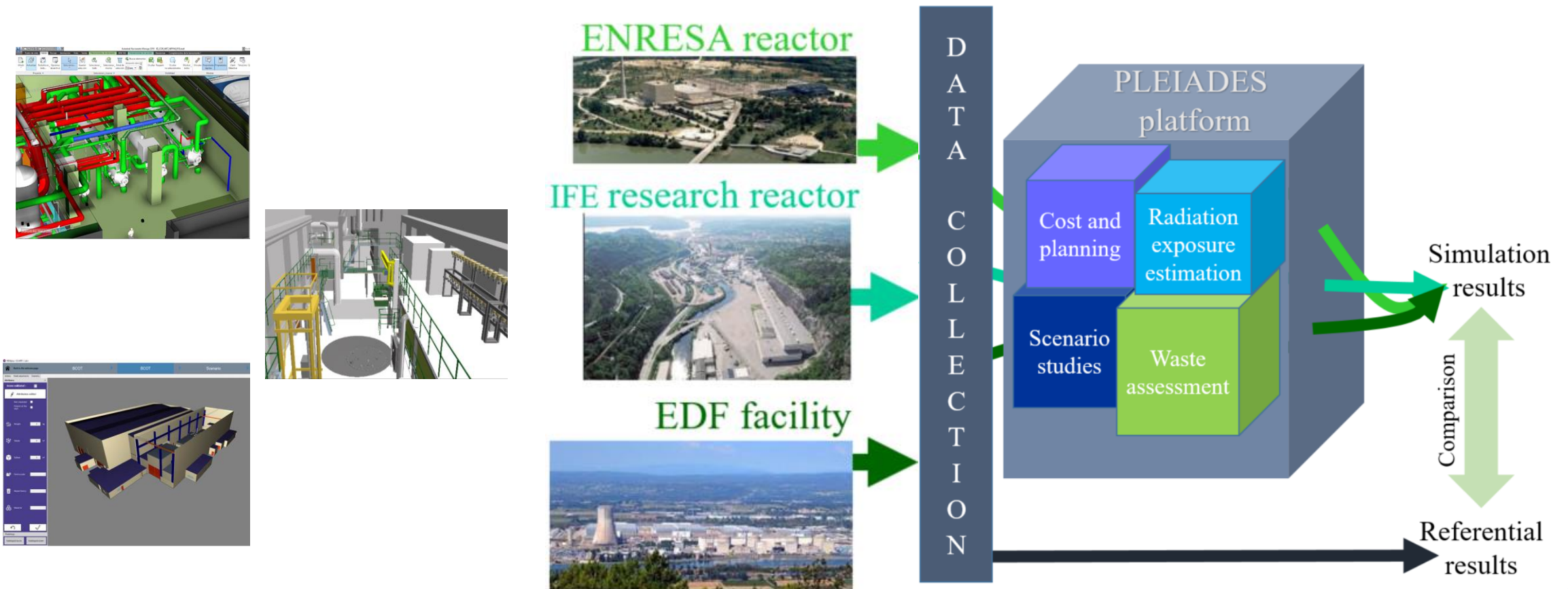
PLEIADES: Objectives

- Establish a **standardized process** to organize the data collected consistent with BIM approach
- **Implemented** in the PLEIADES platform (data management)
- **Promote** the application of PLEIADES in nuclear decommissioning
- Define the **exploitation** strategy :
 - commercialization entity creation
 - business plan
- Education & **training** preparation

- 👍 **Support for holistic approach**
- 👍 **Higher independence from vendors**
- 👍 **Advanced tech support**

PLEIADES: Objectives

- ✓ Demonstrate on real cases

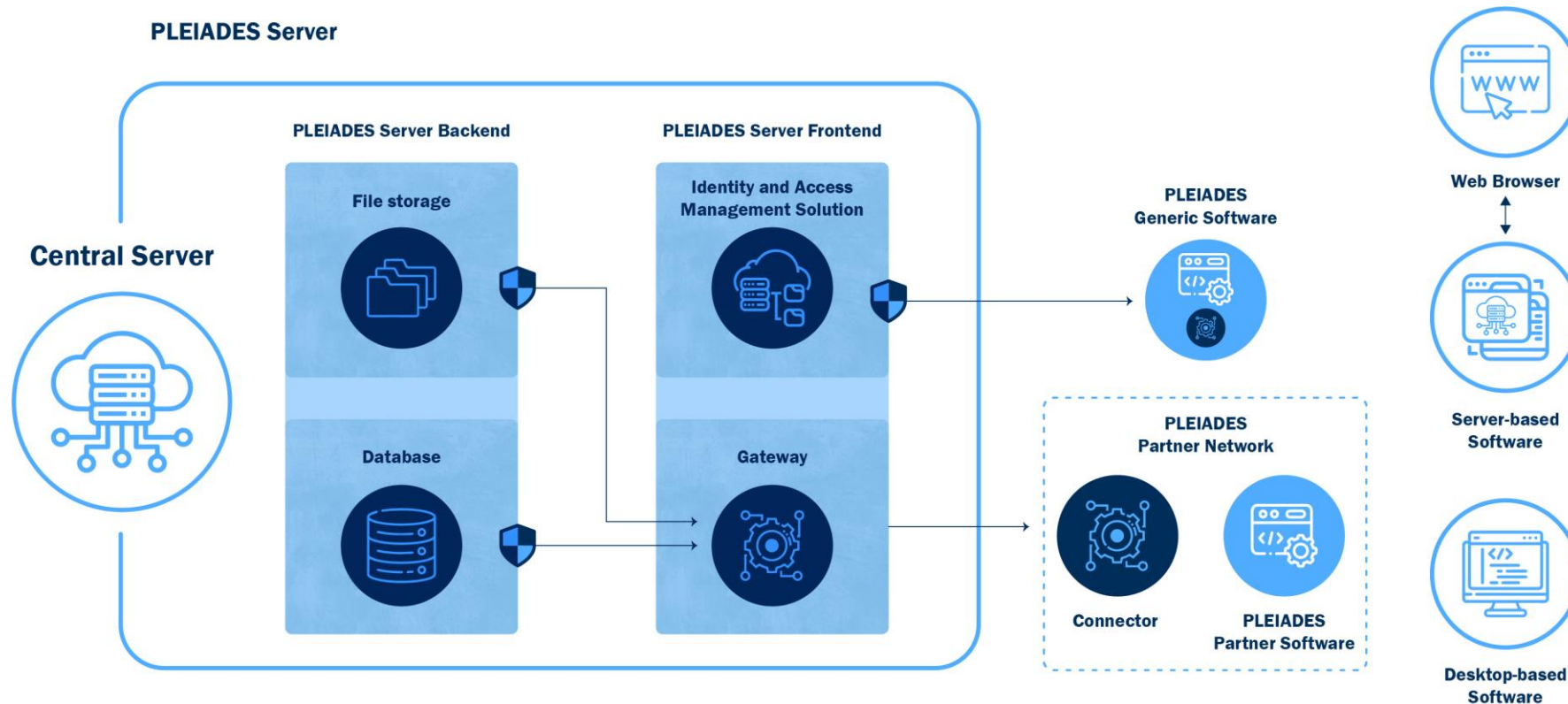


PLEIADES: Highlights

✓ PLEIADES software platform

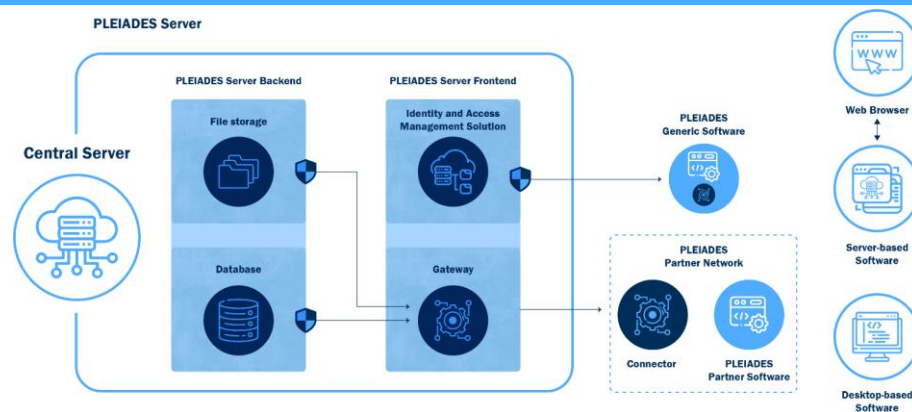
→ PLEIADES innovative platform has been specified, developed and tested

→ Platform is operational



PLEIADES: Highlights

✓ PLEIADES software platform



PLEIADES DB browser
Version 0.1beta

[Add new record](#)

All records
Show 10 entries

_id	Class	Content	RecordInfo	
6229e16c1819e7e781d750f	ActorsTeams	{ "username": "super team", "members": [{ "memberType": "Actor.Person", "memberId": "jason" }, { "memberType": "Actor.Person", "memberId": "trevor" }], "EffectivenessExposure": 99, "WorkExposure": 99 }	{ "client": "AquilaCosting", "moduleId": "2022-03-08T11:18:13.162Z" }	Edit Delete



AquilaCosting
Decommissioning & Waste Management Costing Software

INTERACT

ALVAR

edrop
DEMplus
FOR NUCLEAR
Démantèlement Exploitation Maintenance

HVRC VRdose®
Radiological Protection Job Planning & Optimisation



PLEIADES: Highlights

✓ PLEIADES software platform

✓ Demonstration/validation of the platform in the 6 user stories

→ Test preparation: development of 6 user stories

→ Validation tests

→ Test protocols

→ 3 use cases data preparation

→ BIM modelling

→ Additional data

→ Data integration in the PLEIADES platform

→ Soon ready to demonstrate the capabilities of the PLEIADES prototype

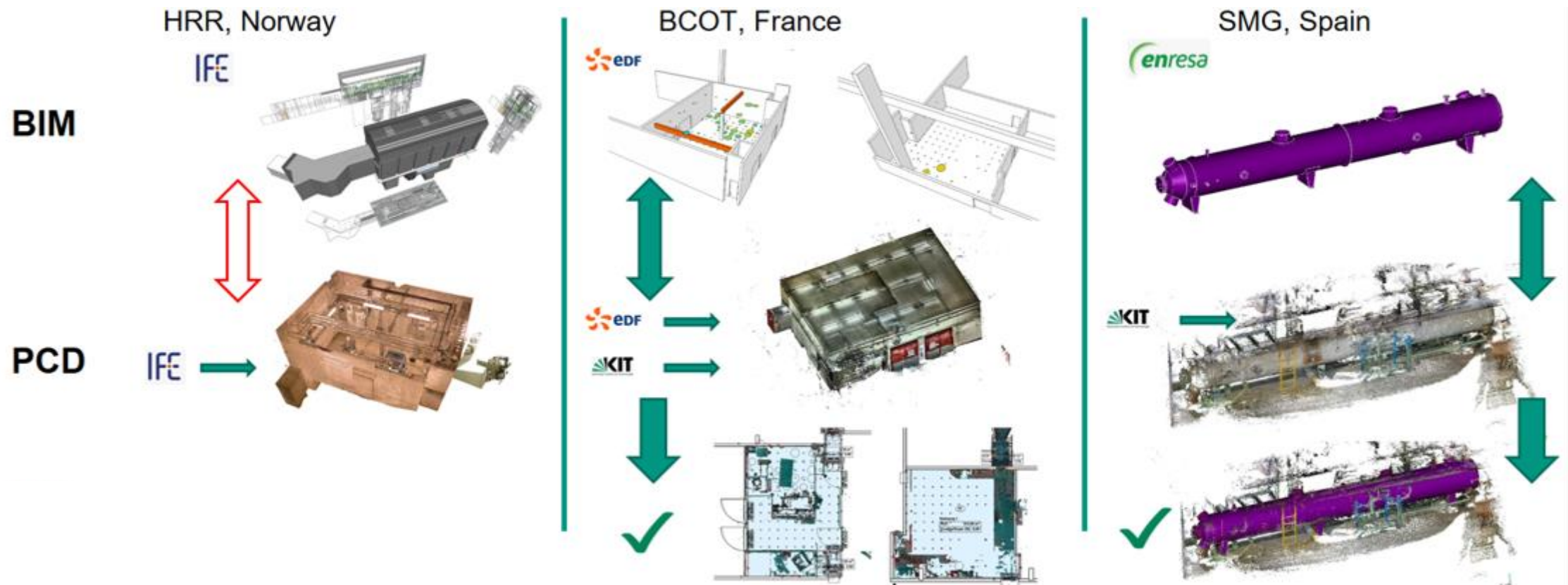
PLEIADES status

- BIM database development
 - ✓ Classes
 - ✓ API for connection to database
 - ✓ Connectors

- Decommissioning data
 - ✓ Radiological measurements
 - ✓ Persons / skills
 - ✓ Teams
 - ✓ Equipment
 - ✓ 3D models
 - ✓ Cost
 - ✓ Job descriptions
 - ✓ Etc.

PLEIADES status

- Creation of Point Clouds Data for more details



PLEIADES: Next Steps

✓ Maintenance/evolution of the PLEIADES software platform

- 2022-2023 leader: Vincent PERROT (CEA)
Dusan DANISKA (WAI)

✓ Demonstration/validation of the platform in the 6 user stories

- 2022-2023 leader: Bérangère CLERE (Cyclife-DS)

✓ Results evaluation (platform & modelling results)

- 2023 leader: Markus AIRILA (VTT)

➤ End of project : September 2023

Thank you for your attention



Contact:



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<http://pleiades-platform.eu>



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