LifeBlock: A Tool for SKG Development under FAIR Principles

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LifeWatch ERIC

Introduction – LifeWatch ERIC

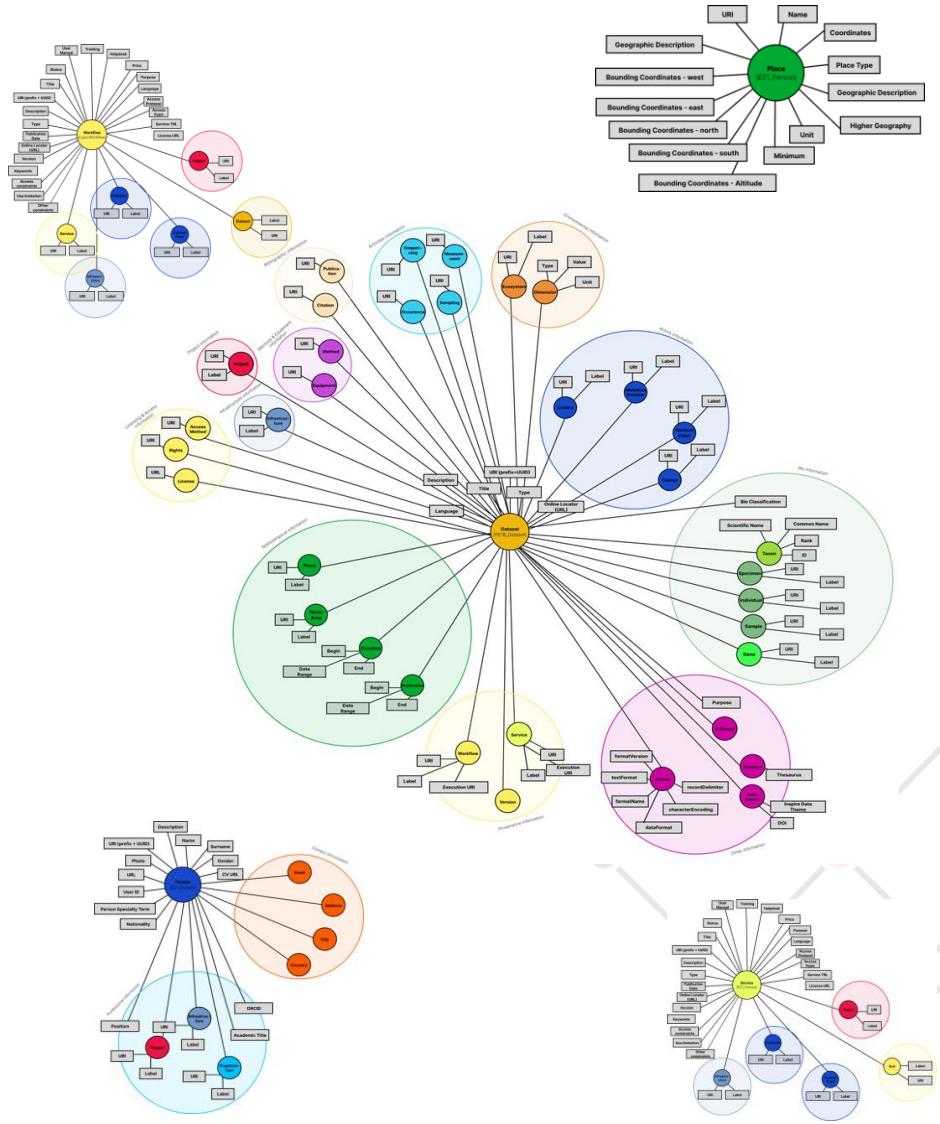
- **LifeWatch ERIC:** We are an organization with a strategic pillar focused on the integration of biodiversity and ecosystem data and services.
- **Mission:** LifeWatch ERIC aims to accelerate the research efforts of the scientific community by delivering a European state-of-the-art e-Science Research Infrastructure on biodiversity and ecosystem research: a Digital Twin which (a) provides access to, and support for, key scientific services by applying cutting-edge ICT technology, (b) enables reproducible analytics, (c) is co-designed and co-created with the user communities and (d) is tuned with the needs for research that provides key insights for society, in particular science-based policy.
- **Lifeblock:** A blockchain-based tool designed to build and manage Scientific Knowledge Graphs (SKG).
- **Relevance of Lifeblock:** In the information age, SKGs are crucial for open science and interdisciplinary collaboration.
- **Our Goal Today:** To demonstrate how Lifeblock ~~is~~ may offer a solution for today's challenges in creating SKGs.

LifeWatch ERIC's philosophy on the creation and evolution of SKGs

- **SKG in Research:** SKGs are the backbone of modern research, turning data into actionable knowledge.
- **Current Challenges:** Creating specific SKGs and keeping them up to date is a complex task.
- **Lifeblock Solution:** Our tool simplifies the creation of SKGs, ensuring accuracy, FAIR principles and consistency.
- **Cross Domain Connectivity:** Lifeblock enables seamless integration of SKGs and RIs from different organisations, creating a knowledge network.
- **Current situation:** LifeBlock currently integrates 5 RIs, with access to their data and conversion to a common RDF structured format with a common metadata format.

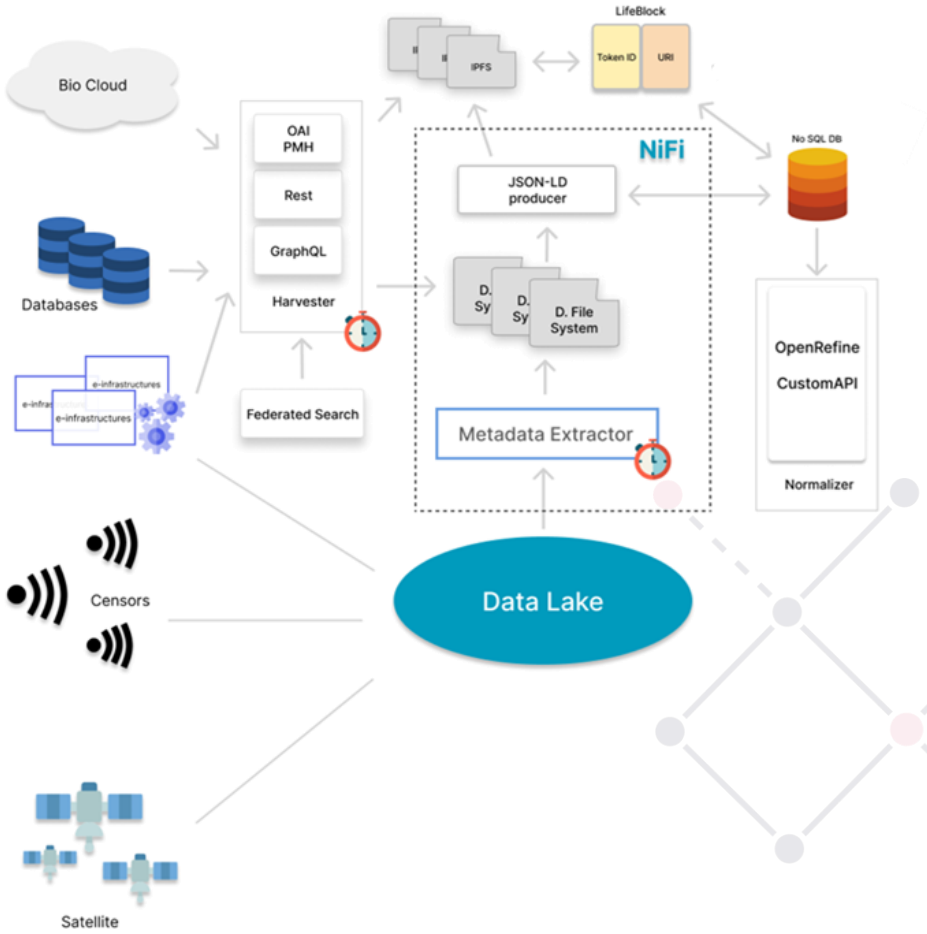
Challenges and evolving development

- **RIs Diversity:** Each organization has its own language and structure; Lifeblock translates and unifies these languages.
- **Multilingualism and Formats:** Lifeblock processes texts in multiple languages and formats, eliminating linguistic and technical barriers.
- **Text to Knowledge:** Our goal is to convert unstructured information into valuable knowledge, ready to be explored and applied, particularly to our VREs.
- **Interoperability:** With Lifeblock, SKGs and RIs from different sources and formats can "talk" to each other seamlessly. LifeBlock has a user data space where it unifies the different sources of information.
- **Queries:** Lifeblock offers an intuitive interface for querying and exploring IRs, both in federated syntactic search notation and in semantic and artificial intelligence search notation.



Integration with the Science DataLake Concept

- **DataLake:** The LifeWatch ERIC SKG infrastructure incorporates a large data lake where data from the different RIs, sensors and satellite data coexist with unified formats and full FAIR traceability.
- **Lifeblock:** It is configured as the bridge that connects the different islands of knowledge in this lake based on FAIR principles, immutability and common format.
- **Accelerated Processing:** Lifeblock streamlines data analysis, enabling faster discovery and from multiple resources.
- **EOSC Prototype and Services:** We are integrated with EOSC, offering advanced services for the scientific community.
- **Tangible Benefits:** With Lifeblock, researchers can discover new insights and validate their findings more efficiently through targeted VREs.



Future plans

- **Cooperation Potential:** Lifeblock is ready to collaborate and expand its network of SKGs and RIs with other initiatives.
- **Multidisciplinary Impact:** From neuroscience to biodiversity, Lifeblock has the potential to embrace and unify any type of data.
- **Open Dialogue:** Ongoing dialogue with RIs and SKGs to tailor LifeBlock to their needs.
- **Future Vision:** Full interconnection of RIs and SKGs through a common format and provision of a wide variety of VREs adapted to the users' needs and respecting the FAIR principles as a basic principle of all development.