Athena RC is an R&I partner focusing on ICT, with expertise in the areas of Big data management, linked data, and large-scale geospatial applications.

InfAI is a research and transfer institute affiliated with the University of Leipzig in Germany. InfAI's AKSW research group is focused on linked data, semantic web technologies and Big data.

IAIS is Fraunhofer's *data institute*, and one of the most renowned research institutions in the data science area, with an extremely strong track record in data mining, machine learning, semantic technologies, information retrieval and software engineering.

TomTom is one of a handful of companies worldwide producing, curating, marketing, and delivering POIs to hundreds of millions of users and companies.

WIGeoGIS is among Europe's leading companies in spatial business intelligence and geomarketing. It helps private businesses as well as public authorities to manage processes with spatial relevance and automated fact based decision making.

GET is a high-tech SME, with solutions covering the entire lifecycle of geospatial data. It produces, maintains and curates geospatial data for the public and private sector, which are used from thousands of companies on a national level.

ABOUT SLIPO

SLIPO is an Horizon 2020 project that develops software, models and processes for transforming conventional POI data into RDF data; interlinking POI entities from different datasets; enriching POI entities with additional metadata; fusing linked POI data; assessing the quality of the integrated POI data; offering value added services based on spatial aggregation, association extraction and spatiotemporal prediction.

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SCALABLE LINKING & INTEGRATION OF BIG POI DATA

SLIPO

Developing linked data technologies for the scalable and quality assured integration of big points of interest data.

THE SIGNIFICANCE OF POIS FOR OUR ECONOMY

Our lives evolve around locations. Every day we use POIs to answer questions, such as: What is there? How do I get there? Where do I find something?

POIs are valuable assets for several economic domains, from mobility and tourism, to logistics and manufacturing. Due to their cross-domain and cross-border nature, they comprise multi-billion, complex value chains, with significant direct and indirect gains in our economy.

POIs are one of the foundations and value multipliers of our Digital Economy!

CURRENT LANDSCAPE IN POI DATA

Despite their high importance and extended use in several domains, POI datasets suffer from a series of issues and limitations that hinder their integration, enrichment and, consequently, full exploitation.

Numerous proprietary POI formats and schemas have been developed through the years, for different purposes in different context. Further, the absence of standardization efforts amplifies the fragmentation of POI data through vendors, applications and contexts.

Another major issue consists in the inherent ambiguity of POI entities. Let's examine some real-world examples:
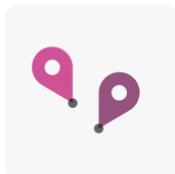
A Chinese restaurant moves a few hundred meters to a new location, while a Mexican restaurant opens at its original place. How is the Chinese restaurant defined? How do we represent the evolution of the POI located in the initial coordinates (Chinese → Mexican)?

The same restaurant may be represented, in different datasets, with slightly different coordinates. In this case, how can we determine if it is the same restaurant or a different one?
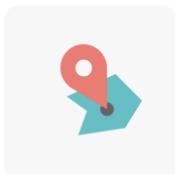
A POI represented as point lies within another POI, represented as polygon. Do they correspond to the same POI? If not, what is their relation and how can we describe it?

THE **SLIPO** APPROACH

Linked data technologies can address the limitations, gaps, and challenges of integrating, enriching, and sharing Big POI data in a scalable and quality assured manner.

The first step is the modelling of a global ontology and mappings to most prominent existing POI schemas, that allows the transformation of conventional POI data to RDF.

Next, a virtuous circle begins by expanding POI coverage, completeness, and richness, delivering data of greater size. This is achieved by continuously interlinking, enriching, fusing POIs, assessing their quality at every step of the process.

INPUT

Proprietary
Private POIs

Open
Open source POIs

Crowdsourced
Multiple creators

POI INTEGRATION

QUALITY ASSURANCE   ANALYTICS

Fuse

SIZE / QUALITY

MORE VALUE

Enrich   Interlink

SIZE / QUALITY

VALUE ADDED ANALYTICS

NEW SERVICES

OUTPUT

SLIPO'S POIs
Richer, more accurate and timely, with higher coverage and completeness
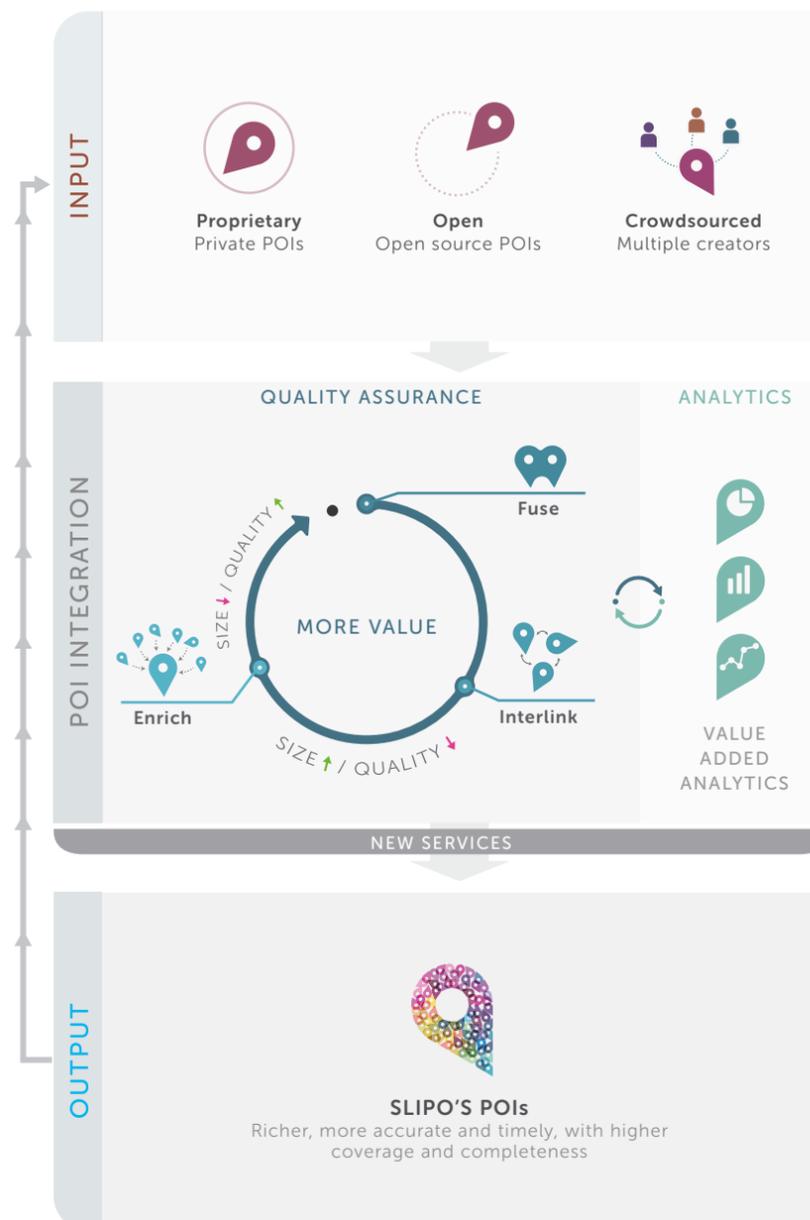
THE **SLIPO** TOOLKIT

The SLIPO Toolkit handles all stages of the POI integration lifecycle. *TripleGeo* and *Sparqlify* transform conventional POI data into RDF. Next, *LIMES* interlinks POI entities from different data sources, taking into account their spatial, thematic and semantic properties. *DEER* and *OSMRec* exploit third sources to extract POI metadata and use them to enrich the linked POIs. Finally, *FAGI* consolidates the descriptions of linked, enriched POIs, by fusing their metadata. Every tool applies indicators and measures for assessing the quality of the produced data.

SLIPO COMPONENTS

SLIPO Workbench

SLIPO API

SLIPO Analytics

Transform

Interlink

Enrich

Fuse

tripleGEO

LIMES

OSMRec

FAGI

SPARQLIFY

DEER
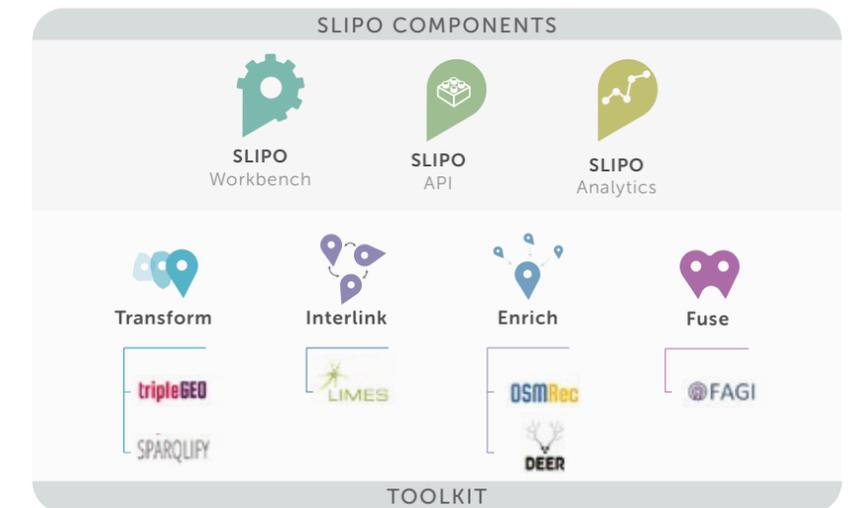
TOOLKIT

The SLIPO Toolkit will be provided in the form of an integrated workbench and made available as open source software.

Lightweight and highly reusable APIs will expose the full functionality of the SLIPO Toolkit according to the Software-as-a-Service paradigm. Value added analytics will be implemented on top of linked, enriched POI datasets, considering spatial aggregation and relations and spatiotemporal analysis.

IMPACT

Current approaches are labor-intensive and do not scale beyond domain-specific or local efforts. By tackling the challenges of large-scale POI data integration, SLIPO enables processes and analytics that are currently infeasible or too expensive to perform. This way, SLIPO will:

Reduce the effort, time and cost required to produce POI data of high quality.

Allow non-expert POI producers and consumers to easily transform, interlink, fuse, enrich and assess the quality of Big POI data.