

Engineering Location Intelligence

Make engineering information easier to find through location and context

Internship area: Geo-ICT, GIS, Data Engineering or Computer Science

Level: challenging graduation or research internship at university of applied sciences / university level

Period: by agreement; 3 to 6 months

The assignment

Engineering organisations hold a great deal of valuable information, but that information is not always easy to retrieve from the perspective of a location, object, asset, corridor or project context. In this internship, you investigate how spatial data, project information and technical information can be linked reliably and in a manageable way without unnecessarily centralising source information.

You compare information and architecture models and investigate how explicit, inferred and uncertain relationships can be recorded, searched and presented. You validate the approach using representative cases and measurable criteria for search quality, provenance, uncertainty and usability. You implement the selected approach in a working proof of concept; its purpose is to technically test and validate the information and relationship model, not merely to demonstrate a map.

Possible research themes

- link location-, object-, asset- and project-related information;
- handle points, areas, corridors and different levels of detail;
- use metadata and relationships from heterogeneous information sources;
- distinguish reliable, inferred and uncertain relationships;
- search and present information from a spatial user context;
- record provenance, source quality, version and scope of validity;
- investigate where fixed logic, search techniques or AI add value.

What we are looking for

We are looking for a curious and independent student who can translate a broad technical challenge into testable research questions and a working solution. You will have room to compare solution directions and technologies and shape the architecture yourself, but you must substantiate your choices through research, experiments and test results.

Required skills

- basic knowledge of GIS, geodata or information modelling;
- ability to program in, for example, Python, TypeScript, C# or Java;
- experience with databases, APIs and structured data;
- ability to investigate analytically, test systematically and document clearly;
- careful handling of information, sources, provenance and uncertainty.

A plus

- spatial databases or mapping applications;
- knowledge graphs, search technology or entity matching;
- BIM, asset or CDE information;
- data extraction, machine learning or local AI;
- experience building technical prototypes independently.

What we expect from you

- you take ownership of the research, planning and technical implementation;
- you compare serious solution directions and substantiate the choice with experiments;
- you build a small working version early and validate iteratively on representative cases;
- you make assumptions, limitations, provenance, uncertainty and failure cases visible;
- you communicate progress and blockers early and concretely;
- you deliver reproducible code, tests, documentation and a clear final demonstration.

What you will deliver

A substantiated and validated approach to Engineering Location Intelligence, supported by a working proof of concept with spatial search and tested location/asset relationships. The result clearly demonstrates why information is linked, from which source and version the relationship originates, how uncertainty is handled, and which next steps are needed for responsible use at larger scale.