lod.nik.uni-obuda.hu/iloc

iLOC – Building In-door Navigation Services using Linked Data

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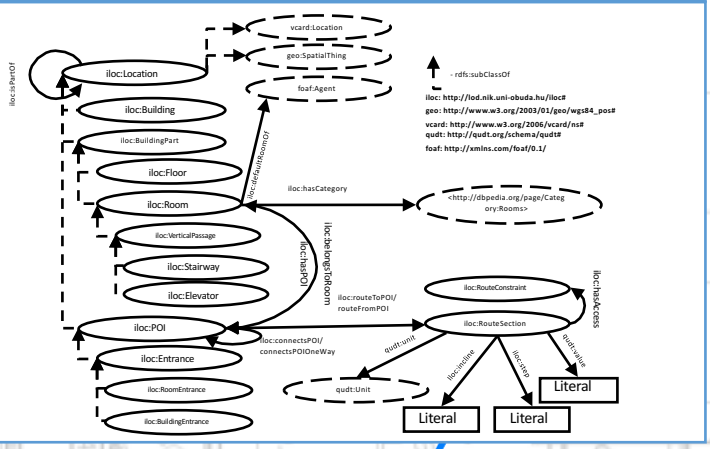
Approach

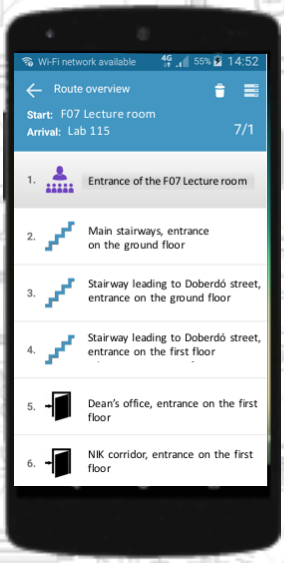
- iLOC - new indoor navigation ontology
- Building layouts published as Linked Data, accessible via SPARQL endpoint
- Indoor routes modeled as step-by-step instructions
- Can be integrated with other datasets (phonebook, equipments, reservation system, etc.)

iLOC class diagram



Goals

- Lack of re-usable vocabularies or ontologies for the description of building plans as Linked Open Data.
- iLOC should enable the integration of various datasets related to buildings and can be used in museums, shopping malls, hospitals, campuses, stadiums, airports
- iLOC should support multiple levels of details, with increasing complexity and capabilities.
- Routes should be calculated with flexible constraints for users' goals and abilities.

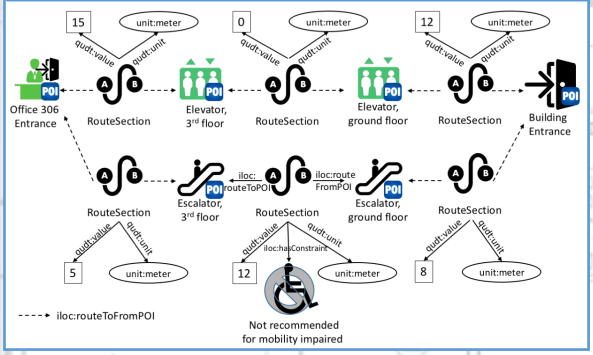


SPARQL: Nearest Wheelchair Accessible Toilet

```
prefix iloc: <http://lod.nik.uni-obuda.hu/iloc#>
prefix rdfs: <http://www.w3.org/2000/01/rdf-schema#>
prefix ex: <http://example.org/>

SELECT ?distance ?sl ?l1 ?l2 ?l3 ?el WHERE {
  BIND (ex:MainEntrance AS ?start ).
  ?end iloc:hasCategory ex:Toilet;
       iloc:hasAccess iloc:WheelChairAccess.
  OPTIONAL {?start rdfs:label ?sl.}
  OPTIONAL {?p1 rdfs:label ?l1.}
  OPTIONAL {?p2 rdfs:label ?l2.}
  OPTIONAL {?p3 rdfs:label ?l3.}
  OPTIONAL {?end rdfs:label ?el.}
  ?start iloc:connectsPOI ?p1.
  ?p1 iloc:connectsPOI ?p2.
  ?p2 iloc:connectsPOI ?p3.
  ?plast iloc:belongsToRoom ?end.
  FILTER (?p3 = ?plast || ?p2 = ?plast || ?p1 = ?plast )
  BIND ((if( ?p3 = ?plast , 3, if( ?p2 = ?plast , 2,
         if( ?p1 = ?plast , 1, -1)))) AS ?distance)
} ORDER BY ?distance
LIMIT 1
```

Example



Use Cases

- Guide at universities, hospitals, airports, shopping malls, etc.
- Finding nearby POIs with detailed queries (e.g.: accessible facilities)
- Support emergency situations
- SPARQL, Gremlin, Mobile App