



Barnabás Szász
University of Debrecen
Debrecen, Hungary
bszasz@gmail.com

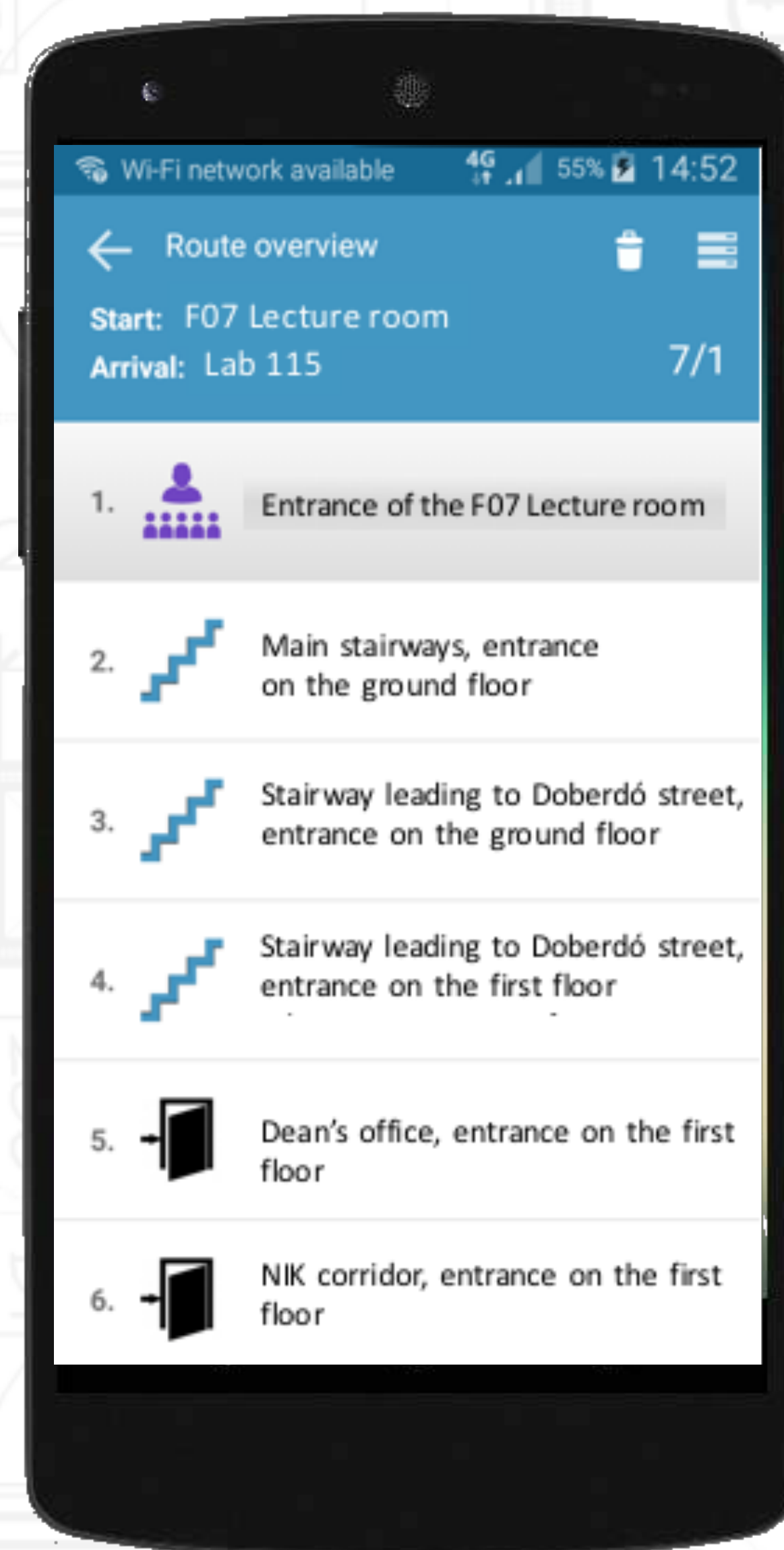
Rita Fleiner
Óbuda University
Budapest, Hungary
fleiner.rita@nik.uni-obuda.hu

András Micsik
MTA SZTAKI
Budapest, Hungary
micsik@sztaki.mta.hu

- 📍 iLOC - new indoor navigation ontology
- 📍 Building layouts published as Linked Data, accessible via SPARQL endpoint
- 📍 3 layers of modelling complexity with increasing expressiveness
- 📍 Indoor routes modeled as step-by-step instructions
- 📍 Can be integrated with other datasets (phonebook, equipment reservation system, timetable, etc.)
- 📍 User location specified by reading QR code or using autocomplete search

[illegible]

- ❖ 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.



```

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

SELECT ?distance ?s1 ?l1 ?l2 ?l3 ?e1 WHERE {
  BIND (ex:MainEntrance AS ?start ).
  ?end iloc:hasCategory ex:Toilet;
    iloc:hasAccess iloc:WheelChairAccess.
  OPTIONAL {?start rdfs:label ?s1.}
  OPTIONAL {?p1 rdfs:label ?l1.}
  OPTIONAL {?p2 rdfs:label ?l2.}
  OPTIONAL {?p3 rdfs:label ?l3.}
  OPTIONAL {?end rdfs:label ?e1.}
  ?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

```



Figure 1 illustrates the proposed mobility model for mobility-impaired users. The diagram shows a path from the Office 306 Entrance to the Building Entrance. The path includes RouteSections, POIs (Points of Interest), and various facilities like Elevators and Escalators. The diagram is divided into two parts: a top part showing a path for a user with a cane and a bottom part showing a path for a user in a wheelchair. The wheelchair user's path is marked with a dashed line and a wheelchair icon, indicating it is not recommended for mobility-impaired users. The diagram includes labels for 'qudt:value', 'qudt:unit', 'unit:meter', 'illoc:routeToPOI', and 'illoc:routeFromPOI'.

- 📍 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