A Solid-based Architecture for Decentralised Interoperable Location Data

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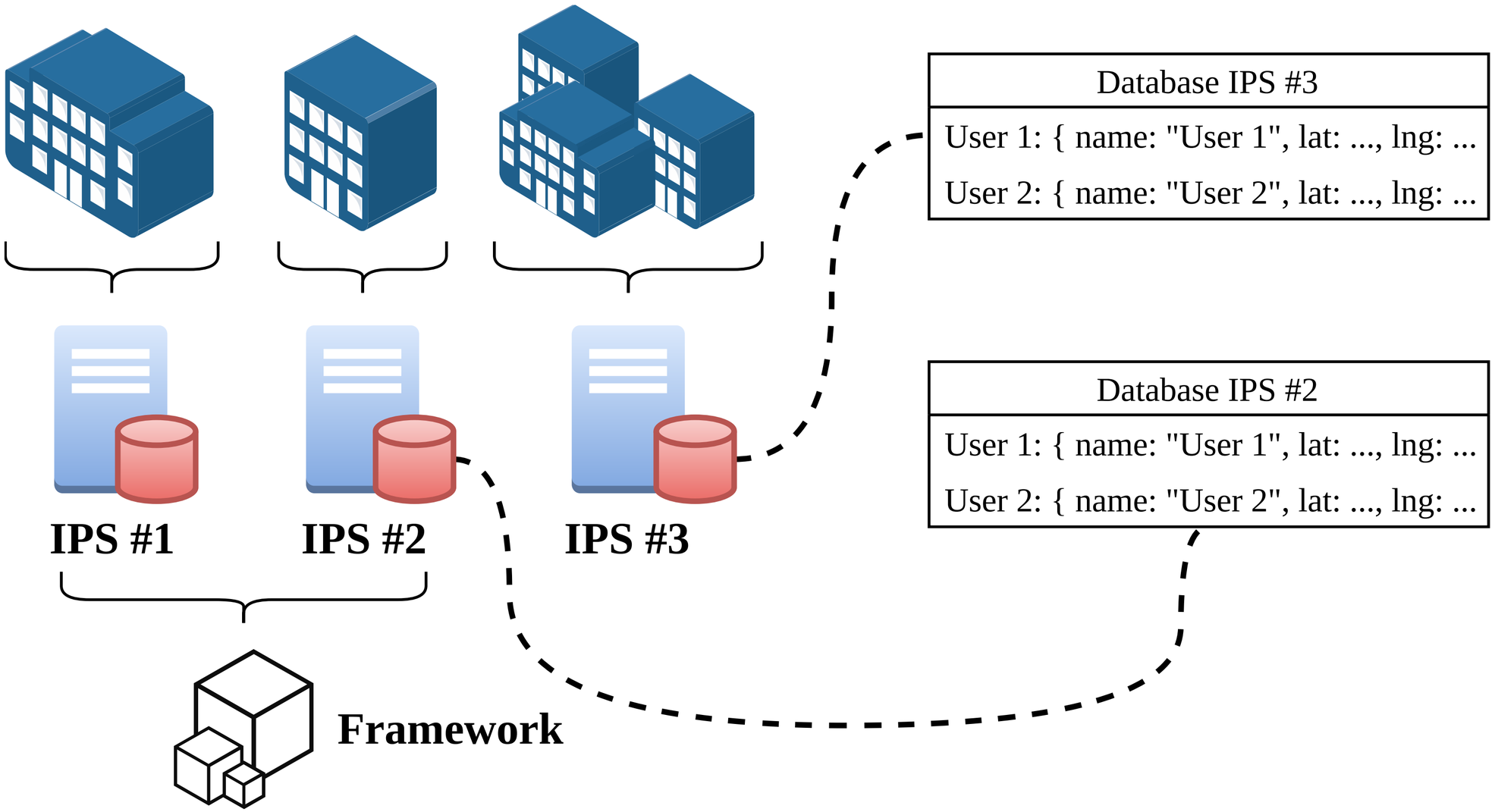
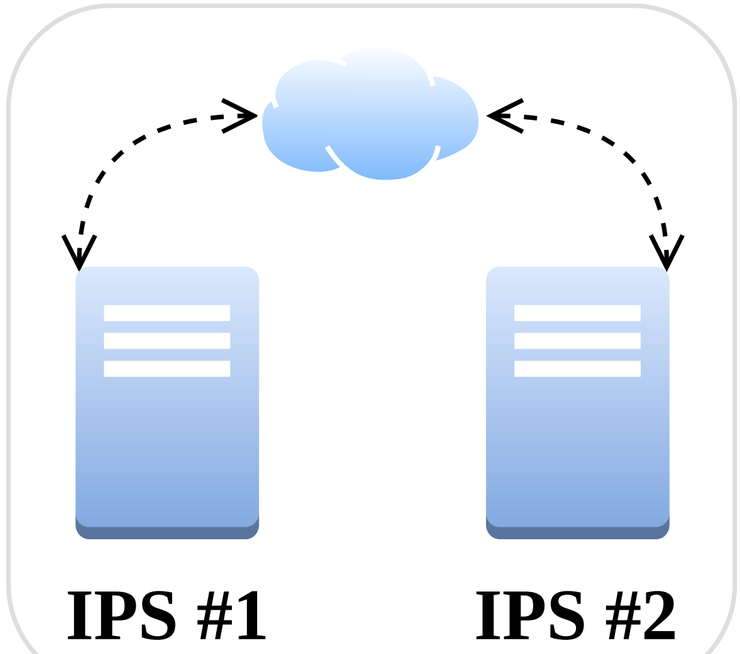
Current indoor positioning systems (IPS)

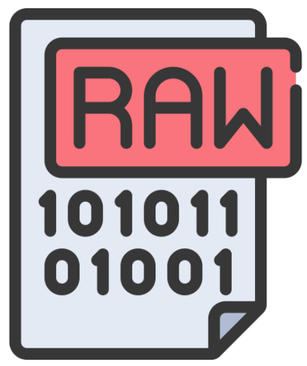


Problems with current IPS'

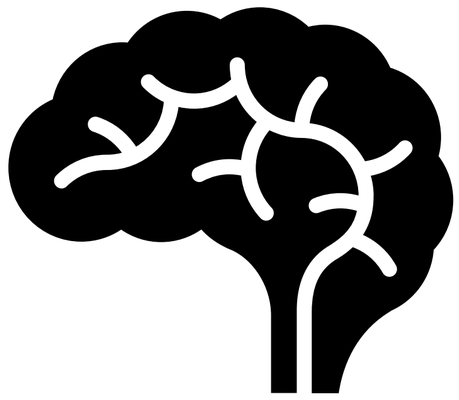
1. Users not in **control** of their **data**
2. No **interoperability** between positioning **systems**
3. No **interoperability** between (navigation) **applications**



Accessibility



Readability

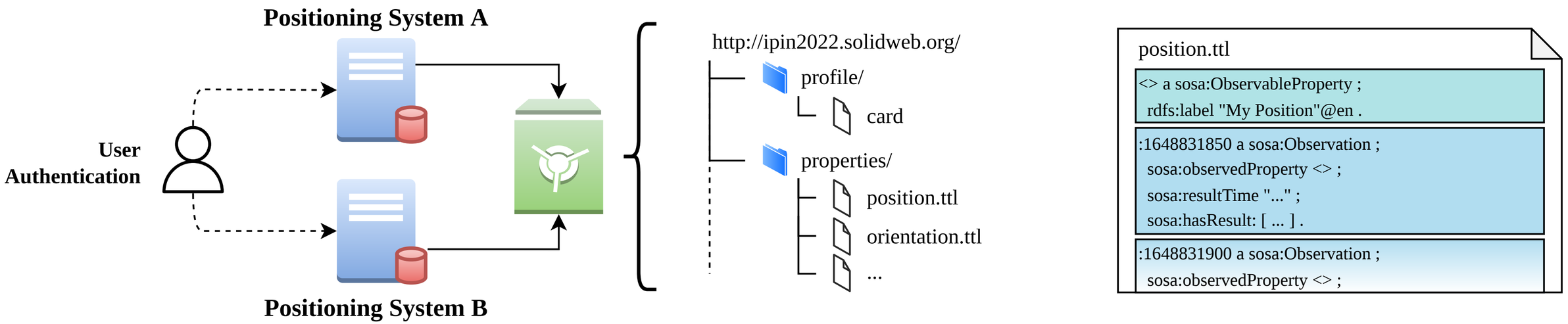


Understandability

What is Solid?

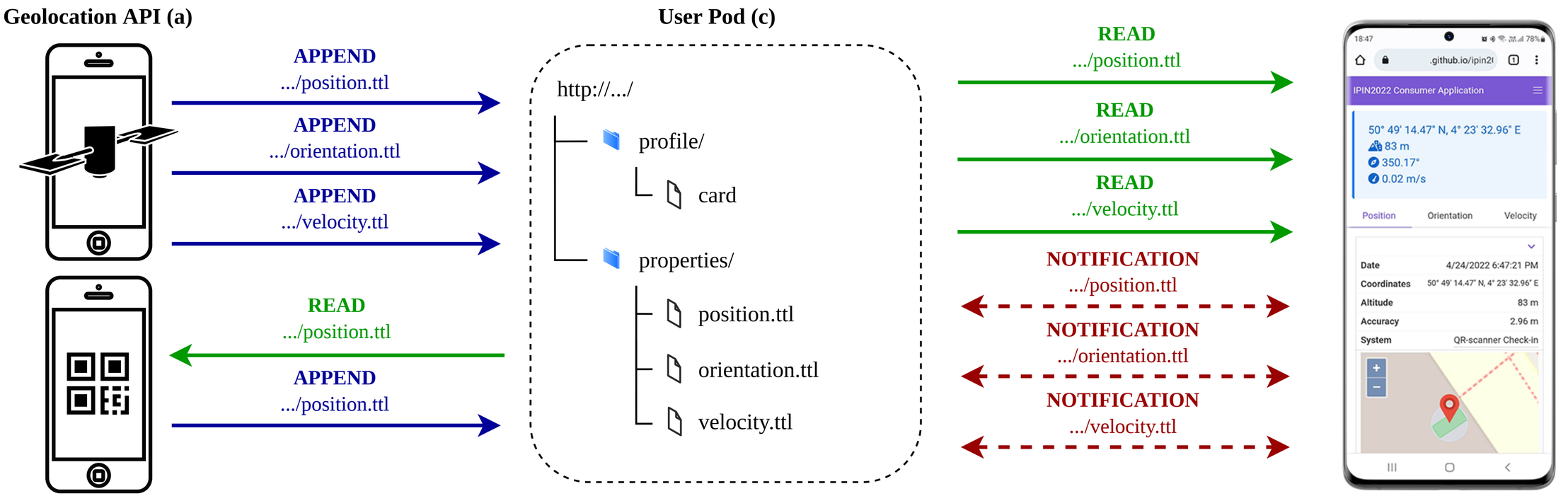
- Decentralised data vaults called *Pods**
- Semantic linked data

What is Solid?



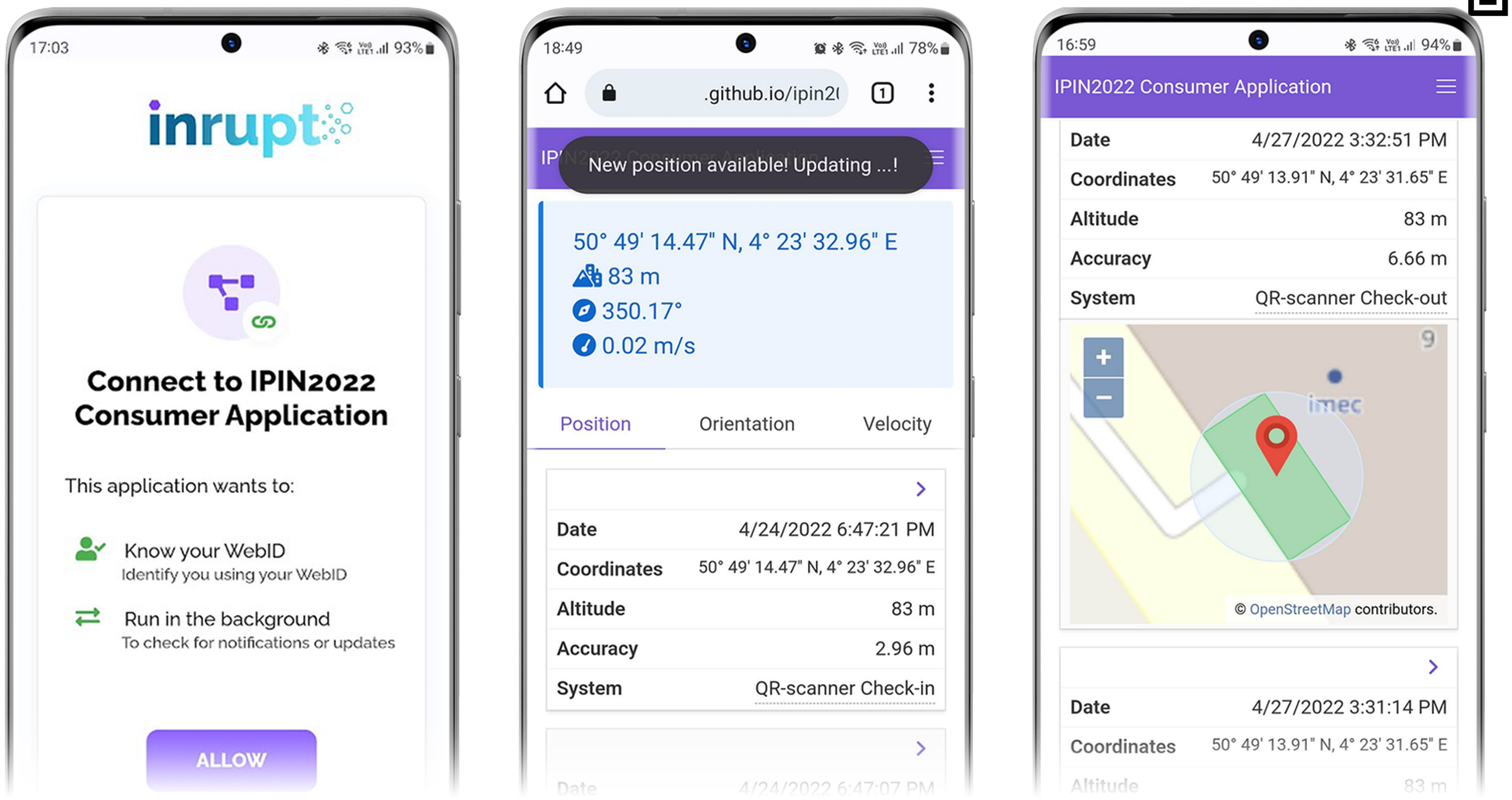
RDF: Properties and Observations

PoC Demonstrator



Developed using OpenHPS

PoC Demonstrator ...



PoC Demonstrator ...

```
SELECT ?posGeoJSON ?datetime ?accuracy {
    ?profile a sosa:FeatureOfInterest ;
            ssn:hasProperty ?property .
    ?observation sosa:hasResult ?result ;
                 sosa:observedProperty ?property ;
                 sosa:resultTime ?datetime .
    ?result geosparql:hasSpatialAccuracy ?spatialAccuracy ;
            geosparql:asWKT ?posWKT .
    BIND(geof:asGeoJSON(?posWKT) AS ?posGeoJSON)
    ?spatialAccuracy qudt:numericValue ?value ;
                     qudt:unit ?unit .
    OPTIONAL { ?unit qudt:conversionMultiplier ?multiplier }
    OPTIONAL { ?unit qudt:conversionOffset ?offset }
    BIND(COALESCE(?multiplier, 1) as ?multiplier) # Default 1
    BIND(COALESCE(?offset, 0) as ?offset) # Default 0
    BIND(((?value * ?multiplier) + ?offset) AS ?accuracy)
} ORDER BY DESC(?datetime) LIMIT 20
```