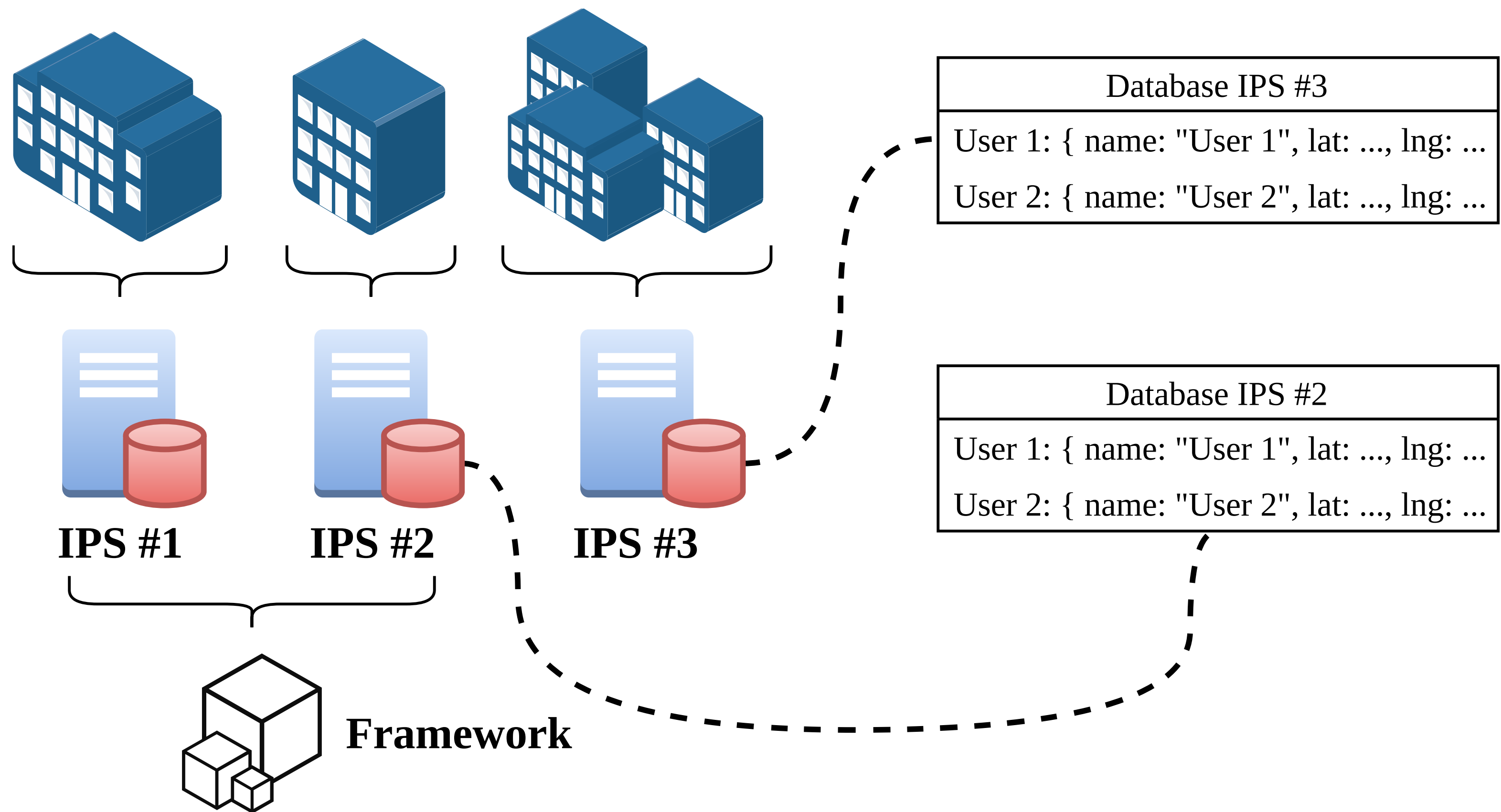


A Solid-based Architecture for Decentralised Interoperable Location Data

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Current indoor positioning systems (IPS)



Problems with current IPS'

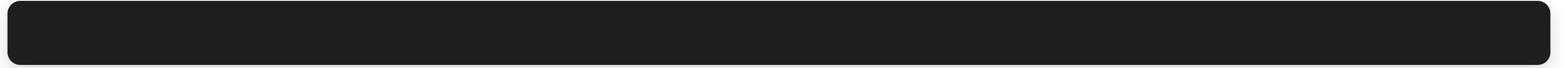
1. Users not in **control** of their **data**
2. No **interoperability** between positioning **systems**
3. No **interoperability** between (navigation) **applications**

What is Solid?

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

What is Solid?

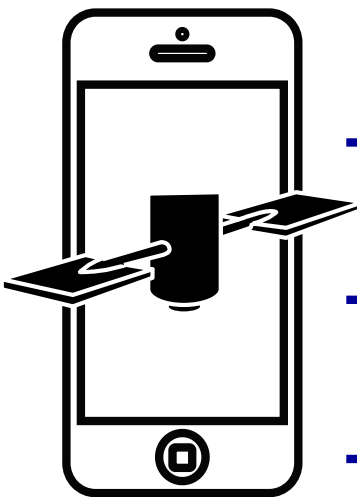
RDF: Properties and Observations



PoC Demonstrator



Geolocation API (a)

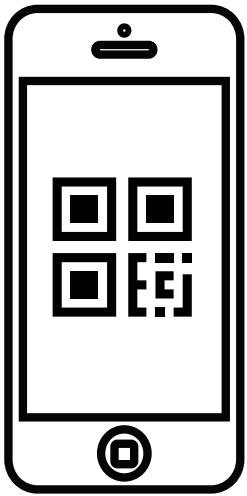


APPEND
.../position.ttl

APPEND
.../orientation.ttl

APPEND
.../velocity.ttl

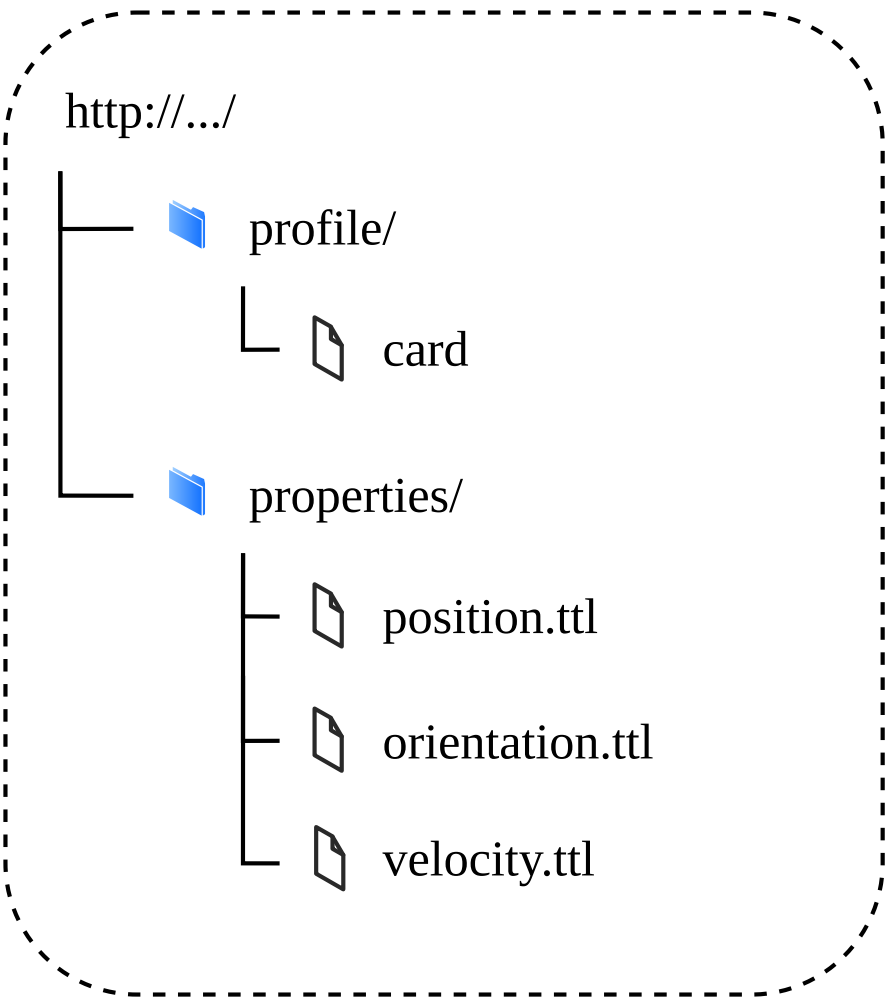
QR-scanner IPS (b)



READ
.../position.ttl

APPEND
.../position.ttl

User Pod (c)



READ
.../position.ttl

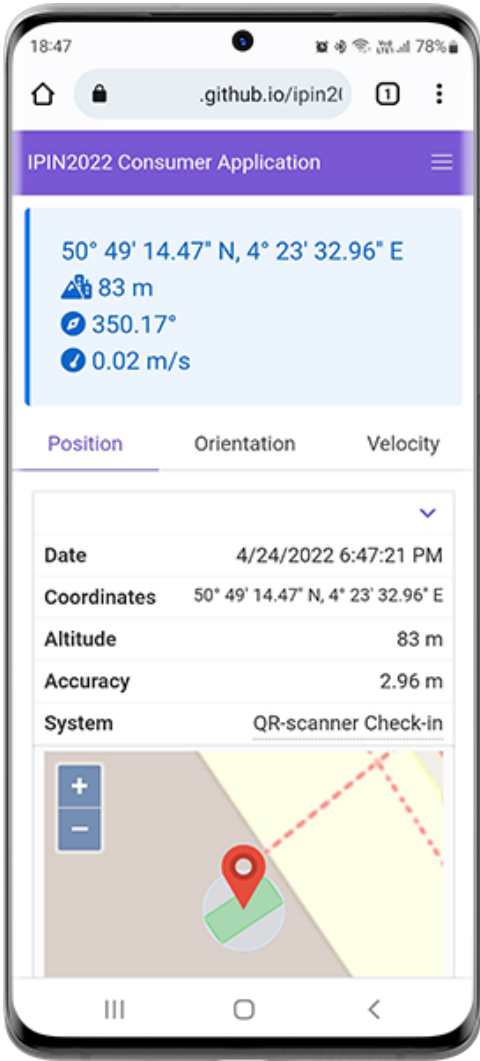
READ
.../orientation.ttl

READ
.../velocity.ttl

NOTIFICATION
.../position.ttl

NOTIFICATION
.../orientation.ttl

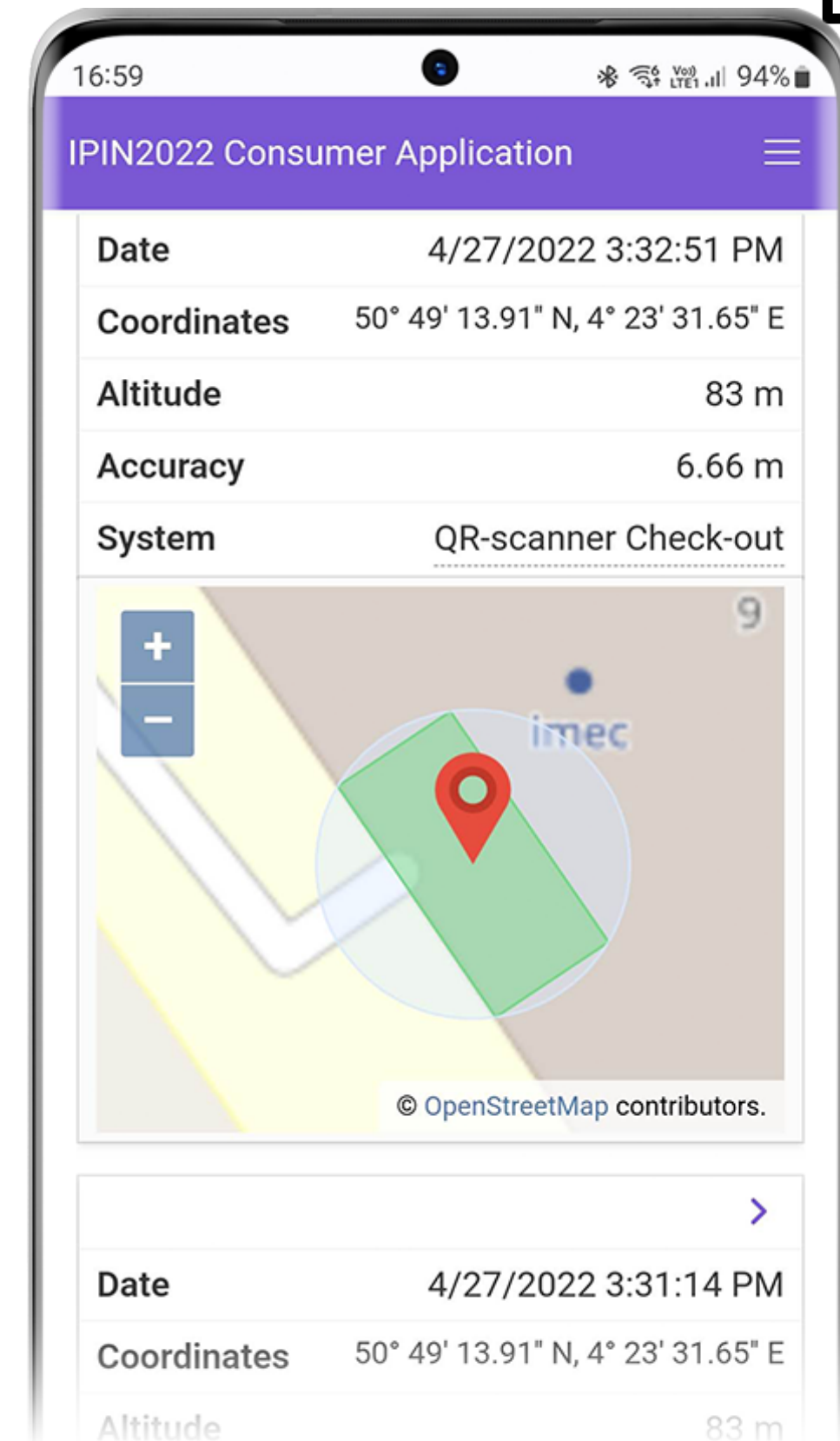
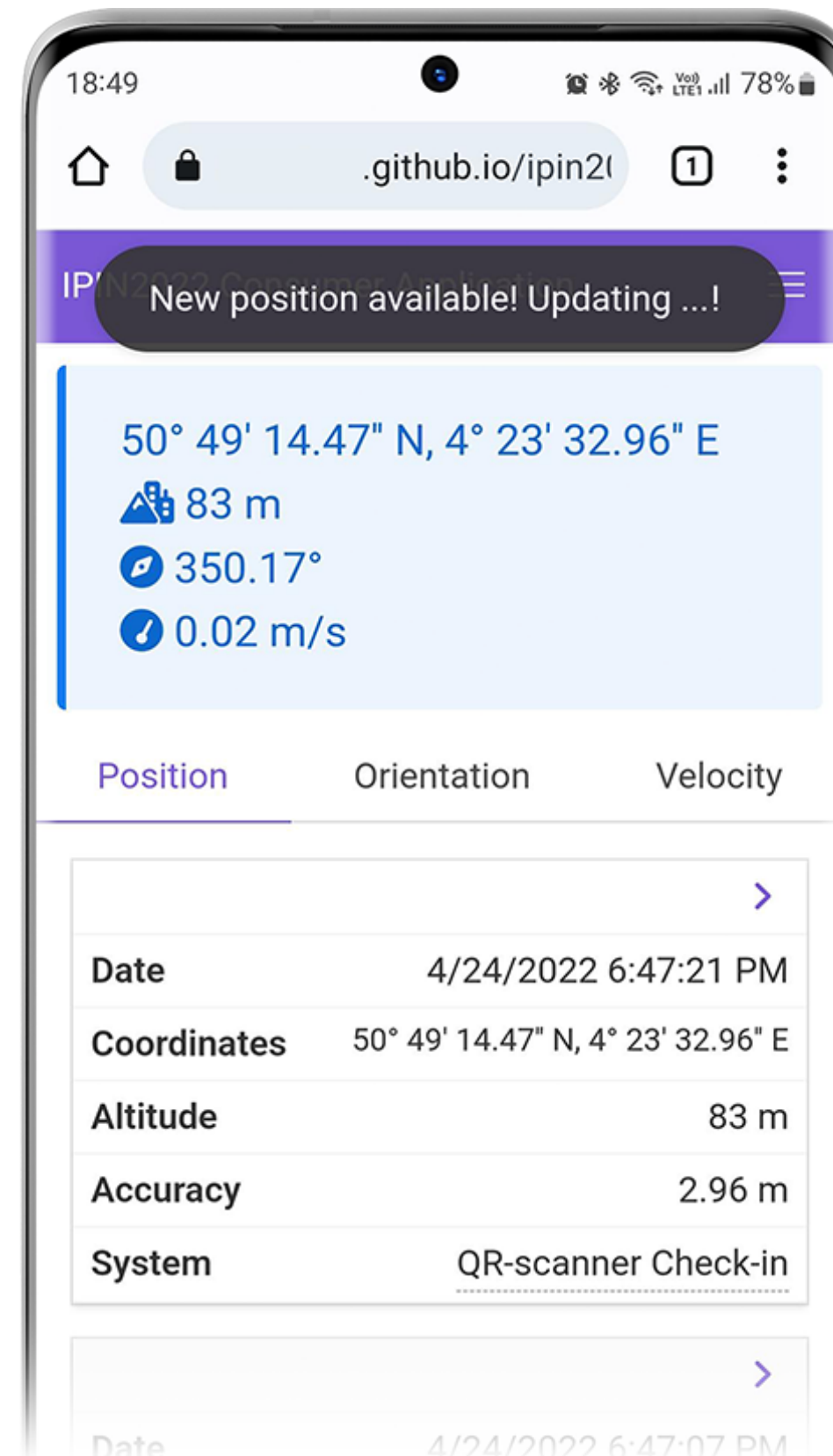
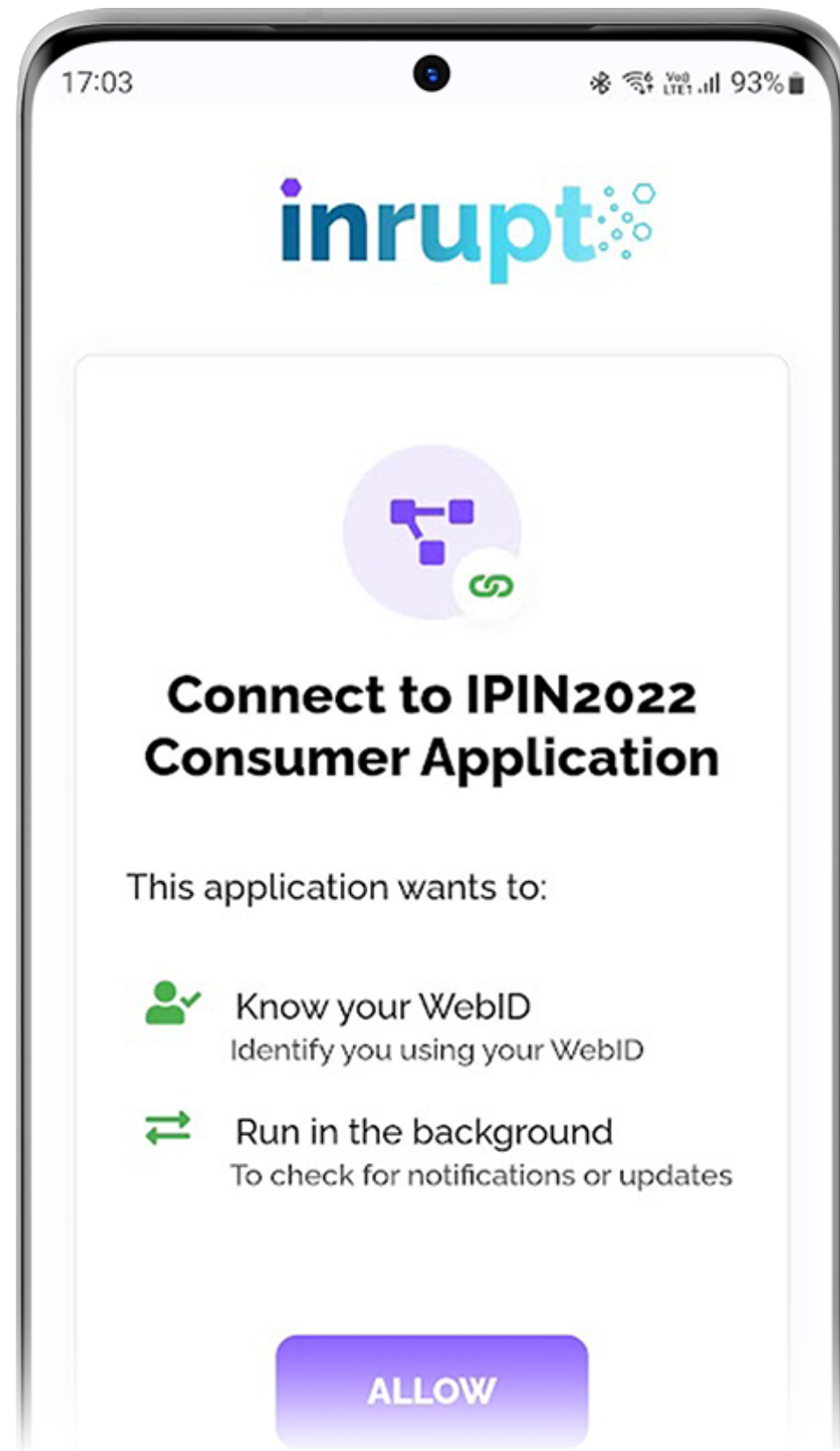
NOTIFICATION
.../velocity.ttl



Consumer Application (d)

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
```