100% Open Journey Planning
Open source, open APIs, open data

Tuukka Hastrup 2016-01-31
Public transport is important!

• More enjoyable cities, cheaper housing
• Youth in cities like Stockholm & Helsinki don't want to get a driver's license anymore

• Different customer profiles
  – Daily customers of public transport, commuting
  – Car owners → Mobility as a Service (MaaS)
  – Tourists
Case Helsinki and Finland

- Low population density
  → mass transportation is a challenge
- Helsinki region vs. national coverage

- Helsinki region public transport:
  - 1.3 million inhabitants
  - 1 million boardings per day

- Current HSL Journey Planner
  reittiopas.fi/en/
  - 0.1 million users per day
  - Customers very satisfied: 50% NPS
Digitransit: navigator for public transport

- Integrated real-time passenger services for multi-modal trips
- Open APIs first: This is not a single app, this is an application and a foundation for more: next generation, third parties, etc.
- Mobile first: Small screens set the design constraints
- HTML5 first: Can wrap HTML5 into native app later
- Regular customers first
  - A commuter shouldn't need to re-choose the destination every morning and evening.
OpenStreetMap: Detailed street network
HTML5 mobile app

- Open Data, Open API, Open Source
- Leaflet
- React, React-router, Fluxible
- Webpack, CoffeeScript
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</table>
Vehicle locations
MQTT

Example message payload (JSON):
{"tsi":1431417982,"spd":5,"lat":60.17052,"long":24.94359,"dl":52 ..}

MQTT topic structure:
/hfp/journey/type/id/line/direction/heads/next_stop/geo/level/geo

Example message topic:
/hfp/journey/bus/67bf46c0/1055/1/Koskela/1105/1020169/4/60;24/19/74/03

Example subscriptions:
/hfp/journey/# (all messages)
/hfp/journey/+/+1055/1/# (line 1055 outbound)
/hfp/journey/+/+/+/+/+60;24/19/# (geohash map rectangle)
GraphQL (1/2)

```graphql
{ stops { lat lon name } }

{ agency(id:"HSL") {
    routes {
        gtfsId type shortName longName
    }
}}

{ stopsByRadius(lat:60.218, lon:24.816, radius:500) {
    edges { node {
        distance
        stop { gtfsId }
    }
}}}

☀️ HSL
HRT
```
GraphQL (2/2)

```graphql
{
  stop(id:"HSL:2111230") {
    name
    stoptimesWithoutPatterns(numberOfDepartures:20) {
      scheduledDeparture
      departureDelay
      trip {
        tripHeadsign
        route { type shortName }
      }
    }
  }
}
```
Main code repositories

• digitransit: documentation
• digitransit-ui: application
• digitransit-deploy: Ansible, Docker, Compose
• navigator-server: publish-subscribe for realtime data

http://github.com/HSLdevcom
Digitransit project resources

Government funding: HSL and FTA

Development team:

• 7 consultants (6 developers, 1 graphical designer)
• 1 in-house developer, Finnish Transport Agency
• 1 in-house senior developer / architect, HSL

Schedule:

• Beta version this spring
• Production before end of this year
Conclusions

• If your city has GTFS open data, you should deploy this

• If not, you should ask the government to open the data

• For better public transport, contribute to Digitransit

Making it easier to hack public services.
Thank you!

Project site: digitransit.fi/en
Belgium demo: dev.hsl.fi/belgium

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