



# The tripscore Linked Data client: calculating specific summaries over large time series

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📅 22/10/2017

📍 DeSemWeb - ISWC17

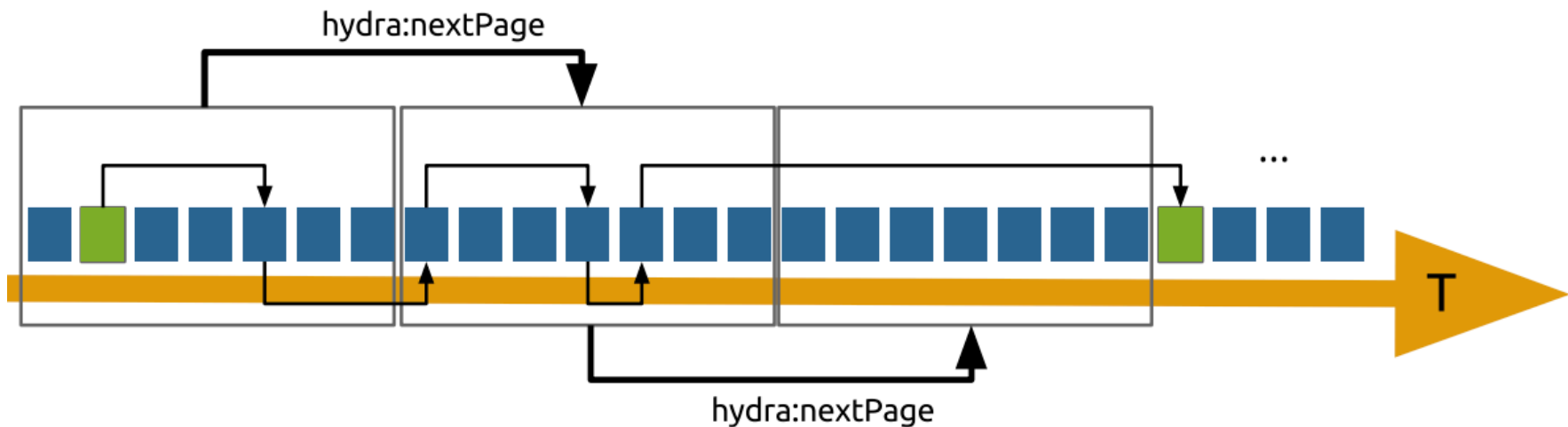
- **Public transport data is published in a way in which analytical processing is too expensive**
  - Previous work: Linked Connections (LC) framework
  - Cost-efficient publishing alternative to the de-facto GTFS standard
- Can Linked Data agents use LC to solve analytical queries over longer periods of time?
- New regulation by the EU Commission about discoverability and access to public transport data across Europe
- **Why do not we use Google Maps?**
  - Centralized solution
  - No Open data
  - No Linked data
  - No user preferences (or any other feature)

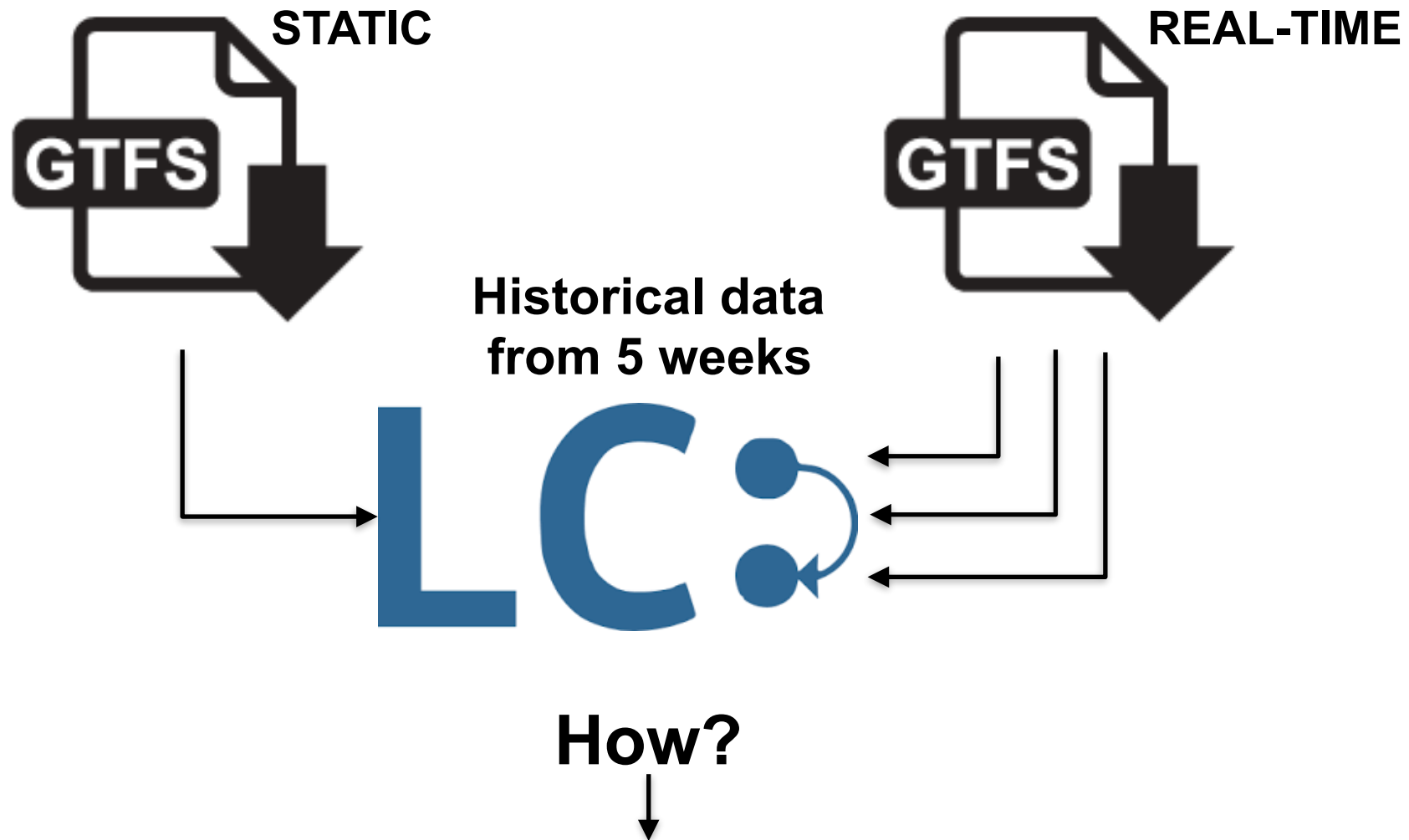
## A connection

departureStop  
departureTime

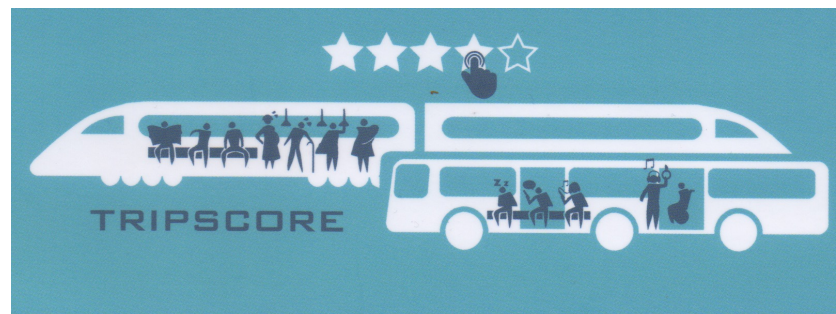
arrivalStop  
arrivalTime

...extra info...  
headsign  
trip  
route





Rojas, J. et al. (2017). **Providing Reliable Access to Real-Time and Historic Public Transport Data Using Linked Connections**. Proceedings of the 16th International Semantic Web Conference on Posters & Demos (ISWC17).

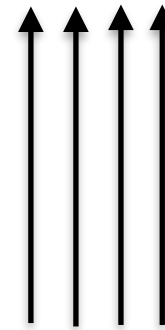
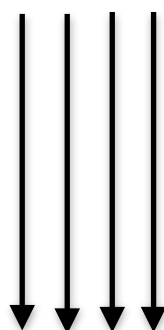


Calculate connections  
and results

`http://.../connections?  
departureTime=20XX-XX-  
XXT10:20:00.000Z`

HTTP Responses

**LC**  
SERVER

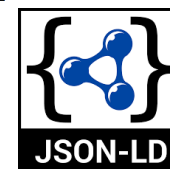


10 min of  
connections

```

JSON
{
  "@context": {
    "@id": "http://madrid.linkedconnections.org/crtm/connections?departureTime=2017-10-11T10:20:00.000Z",
    "@type": "hydra:PagedCollection",
    "hydra:next": "http://madrid.linkedconnections.org/crtm/connections?departureTime=2017-10-11T10:30:00.000Z",
    "hydra:previous": "http://madrid.linkedconnections.org/crtm/connections?departureTime=2017-10-11T10:10:00.000Z"
  },
  "hydra:search": {
    "@graph": {
      0: {
        "@id": "#1507717200000par_8_17052100_8_545__8_545__1_12%3A20%3A00_1_-1_8_545__",
        "@type": "Connection",
        "departureStop": "http://madrid.linkedconnections.org/crtm/stops/par_8_17052",
        "arrivalStop": "http://madrid.linkedconnections.org/crtm/stops/par_8_881",
        "departureTime": "2017-10-11T10:20:00.000Z",
        "arrivalTime": "2017-10-11T10:20:23.000Z",
        "gtfs:trip": "http://madrid.linkedconnections.org/crtm/trips/100_8_545__8_545__1_12%3A20%3A00_1_-1_8_545__",
        "gtfs:route": "http://madrid.linkedconnections.org/crtm/routes/8_545__"
      }
    }
  }
}

```



Move the server effort to the client



Server availability

- TripScore front-end
- TripScore back-end
- All code is available at:



<https://github.com/osoc17>

- Demo available at:

<http://tripscore.eu/>

- Paper available at:

<https://cef-oasis.github.io/tripscore>

tripscore English

## Calculate your tripscore

From

To

Time 10:38 NOW Day Friday NOW

**CALCULATE TRIPSCORE**

Recent

- Brussel-Centraal/Bruxelles-Central - Schaarbeek/Schaerbeek 17:43 Monday
- Brussel-Centraal/Bruxelles-Central - Schaarbeek/Schaerbeek 12:44 Friday
- Brussel-Noord/Bruxelles-Nord - Brussel-Centraal/Bruxelles-Central 12:42 Friday
- Düsseldorf Hbf - Brussel-Centraal/Bruxelles-Central 12:41 Monday

tripscore English

Connections processed: 5628 HTTP Requests: 130 HTTP Responses: 130

< Go back

### Brussel-Centraal/Bruxelles-Central - Schaarbeek/Schaerbeek

16:38 Wednesday

15:41 - 15:58 ★★★★★

Changes  
Brussel-Noord/Bruxelles-Nord

Average travel time 00:17

Hops needed 1

Delay 0 min

Average time for a platform change 00:10

Delay consistency 100%

Chance of missing connections due to delays 0%

Based on 5 week(s)

tripscore English

Connections processed: 582 HTTP Requests: 130 HTTP Responses: 110

< Go back

### Brussel-Centraal/Bruxelles-Central - Schaarbeek/Schaerbeek

16:38 Wednesday

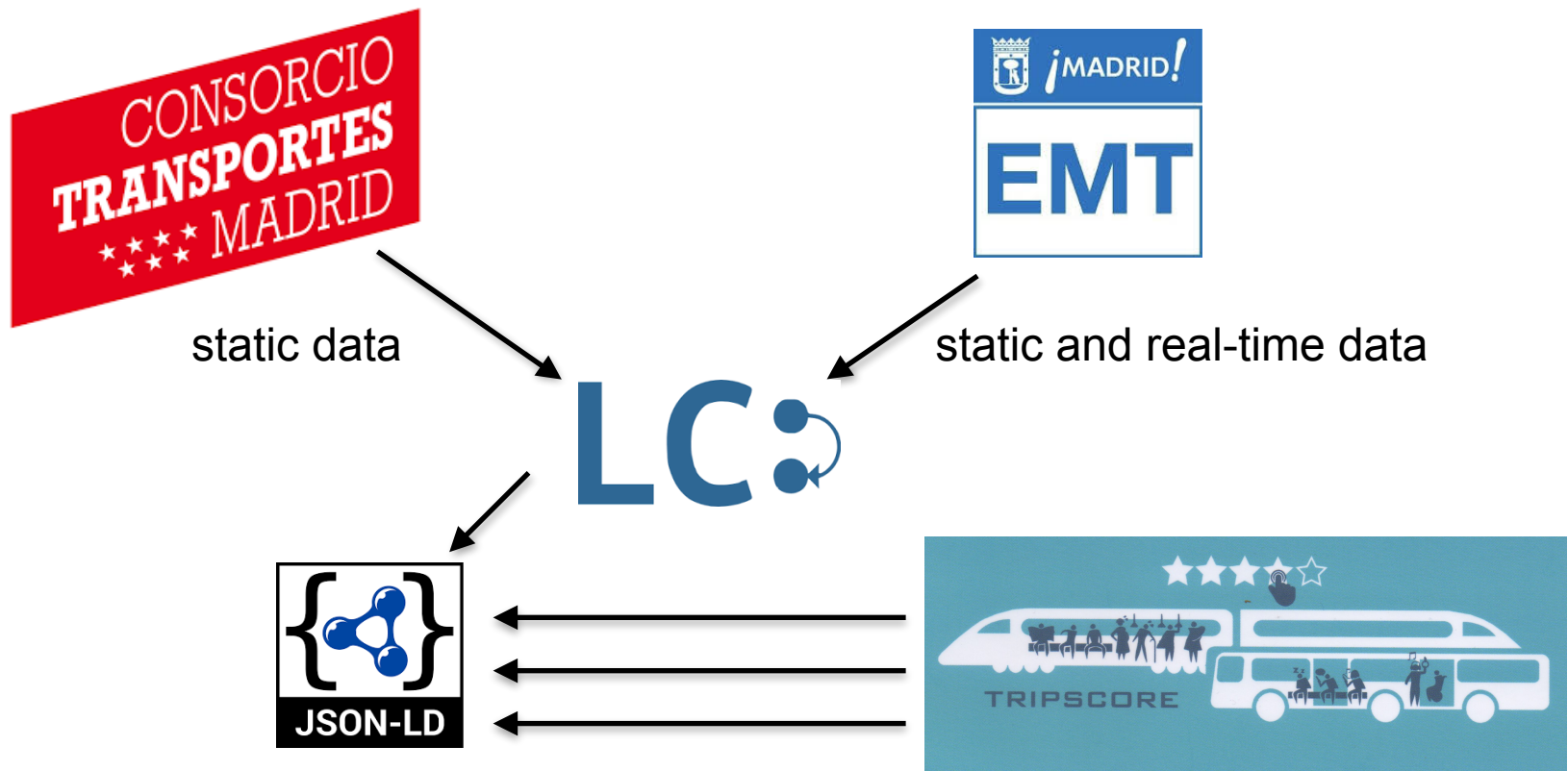
15:41 - 15:58	★★★★★
15:43 - 15:58	★★★★★
15:44 - 15:53	★★★★★
15:46 - 16:06	★★★★★
15:49 - 15:58	★★★★★
15:52 - 16:06	★★★★★
15:55 - 16:06	★★★★★

Learn more about the project on [OASIS.team](#) or [GitHub](#)

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Connections processed: 5628 HTTP Requests: 130 HTTP Responses: 130

- New approaches (like GTFS2LC) to deal with heterogeneity in the transport domain
- Improve discoverability of the datasets: TransportDCAT-AP by OASIS team
- Transform the open transport data from Madrid (tram, train, buses and metro)





- Do we have to transform all transport data to LC?
- Could we propose transformations “on the fly”?
- How these “on the fly” transformations would influence the performance?
- Are summaries of the data the way to improve the performance?
- How does this solution can help to solve the heterogeneity problem of the domain? Will the companies publish their data in this way?
- How can we demonstrate the relevance of our metadata profile for starting to include it in the (transport) open data portals?



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