



# mec

## The journey to a Belgian intermodal route planner

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Pieter Colpaert

@pietercolpaert

<https://pietercolpaert.be>

# iRail: active as a Belgian non-profit since 2010

## NMBS moet dienstregeling als open data beschikbaar stellen

22/04/2015 om 20:07 door hrt | Bron: BELGA



**Bart Rosseau Et Pieter Colpaert**  
@BartRosseau et @PieterColpaert, Open Data aficionados chez Open Knowledge Belgium

OPINION

03/02/15 à 13:27 - Mise à jour à 13:44

### La Belgique laisse-t-elle passer ses opportunités 'open data'?

Les Open Data ne sont pas des sources de données *sensibles à la non-confidentialité*, qui peuvent être utilisées par n'importe qui ou n'importe quoi, puisque des machines peuvent aussi découvrir et utiliser de manière autonome des données sur le web, afin de créer des applications, étayer des rapports et améliorer des services. Au niveau européen, les open data sont considérées comme une clé importante pour l'économie numérique et pour les développements du genre Smart City. C'est une étape vers une simplification de l'administration et de la collaboration entre les pouvoirs publics, et cela peut alléger l'énorme pression sur les budgets IT du gouvernement en établissant une meilleure distinction entre les données, les outils et les services.

SHARE  

Andere ontwikkelaars willen graag zelf slimme treinapps bouwen, maar die ontwikkeling houdt de NMBS vandaag tegen



# A route planning API

E.g., <http://api.irail.be/stations?format=xml&lang=en>

```
▼<stations version="1.1" timestamp="1413703528">
  <station id="BE.NMBS.008015345" locationX="6.105275" locationY="50.770832"
  URI="http://irail.be/stations/NMBS/008015345" standardname="Aachen Hbf (d)">Aachen Hbf (d)</station>
  <station id="BE.NMBS.008895000" locationX="4.039653" locationY="50.942813"
  URI="http://irail.be/stations/NMBS/008895000" standardname="Aalst">Aalst</station>
  <station id="BE.NMBS.008895125" locationX="4.024407" locationY="50.948377"
  URI="http://irail.be/stations/NMBS/008895125" standardname="Aalst-Kerrebroek">Aalst-Kerrebroek</station>
  <station id="BE.NMBS.008891140" locationX="3.447848" locationY="51.092295"
  URI="http://irail.be/stations/NMBS/008891140" standardname="Aalter">Aalter</station>
  <station id="BE.NMBS.008833209" locationX="4.824043" locationY="50.984406"
  URI="http://irail.be/stations/NMBS/008833209" standardname="Aarschot">Aarschot</station>
  <station id="BE.NMBS.008892288" locationX="3.418363" locationY="50.98446"
  URI="http://irail.be/stations/NMBS/008892288" standardname="Aarsele">Aarsele</station>
  <station id="BE.NMBS.008886546" locationX="3.847086" locationY="50.733095"
  URI="http://irail.be/stations/NMBS/008886546" standardname="Acren">Acren</station>
  <station id="BE.NMBS.008874583" locationX="4.584552" locationY="50.429529"
  URI="http://irail.be/stations/NMBS/008874583" standardname="Aiseau">Aiseau</station>
  <station id="BE.NMBS.008831039" locationX="5.292866" locationY="50.886837"
  URI="http://irail.be/stations/NMBS/008831039" standardname="Alken">Alken</station>
  <station id="BE.NMBS.008843331" locationX="5.32049" locationY="50.546011"
  URI="http://irail.be/stations/NMBS/008843331" standardname="Amay">Amay</station>
```

And other calls to:

plan routes, get train information, list arrivals and departures at a specific station



# Powering route planning apps or integrations

**Smartphone (Left):** Maandag 29 septemb  
Railer  
Brussel-Centraal naar L  
09:55 Leuven L  
10:01 Eupen IC  
10:12 Genk IC

Time	Destination	Train Type	Class
21:59	Brussels South		
21:41 +18'	Schaerbeek	IC	5
21:47	Brussels North	IR	14
21:48	Brussels North	L	20
21:50	Brussels Airport	IR	15
21:56	Ghent Sint Pieters		
21:57	Saint Ghislain		
21:58	Welkenraedt		
21:59	Antwerp Central		
22:03	Namen		
22:03	Aalst		
22:05 +14'	Ostend		
22:06	Leuven		
22:09	Brussels North		
22:11	Nijvel		
22:15	Binche		
22:15	PARIS		
22:21	Mouscron		
22:23	Brussels Airport		
22:25	Antwerp Central		
22:26	Bruges		
22:26	Braine Le Comte		
22:30	Charleroi South		
22:30	Brussels Airport		

**Tablet (Center):**  
Villol Station Jambline De Meux 0/25  
Villol Station Archimede 11/25  
Michel-Ange STIB  
Luxembourg 08:04  
Schuman 08:06  
Cim. Bruxelles 08:06  
Kraainem 08:06  
Nato 08:06  
Bru.-Schuman / Brux.-Schuman  
Aalst 07:48 +15'  
Louvain-La-Neuve-Univ. 07:59 +10'  
Schaerbeek / Schaerbeek 08:01 +5'  
Brussels Airport DEPARTURES  
Hanover - Germany 09:35  
Barcelona - Spain 09:55 +7'  
Stockholm - Sweden 10:00  
FlatTurtle  
120onCortenbergh offers open Wi-Fi: "FlatTurtle.com"

**Smartphone (Top Right):**  
/route gent -> harelbeke 15:40 ✓  
iRail Bot  
Je trein vertrekt in Ghent-Sint-Pieters (Perron 7) om 16:10 en komt 28 minuten later aan in Harelbeke (Perron 2) om 16:38 15:40

**Smartwatch (Right):**  
15:24  
Rotterdam Centraal  
8  
7:39  
+1  
16:02  
Den Haag Centraal



**Now serving more than  
1 million requests/day**

More information at <https://hello.irail.be>

# Yet... the iRail API

- Only works with SNCB data (unimodal)
- Only works from station to station (not door to door)
- Serves a black-box algorithm
- Doesn't link with e.g., Blue Bikes, Villo, parking availability, elevators...

... So we should try to access and offer more data



**Schedules**

Contract

API keys

Contract  
(about to change)

Open License

**Real-time**

Contract

API keys

API keys  
beta-version

no

**Historic**

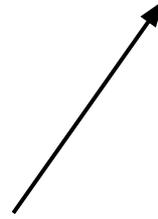
no

no

no

no

More accessible, more reusable,  
More advances route planning ...

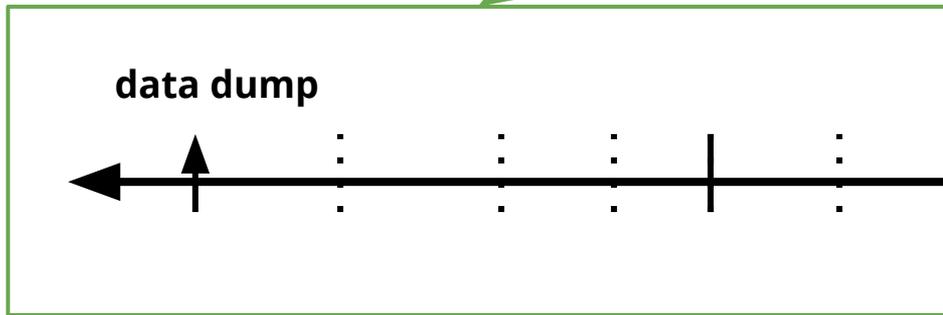


Can we find a *better* way to publish  
public transport data?

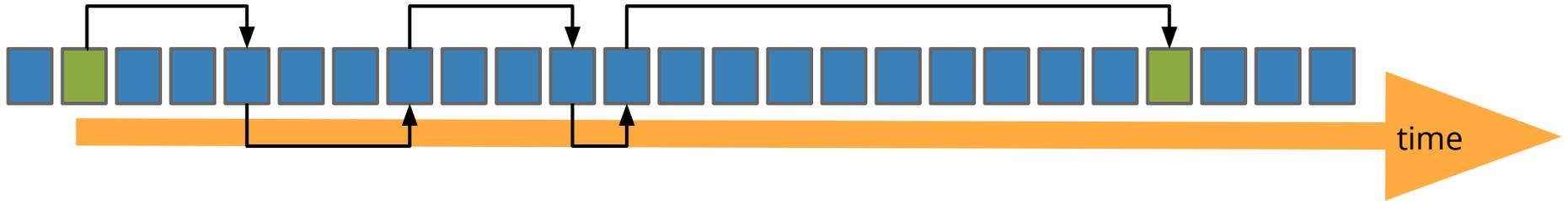
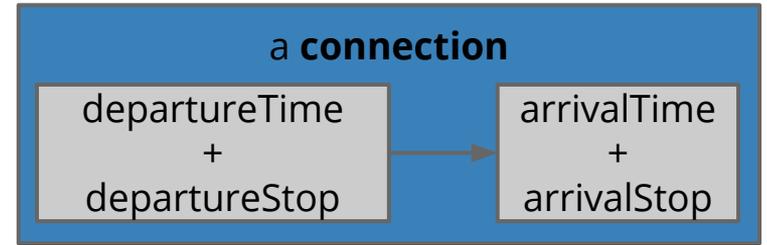


# Trade-off in Web publishing we're constantly making

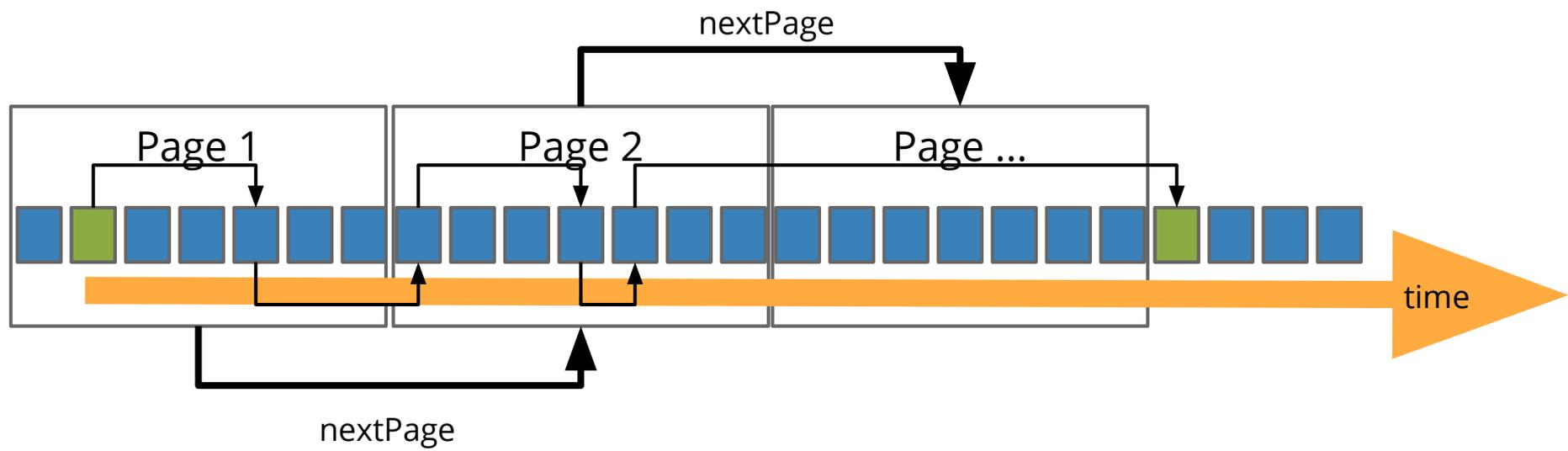
Cacheability and simplicity to  
power cost-efficiency

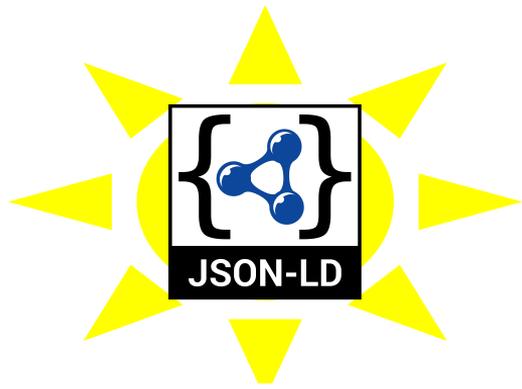


# The algorithm



= Going through a list of ordered departures





# JSON with Linked Data

\$ curl <https://graph.irail.be/sncb/connections>

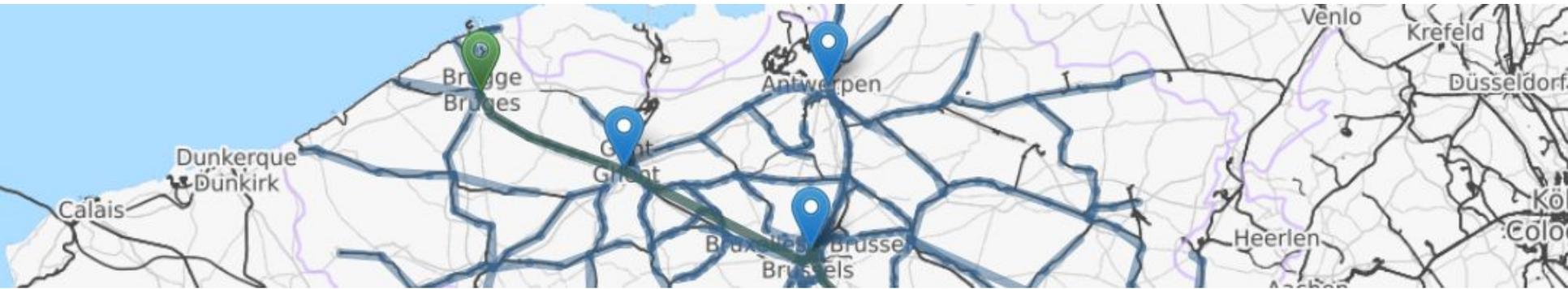
```
"hydra:variable": "departureTime",
"hydra:required": true,
"hydra:property": "lc:departureTimeQuery"
},
"@graph": [
  {
    "@id": "http://irail.be/connections/8811221/20180306/S93288",
    "@type": "Connection",
    "departureStop": "http://irail.be/stations/NMBS/008811221",
    "arrivalStop": "http://irail.be/stations/NMBS/008811213",
    "departureTime": "2018-03-06T16:10:00.000Z",
    "arrivalTime": "2018-03-06T16:11:00.000Z",
    "direction": "Braine-L Alleud",
    "gtfs:trip": "http://irail.be/vehicle/S93288/20180306",
    "gtfs:route": "http://irail.be/vehicle/S93288",
    "gtfs:pickupType": "gtfs:Regular",
    "gtfs:dropOffType": "gtfs:Regular",
    "departureDelay": 300,
    "arrivalDelay": 300
  },

```



Try it yourself at

<http://LinkedConnections.org>



# Intermodality

## **With other public transport offerings**

Including other Linked Connections sources

## **Door to door navigation and calculating interstop distances**

Link with a road network

Link with other datasets such as parking lots, bike slots, elevators, ...

# Route planning needs access to plenty of datasets

How can we automate data adoption by third parties?

# Pilot real-time availability of urban parking sites as Linked Open Data

<https://smart.flanders.be/piloten/parkeren.html>

 Kortrijk

 Gent

 Leuven

 Sint-Niklaas

parkings

belgium

netherlands

 Kortrijk

PARKING	VACANT	TREND
p-houtmarkt	168	
p-budabrug	230	
p-veemarkt	575	
p-schouburg	395	
p-broeltorens	320	
p-haven	250	
p-p+r expo	448	
p-station	214	

# Why was this pilot important?

Not this simple visualization, but:

- Data reuse is automated
- 100% compatible with DATEXII
- Scalability and minimal publishing cost

Reuse this data yourself via:

<https://smart.flanders.be/ontwikkelaars/>

```
<parkingRecordReference targetClass="ParkingRecord" version="1.0">
</parkingRecordReference>
<parkingStatusOriginTime>2017-11-11T10:04:03+01:00</parkingStatusOriginTime>
</parkingStatusOriginTime>
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</parkingOccupancy>
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```

# Summarizing

1. iRail API: more than 1 million requests per day for SNCB only  
⇒ great playground
2. Route planning ecosystem needs plenty of datasets:  
⇒ idea of Linked Data and Linked Connections
3. Let's reuse European standards such as DATEXII, NeTEx, SIRI...

Thanks!

<https://pietercolpaert.be/>