



navitia.io



# KDE Itinerary

A privacy by design travel assistant

FOSDEM 2020

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# Digital Travel Assistants

- TripIt, Google, Apple, etc.
  - Extract booking information from email
  - Show unified itinerary
  - Calendar integration
  - Monitor for delays/changes
- Price: “free” (ie.: your privacy)



# Privacy Issues

- Directly leaked data
  - Name, birthday, CC number, passport id, etc.
- Indirectly leaked data
  - Correlating data from many travelers uncovers relations between people
  - Your interests, who you work for, where your family lives, people you know, etc.

Can we build this ourselves?



# What would we need?

- This is more about data than code
- Personal data
  - Booking emails/documents/websites
- Static data
  - Where is airport “BRU”?
- Dynamic data
  - Is THA 9484 on time?



# Booking Data

- De-facto standard data model: schema.org
- Email
  - Structured data (JSON-LD, Microdata)
  - Unstructured data (text, HTML, PDF)
- Apple Wallet passes
- Barcodes (IATA BCBP, UIC 918.3, etc)



- Freely available, comprehensive collections
  - Wikidata (almost everything imaginable)
  - OpenStreetMap (timezone maps)
  - Unicode CLDR (localized country/region information)
- Work needed
  - Vendor-specific train station identifier
  - Terminal maps, coach/platform maps, seat maps



- For trains/buses: GTFS/GTFS-rt
  - Navitia
  - OpenTripPlanner/Digitransit
- Apple Wallet (leaks user identification)
- Vendor-specific REST APIs
  - varying terms and conditions
  - API keys required

So much for the theory...



# Data Extraction



- KItinerary library and CLI tool
  - schema.org data model
  - Structured data extraction
  - Unstructured data extraction, generically and with vendor-specific scripts
  - Augmentation with Wikidata knowledge
  - Consumes HTML, MIME, PDF, iCal, text, PkPass



- KPublicTransport library
  - Navitia/GTFS data model
  - Location, departure and journey queries
  - Backends for Navitia, OTP, Hafas, EFA
  - Result aggregation from multiple backends
  - Open Data attribution handling
  - Train/platform layouts



# KDE Itinerary App

- Trip timeline and boarding pass access

≡ My Itinerary      Today

📅 Friday, 31 Jan 2020

▼ Trip: Brussels (January/February 2020)

Date: 31 Jan 2020 13:49:00 (3 days)  
6.3°C / 12.7°C

ICE 858      13:49:00

Departure from Berlin Hbf (tief) on platform 4  
GERMANY

Arrival at Köln Hbf on platform 6 A-C  
Arrival time: 31 Jan 2020 18:09:00  
GERMANY

Temperature: 9.3°C  
Precipitation: 0 mm

THA 9484      18:43:00

Departure from KOELN HBF on platform 7  
GERMANY

Arrival at BRUXELLES MIDI on platform 6  
Arrival time: 31 Jan 2020 20:35:00

< > My Itinerary > Flight > Boarding Pass

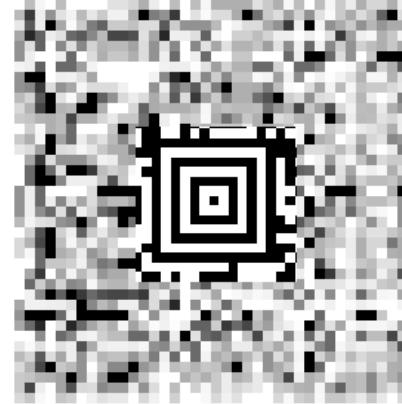
brussels airlines      Seat Gate 13C A

BRUSSELS      BERLIN

BRU      TXL

Flight	Date	Boarding	Class
2591	22/04/2018	20:20	CHECK

Passenger      Status  
KRAUSE/VOLKER      LH





- Real-time data, alternative connections, stats

Departure

Time: 13.01.19 14:52 +0  
Station: Düsseldorf Hbf

Platform: 17 (was: 18)

---

Arrival

Arrival time: 13.01.19 19:27 +27  
Station: Berlin Hbf

Platform: 11 A - D

### Alternative Connections

12:05 2:51  
0 changes

12:30 3:21  
12:30 +0 S+U Berlin Hauptbahnhof (tief) 2  
ICE 509 (3:21)  
15:51 +0 Nürnberg, Hauptbahnhof 9  
*Komfort Check-in möglich <http://bahn.de/komfortcheckin>*  
*Bicycles conveyed - subject to reservation*  
*Number of bicycles conveyed limited*  
*Bordrestaurant*  
*vehicle-mounted accessaid*  
*VBB-Verbundfahrausweise ganz oder teilweise ungültig*  
*Bicycle conveyance*

Save

13:37 3:15  
0 changes

Data providers: [Berlin](#), [Germany](#), [Nuremberg](#), [openstreetmap](#), © [navitia.io](#)

2019

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Total

Trips ↗ 51  
Distance ↗ 15,842 km  
Hotel nights ↗ 23  
CO<sub>2</sub> ↗ 2,955 kg

---

Flights

Flights ↓ 14  
Distance ↗ 10,093 km  
CO<sub>2</sub> ↗ 2,874 kg

---

Trains

Trips ↗ 35  
Distance ↗ 5,736 km  
CO<sub>2</sub> ↗ 80 kg

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Bus

Trips > 2  
Distance ↗ 12 km  
CO<sub>2</sub> ↗ 0.82 kg

---

Car

Trips > 0  
Distance > 0 km  
CO<sub>2</sub> > 0 kg



- Power plug incompatibility warnings :)

☰ | My Itinerary      ☰ Today :

📅 Sonntag, 10.09.17

ⓘ Entering Switzerland

Some incompatible power sockets: Type J  
Some incompatible power plugs: Schuko

✈ LX 963 TXL → ZRH      06:15

Departure from Berlin Tegel: 06:45

☰ | My Itinerary      ☰ Today :

📅 Donnerstag, 15.06.17

ⓘ Entering United Kingdom

People are driving on the wrong side.  
No compatible power sockets: Type G

✈ 4U 8462 TXL → LHR      12:55

Departure from Berlin-Tegel: 12:55



- Automatic local transport navigation

The screenshot displays two separate transport routes. The top route is for a train trip from KOELN HBF to BRUXELLES MIDI. The bottom route is for a subway trip from BRUXELLES MIDI to NH Brussels Stéphanie.

**Top Route (Train):**

- Departure from KOELN HBF on platform 7, GERMANY at 6:43 PM.
- Arrival at BRUXELLES MIDI on platform 6, BELGIUM at 8:35 PM on Friday, 1/31/20.

**Bottom Route (Subway):**

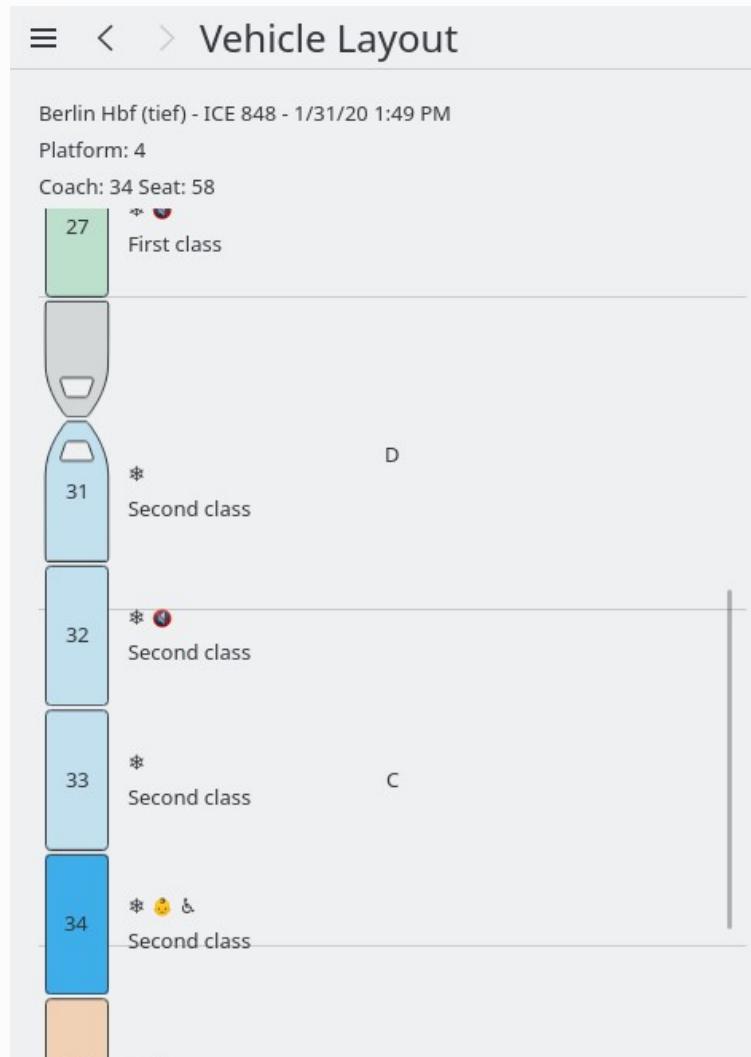
- Departure from BRUXELLES MIDI to NH Brussels Stéphanie at 8:47 PM.
- Walk 288m (0:04) from Couloir secondaire - Secundaire gang (Saint-Gilles - Sint-Gillis).
- Arrival at GARE DU MIDI (Saint-Gilles - Sint-Gillis) at 8:51 PM.
- Metro 2 (0:03) from GARE DU MIDI (Saint-Gilles - Sint-Gillis) to LOUISE (Saint-Gilles - Sint-Gillis) at 8:51 PM.
- Walk 243m (0:04) from LOUISE (Saint-Gilles - Sint-Gillis) to 32 Rue Jean Stas - Jean Stasstraat (Saint-Gilles - Sint-Gillis) at 8:55 PM.
- Arrival at 32 Rue Jean Stas - Jean Stasstraat (Saint-Gilles - Sint-Gillis) at 8:58 PM.

A "Select..." button is located at the bottom of the bottom route's list.



# KDE Itinerary App

- Train layout display





# Email Integration: KMail



Bestätigung Ihrer Thalys-Reservierung : KOELN HBF -> BRUXELLES  
MIDI 31/01/2020 18:43



From: [Thalys Ticket <thalysticket@mail.thalysticketless.com>](#)  
To: [mail@villigerklausen.ch](mailto:mail@villigerklausen.ch)  
Date: 05/01/2020 12:27  
Attachments: [barcode.gif](#)

KOELN HBF

31/01/2020 18:43

Class: 2 Coach: 28 Seat: 97



BRUXELLES MIDI

THA 9484

31/01/2020 20:35

Show Calendar

Add to Calendar

Add to KDE Itinerary



# Email Integration: Nextcloud Hub



Screenshot of the Nextcloud Hub interface showing email integration.

**Left Sidebar:**

- + New message
- All inboxes
- christine.schott.nc@gmail.com
- Inbox
- Favorites
- Show all folders
- Settings

**Message Preview:**

**Buchungsbestätigung (Auftrag BPM83K)**  
Jos Poortvliet to christine.schott.nc@gmail.com

**Train Tickets:**

From	To	Train	Date	Time	Arrival
Stuttgart Hbf	Nürnberg Hbf	IC 2069	06/27/2019	12:00 AM	4:18 PM
Nürnberg Hbf	Berlin Hbf (tief)	ICE 1002	06/28/2019	5:01 PM	12:00 AM

**Actions:**

- + Import into Family
- + Import into Personal (selected)
- + Import into Work

**Email Content:**

Hi Christine,  
Here's also a train ticket example - I went to Stuttgart, and back to Nuremberg.

**DB Logo:**

**Buchungsbestätigung (Auftrag BPM83K)**

Sehr geehrter Herr Poortvliet,

vielen Dank für Ihren Fahrkartkauf.

Ihre Buchungsdaten:

Auftragsnummer: BPM83K  
Kundennummer: 17440465

• Falls Sie die App "DB Navigator" auf Ihrem Android Smartphone oder iPhone installiert haben, können Sie Ihr Handy-Ticket über folgenden Link herunterladen:  
→ Auftrag laden für iOS DB Navigator  
→ Auftrag laden für Android DB Navigator



# Email Integration: Thunderbird



Bordkarten für Ihren Eurowings Flug der Buchung [REDACTED] - Mozilla Thunderbird

Abrufen | Verfassen | Chat | Adressbuch | Schlagwörter | Antworten | Allen antworten | Weiterleiten | Archivieren | Junk | Löschen | Mehr

Von noreply@eurowings.com ☆

Betreff **Bordkarten für Ihren Eurowings Flug der Buchung** [REDACTED] 24.06.19, 13:34

An [REDACTED] ☆

STR	✈	VLC
Mi., 19. Juni 2019, 09:40 MESZ	EW 2530	Mi., 19. Juni 2019, 11:50 MESZ
VLC	✈	STR
Mi., 26. Juni 2019, 12:30 MESZ	EW 2531	Mi., 26. Juni 2019, 14:50 MESZ

Add to KDE Itinerary Download

Eurowings

## Ihre Bordkarten

Im Anhang dieser E-Mail finden Sie Ihre Bordkarten. Bitte drucken Sie Ihre Web Bordkarte aus oder speichern Sie die mobilen Dokumente auf Ihrem Mobilfunkgerät.

Detailinformationen:

▶ 0 4 Anhänge 108 KB Alle speichern



# Browser Integration

Akademy 2019 - Milan, Italy - x +

akademy.kde.org/2019

 Milan, 7th-13th September

About Register Event Details Travel & Accommodation Wiki Sponsor

Akademy 2019 - Milan, Italy - 7th-13th September



Akademy 2019 will be held at the [University of Milano-Bicocca](#) in Milan, Italy, from Saturday the 7th to Friday the 13th of September.

The conference is expected to draw hundreds of attendees from the global KDE community to discuss and plan the future

Plasma Browser Integration



**Akademy 2019**

For most of the year, KDE—one of the largest free and open software communities in the world — works on-line by email, IRC, forums and mailing lists. Akademy provides all KDE contributors the opportunity to meet in...

Sat, Sep 7, 2019, 09:30 AM to Sat, Jul 13, 2019, 04:30 PM

Piazza dell'Ateneo Nuovo, 1, 20126, Milan (IT)

Add to Calendar

Add to Itinerary

**ubuntu**  
Delivered by Canonical

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**AKDAR**



# Get Involved!

- Get KDE Itinerary:
  - [https://community.kde.org/KDE\\_PIM/KDE\\_Itinerary](https://community.kde.org/KDE_PIM/KDE_Itinerary)
- Forget those privacy concerns for a minute, we need test data ;-)
  - Flights, trains, rental cars, hotels, buses, event tickets, restaurants, etc.

# Thank you!

Visit us:

KDE - building K (obviously ;))

Nextcloud - building H



# References

- Project overview: <https://phabricator.kde.org/project/profile/280/>
- Wiki: [https://community.kde.org/KDE\\_PIM/KDE\\_Itinerary](https://community.kde.org/KDE_PIM/KDE_Itinerary)
- Source code
  - kpkpass: <https://phabricator.kde.org/source/kpkpass/>
  - kitinerary: <https://phabricator.kde.org/source/kitinerary/>
  - kpublictransport: <https://phabricator.kde.org/source/kpublictransport/>
  - KDE Itinerary: <https://invent.kde.org/kde/itinerary>
  - KMail plug-in: <https://phabricator.kde.org/source/kdepim-addons/>
  - Browser Integration: <https://blog.broulik.de/2019/11/taking-itinerary-to-the-next-level/>
  - Nextcloud Integration: <https://github.com/nextcloud/mail/compare/feature/kitinerary-integration>
- Blog: <https://volkerkrause.eu>
- Provider support: [https://community.kde.org/KDE\\_PIM/KItinerary/Supported\\_Providers](https://community.kde.org/KDE_PIM/KItinerary/Supported_Providers)
- Nightly APKs: [https://binary-factory.kde.org/job/Itinerary\\_android/](https://binary-factory.kde.org/job/Itinerary_android/)