Interreg
EUROPEAN UNION
Danube Transnational Programme
OJP4Danube

Project co-funded by the European Union

OJP4Danube Project

Crossborder multimodal distributed journey planning

Distributed Journey Planning

OpenAPI Standard

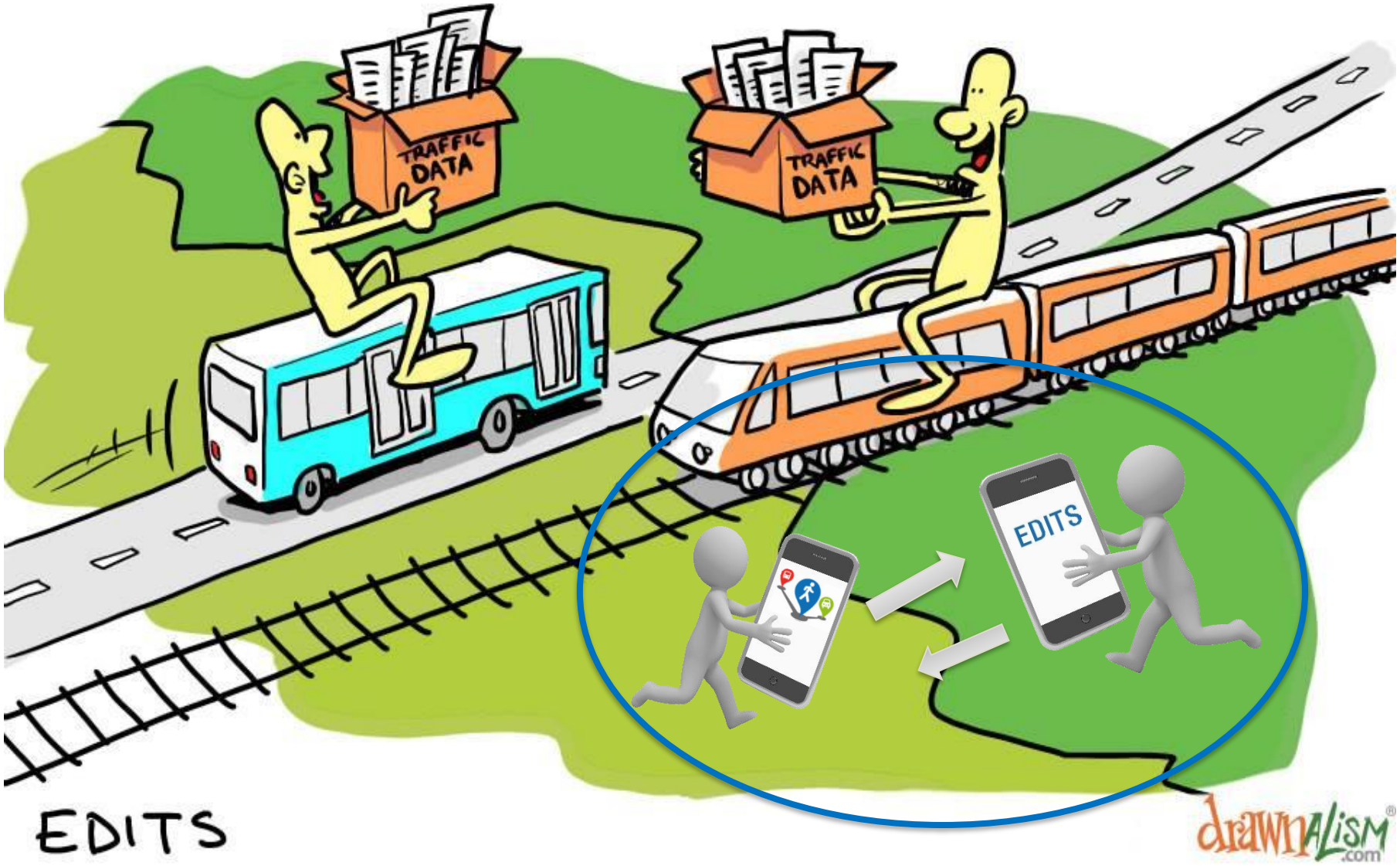
OJP4Danube Architecture

Distributed routing algorithm

Pilot App

Technical Challenges

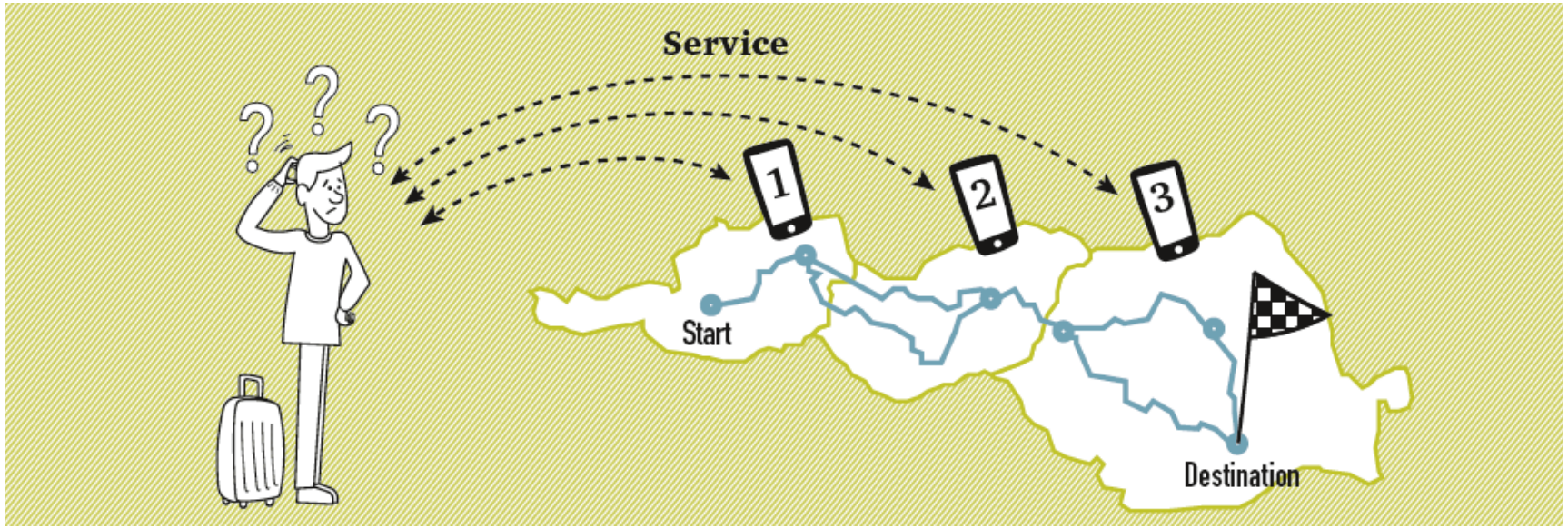
Data or Services?



Data or Services?

Distributed Journey Planning

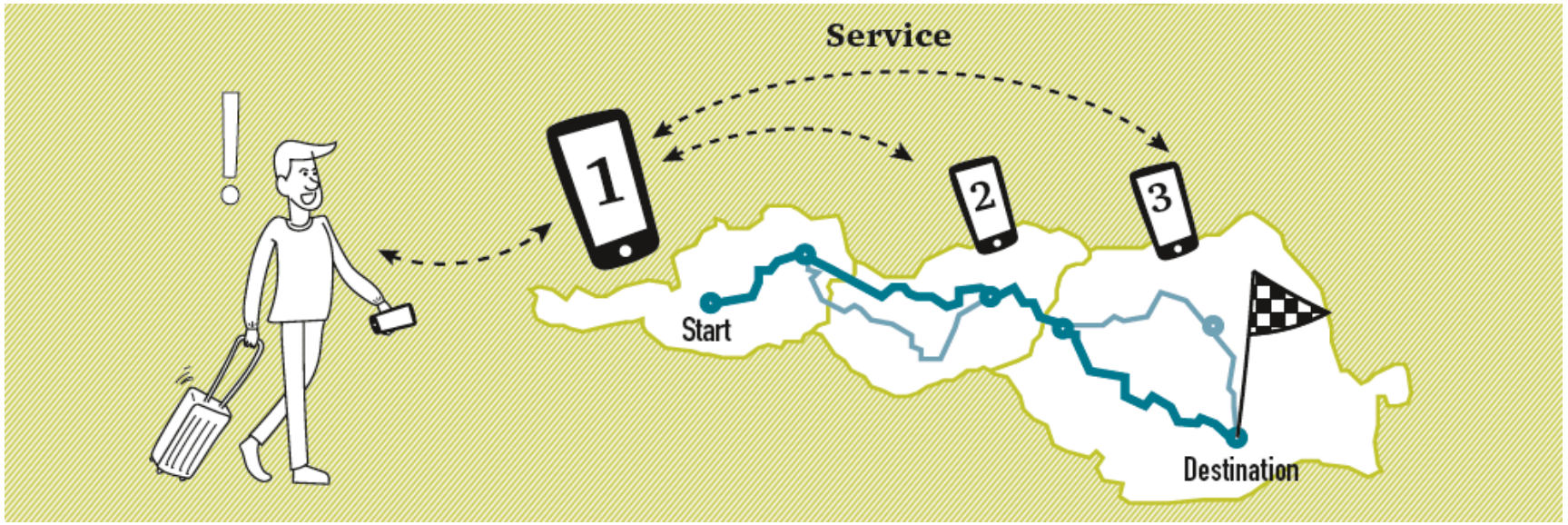
Benefit for the user



- for multimodal journeys crossing regional/national borders one integrated service is lacking
- lacking cross-border and cross-operator information

Distributed Journey Planning

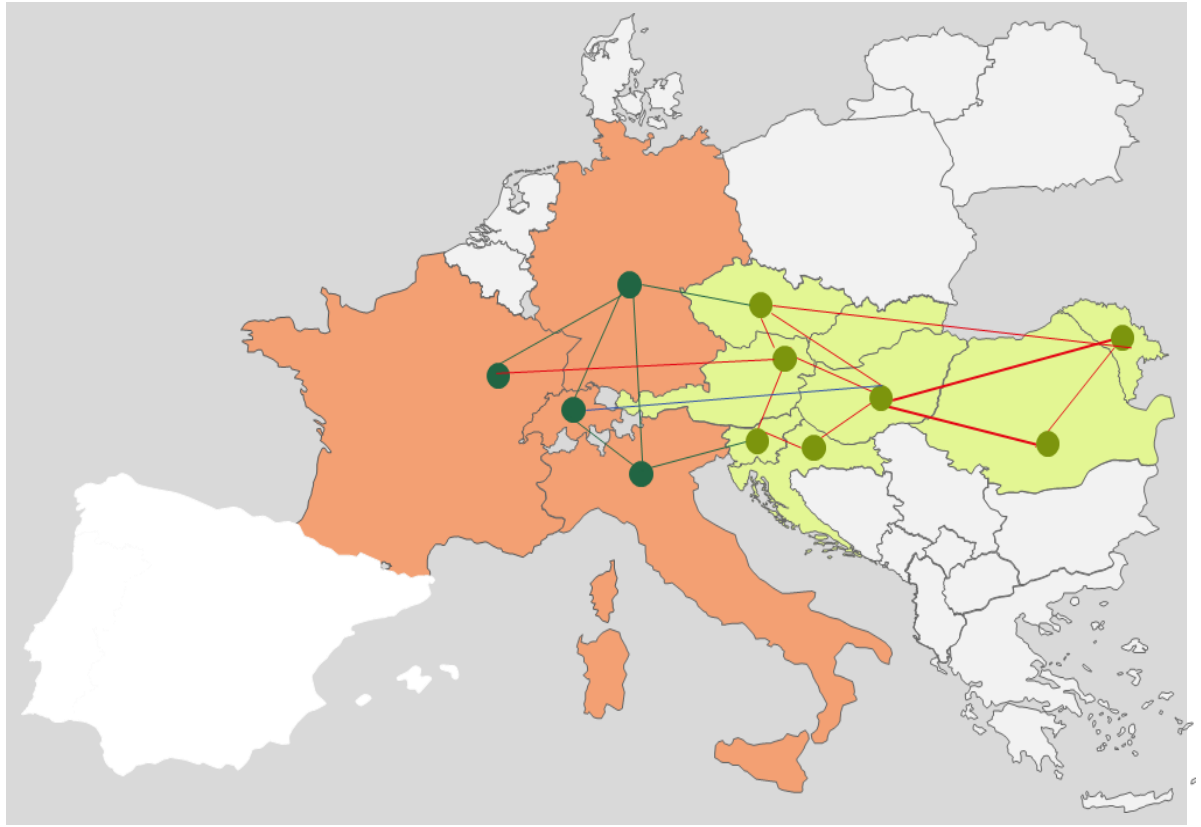
Benefit for the user



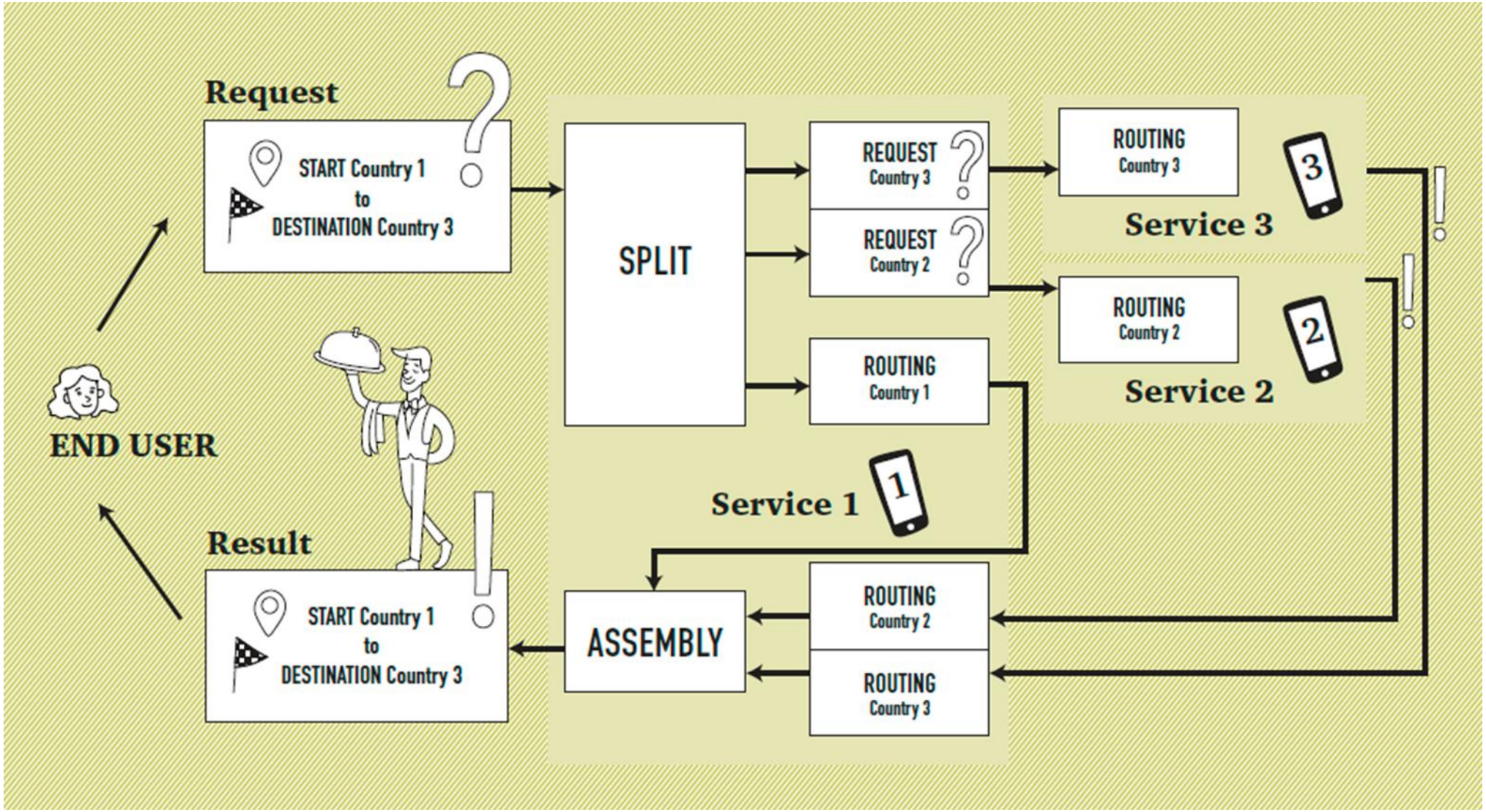
- Information of the highest quality and up-to-dateness
- Simplified access to information – well-known APP

Benefits of OJP – for operators

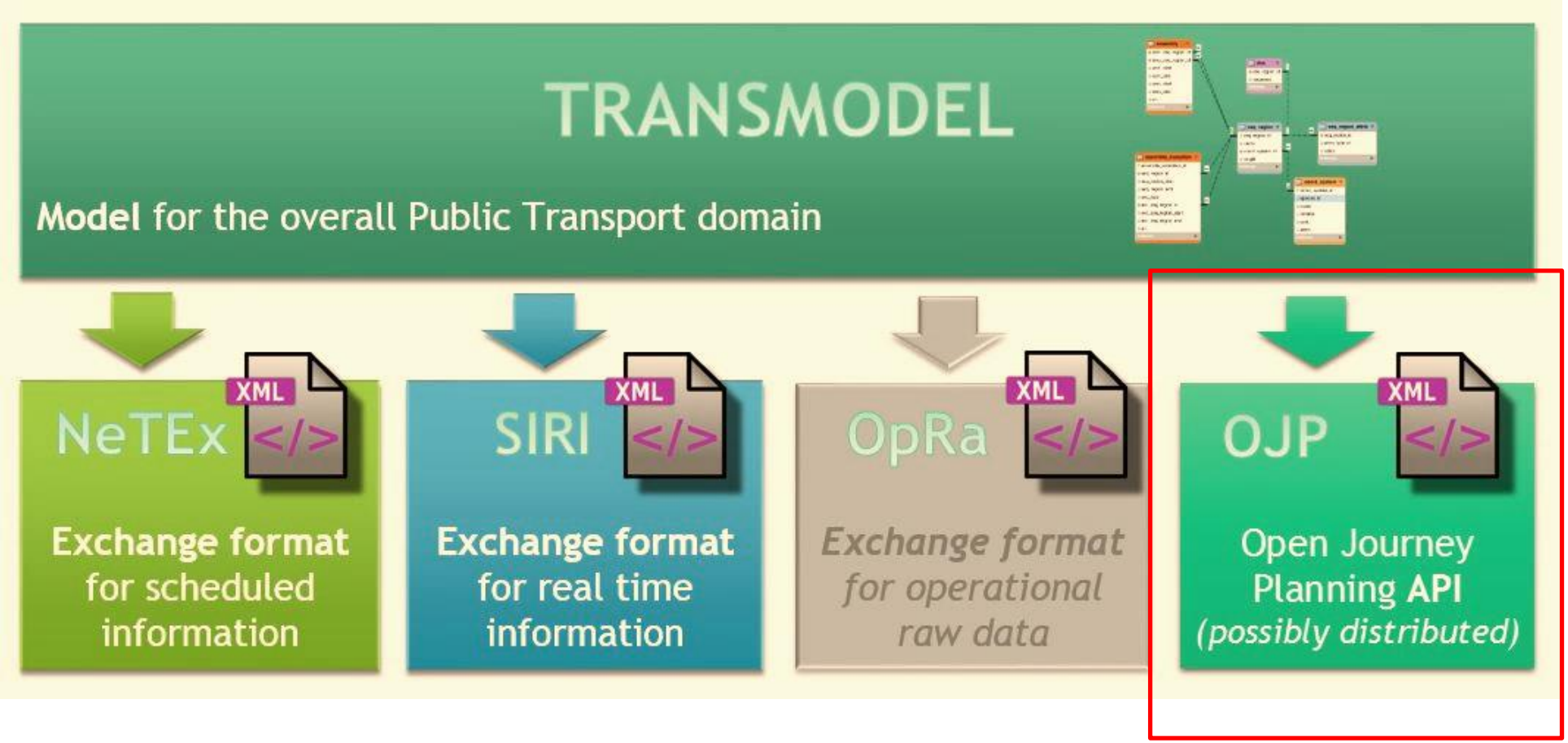
- **Sovereignty over data**
- Extension of the **range of the own system** by the coverage of all affiliated systems
- Thus, improvement of the **functionalities and quality of information** provision for customers
- **Strengthening the market position** of the local/regional service provider



Distributed Journey Planning



Standardisation – Public transport standards family



Standardisation

„OJP Standard“

Publishing of CEN Standard for “linking of services”

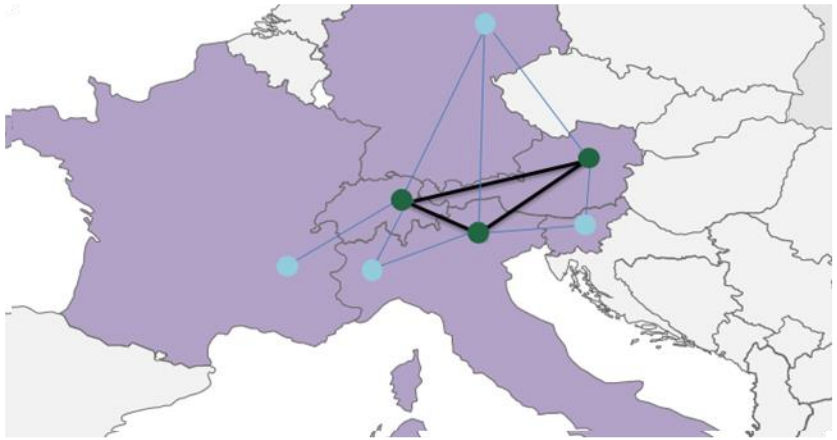
CEN/TS 177118 Public Transport –
Open API for distributed **j**ourney **p**lanning (2017)

Universal interface for service exchange

OJP initiatives

Harmonisation
(Profile!)

Know-How exchange



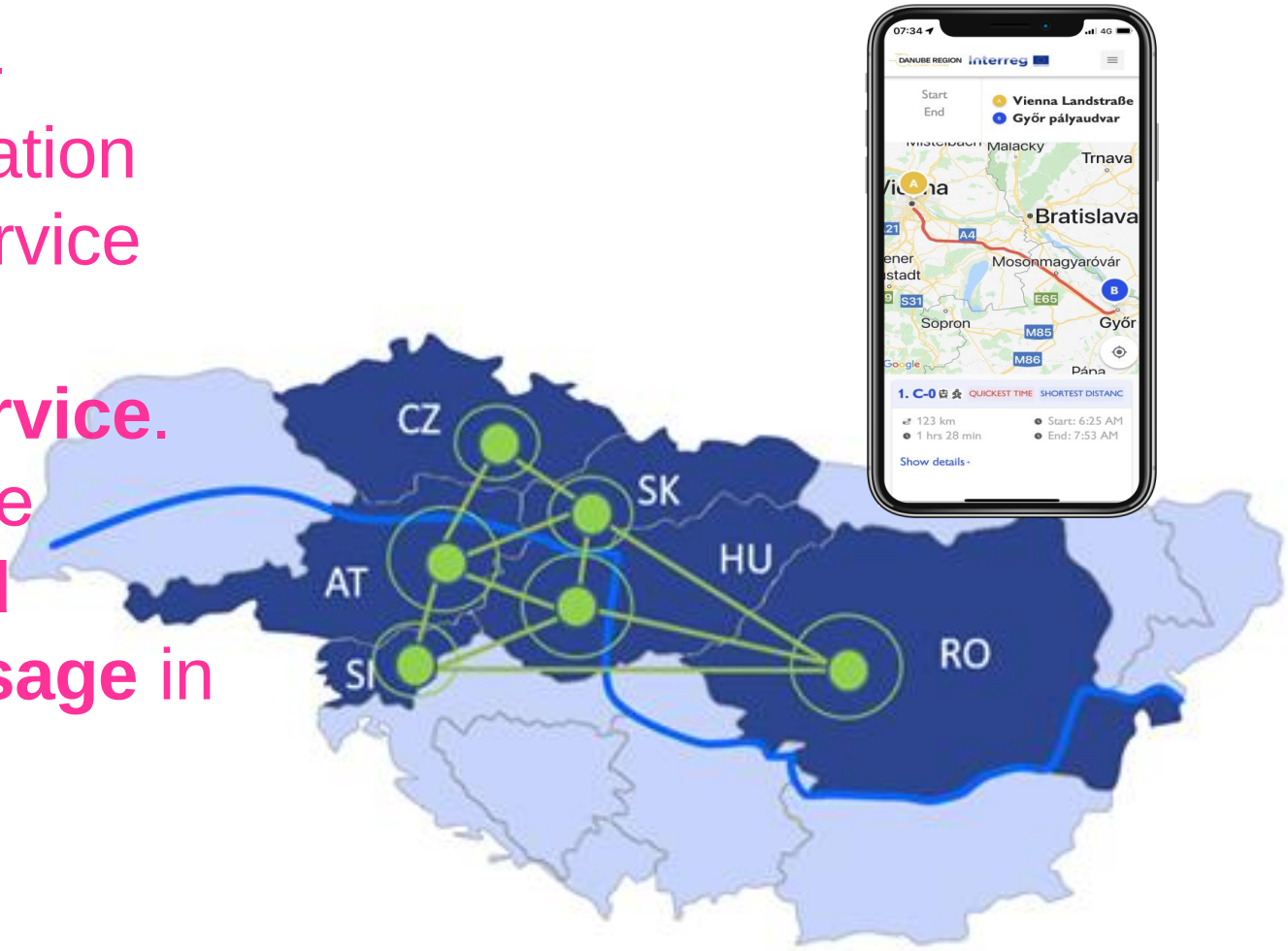
OJP4Danube

EU-SPIRIT
European travel information network

LinkingAlps

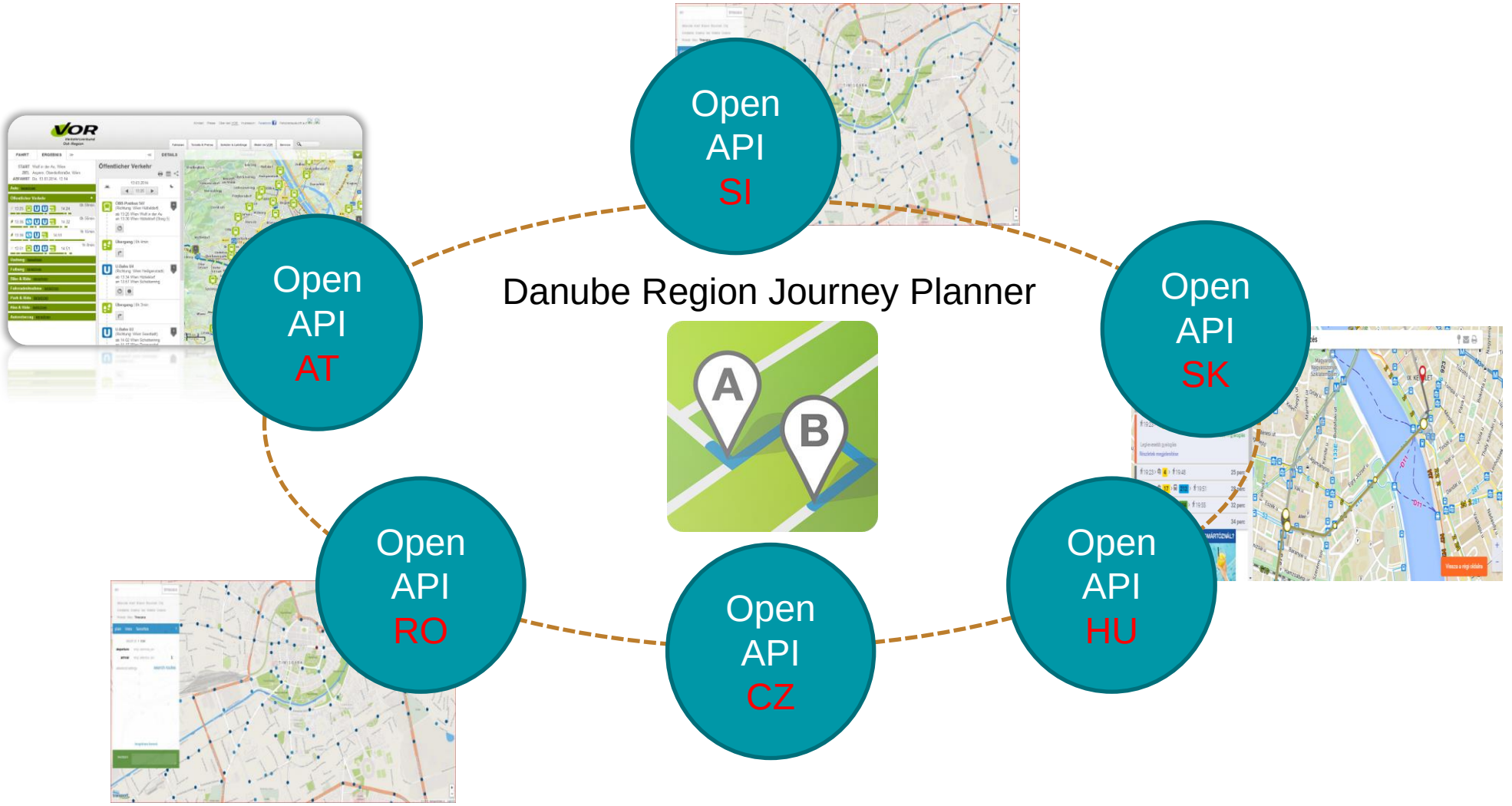
OJP4Danube Project

Objective:
Create a transnational and cross-operator integration of the information into a single travel information service that will be tested, evaluated and demonstrated in an **end-user-service**. (…). Particular focus will be on the integration of **cycling routes and relevant information for bike usage** in connection with other modes



OJP4Danube - Linked Journey Planners

Harmonized interfaces (OJP – APIs)



Implementability

Implemented
Planned
Interested if data

VAO (AT)

- F1: Walk distance
- F2: Bike onboard
- F3: Bike routing (Eurovelo)
- F7: Bike parking
- F8: Shared bikes

IDSJMK (CZ)

- F1: Walk distance
- F2: Bike onboard
- F4: Bike infrastructure
- F6: Platform facilities
- F7: Bike parking

NCUP (SI)

- F1: Walk distance
- F2: Bike onboard
- F3: Bike routing (Eurovelo)
- F7: Bike parking ***
- F8: Shared bikes ***

TERKEPEM (HU)

- F1: Walk distance *
- F4: Bike infrastructure
- F5: Ascents&elevation
- F2: Bike onboard
- F3: Bike routing (Eurovelo)
- F6: Platform facilities
- F7: Bike parking
- F8: Shared bikes

IKVC (SK)

- F2: Bike onboard
- F8: Shared bikes

TJP (RO)

- F1: Walk distance **
- F2: Bike onboard
- F7: Bike parking
- F8: Shared bikes

(*) Need to be integrated to PT journey planner (**) Needs to be implemented for cycling (***) Ljubljana only

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User interface: selected cross border features

Walk/cycling distance:

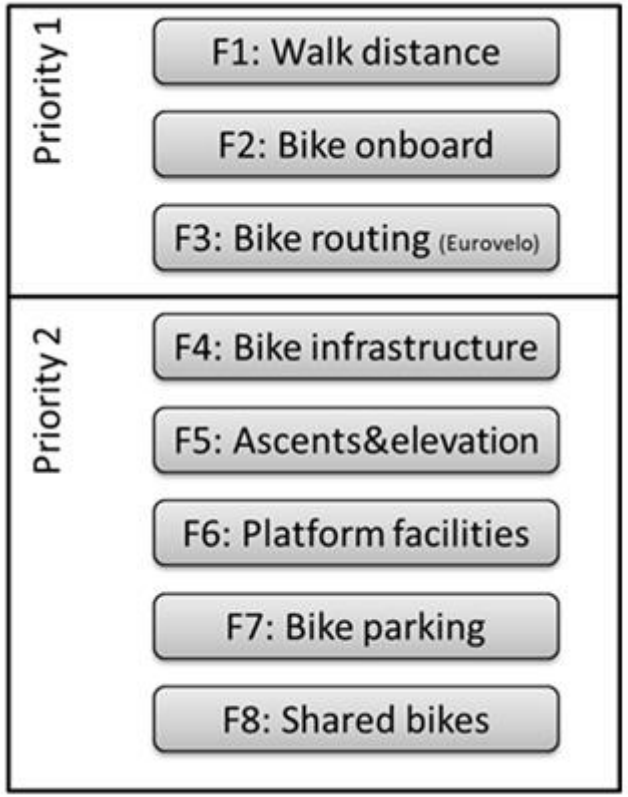
- Input: maximum walking and cycling distance, maximum speed, default
- Output: walking and cycling legs highlighted, display length

Bike-on-board:

- Input: check box, not hidden, one type of bike
- Output: static or real-time info available, but no reservation

Bike routing:

- Input: preference of using EUROVELO routes
- Output: label routes and instructions, crossborder connections highlighted



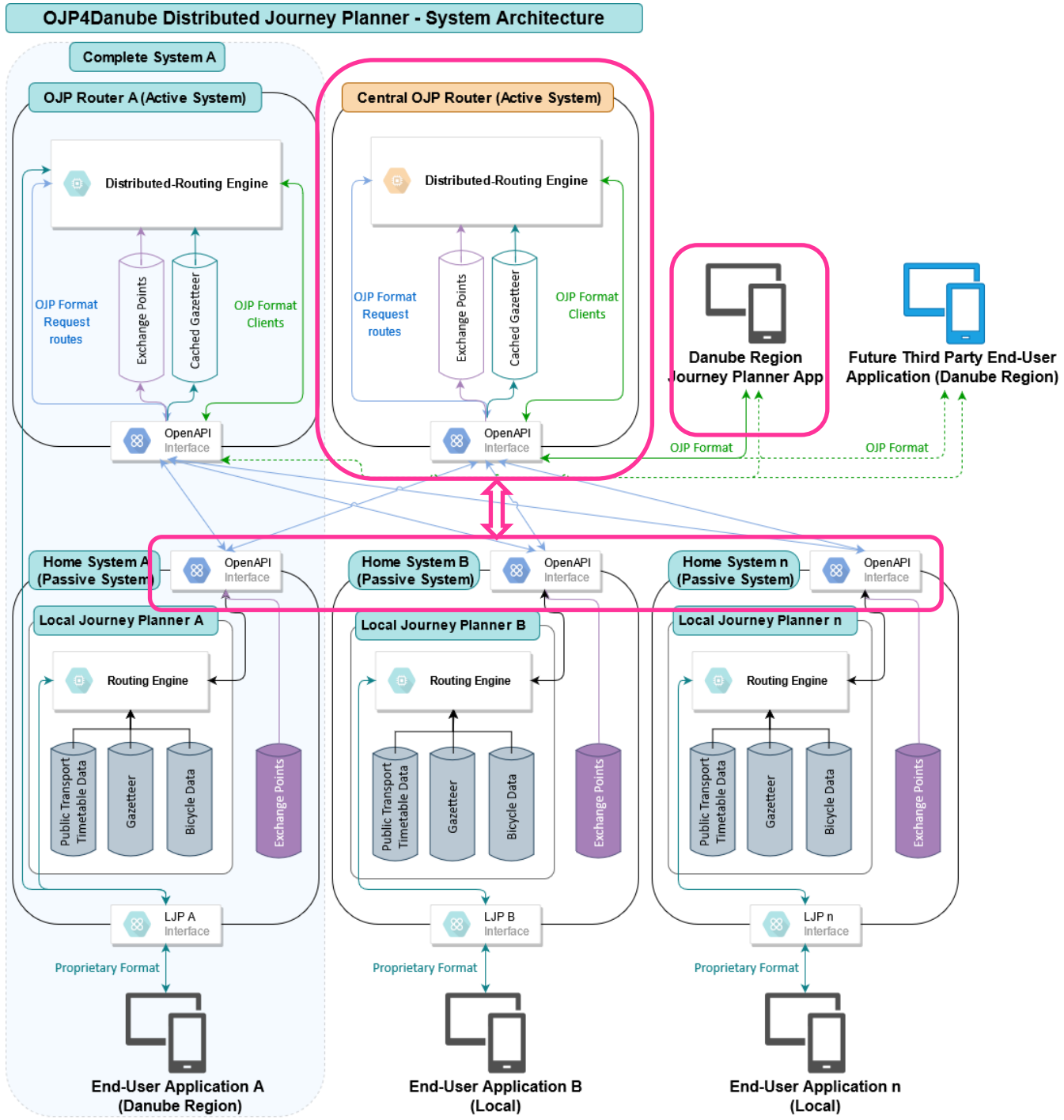
Architecture

Development:

- OJP Interfaces in all Passive Systems
- Development of the Active System (Central OJP Router)
- Development of the DJRP App

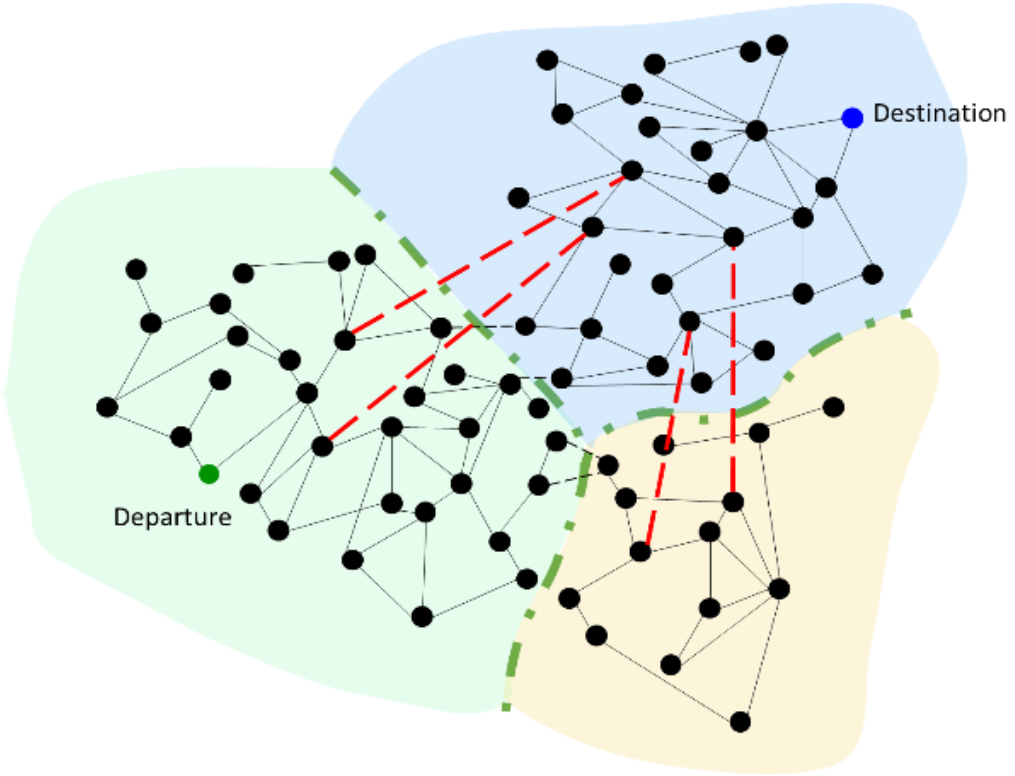
Integration:

- Integration testing between Active System and Passive Systems
- Harmonization / implementation adjustments if necessary in Active / Passive Systems

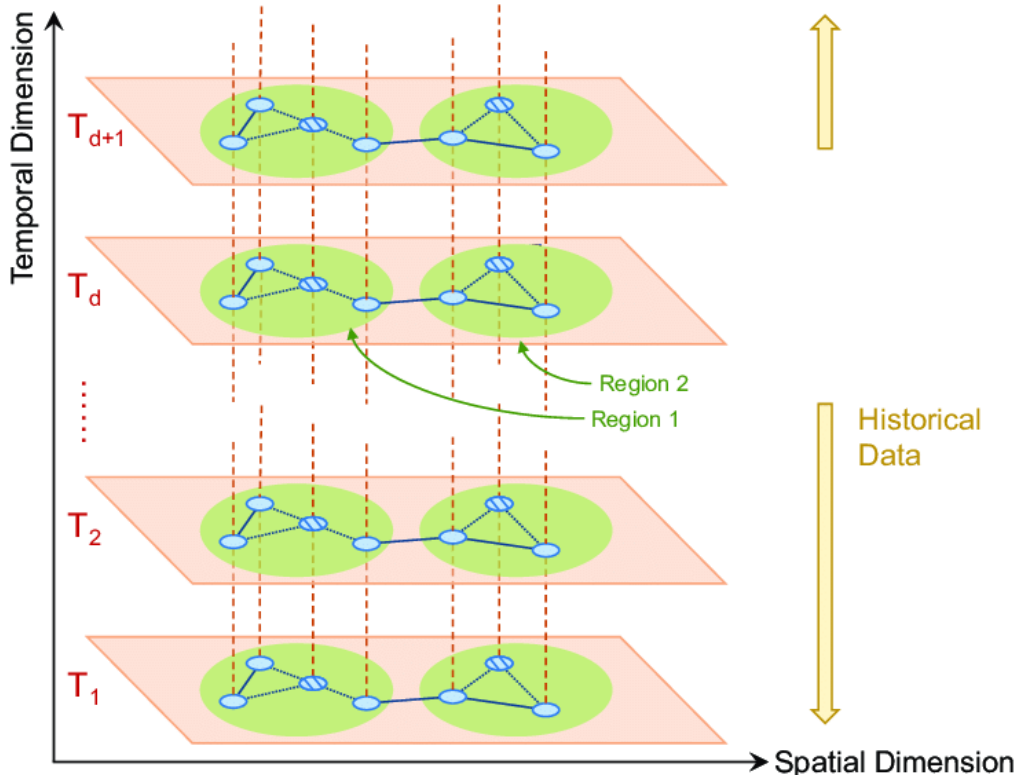


Distributed routing algorithm

Ant colony algorithm



Spatio-temporal graph

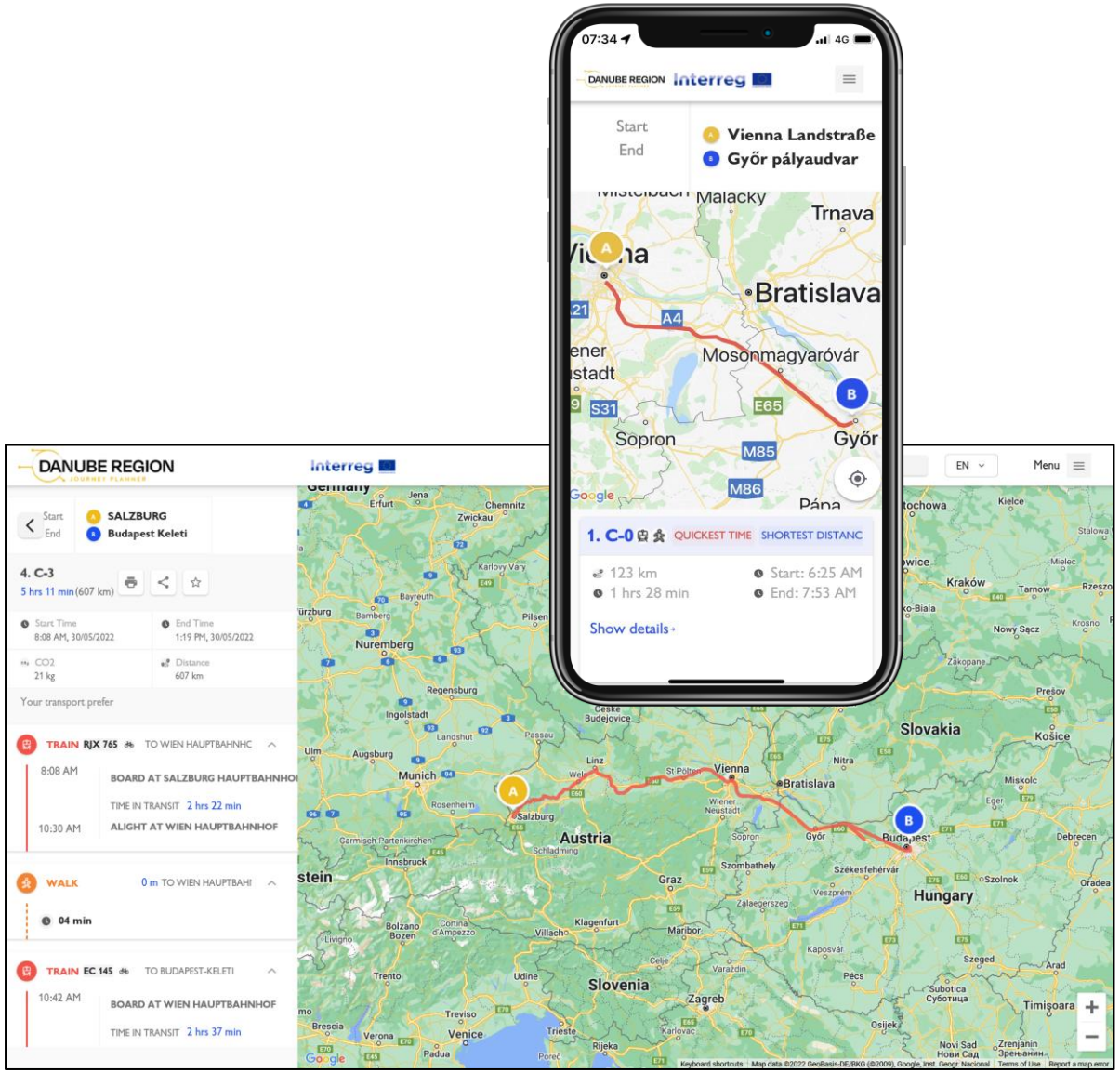


Danube Region Journey Planner App

Native Mobile App - Android

Native Mobile App – iOS

Mobile friendly Webpage



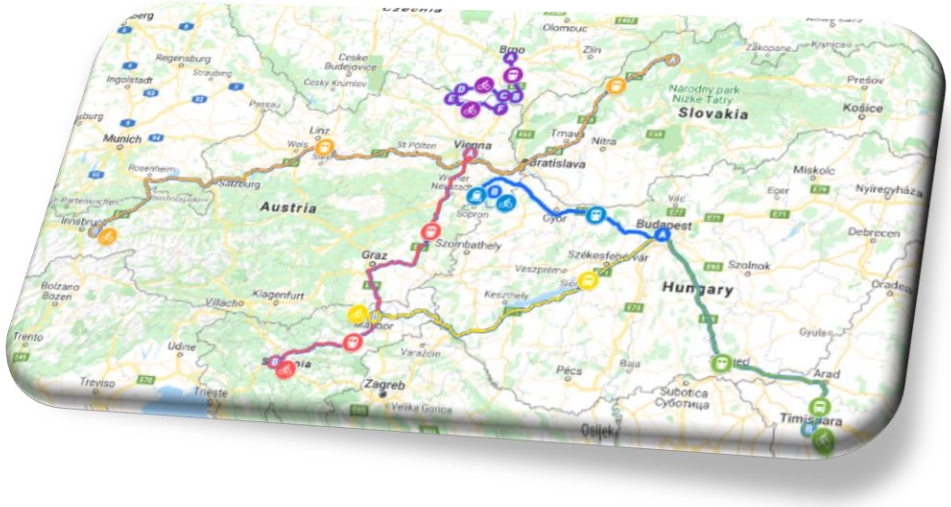
Technical Challenges

Harmonized interfaces (OJP – APIs)

- Common Standard (OpenAPI - CEN/TS 177118)
- Selected OJP Profile
- Mock-up OJP Interface Validation Tool

Dynamic Selection of Exchange Points

- Dynamic algorithm



Thank you!

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