RRTM-C

Rail Road Transportmanagement - Cargo

IPIC 2023

Jürgen Zajicek

THE PROJECT

- *RRTM-C* – Rail Road Transportmanagement - Cargo
- Implementation project in the program „Logistikförderung 2019-2023“
  - Funded by Austrian Federal Ministry for Climate Action, Environment, Energy, Mobility, Innovation and Technology and
  - mananged by Austrian Railway Infrastructure Agency (SCHIG)

- Partners
  - Asfinag Mautservices GmbH (Lead)
  - AIT Austrian Institute of Technology GmbH (AIT)
  - Austrian Federal Railway ÖBB Infrastruktur AG
  - Venz Logistik GmbH
- Duration: February 2020 till December 2022

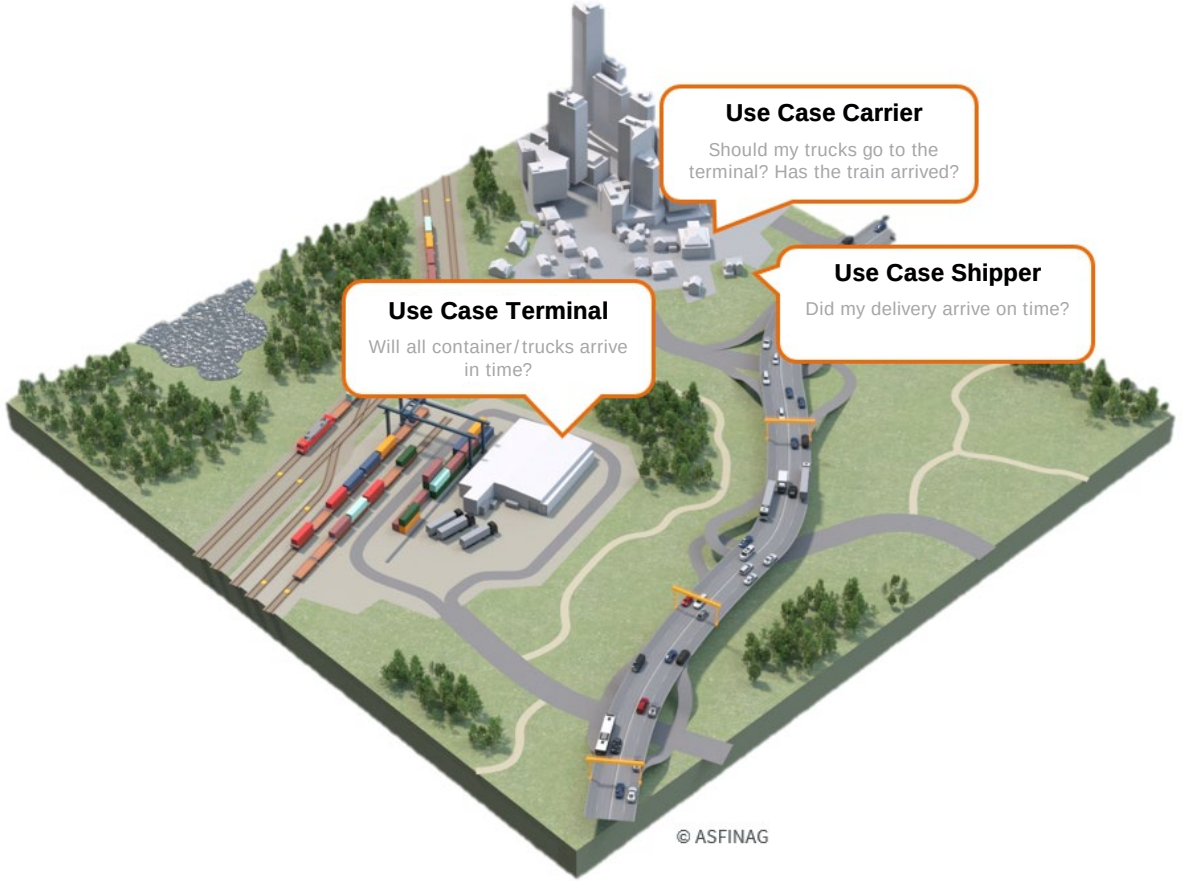
SCHIG
MOBILITÄT VERSTEHEN

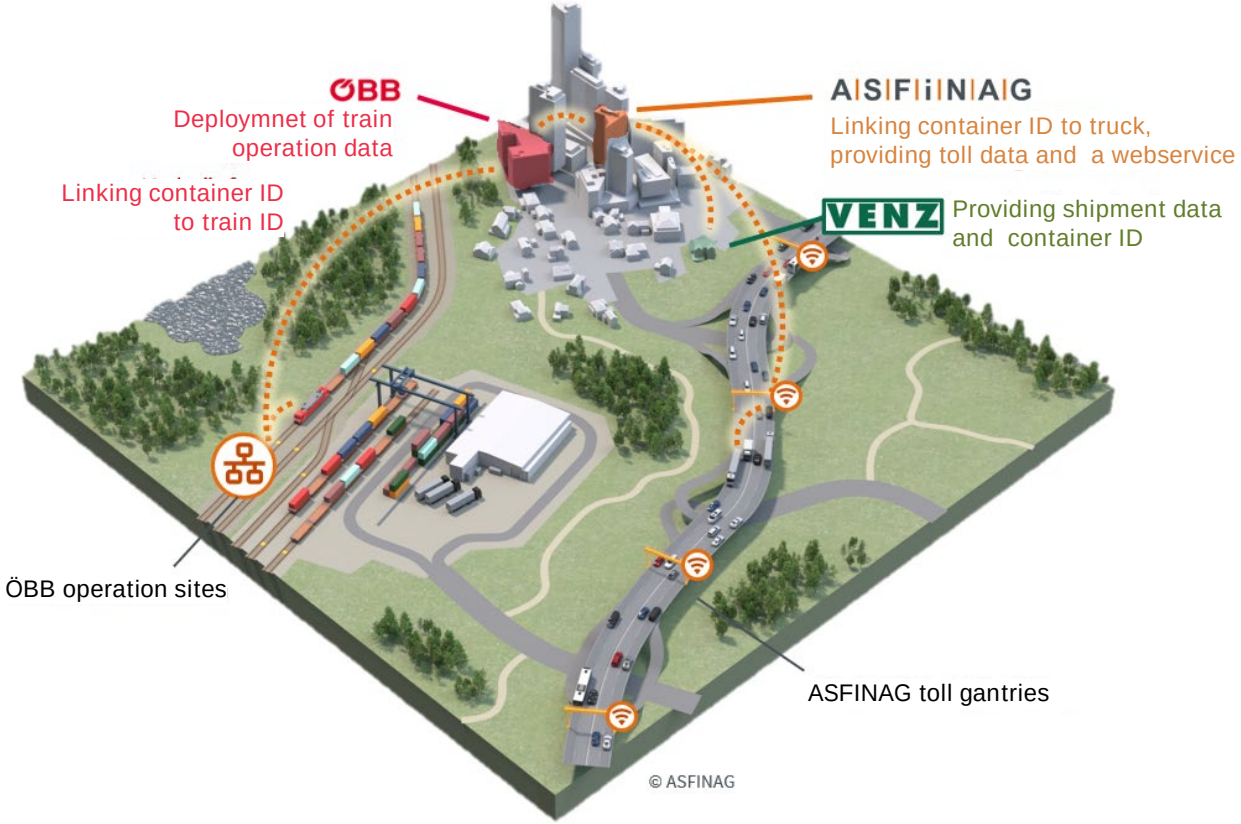
Federal Ministry
Republic of Austria
Climate Action, Environment,
Energy, Mobility,
Innovation and Technology

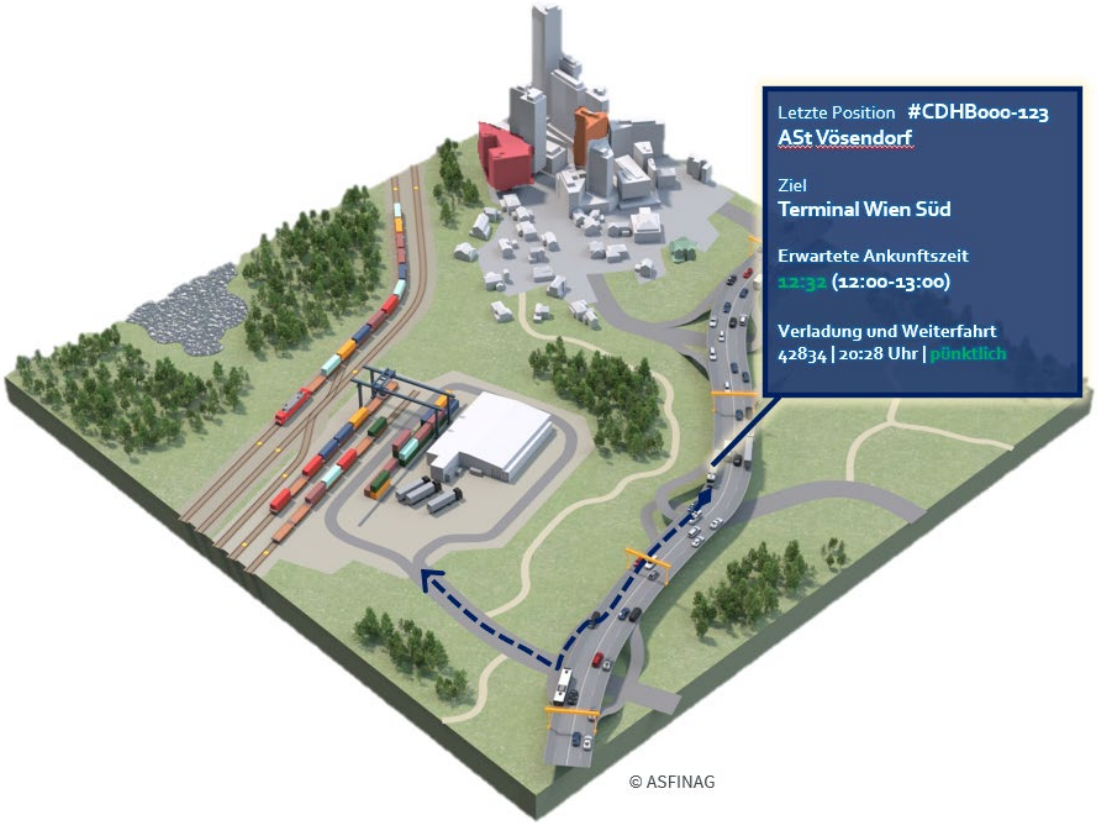
GOALS

- Development and implementation of a closed information chain along multimodal goods transports
- Using only implemented data sources and information systems of the partners
  - Road: transport waybills, toll data, etc
  - Rail:transport wwaybills, rail operation data, terminal management data

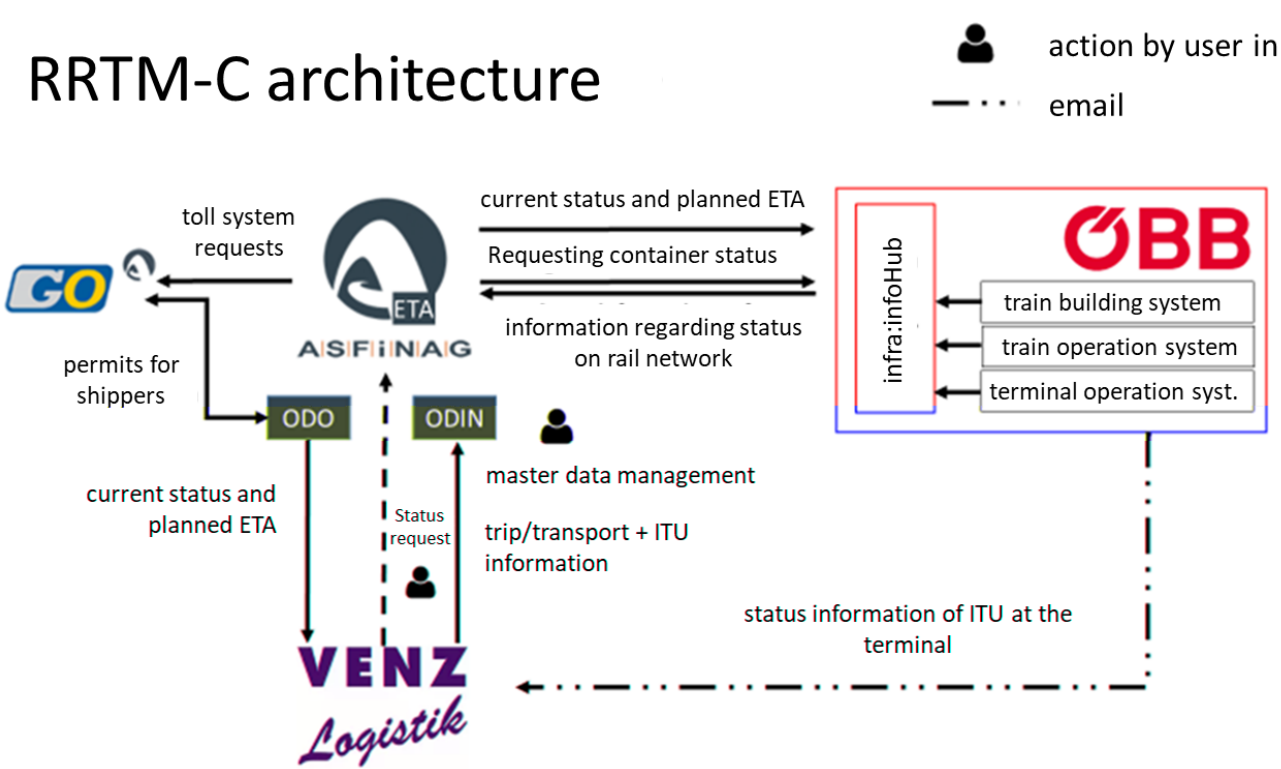
- Main result:
  - Creation of continuously updated ETA of the containers at transport mode switching points
  - model for optimising terminal operation based on these ETA


Use Case Carrier
Should my trucks go to the terminal? Has the train arrived?
Use Case Shipper
Did my delivery arrive on time?
Use Case Terminal
Will all container/trucks arrive in time?
© ASFINAG


ÖBB
Deploymnet of train operation data
Linking container ID to train ID
ASFINAG
Linking container ID to truck, providing toll data and a webservice
VENZ
Providing shipment data and container ID
ÖBB operation sites
ASFINAG toll gantries
© ASFINAG


Letzte Position #CDHB000-123
ASt Vösendorf
Ziel
Terminal Wien Süd
Erwartete Ankunftszeit
12:32 (12:00-13:00)
Verladung und Weiterfahrt
42834 | 20:28 Uhr | pünktlich
© ASFINAG

RRTM-C architecture

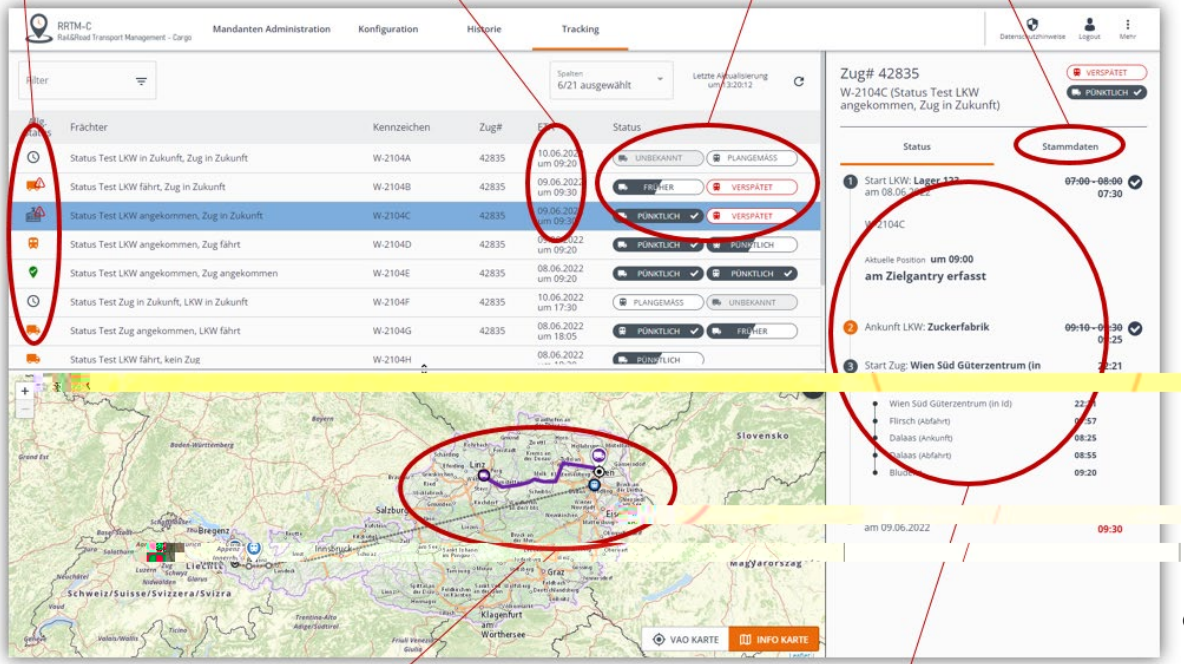


current status

estimated time of arrival whole transport

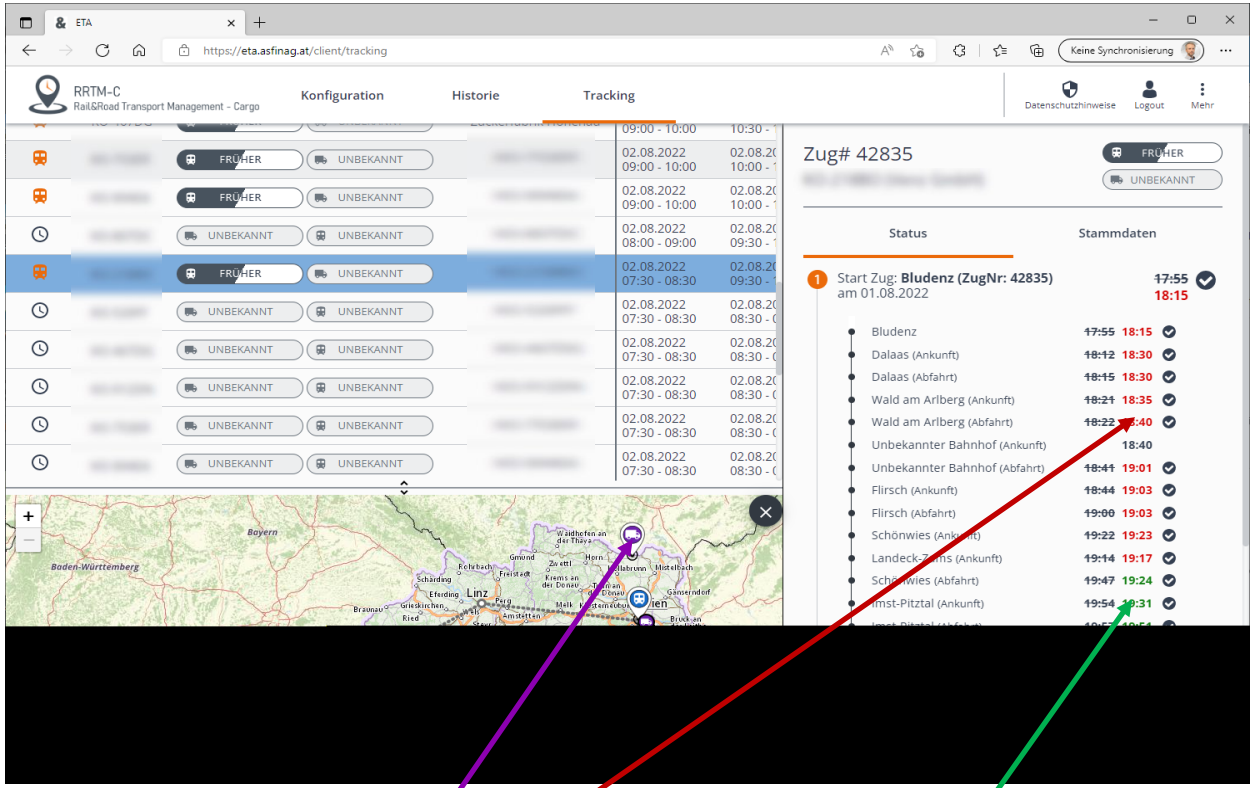
status multimodal transport chain

master data of each transport



map view of available and planned route data

details of available and planned route data



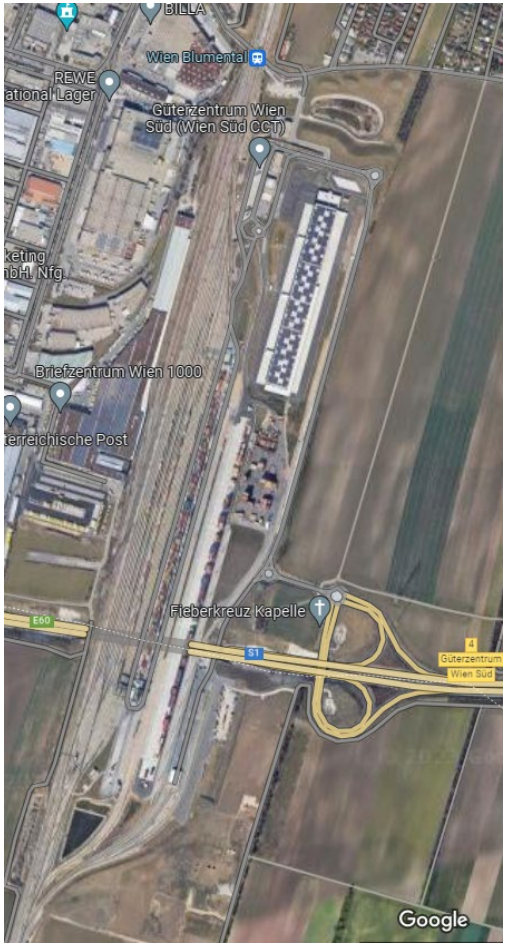
- **train** on the way, left slightly delayed, has catched up and is now a little earlier in Imst
- **truck** last mile run currently status unknown da noch nicht gestartet

TEST RUN AND EVALUATION

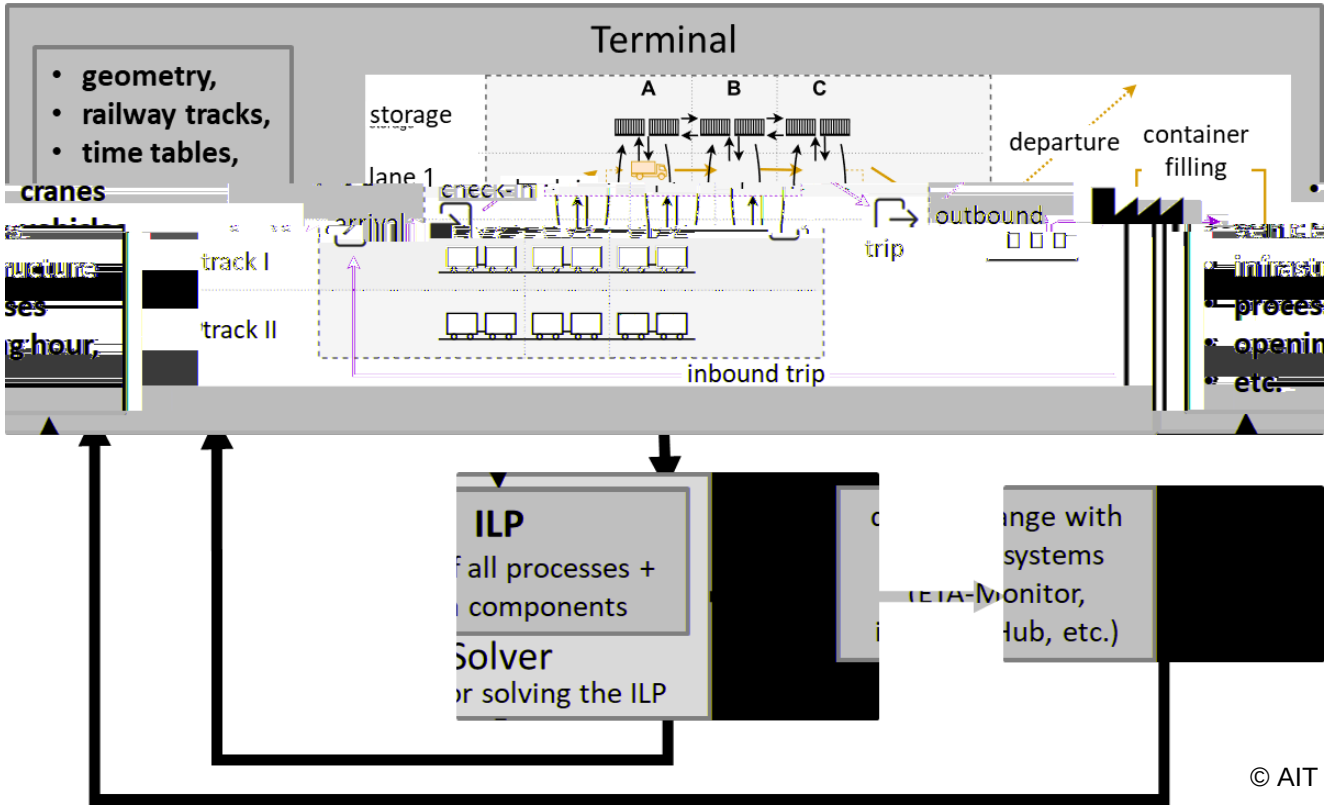
- field tests July and September 2022
  - real production data from
  - shipper companies Containerdienst Hämmerle and Fa. Venz,
  - Infrastructure operator Asfinag (tolling system) Mautsystem and ÖBB Infra
- results
  - Edge Cases
  - loading and unloading points very far from motorways (no toll data □ no ETA)
  - very long delay times
- problems with tracking:
  - incorrect master data
  - Last minute changes of
    - trucks → wrong licence plate number on trucks
    - trains → wrong train number
  - Incorrect starting and arrival times,
  - starting and end points of transports

OPTIMISATION FRAMEWORK

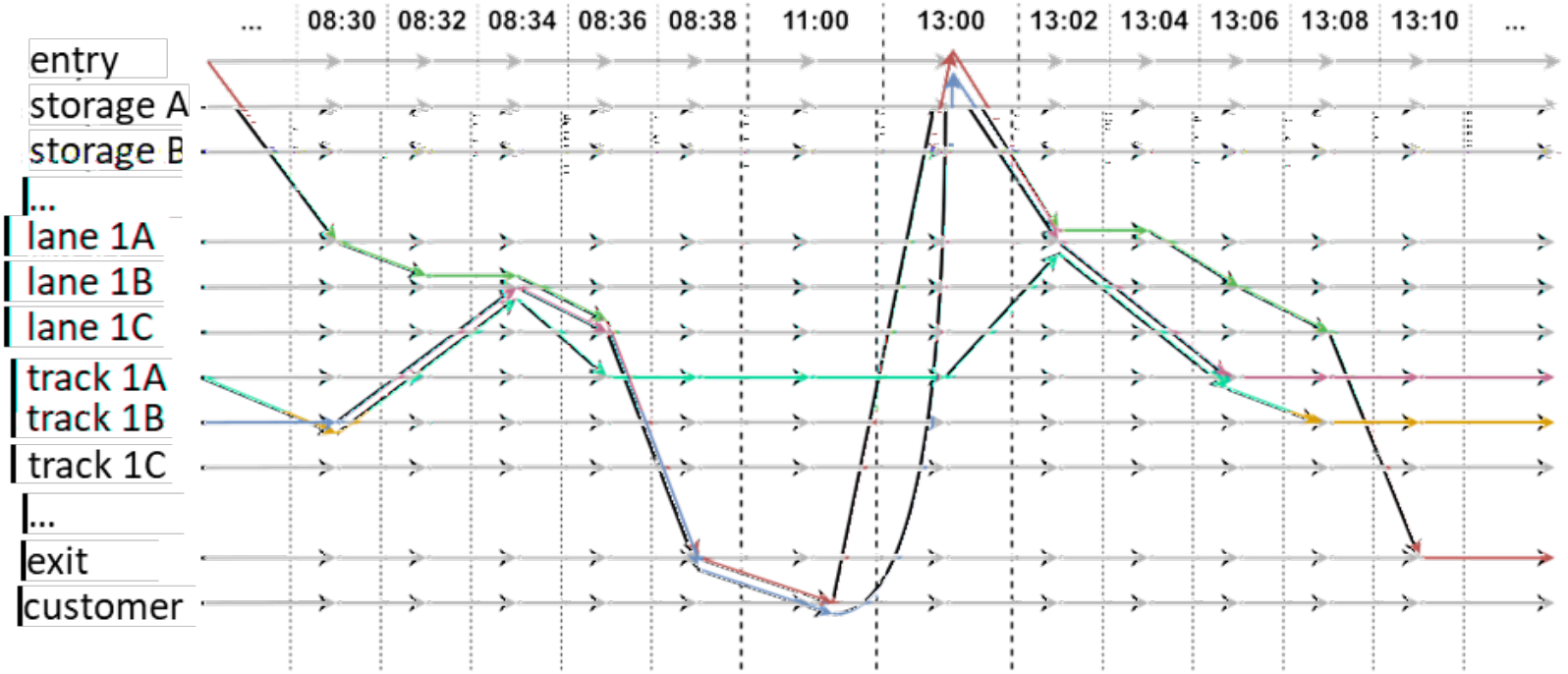
- Modeling of all processes at the Terminal Vienna South
- Development of an ILP-Terminal-Model with
  - geometry (road and rail),
  - container data,
  - time tables,
  - real starting and arrival information



ILP-MODEL WORK FLOW



ILP-MODEL WORK FLOW



OPTIMISATION FRAMEWORK

- ILP-Model possibilities
  - scalable and adaptable for each future terminal
  - testing scenarios with
    - different grade of information availability
    - different demands and capacities
    - changes in infrastructure

THANK YOU FOR ATTENTION!

DI Jürgen Zajicek
+43 664 620-78-36
juergen.zajicek@ait.ac.at
AIT Austrian Institute of Technology GmbH
Center for Energy,
Business Unit Integrated Energy Systems,
Team Integrated Transport Optimisation