OptiFrame data management

The OptiFrame Consortium

Brussels, February 14th 2018

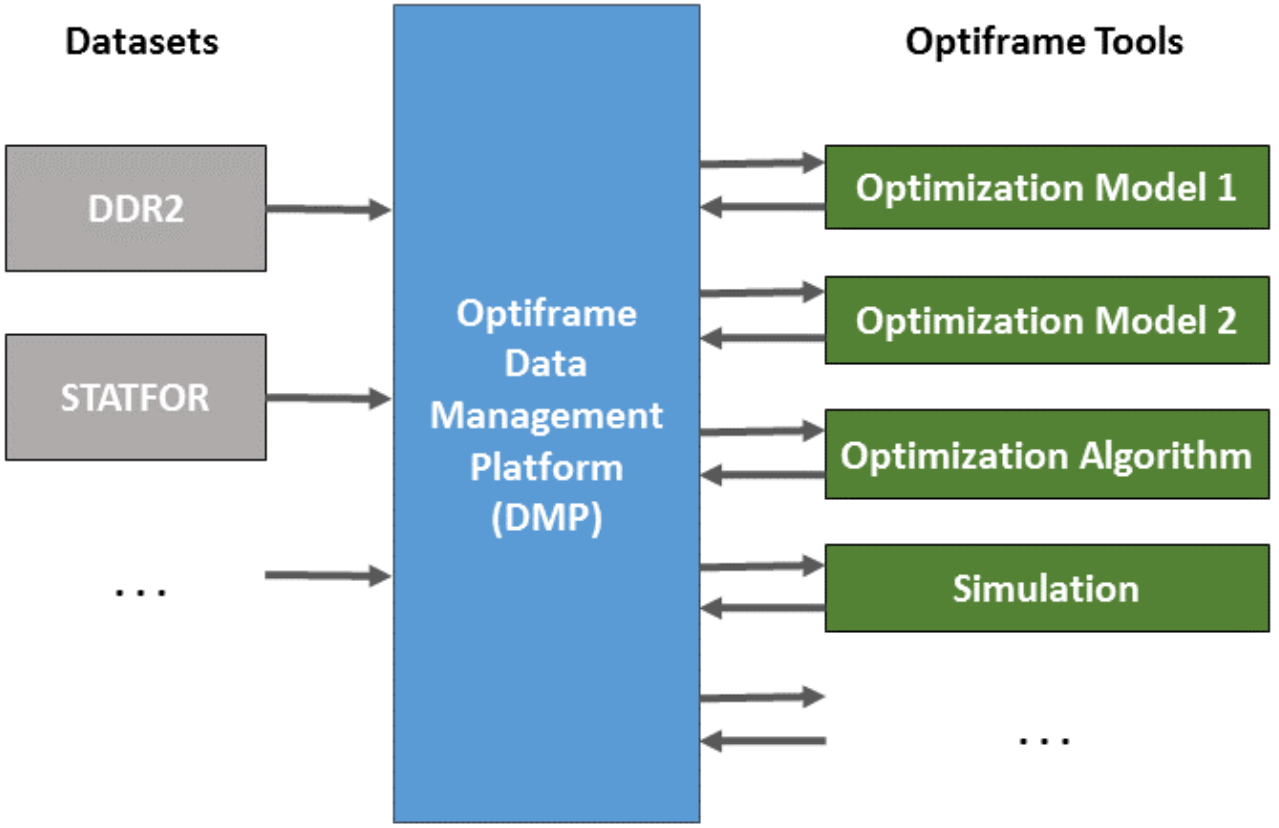
Founding Members

EUROPEAN UNION EUROCONTROL

Data related issues

OptiFrame Data Management Platform (DMP)

Design schema



Data related issues

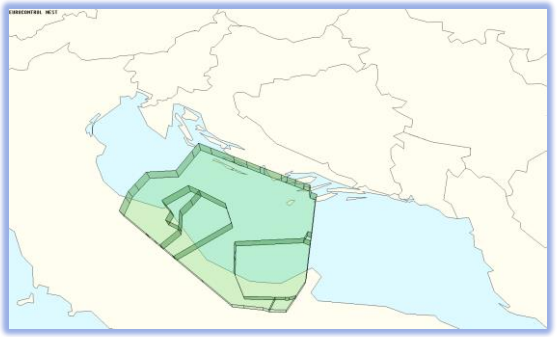
Data sources

- **DDR2** [EUROCONTROL]: data on traffic demand, on a daily basis, for whole ECAC area, since January 2006
    - **Historical data**
    - Filtered data
    - Airline trajectories
    - **Forecast traffic** (STATFOR – Statistics and Forecast)
    - **Dataset files** (Airspace description, Route charges)
    - **Tools** (SAAM, NEVAC, NEST)
    - Events
    - Reports
- **NEST** (Network Strategic Tool), among other features, provides an interface towards DDR2: data download and filtering through **text files**

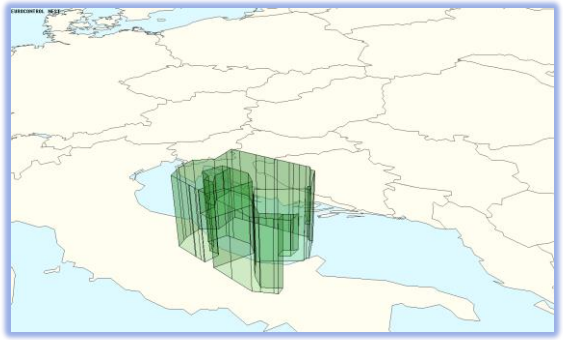
Data related issues

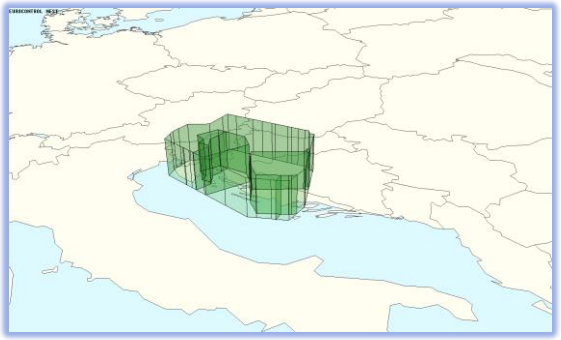
Data sources: airspace description

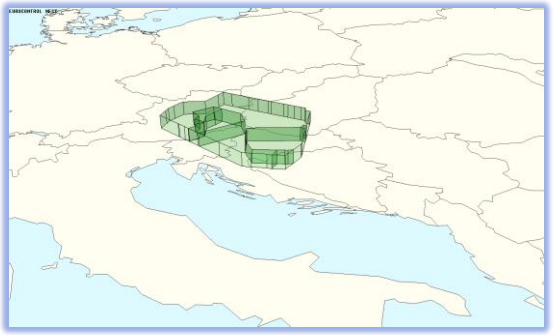
- **Air block**: 2D closed polygon.
  2D tessellation of the airspace



- **Elementary sector:** 3D connected space
  airblock(s) + min/max FL



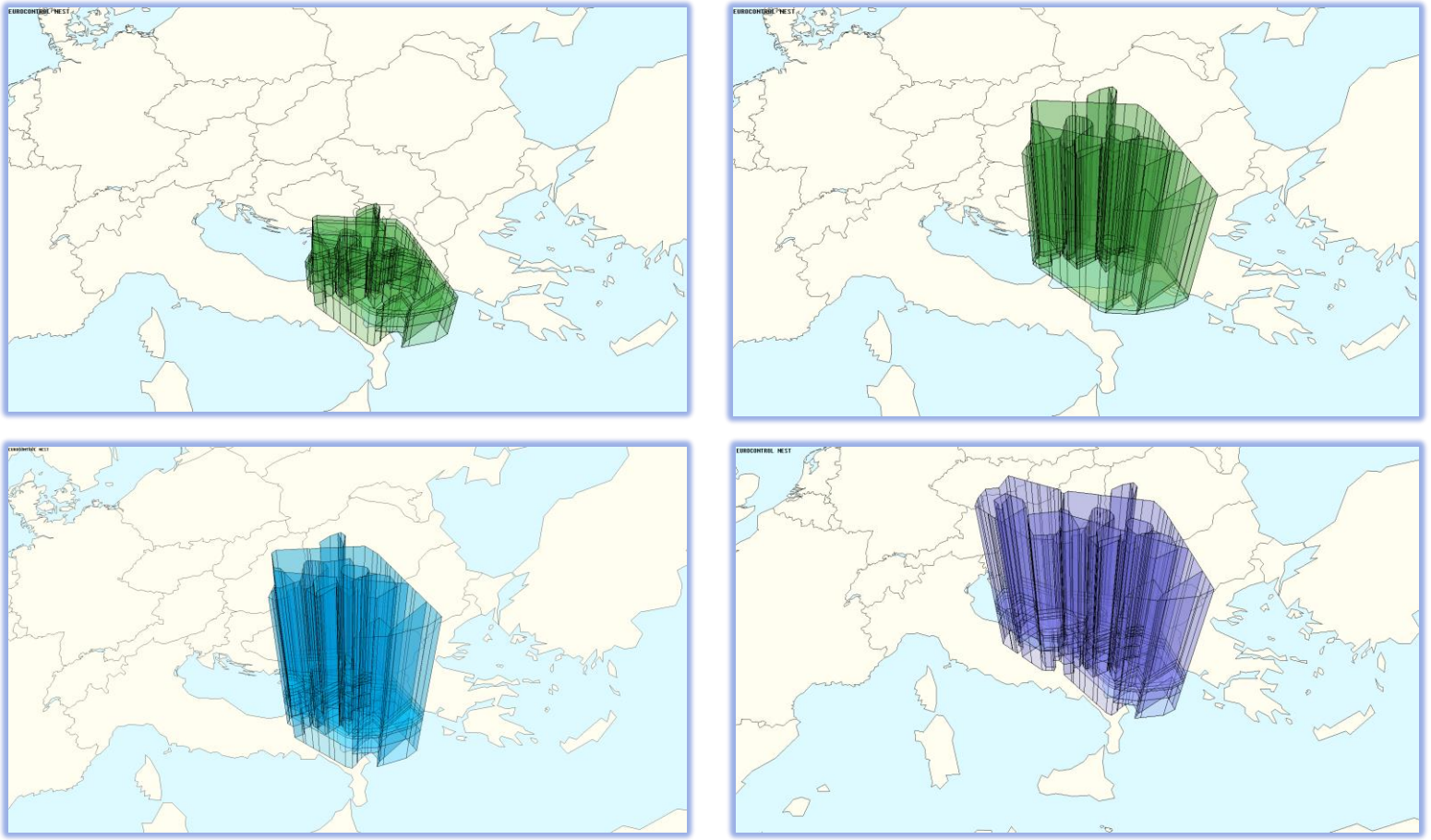




Data related issues

Clustered sectors

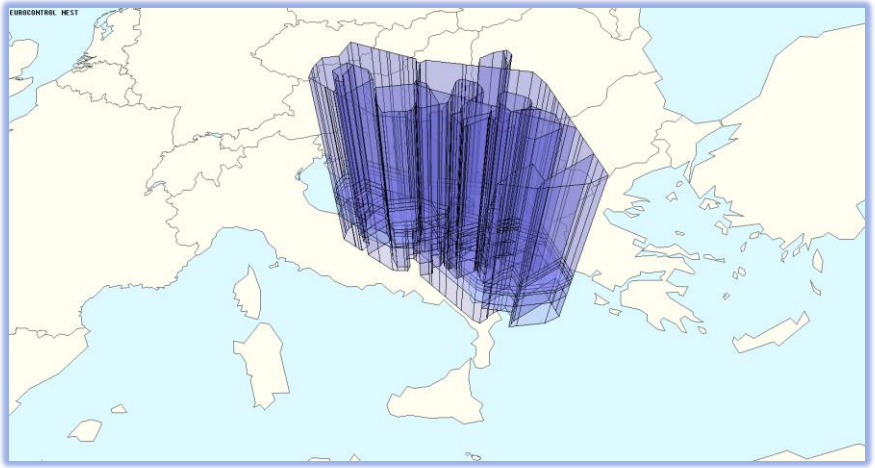
- **Clustered sectors:** aggregate elementary/clustered sectors, may overlap in space



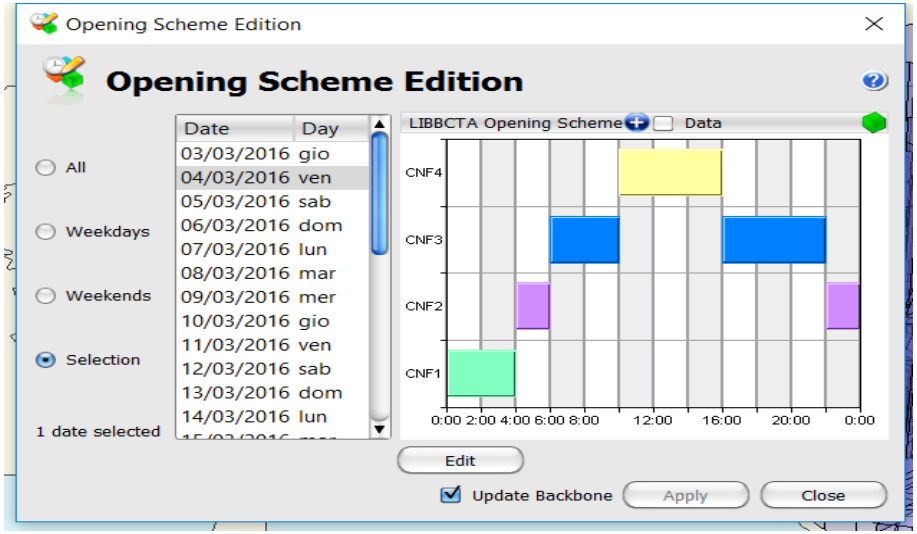
Data related issues

Control areas

- **Control Area (CTA)**

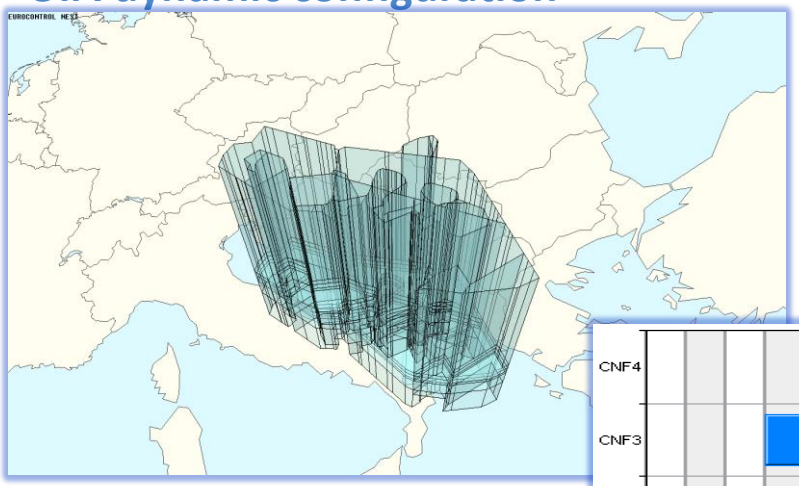


- **Dynamic airspace configuration**
  - Opening schemes
    - day-of-the-week
    - hour of the day (peak/off-peak)
  - Enabled sectors:
    sectors are defined in 4D

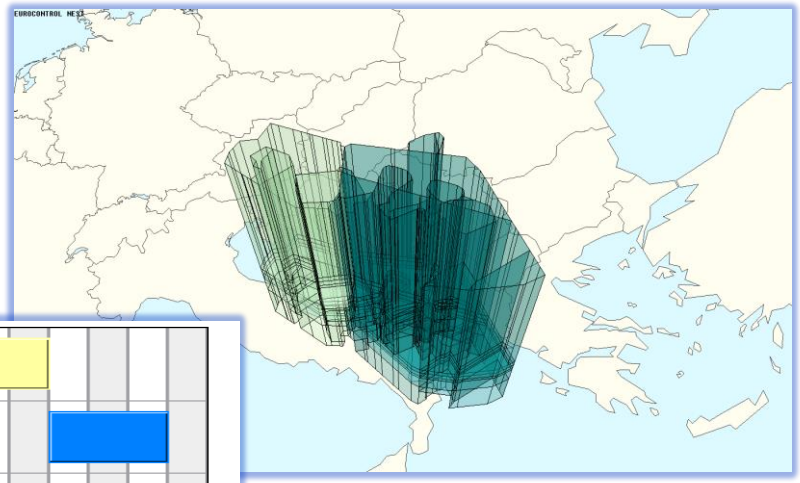


Data related issues

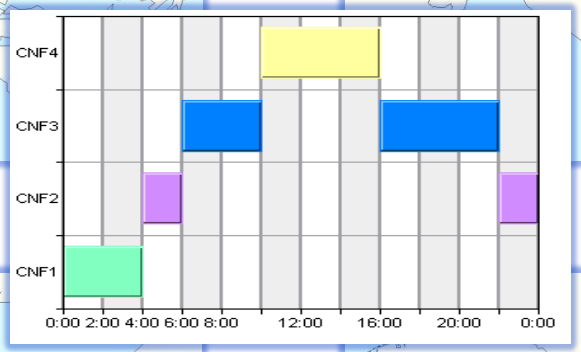
CTA dynamic configuration

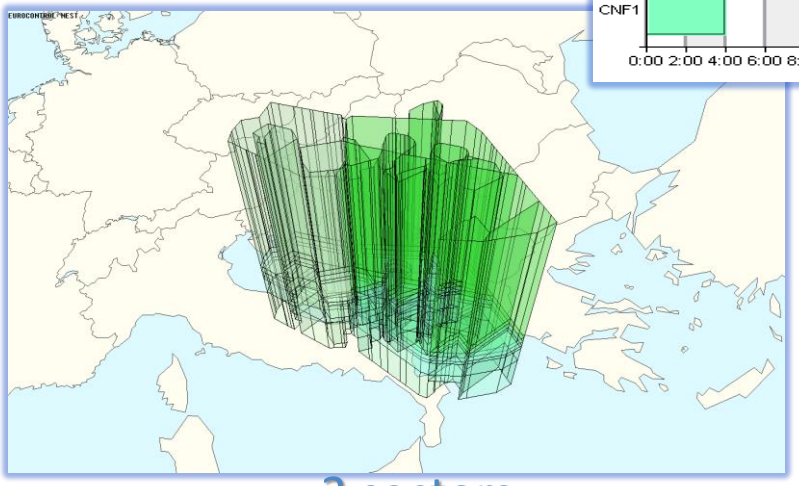


1 sector

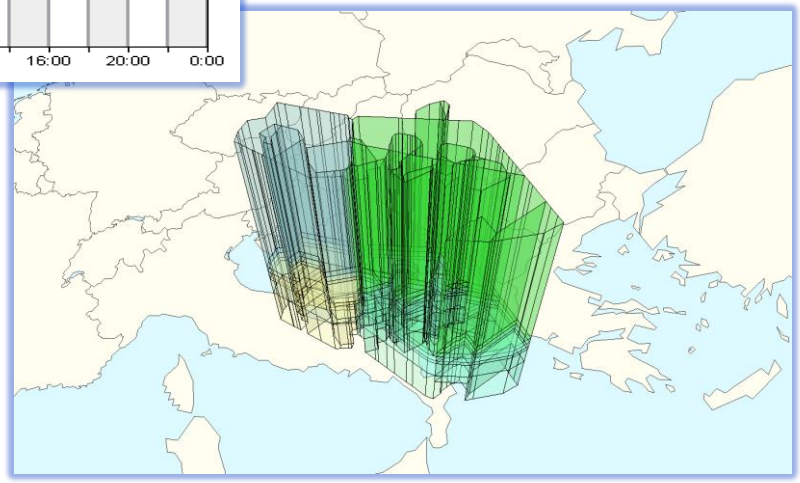


2 sectors





3 sectors

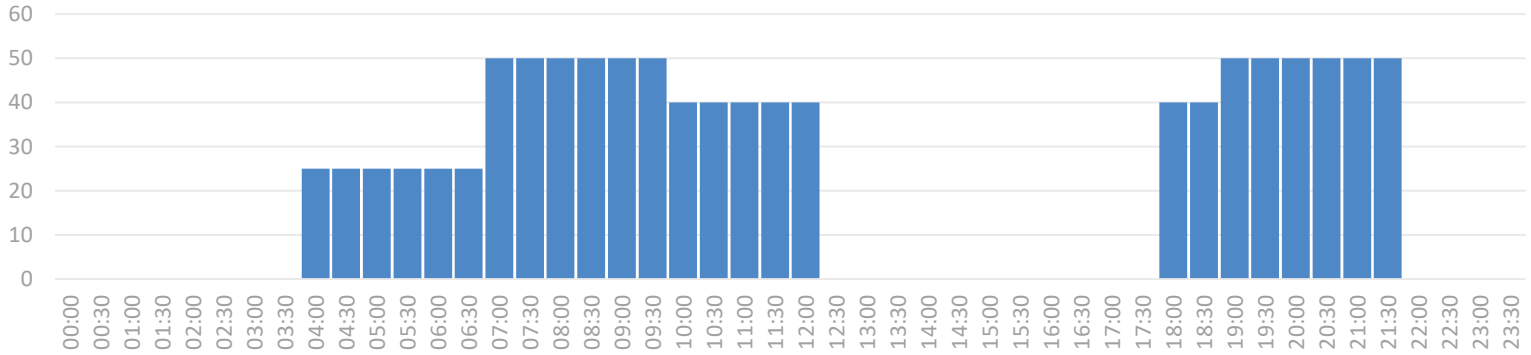


4 sectors

Data related issues

Capacities

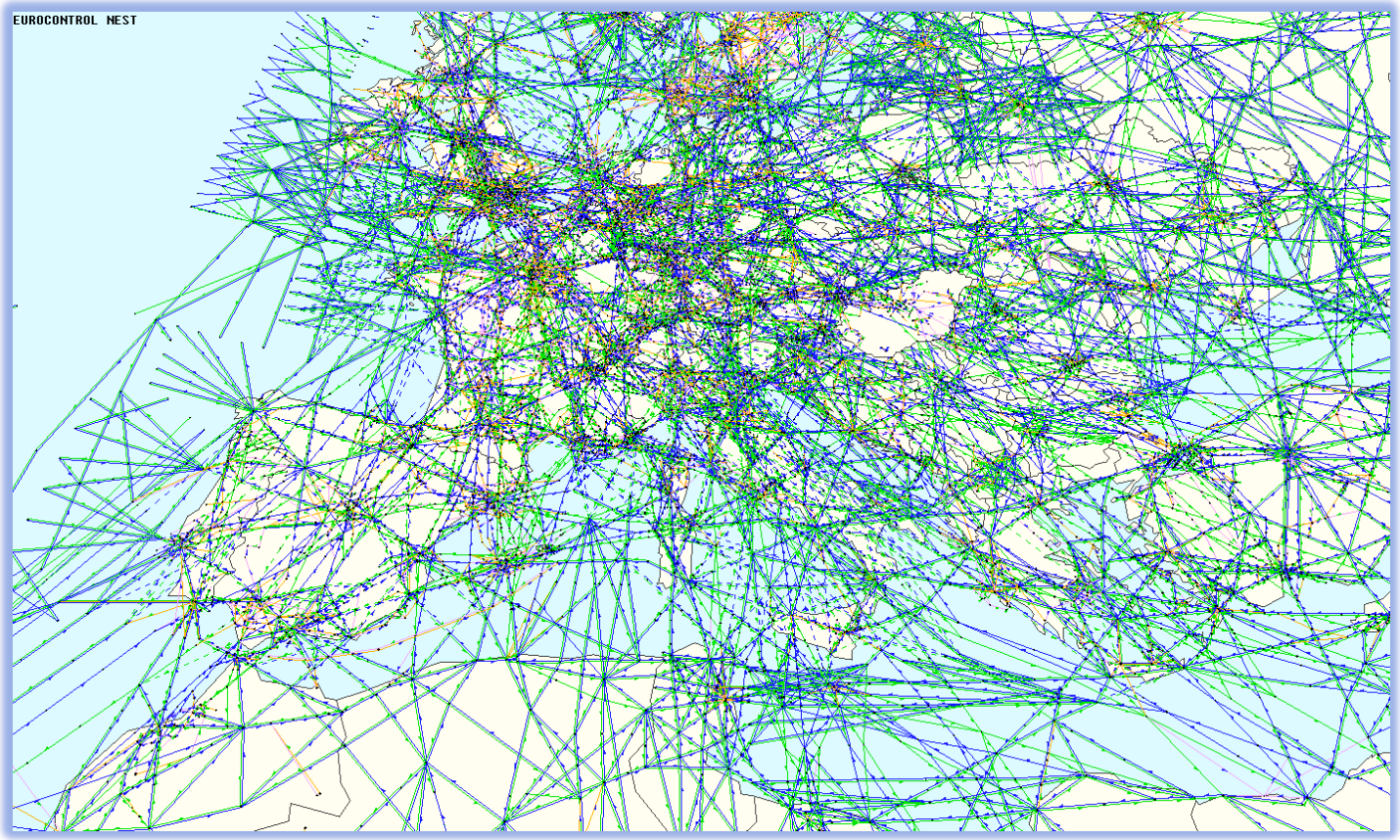
- Maximum number of aircraft that **can enter a sector** per time unit
- **Airports**: maximum *declared* number of A/D at an airport per time unit (limited data available from DDR2)
- Described by **Traffic Volumes** associated to airspace entities
    - **Enabled** sectors (include in current CTA configuration)
    - **Active** traffic volumes
    - Exceptions (e.g. **flows**)
- Capacities are **dynamic**: depend on traffic - control resources
- Sector capacity profile (enabled/not enabled, active traffic volumes)
- Exceptions (e.g., “flows”)



Data related issues

Network description

- **Navigation points**: 2D positions (waypoints, **standard** waypoints)
- Segments

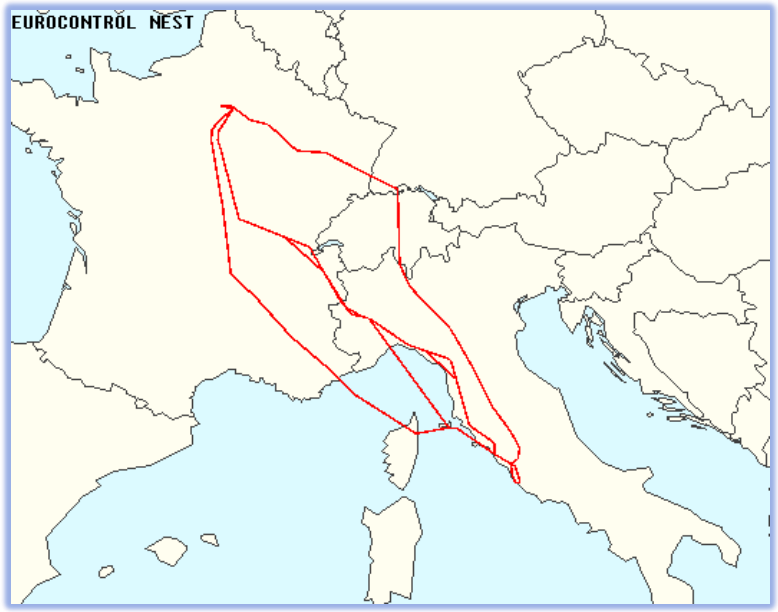


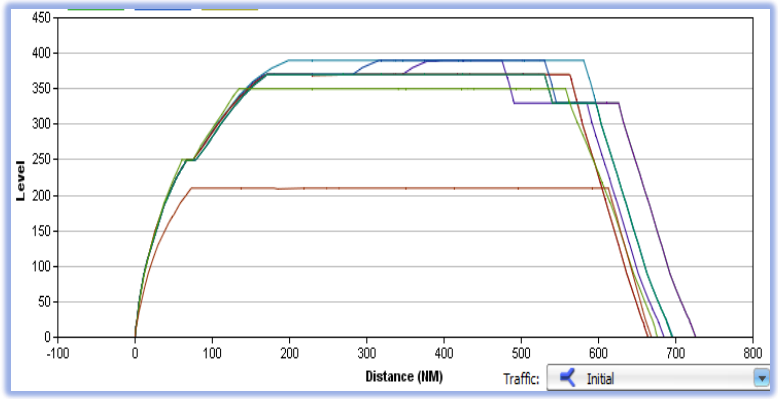
Data related issues

Traffic data

- **Historical** data on **flight 4D trajectories**
  - **Filed** Tactical Flight Model (**FTFM**)
  - Regulated Tactical Flight Model (RTFM)
  - Current Tactical Flight Model (CTFM)

- Available information:
  - Flight ID (date, airports, times, callsign …)
  - Aircraft type
  - Crossed airspace elements
    (sector, waypoint …; FL; time enter/exit)





Data related issues

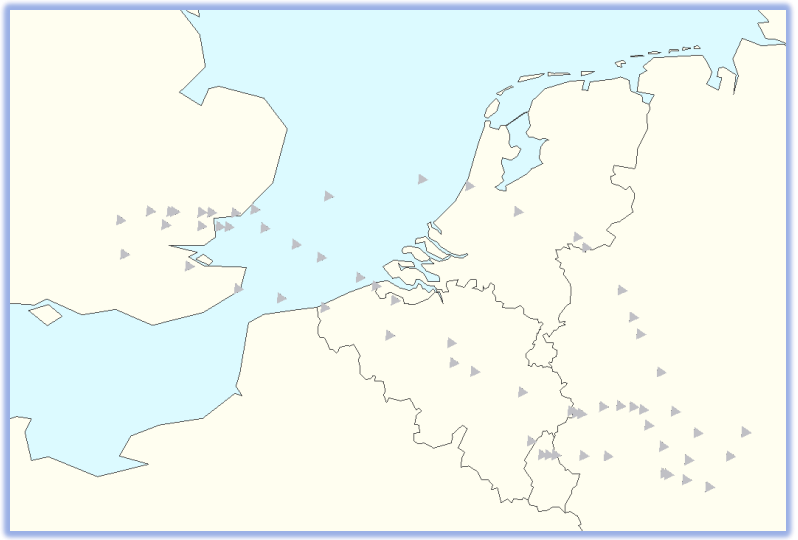
Example: EGLL – EDDF network

- AIRAC Oct 2016
- 38 flights
- ~ 30 standard waypoints per route

- **Base networks**
  includes all crossed sectors and standard waypoints

  - 2 airports
  - 32 sectors
  - 47 sector adjacency-edges

  - 63 standard waypoints
  - 76 standard waypoints-arcs



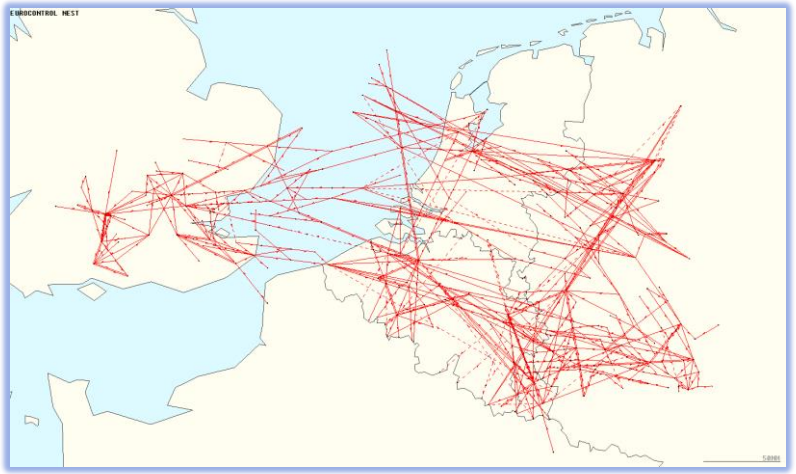
Data related issues

Example: EGLL – EDDF network

- **Expanded network**
  all standard waypoints in crossed sectors

  - 2 airports
  - 32 sectors
  - 113 sector adjacency-edges

  - 501 standard waypoints
  - 1266 standard waypoints -arcs



OptiFrame Framework

Thank you very much for your attention!

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SESAR JOINT UNDERTAKING

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