On-demand DT

& its interactability

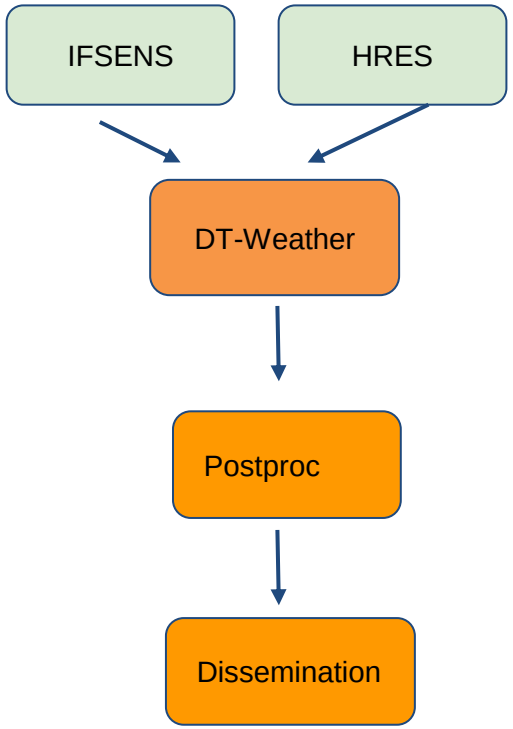
Xiaohua Yang (DMI), on behalf of the On-demand DT (DE330) team

Funded by the European Union

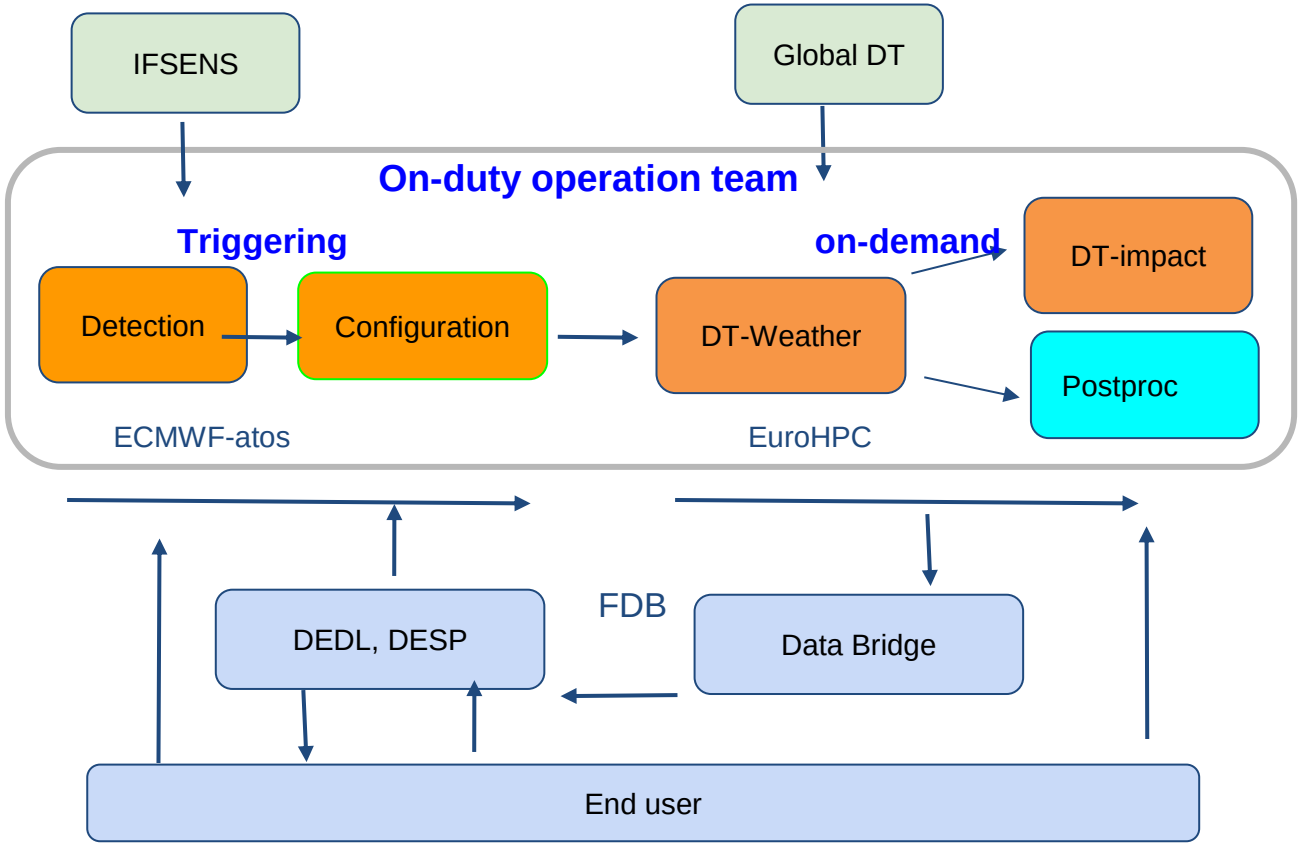
Destination Earth implemented by ECMWF esa EUMETSAT

On-Demand DT workflow

Connecting components of the end-to-end integrated workflow around extreme events



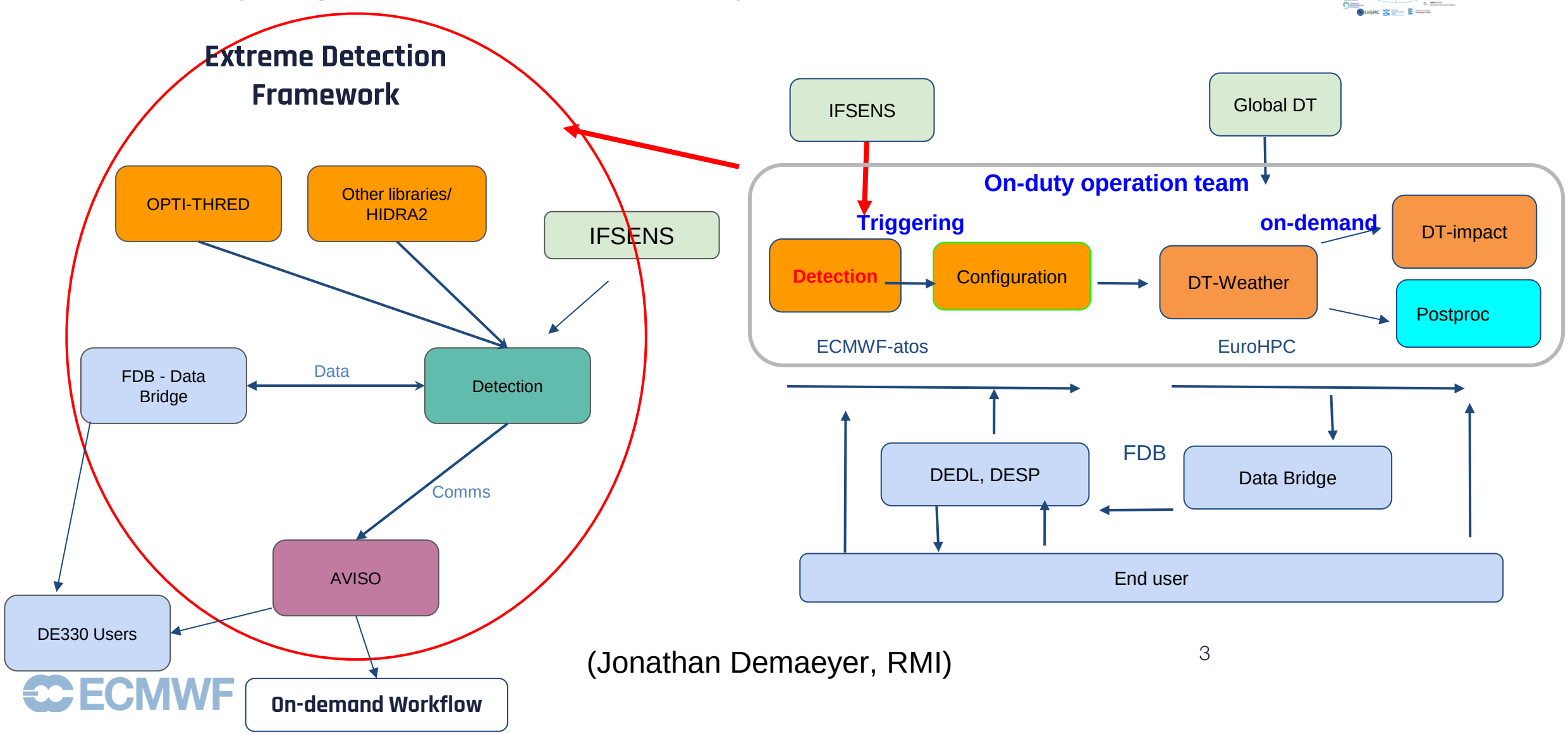
Operational LAM



On-Demand DT

On-Demand DT workflow

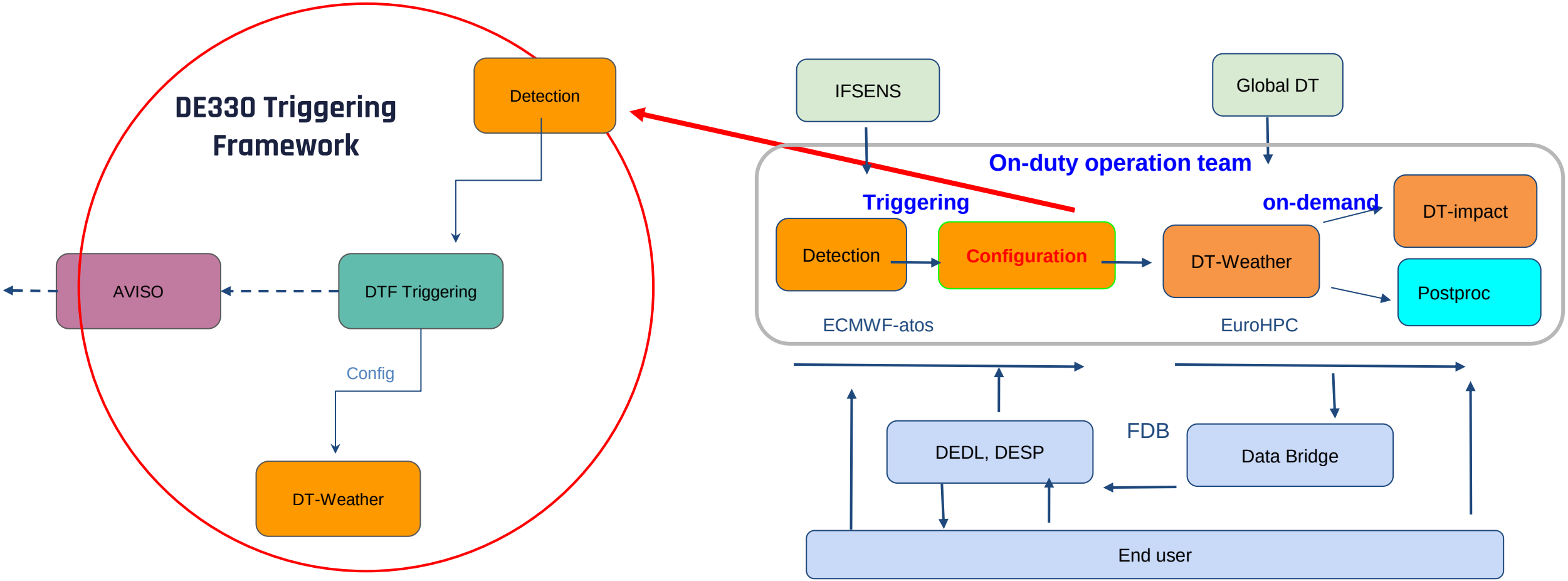
Connecting components of the end-to-end integrated workflow around extreme events



(Jonathan Demaeyer, RMI)

On-Demand DT workflow

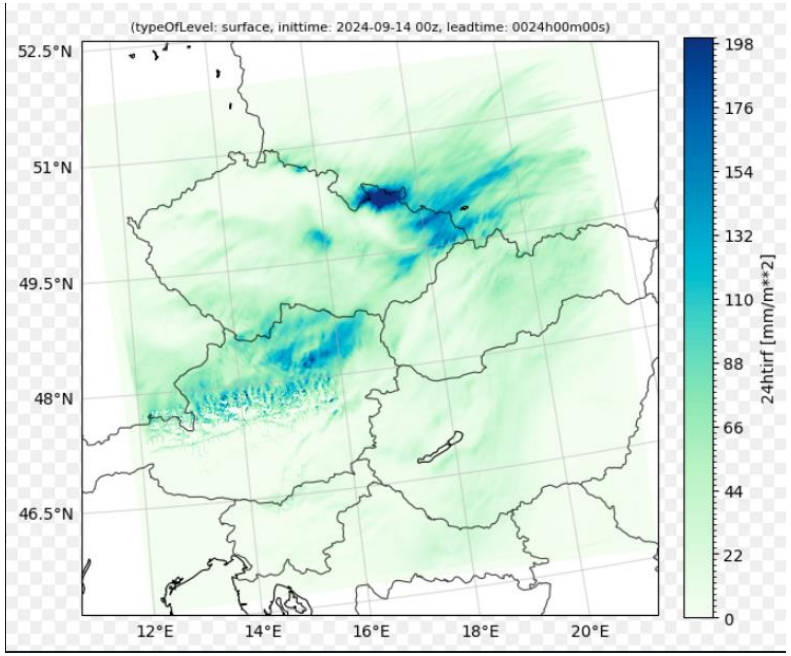
Connecting components of the end-to-end integrated workflow around extreme events



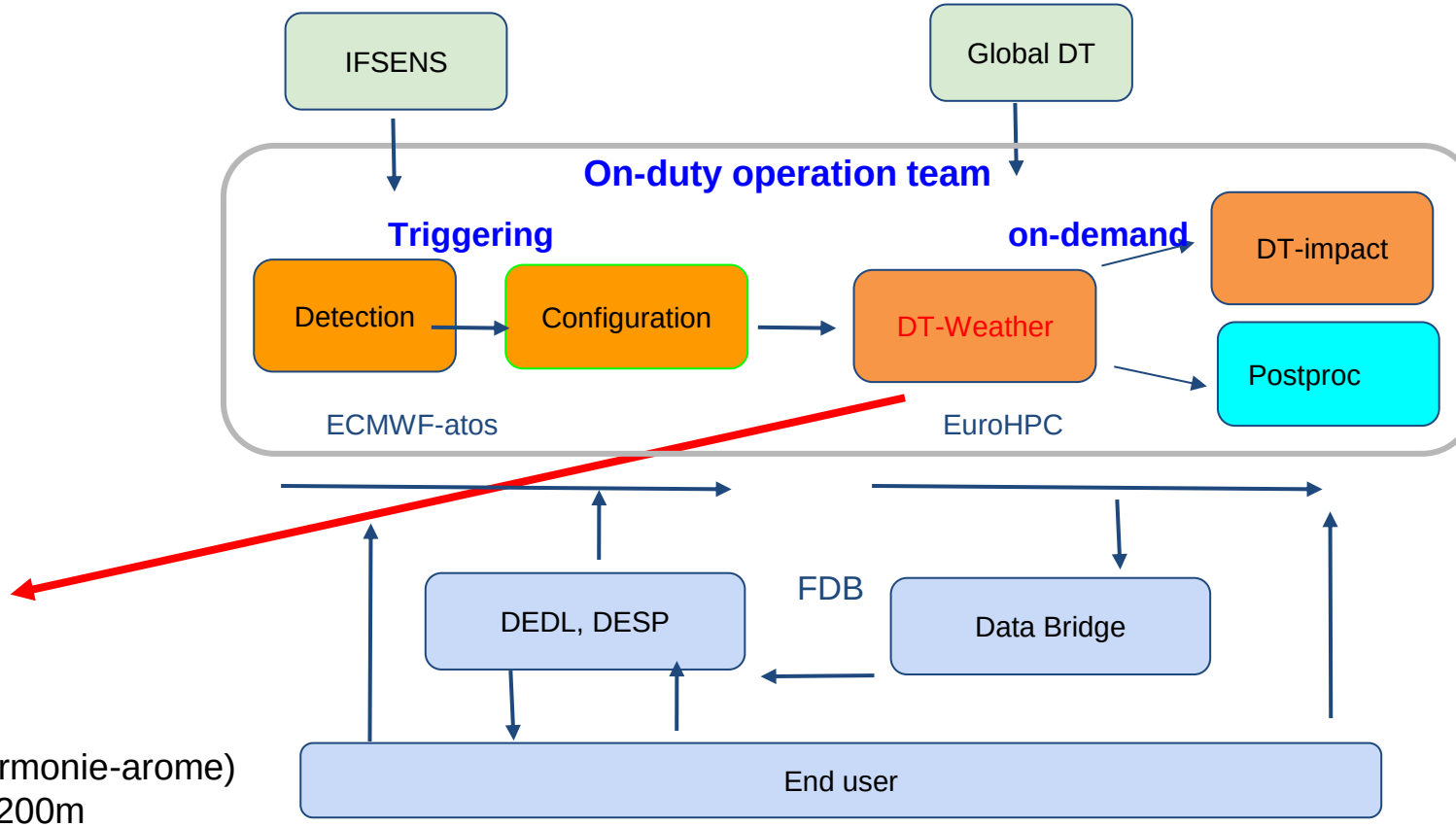
(Jonathan Demaeyer, RMI)

On-Demand DT workflow

Connecting components of the end-to-end integrated workflow around extreme events



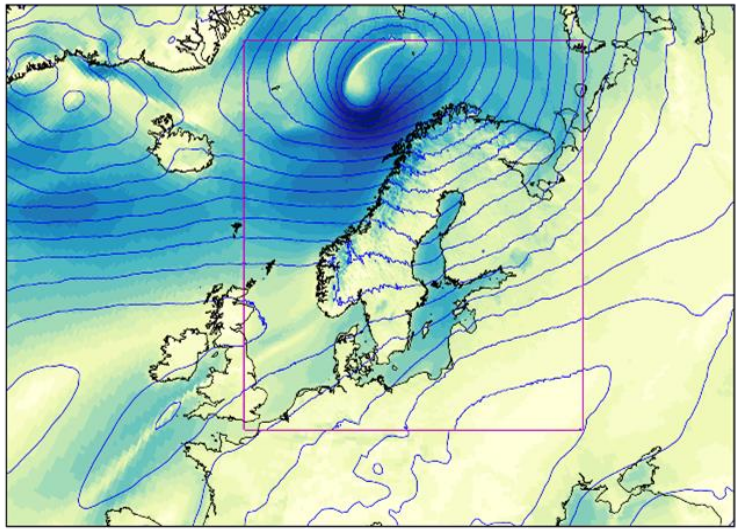
24h accumulated rain on 14 Sept by Arome@500m



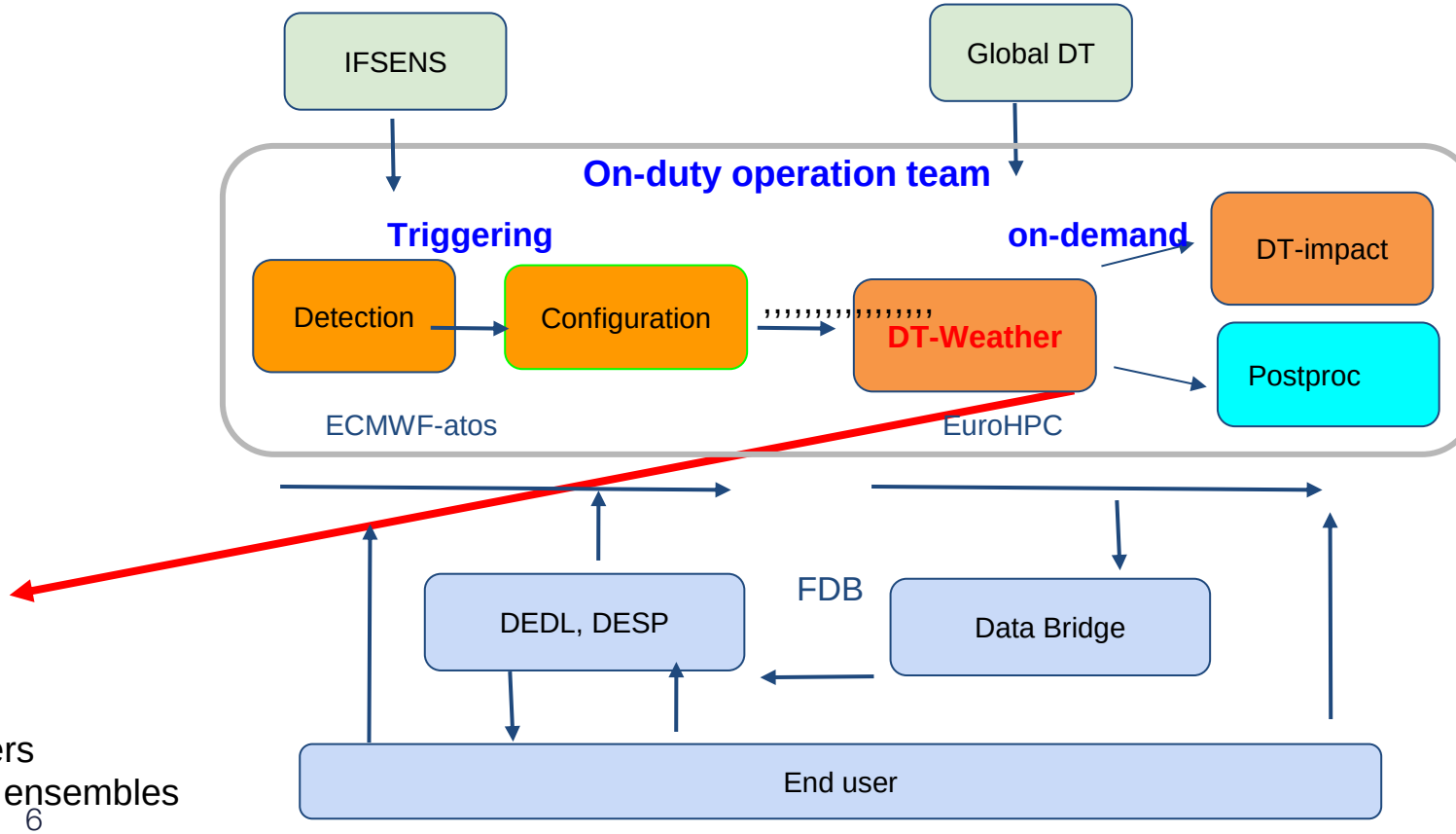
- ACCORD NWP with three flavours (Arome, Alaro, Harmonie-arome)
- Typical grid resolution 500m, 750m, 1000m, some at 200m

On-Demand DT workflow

Connecting components of the end-to-end integrated workflow around extreme events



AI-based forecast for storm Ingunn Feb 2024
(Thomas Nipen)



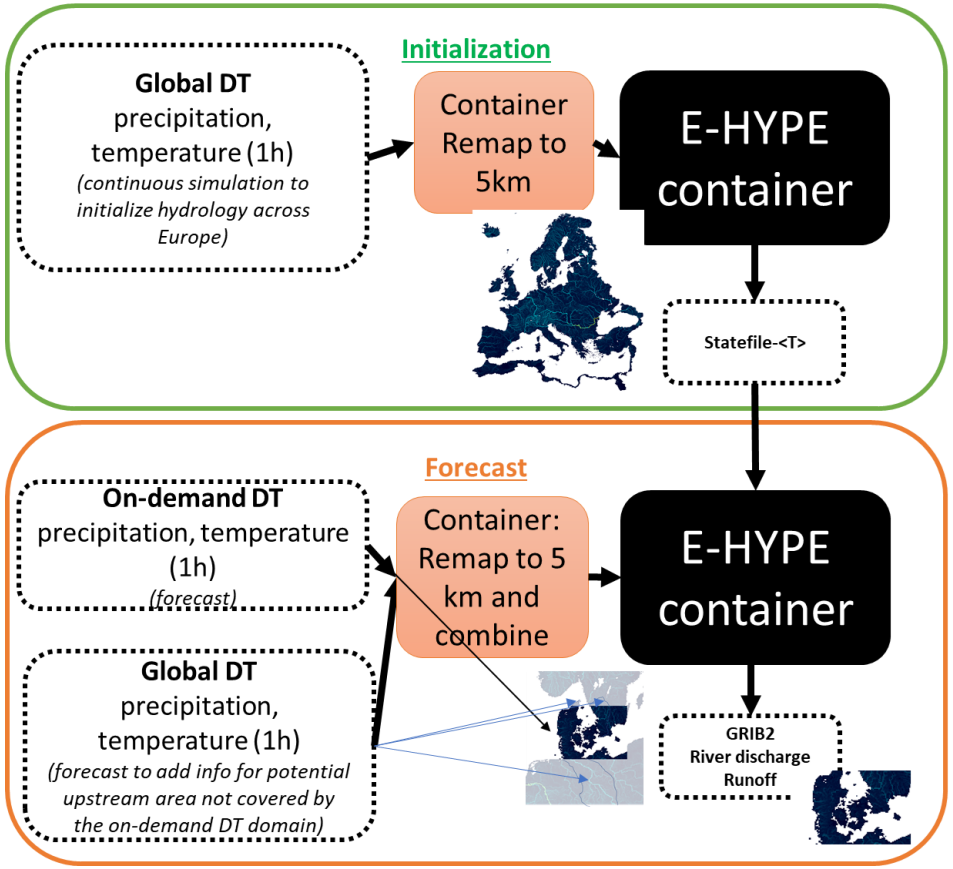
- Uncertainty quantification with either
  - physics-based sub-km EPS with limited numbers
  - or high resolution data driven weather forecast ensembles
  - or via statistical-processing approaches

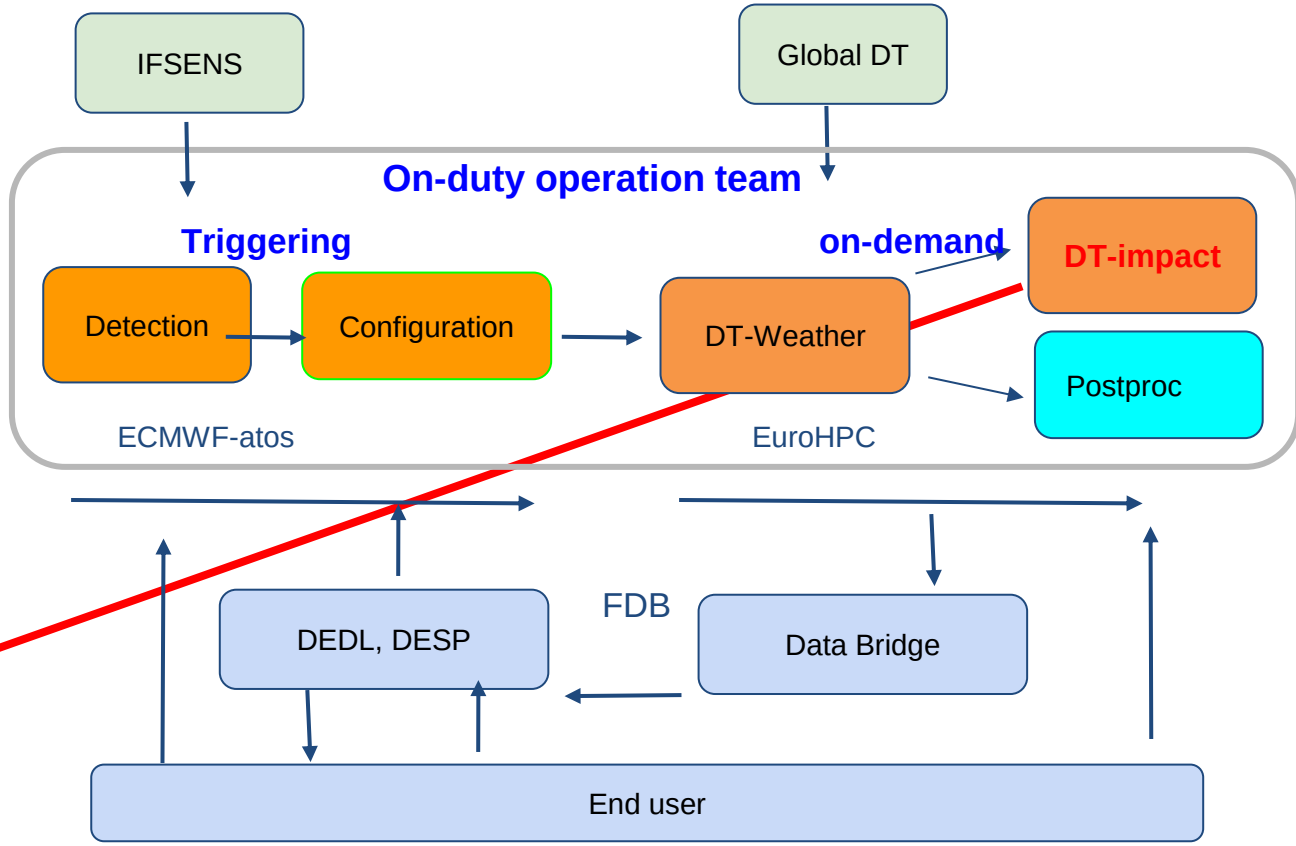
6

On-Demand DT workflow

Connecting components of the end-to-end integrated workflow around extreme events

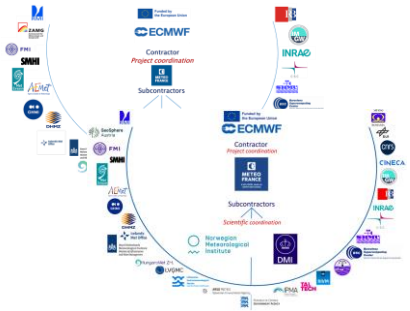
(Peter Berg, SMHI)





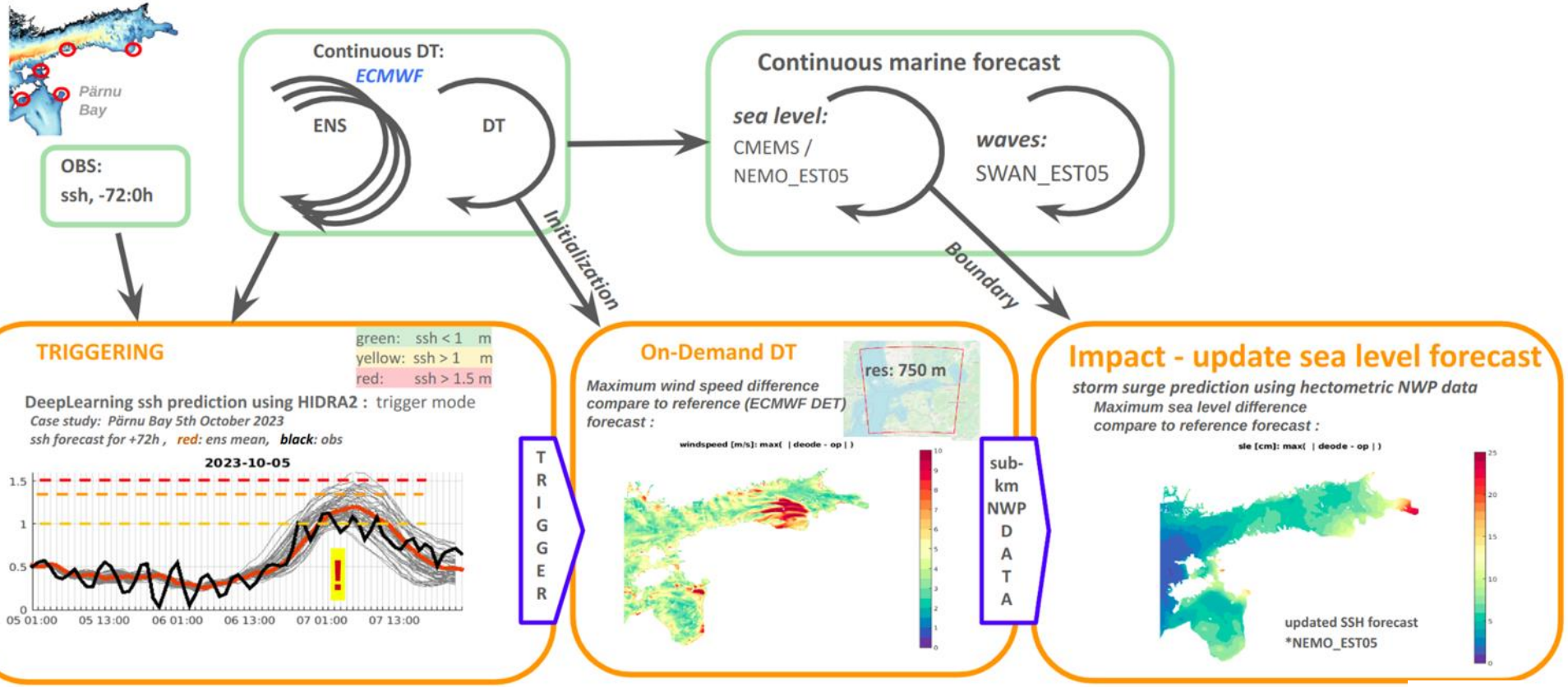
More examples on coupling with impact sectors in the presentations at the Extreme DT sessions

On-Demand DT workflow



Connecting components of the end-to-end integrated workflow around extreme events

Sea level height forecast: triggering and post-NWP SLH forecast with Nemo



Mor
the

Baltic Sea pilot area

ECMWF

ARSO METEO
Slovenian Environment Agency

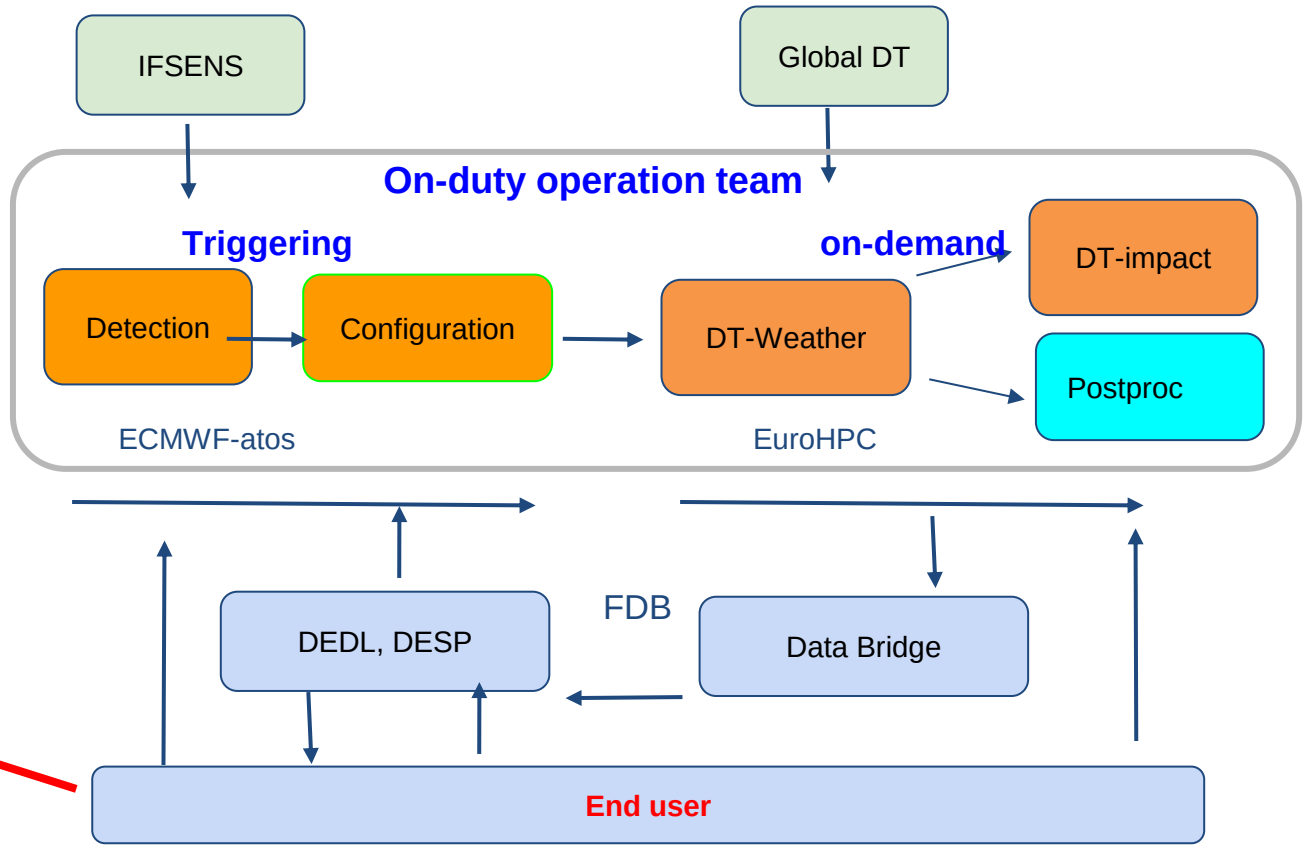
TAL TECH

On-Demand DT workflow

Connecting components of the end-to-end integrated workflow around extreme events

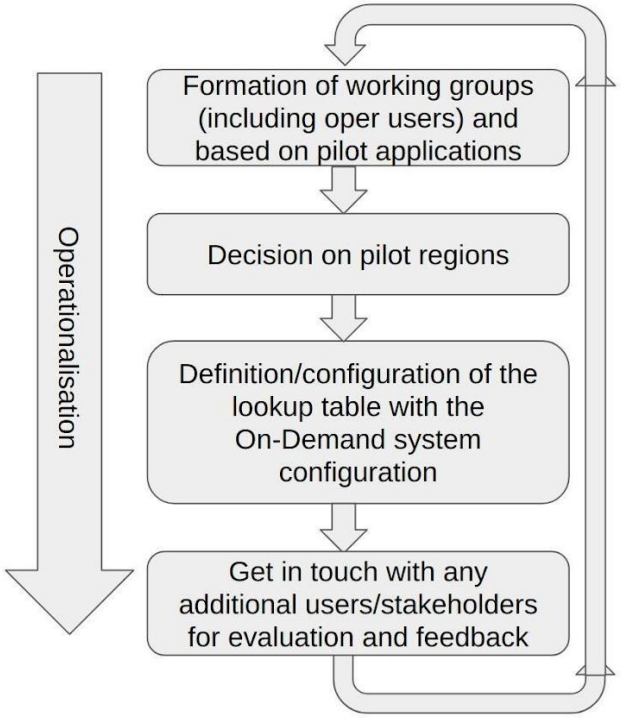
User link

- **Detection & Triggering** — "User-driven" type events
- **DT-NWP, DT-ML** — Involvement of DE330 NMSs duty forecasters
- **DT impact** — Links to end users via DE330 partners involving NWSs and impact sector partners
- **Data bridge, DESP, DEDL** — Decision-ready data delivery within specified policy framework on data bridge adjacent to EuroHPC



On-Demand DT workflow

Iterative process to update the event-triggering lookup table

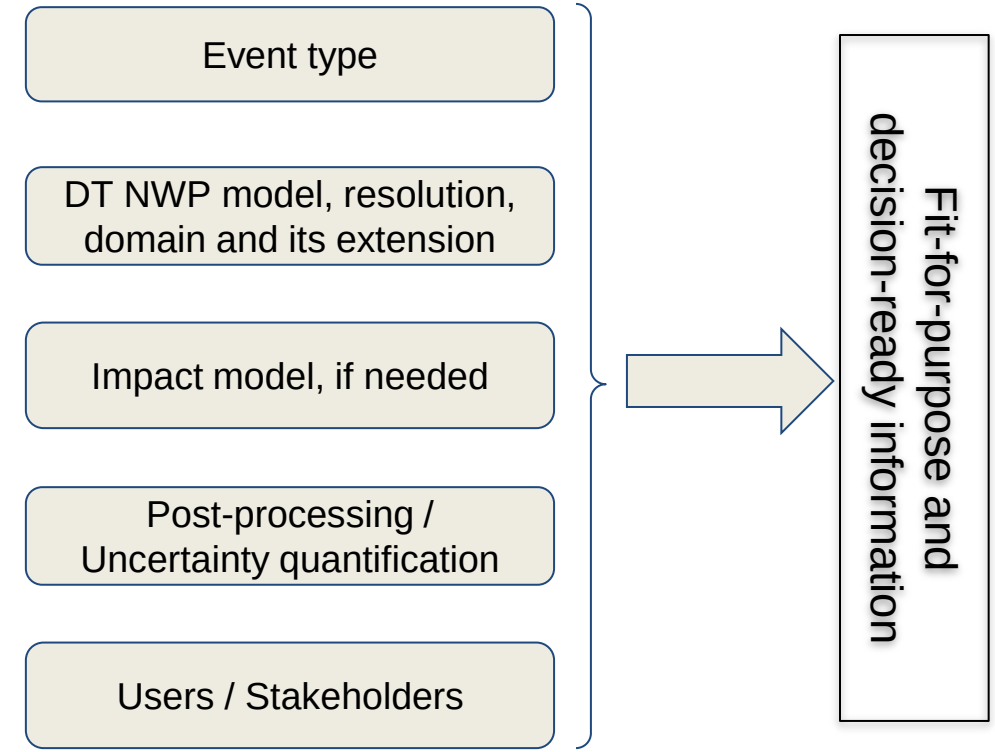


Example: Focusing on air quality, renewable energy, or Flooding

Example: Air quality & renewable energy & flooding – Carpathian basin and surrounding
Flooding & renewable energy – France and Benelux

Example: Air quality / renewable energy / flooding – Arome CSC, 1500x1500 grid points, 500m Resolution, etc…

Example: National environmental/management/safety agencies, Ship companies, Tennet, RTE, etc…



Considering feedback from users/stakeholders