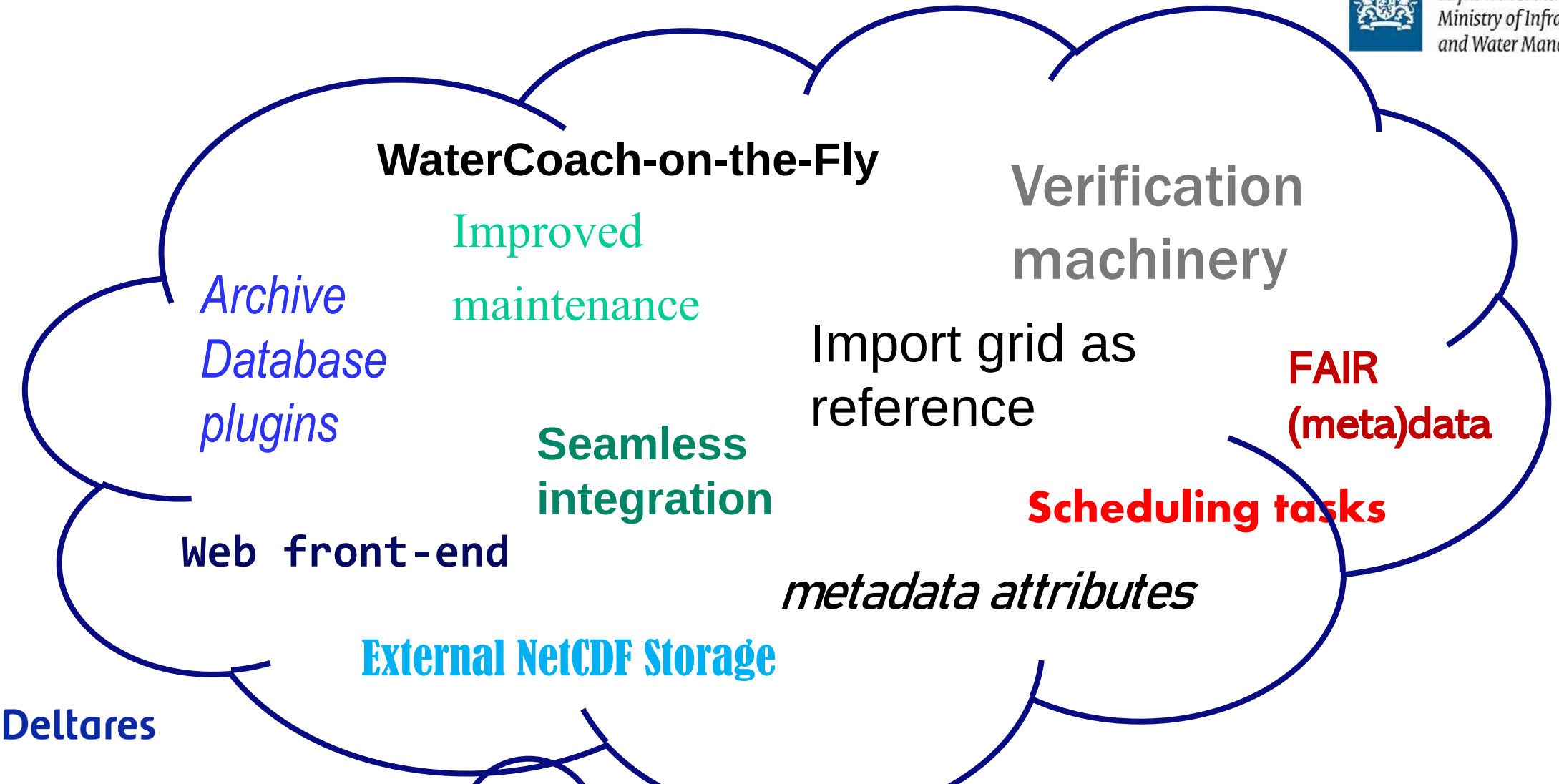
The Open Archive –
New developments and desires

VORTECH

Rijkswaterstaat
Ministry of Infrastructure and Water Management



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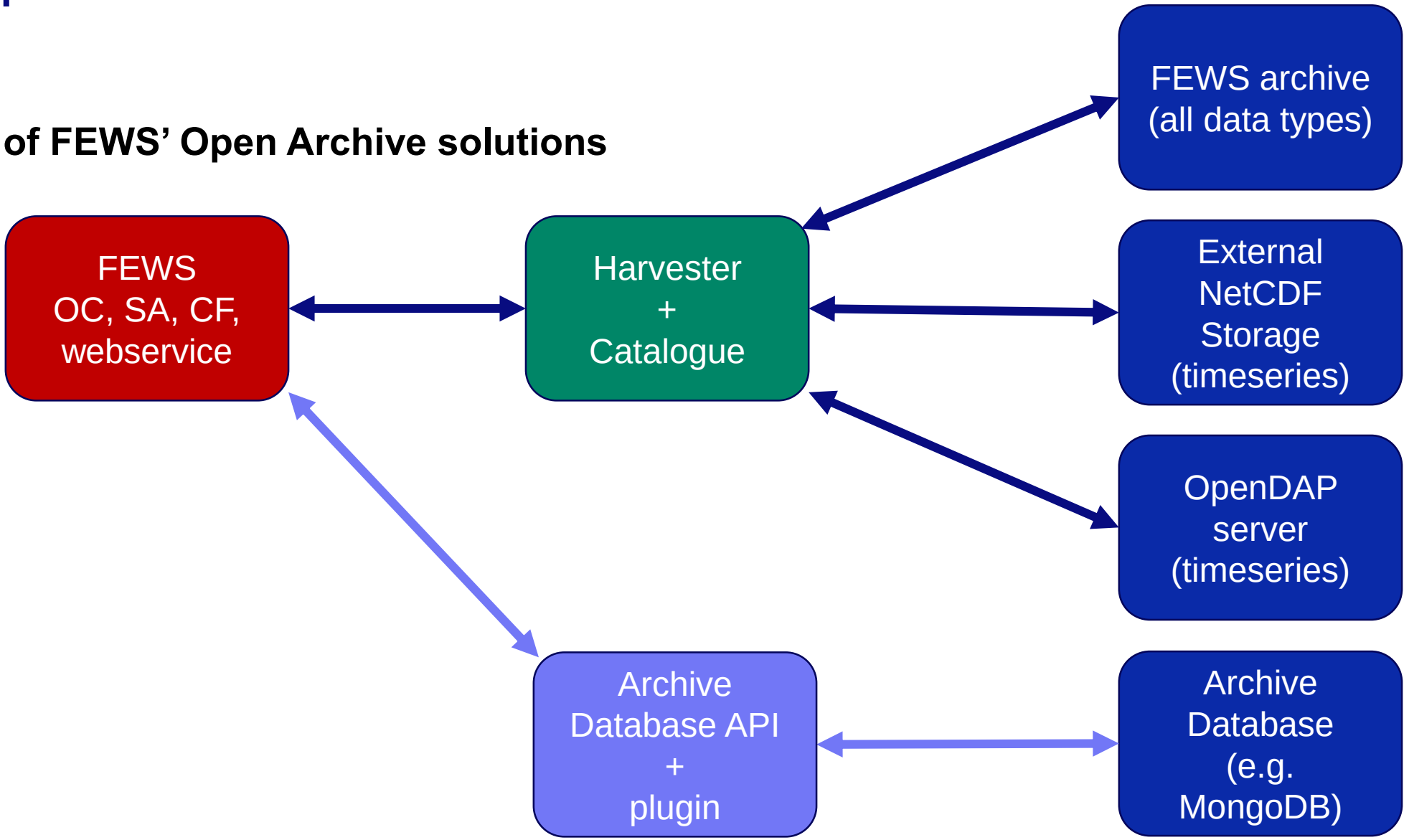
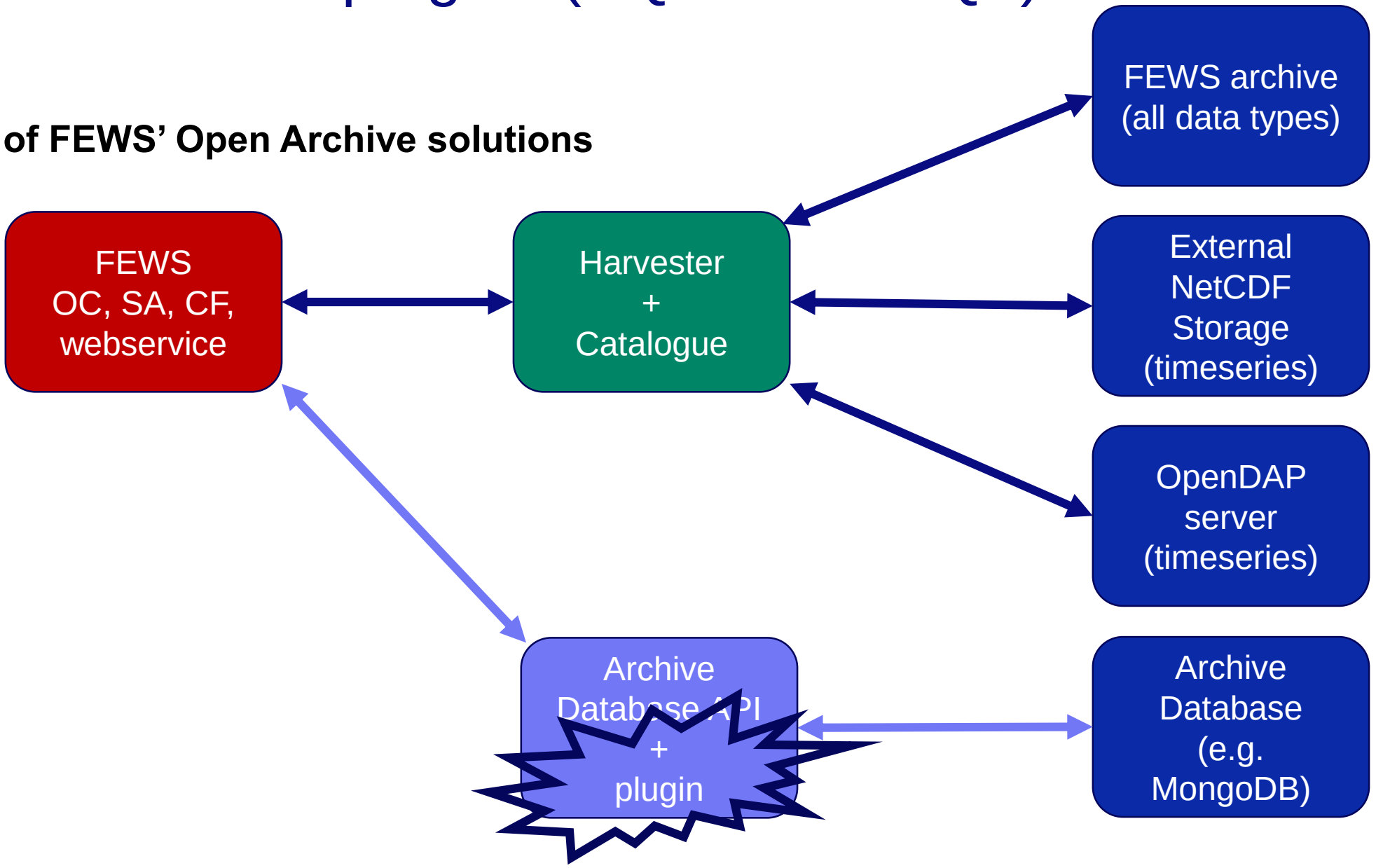
The Open Archive – How?

Summary of FEWS' Open Archive solutions



Archive Database plugins (SQL or NOSQL)

Summary of FEWS' Open Archive solutions



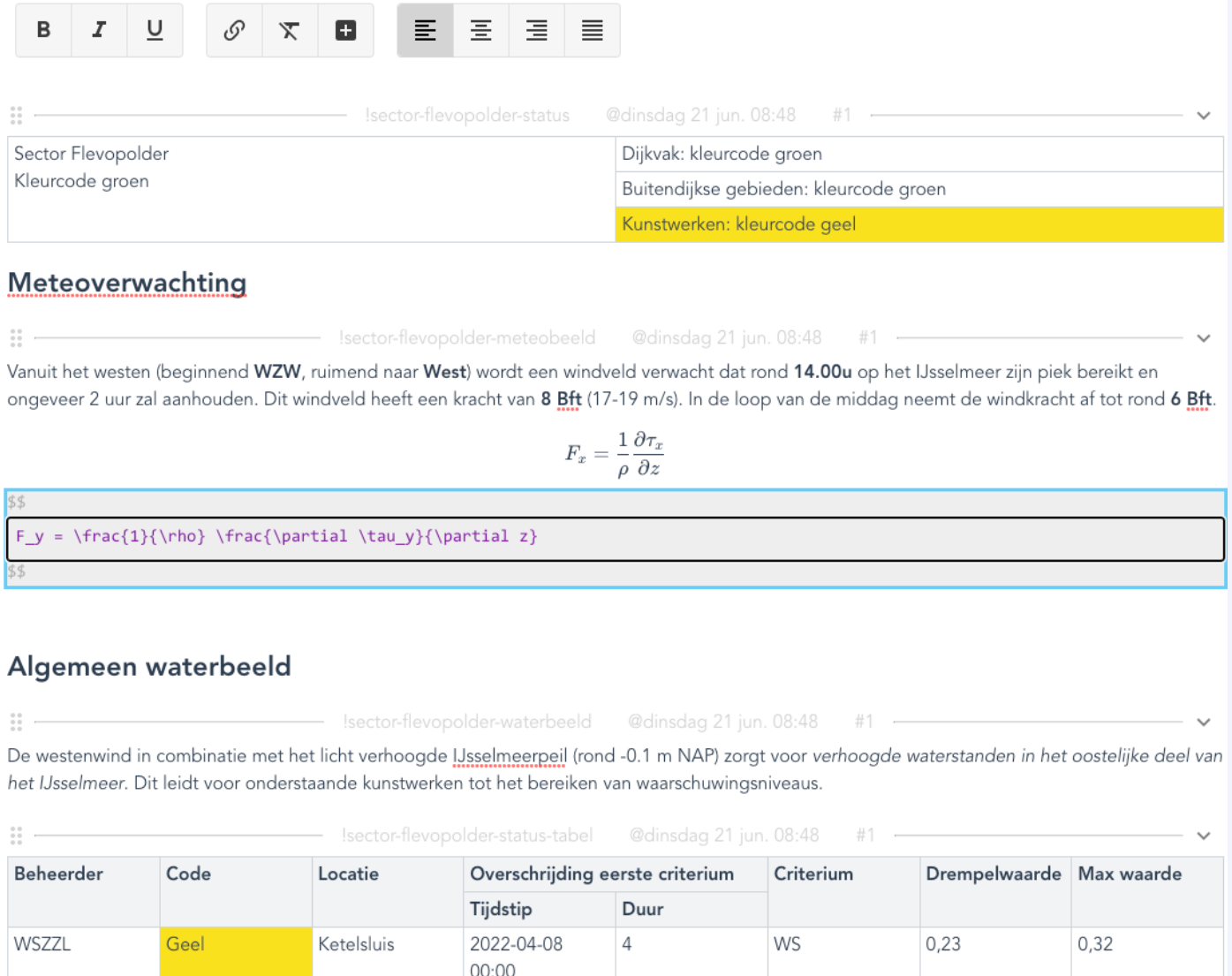
The FEWS Open Archive – Products

Automatic and collaborative reporting at Rijkswaterstaat

Steps

1. FEWS exports inputs as much as possible (data, graphs, tables)
2. Operators iterate in web interface:
   1. Add text
   2. Add additional graphs
   3. Set status (draft / final)
3. Store new version in Open Archive

   → Full report as well as separate components get separate Id's



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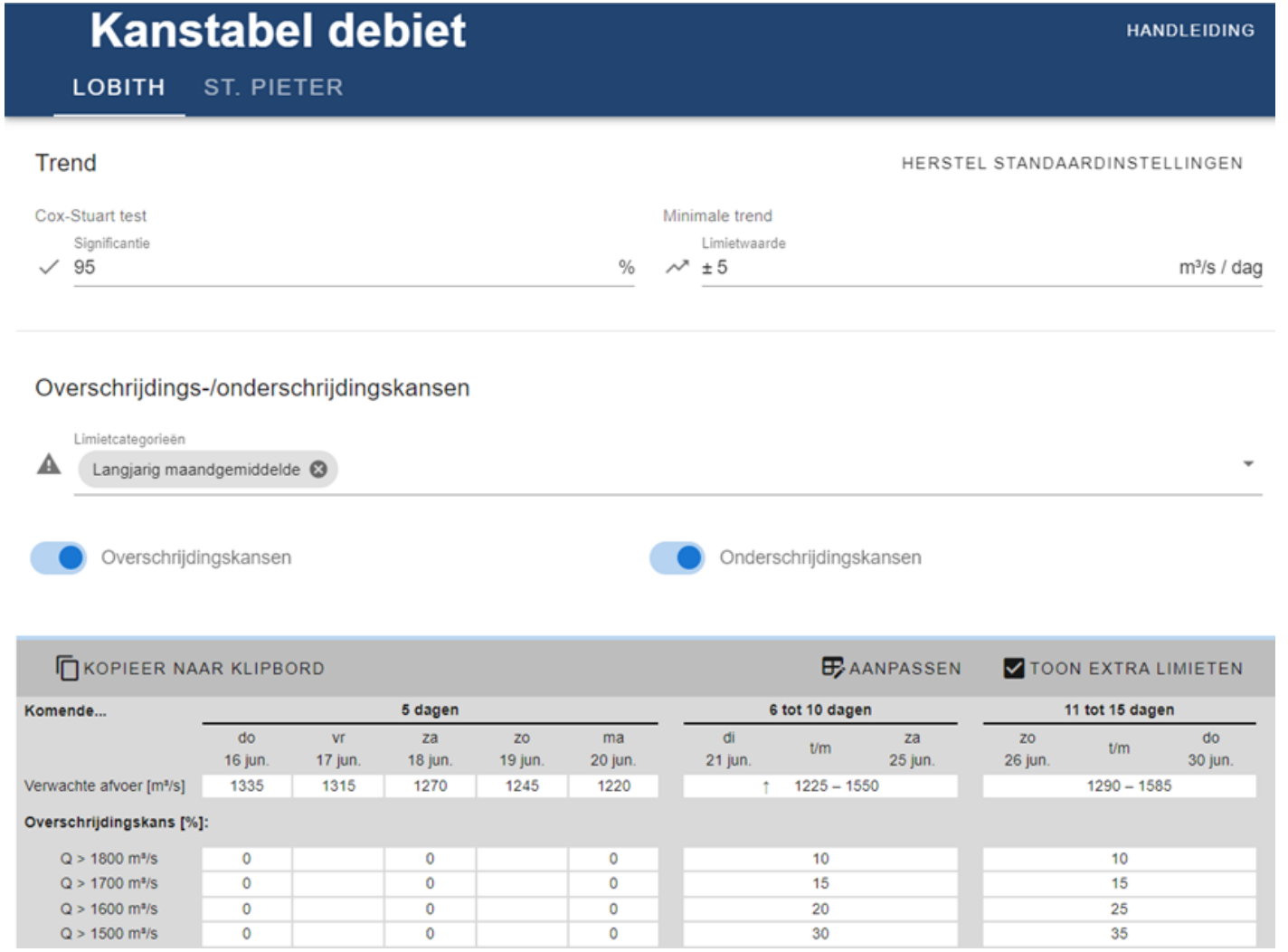
The FEWS Open Archive – Products

Automatic and collaborative reporting at Rijkswaterstaat

Data editing can be very flexible!

Example: probability of exceedance table per lead time



Komende...	5 dagen					6 tot 10 dagen			11 tot 15 dagen		
	do 16 jun.	vr 17 jun.	za 18 jun.	zo 19 jun.	ma 20 jun.	di 21 jun.	t/m	za 25 jun.	zo 26 jun.	t/m	do 30 jun.
Verwachte afvoer [m³/s]	1335	1315	1270	1245	1220	↑ 1225 – 1550			1290 – 1585		
Overschrijdingskans [%]:											
Q > 1800 m³/s	0		0		0	10			10		
Q > 1700 m³/s	0		0		0	15			15		
Q > 1600 m³/s	0		0		0	20			25		
Q > 1500 m³/s	0		0		0	30			35		

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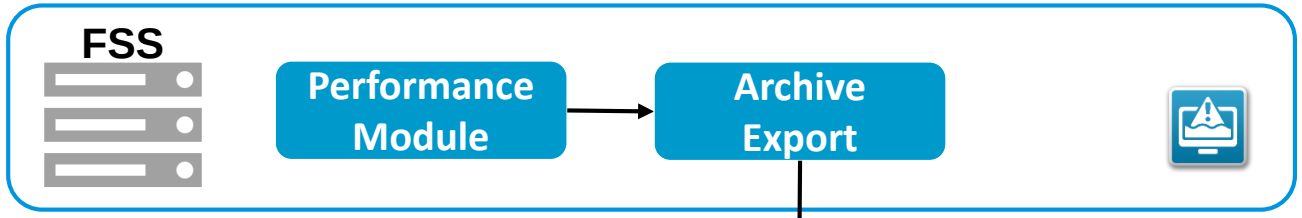
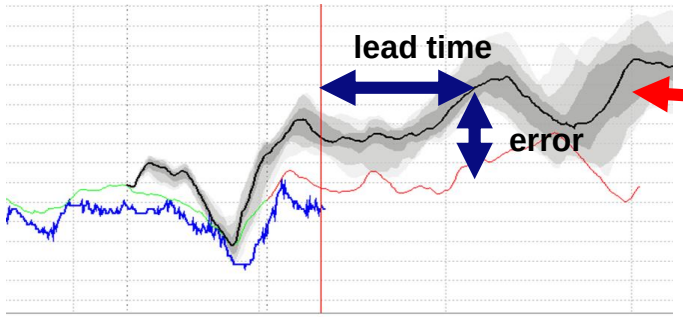
The FEWS Open Archive – Verification machinery

Model and forecast verification at Rijkswaterstaat

1. **Statistics are computed in OC, and exported to an External NetCDF Storage**
2. **Lightweight website queries FEWS webservice for metadata and data**





verification metrics (ts)

bias
rmse
std.dev

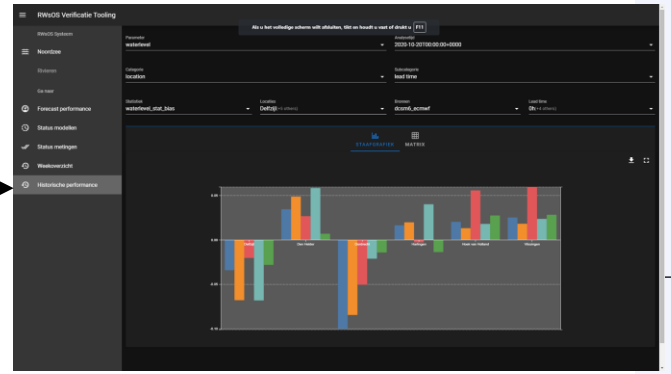
External Storage NetCDF Archive (Matroos 2.0)

PI-Webservice

metrics ts

Live demo?

Web visualisation



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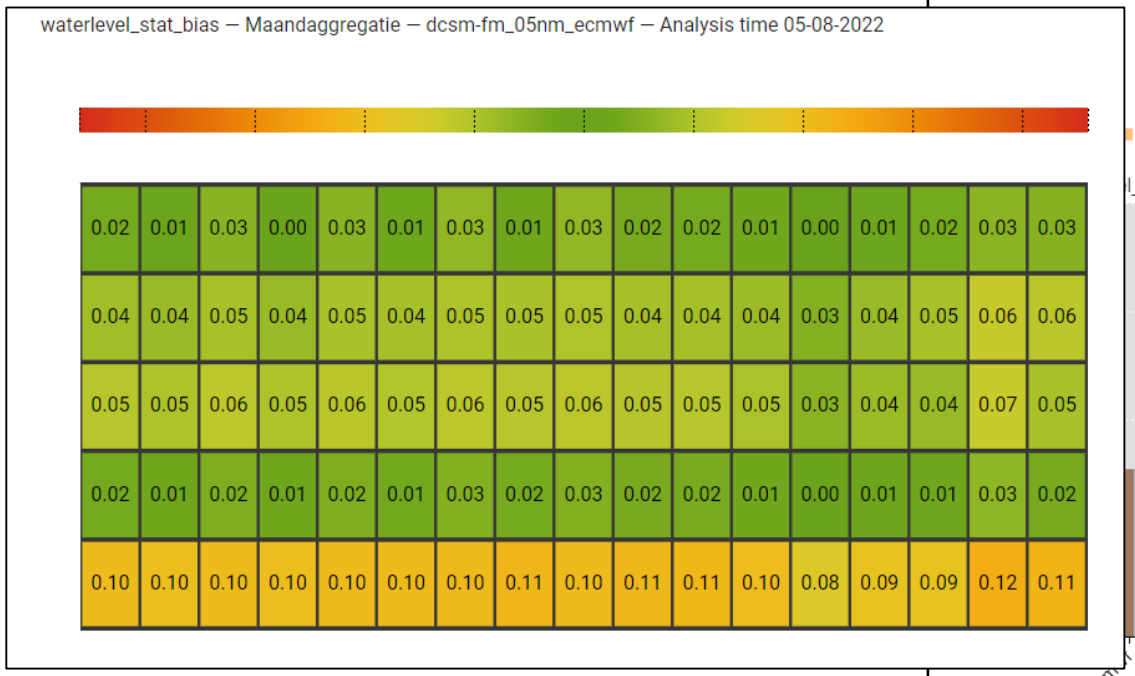
- Example diagrams



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The FEWS Open Archive – Verification machinery

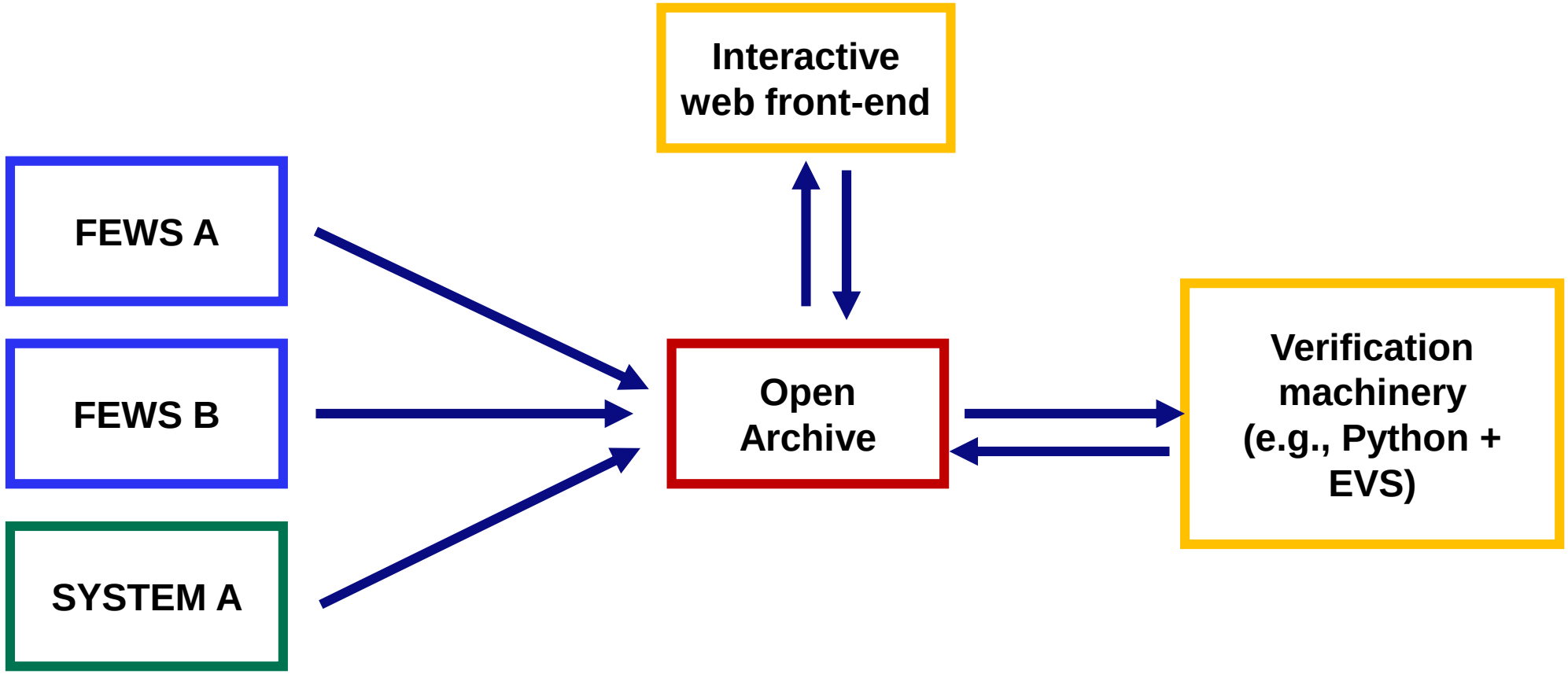
Model and forecast verification at Rijkswaterstaat

Planned next steps

- GOAL: Verify ensemble forecasts stored in the archived
- Use FEWS' General Adapter + Python + EVS software for the analysis
- Scheduled regularly to produce raw metrics and diagrams
- Dissemination using the automatic and collaborative reporting web interface

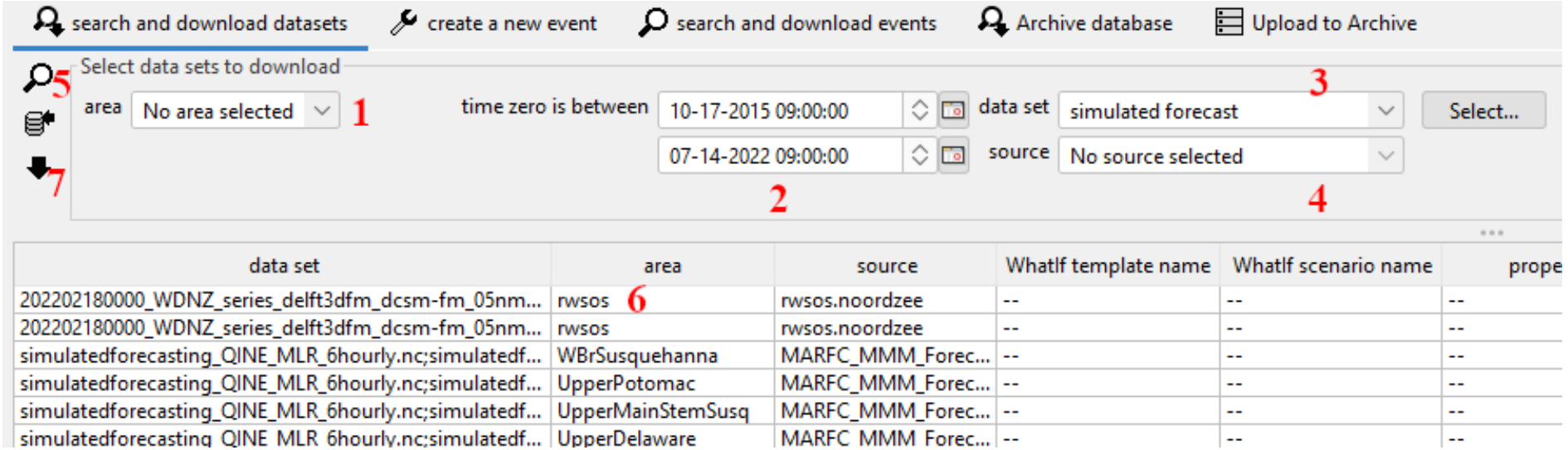
The FEWS Open Archive – Verification machinery

Model and forecast verification at Rijkswaterstaat



Web front-end (as part of Web-OC)

- Align with Web-OC developments:
  - Web-interface for searching, selecting (and tagging)
  - Leverage same visualization code on archived data as Web-OC



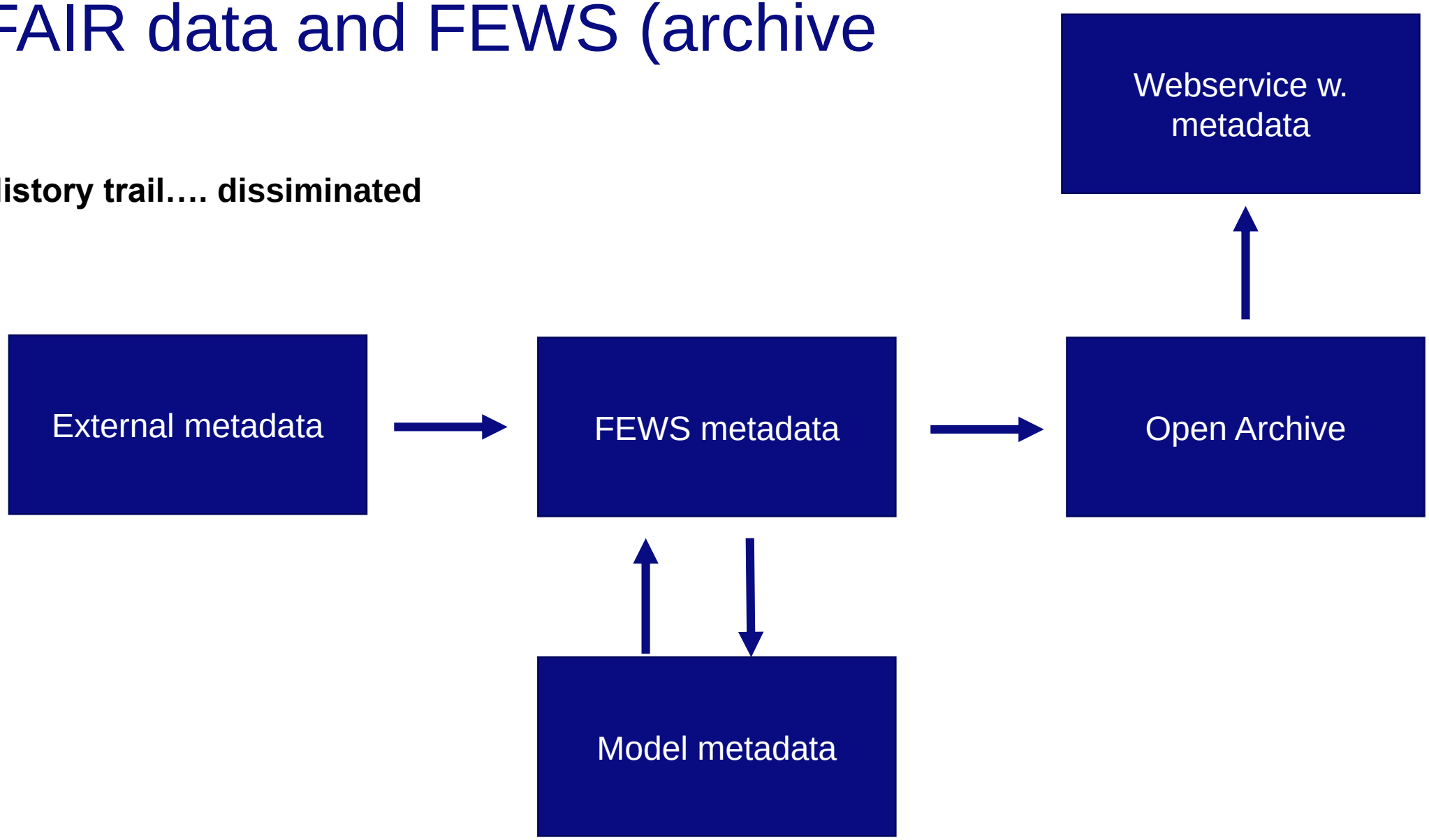
Improve archive maintenance tooling

- More checking and logging
- Allow more customized clean-up
- Merging events tagged by multiple systems

FAIR data and FEWS (archive

FAIR data and FEWS (archive

History trail…. dissiminated



Metadata attributes

- Aliasses of location or parameters
- Follow standards
- Get rid of XML code in NetCDF’s?
- Better parsing of metadata (e.g. not dates as strings)

Scheduling / triggering archive tasks

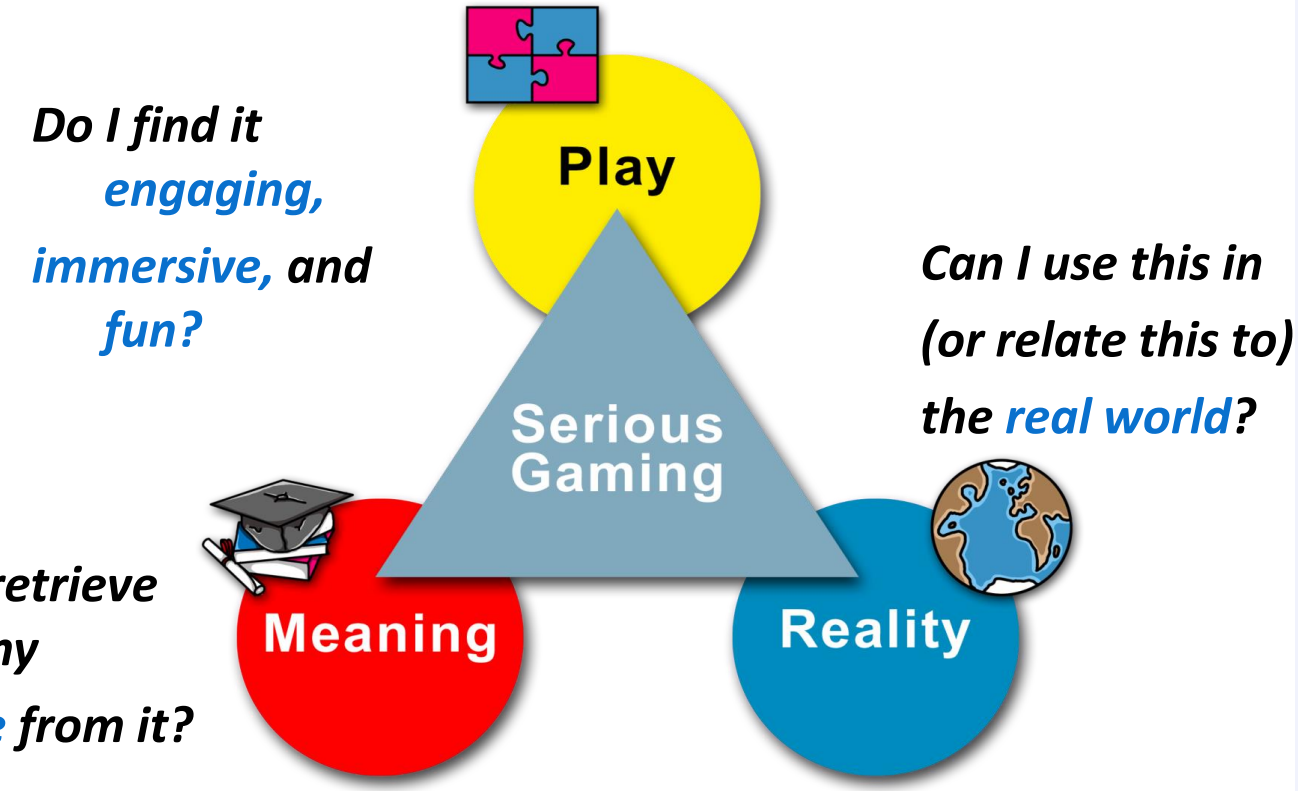
- Scheduling is possible (also clean-up)
- Maybe desirable to add more tasks (like start some analysis tool)
- Add trigger to harvester (to add files to catalogue, or after files are added)

Seamless integration

- External historicals can be picked up in client, but not:
- External forecasts (for e.g., event analysis or reforecast experiments)
- Simulated historical (to see longer period of simulations)
- Simulated forecast (event analysis with manual forecast selection)

WaterCoach, a FEWS serious game

- Introduction
- FEWS Open Archive
  - What's in a name?
  - Why?
  - How? (incl.new developments)
  - Highlights
  - Desired developments
- WaterCoach
  - What is it?
  - Relation with Open Archive
  - New developments



Detailed info and course material: https://publicwiki.deltares.nl/display/FEWSDOC/Water+Coach

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WaterCoach – what is it?

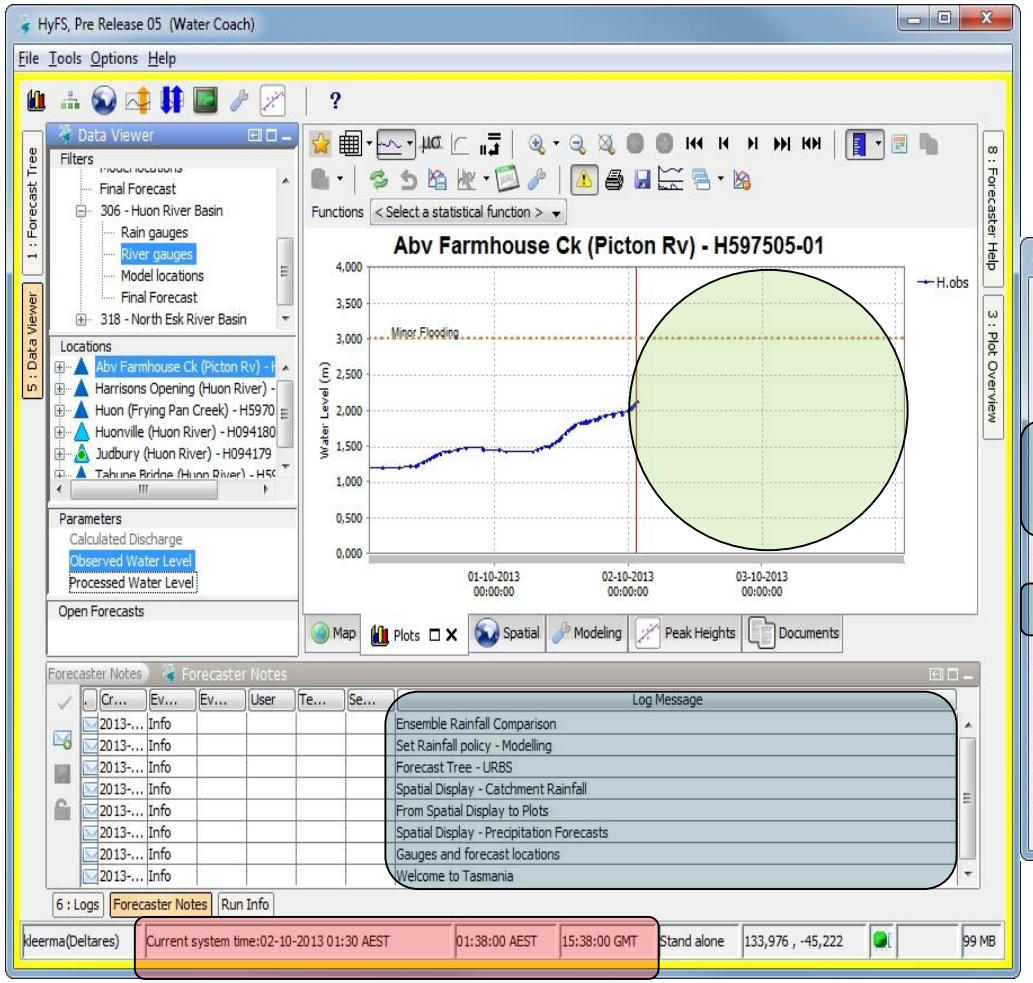
Delft-FEWS and WaterCoach arranged side by side

Yellow border = Training Mode

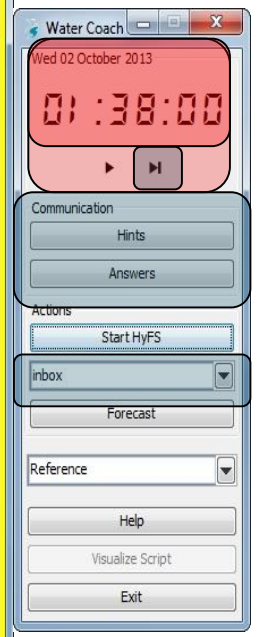
System Time in dictated by WaterCoach

Observations in “the future” are hidden

WaterCoach sends messages to Forecaster Notes



Water Coach (clock) always on top



WaterCoach – what is it?

WaterCoach can be used in a

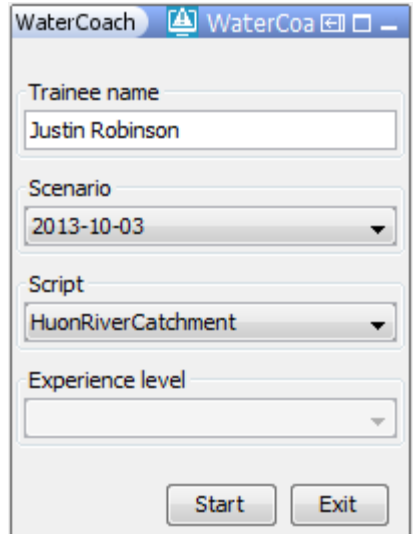
- Exercise (team)
  - Script not required (or at least not the focus)
  - Focus on team interaction, communication with externals
- Training (individual)
  - Both scenario and script need to be developed
  - Focus on training skills, content, procedures

WaterCoach on the Fly

A **scenario** consists of data, preferably **realistic** data

The FEWS Archive Catalogue Displays can be helpful here; steps:

1. **Tag an event** in the OC; relevant data is marked in the catalogue
2. Open an **SA with empty localDataStore**
3. **Select** the **event** and **import the data**



Next steps:

4. Make a **script** (XML); can be just exercise title, start and end time
5. **Store** script with configuration and localDataStore in dedicated **folder structure**
6. Open WaterCoach panel and select the script of interest

WaterCoach on the Fly

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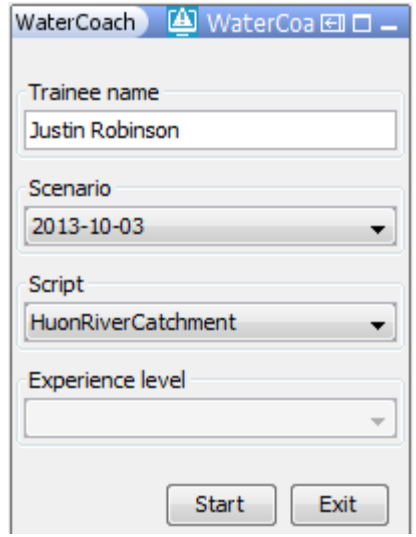

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Highlight 3: WaterCoach on the Fly

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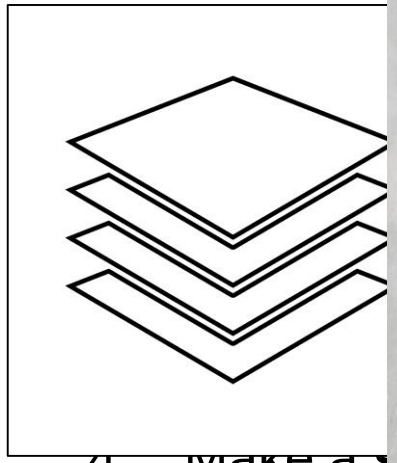
The FEWS A be helpful her



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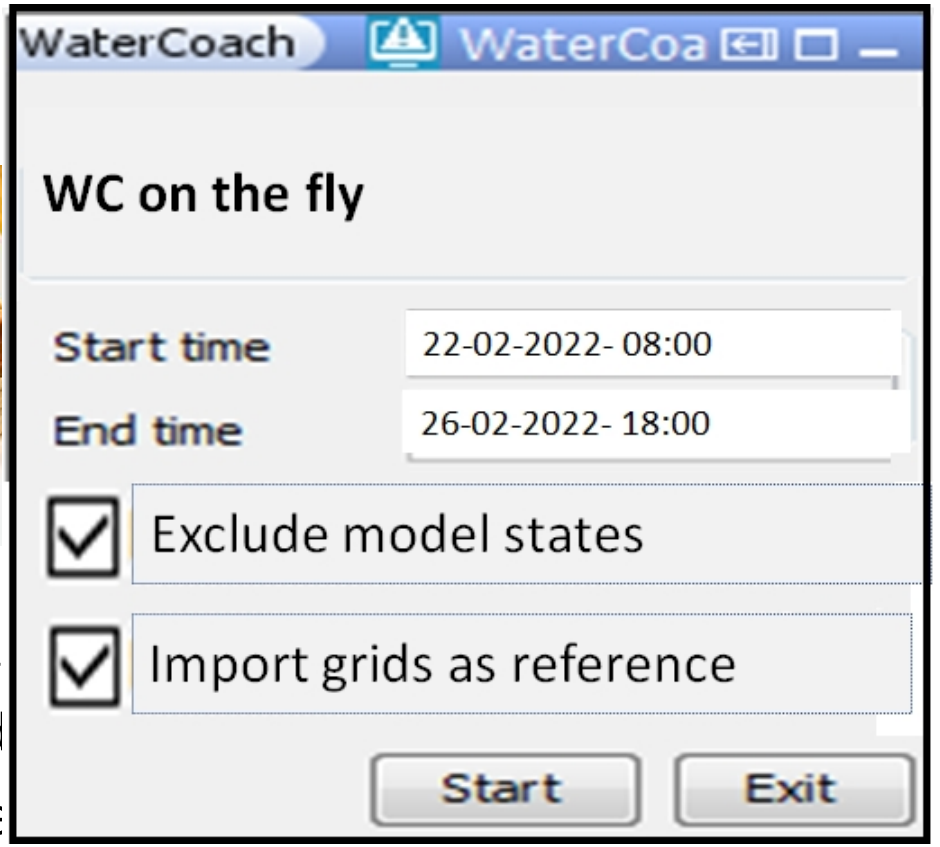
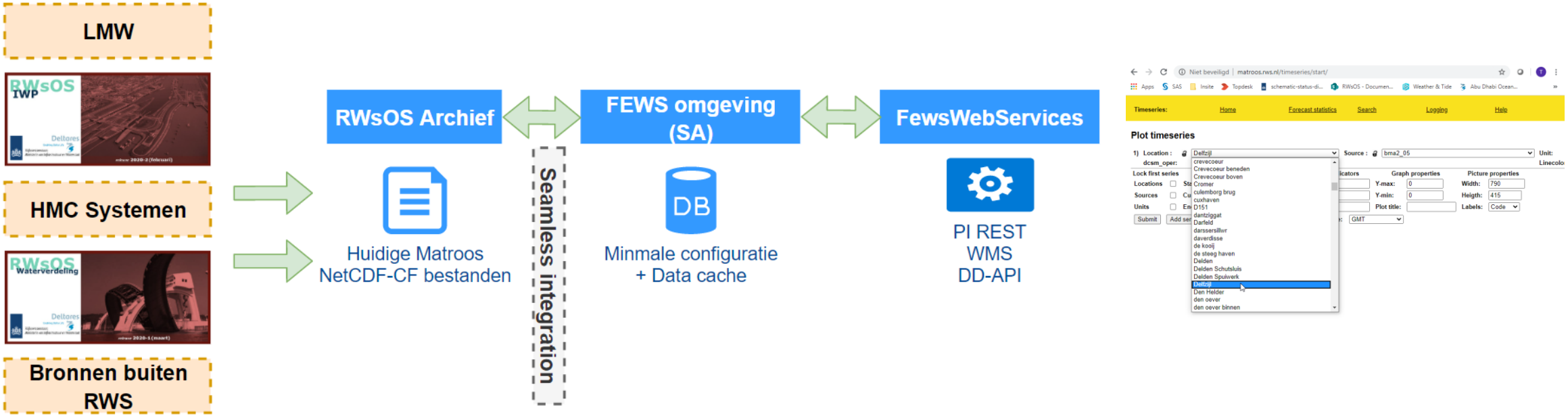


RWsOS Archive

- FewsWebServices is connected to a FEWS environment and not directly to the archive.
- Access to archived data: seamless integration
- Minimal configuration (only SystemConfigFiles)
- Developments RWsOS-Archief → successor of Matroos



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Roadmap 2022 – Computational Framework

- The Computational Framework is the *mode* of Delft-FEWS to run scenarios which are not strictly connected to the 'here & now' like in operational forecasting systems. You can define and run scenarios in the (far) past or future, visualize, compare and manage them.

  - **What-If Editor and What-if Template functionality fully available, also for Client-Server systems**
  - **Interaction with Open Archive for storing and searching scenarios**
  - **Exchange of scenarios between users**
  - **Deliver blueprints for Deltares models**

- Expected effort in 2022: ±55 days
- Main contact for this roadmap theme is: Peter Gijsbers

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