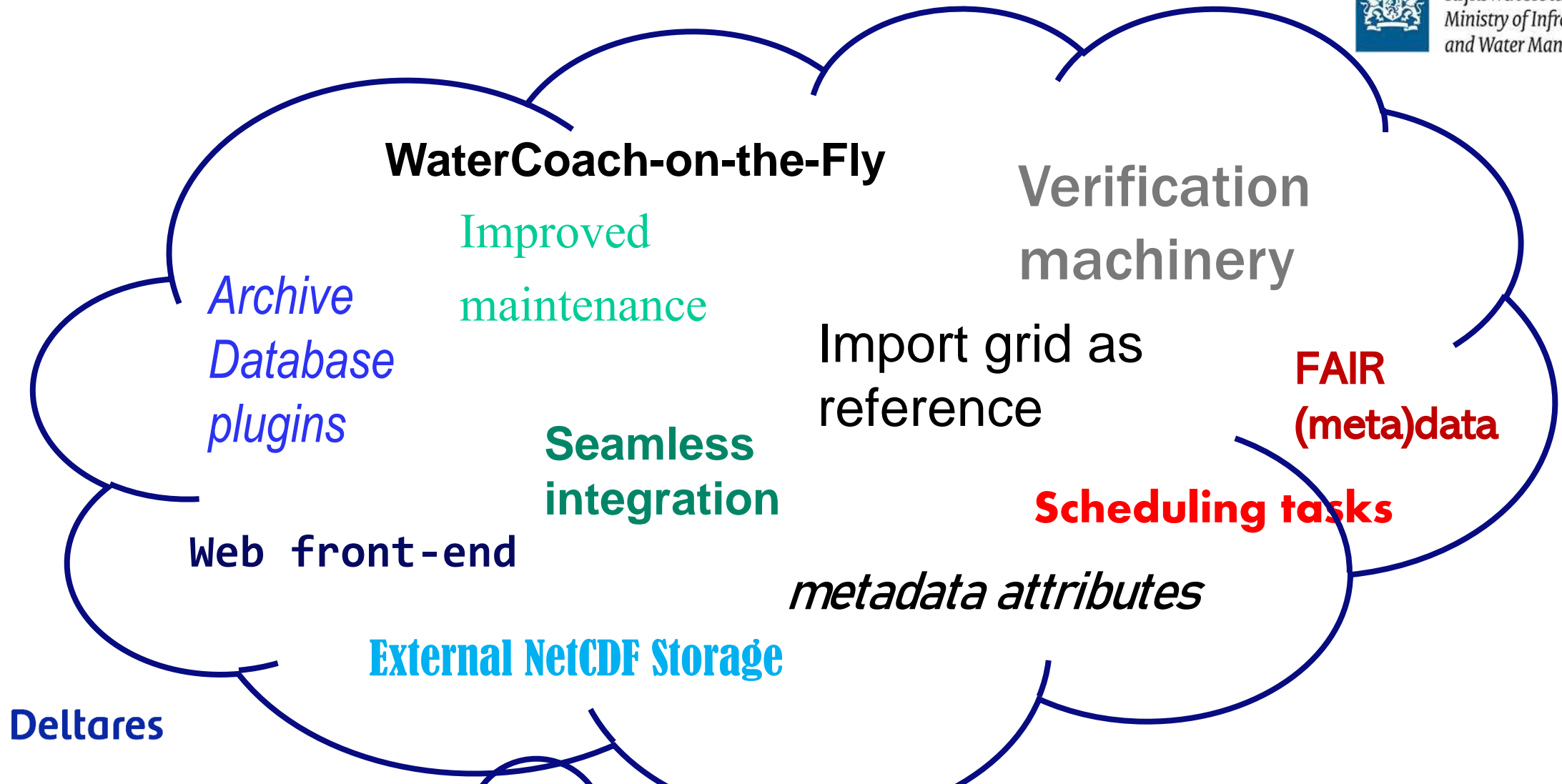
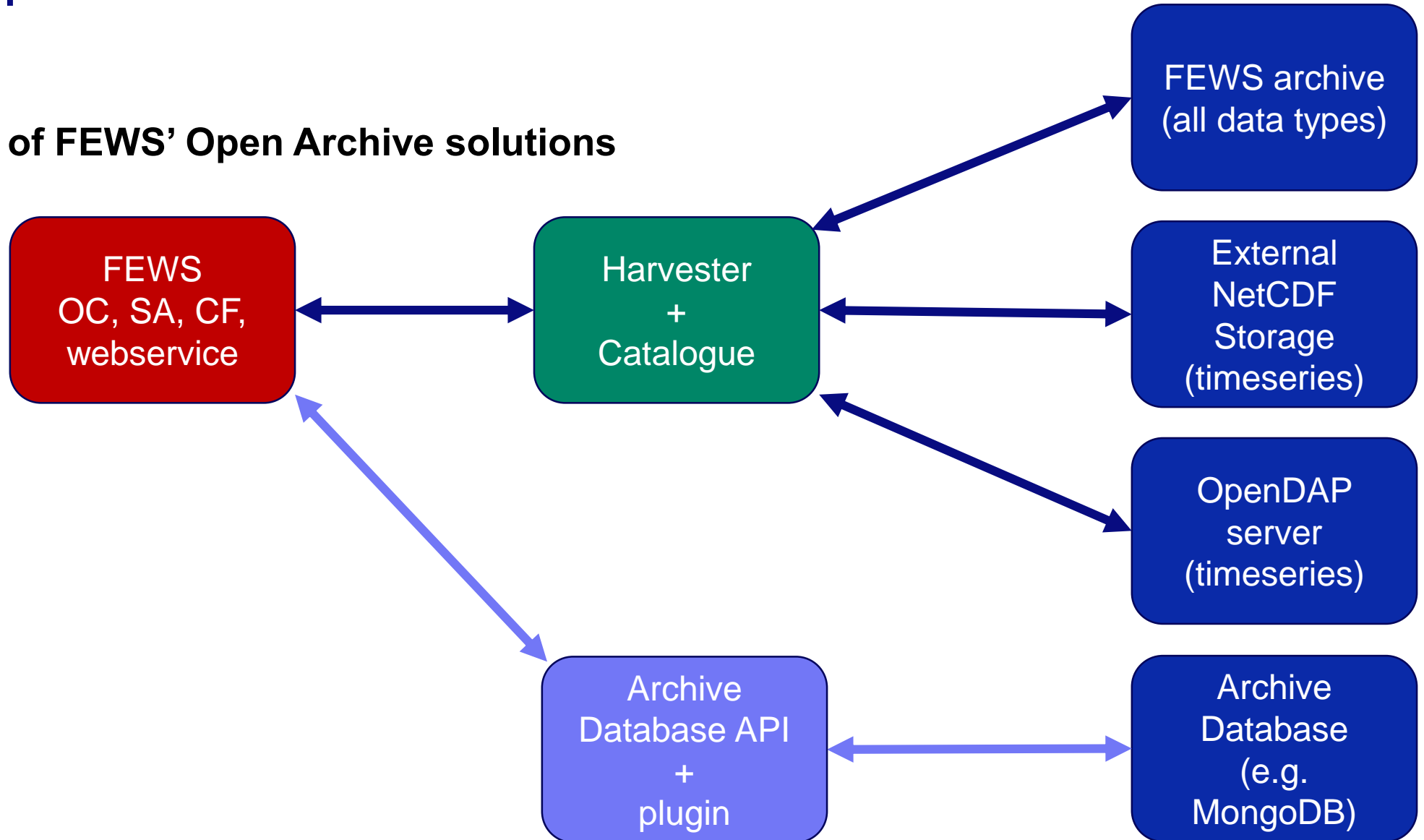


# The Open Archive – *New developments and desires*



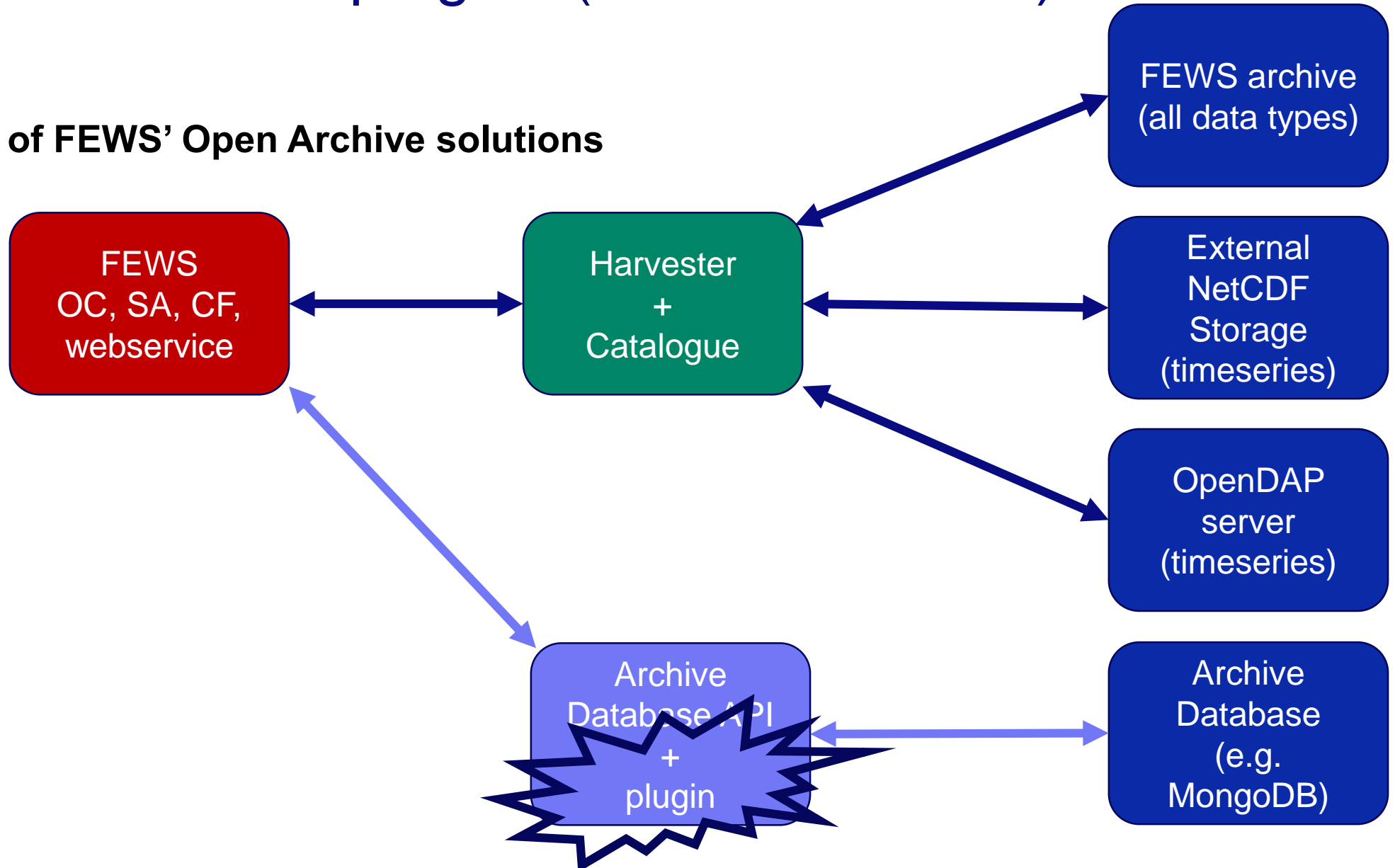
# The Open Archive – How?

## 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

B I U

---

lsector-flevopolder-status
@dinsdag 21 jun. 08:48
#1

Sector Flevopolder	Dijkvak: kleurcode groen
Kleurcode groen	Buitendijkse gebieden: kleurcode groen
	Kunstwerken: kleurcode geel

## Meteoverwachting

lsector-flevopolder-meteobeeld
@dinsdag 21 jun. 08:48
#1

Vanuit het westen (beginnend **WZW**, ruimend naar **West**) wordt een windveld verwacht dat rond **14.00u** op het IJsselmeer zijn piek bereikt en ongeveer 2 uur zal aanhouden. Dit windveld heeft een kracht van **8 Bft** (17-19 m/s). In de loop van de middag neemt de windkracht af tot rond **6 Bft**.

$$F_x = \frac{1}{\rho} \frac{\partial \tau_x}{\partial z}$$

```
F_y = \frac{1}{\rho} \frac{\partial \tau_y}{\partial z}
```

## Algemeen waterbeeld

lsector-flevopolder-waterbeeld
@dinsdag 21 jun. 08:48
#1

De westenwind in combinatie met het licht verhoogde IJsselmeerpeil (rond -0.1 m NAP) zorgt voor verhoogde waterstanden in het oostelijke deel van het IJsselmeer. Dit leidt voor onderstaande kunstwerken tot het bereiken van waarschuwningsniveaus.

lsector-flevopolder-status-tabel
@dinsdag 21 jun. 08:48
#1

Beheerder	Code	Locatie	Overschrijding eerste criterium		Criterium	Drempelwaarde	Max waarde
			Tijdstip	Duur			
WSZZL	Geel	Ketelsluis	2022-04-08 00:00	4	WS	0,23	0,32

# 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

### Kanstabel debiet

HANDLEIDING

LOBITH ST. PIETER

#### Trend

HERSTEL STANDAARDINSTELLINGEN

Cox-Stuart test

Significantie

✓ 95

%

Minimale trend

Limietwaarde

↗ ± 5

m³/s / dag

#### Overschrijdings-/onderschrijdingskansen

Limietcategorieën

⚠ Langjarig maandgemiddelde ✕

☒ Overschrijdingskansen

☒ Onderschrijdingskansen

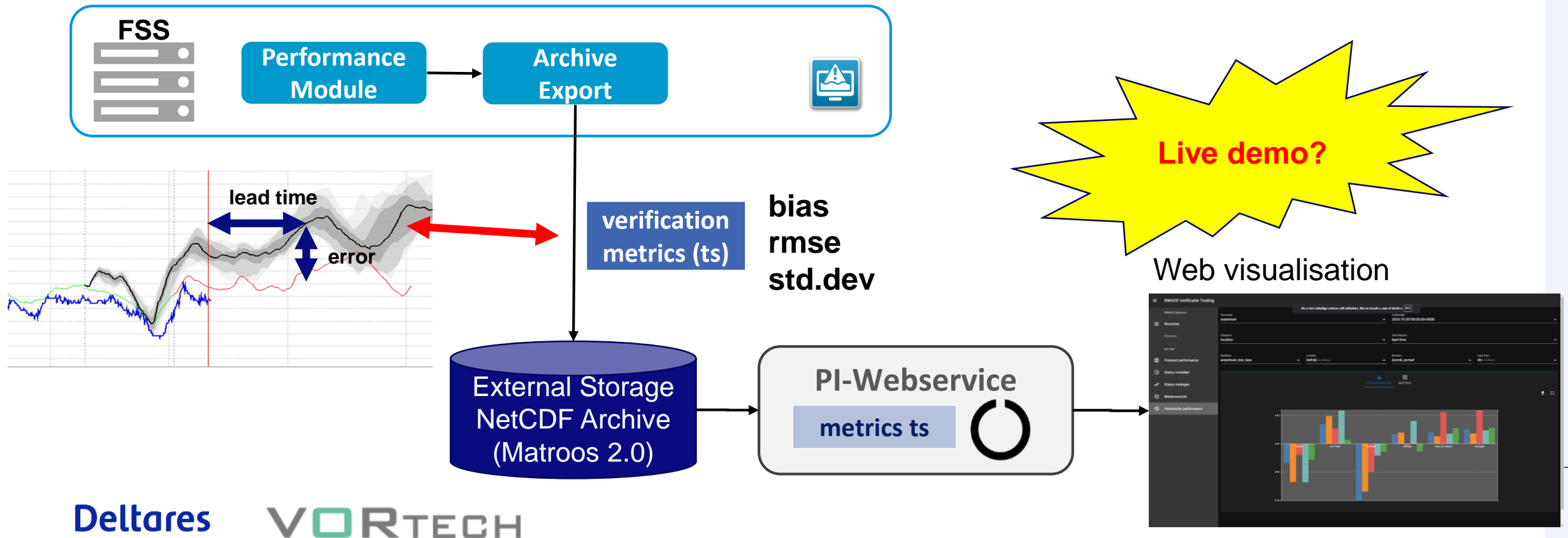
📋 KOPIEER NAAR KLIPBORD⚙ AANPASSEN☑ TOON EXTRA LIMIETEN

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	

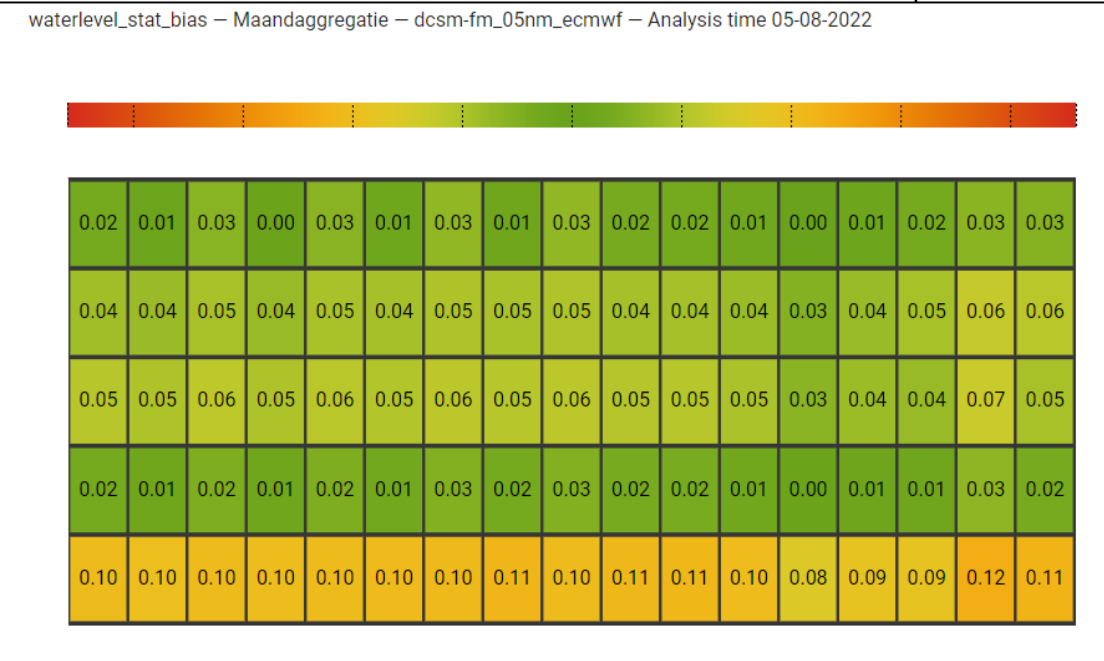
# The FEWS Open Archive – Verification machinery

## *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



- Example diagrams



# The FEWS Open Archive – Verification machinery

## *Model and forecast verification at Rijkswaterstaat*

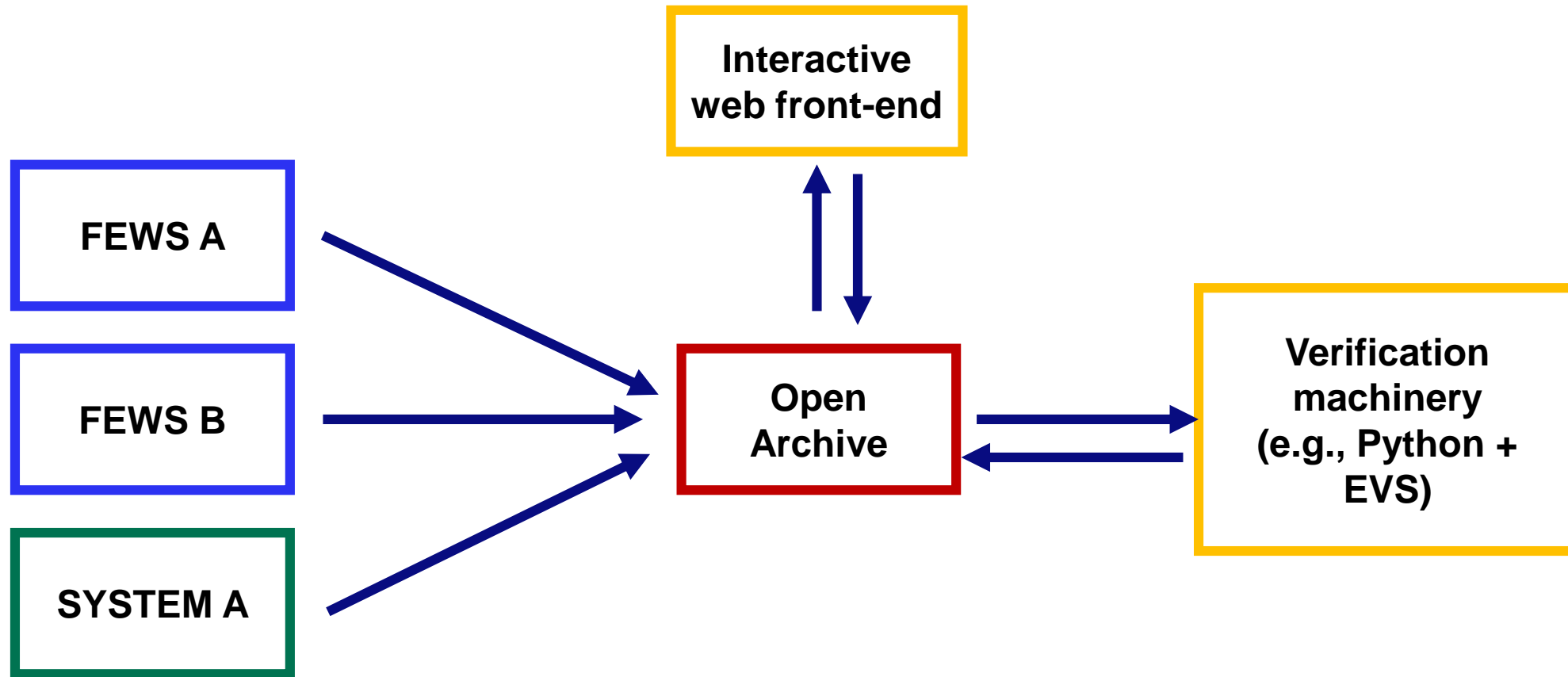
### **Planned next steps**

- 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

search and download datasets   create a new event   search and download events   Archive database   Upload to Archive

Select data sets to download

5   area: No area selected (1)   time zero is between: 10-17-2015 09:00:00 to 07-14-2022 09:00:00 (2)   data set: simulated forecast (3)   source: No source selected (4)   Select...

data set	area	source	WhatIf template name	WhatIf scenario name	prope
202202180000_WDNZ_series_delft3dfm_dcsfm-fm_05nm...	rwsos (6)	rwsos.noordzee	--	--	--
202202180000_WDNZ_series_delft3dfm_dcsfm-fm_05nm...	rwsos	rwsos.noordzee	--	--	--
simulatedforecasting_QINE_MLR_6hourly.nc;simulatedf...	WBrSusquehanna	MARFC_MMM_Forec...	--	--	--
simulatedforecasting_QINE_MLR_6hourly.nc;simulatedf...	UpperPotomac	MARFC_MMM_Forec...	--	--	--
simulatedforecasting_QINE_MLR_6hourly.nc;simulatedf...	UpperMainStemSusq	MARFC_MMM_Forec...	--	--	--
simulatedforecasting_QINE_MLR_6hourly.nc;simulatedf...	UpperDelaware	MARFC_MMM_Forec...	--	--	--

# 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 Principles](#) [Implementation Networks](#) [News](#) [Events](#) [Resources](#) [About GO FAIR](#) [Q](#)

## FAIR Principles

[Home](#) > [FAIR Principles](#)

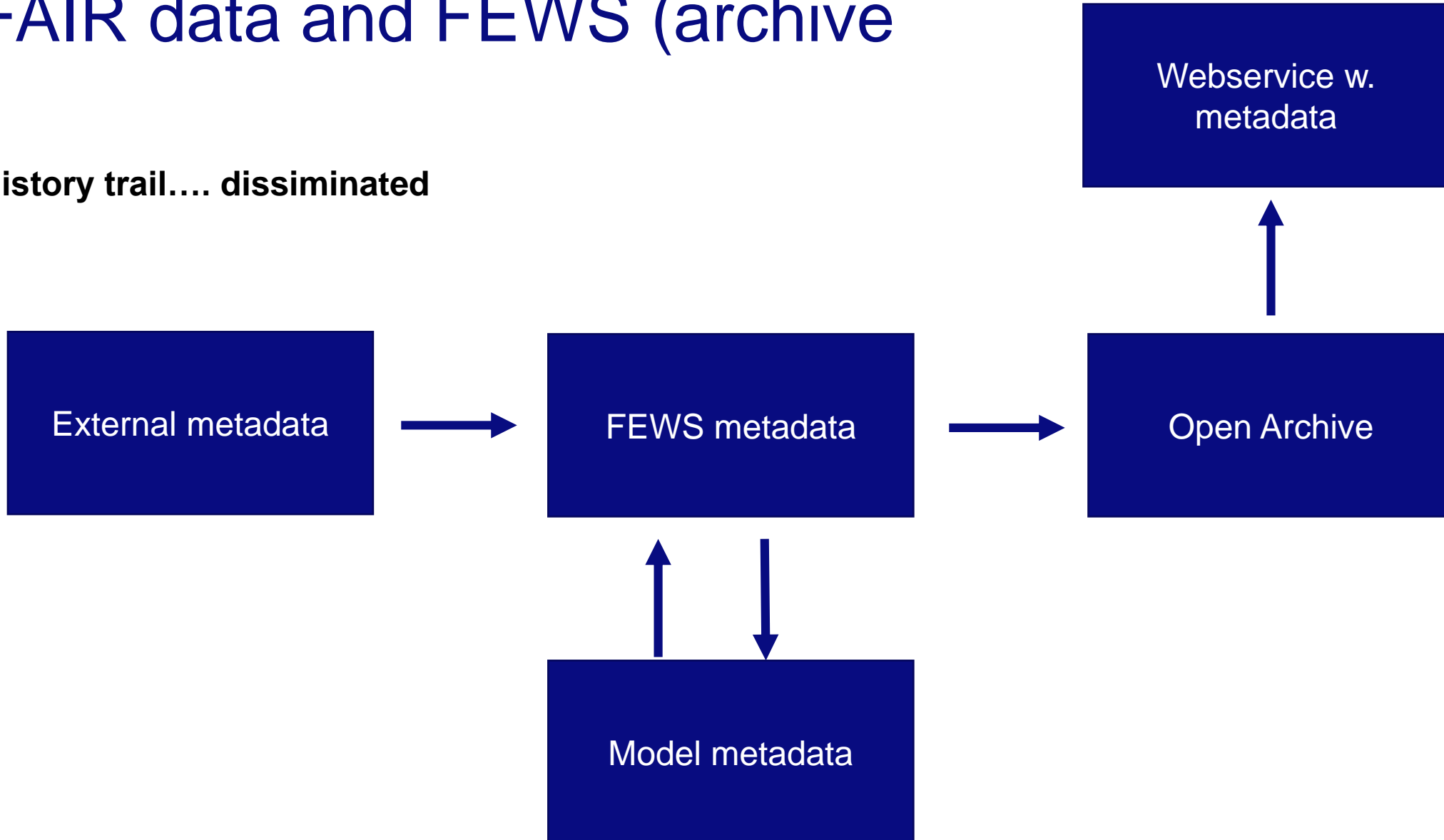
### > FAIR Principles

- > **F1: (Meta) data are assigned globally unique and persistent identifiers**
- > **F2: Data are**

In 2016, the '**FAIR Guiding Principles for scientific data management and stewardship**' were published in *Scientific Data*. The authors intended to provide guidelines to improve the **F**indability, **A**ccessibility, **I**nteroperability, and **R**euse of digital assets. The principles emphasise machine-actionability (i.e., the capacity of computational systems to find, access, interoperate, and reuse data with none or minimal human intervention) because humans increasingly rely on computational support to deal with data as a result of the increase in volume, complexity, and creation speed of data.

# FAIR data and FEWS (archive

History trail.... dissiminated



# Metadata attributes

- Aliases 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)

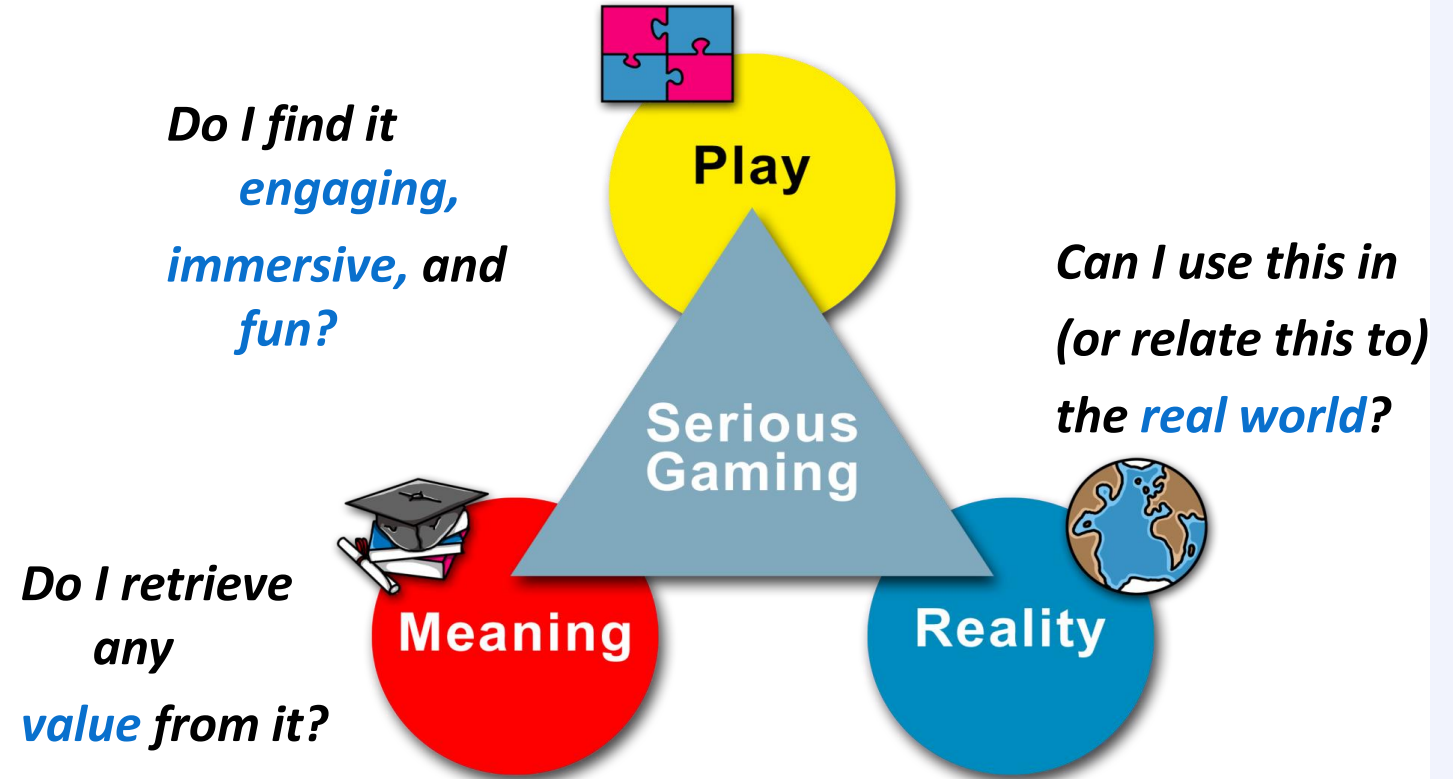
# Seamless integration

- 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>

# WaterCoach – what is it?

## Delft-FEWS and WaterCoach arranged side by side

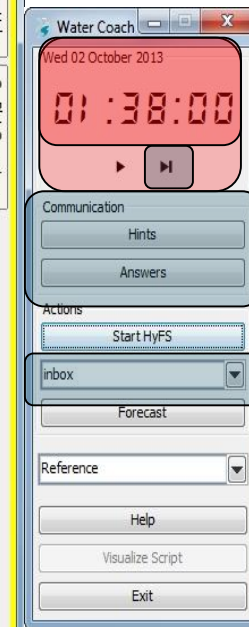
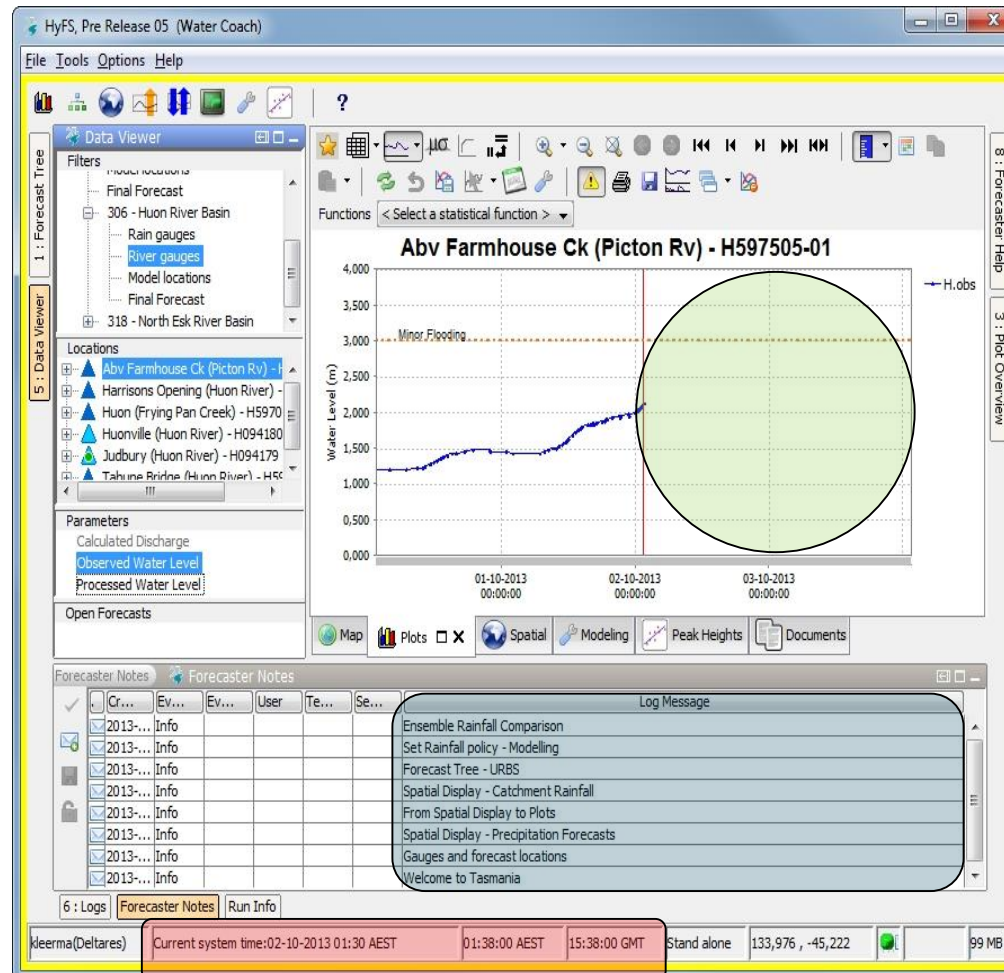
Yellow border = Training Mode

System Time is 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

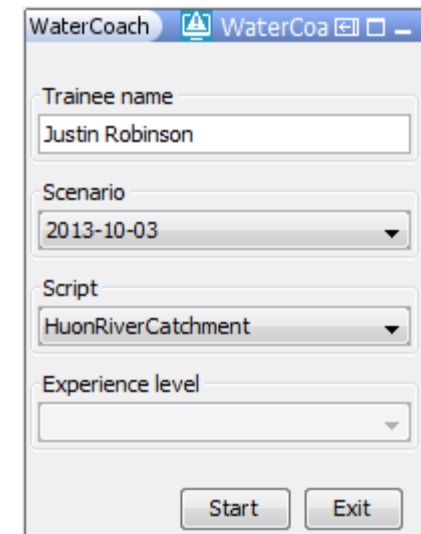
A **scenario** consists of data, preferably **realistic** data

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

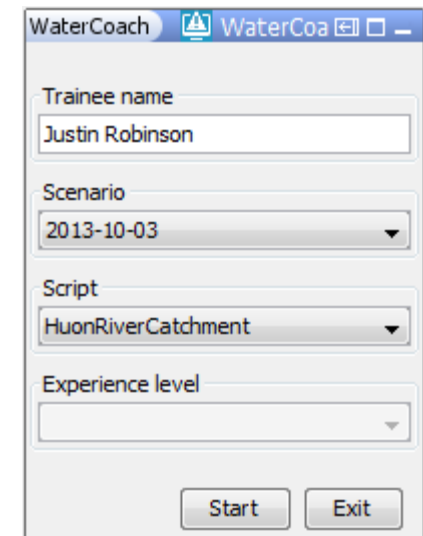
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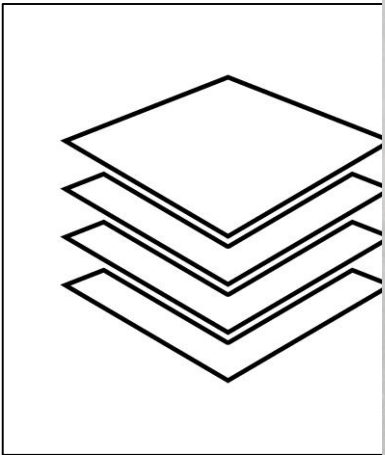
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# Highlight 3: WaterCoach on the Fly

A scenario of  
The FEWS A



- 4. Make a s
- 5. **Store** so
- 6. Open Wa



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be helpful her



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IDataStore in c  
script of intere

WaterCoach WaterCoa

WC on the fly

Start time 22-02-2022- 08:00

End time 26-02-2022- 18:00

☒ Exclude model states

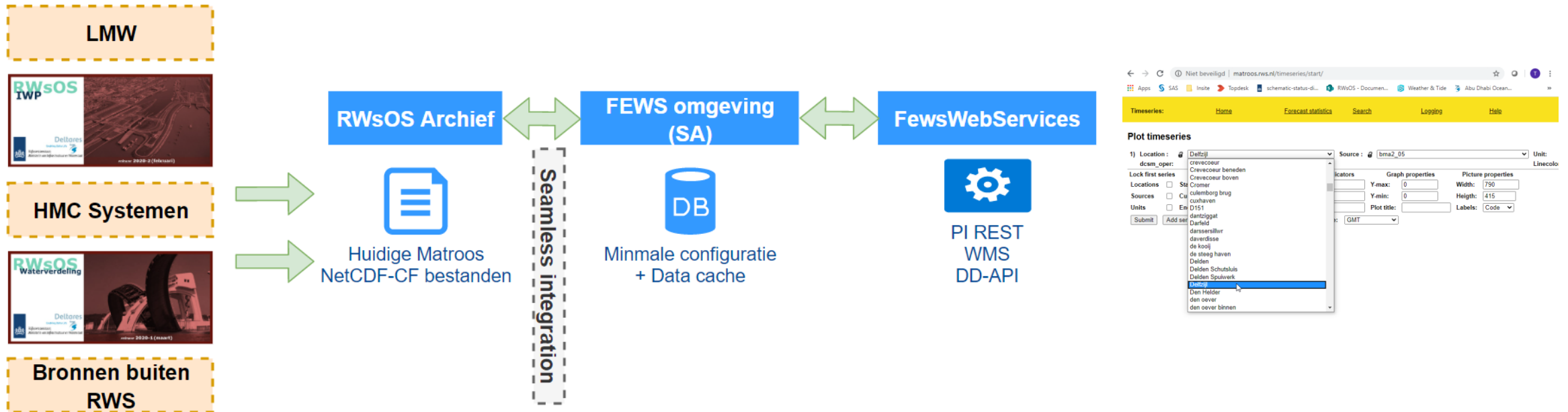
☒ Import grids as reference

Start Exit



# 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



# 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](#)

