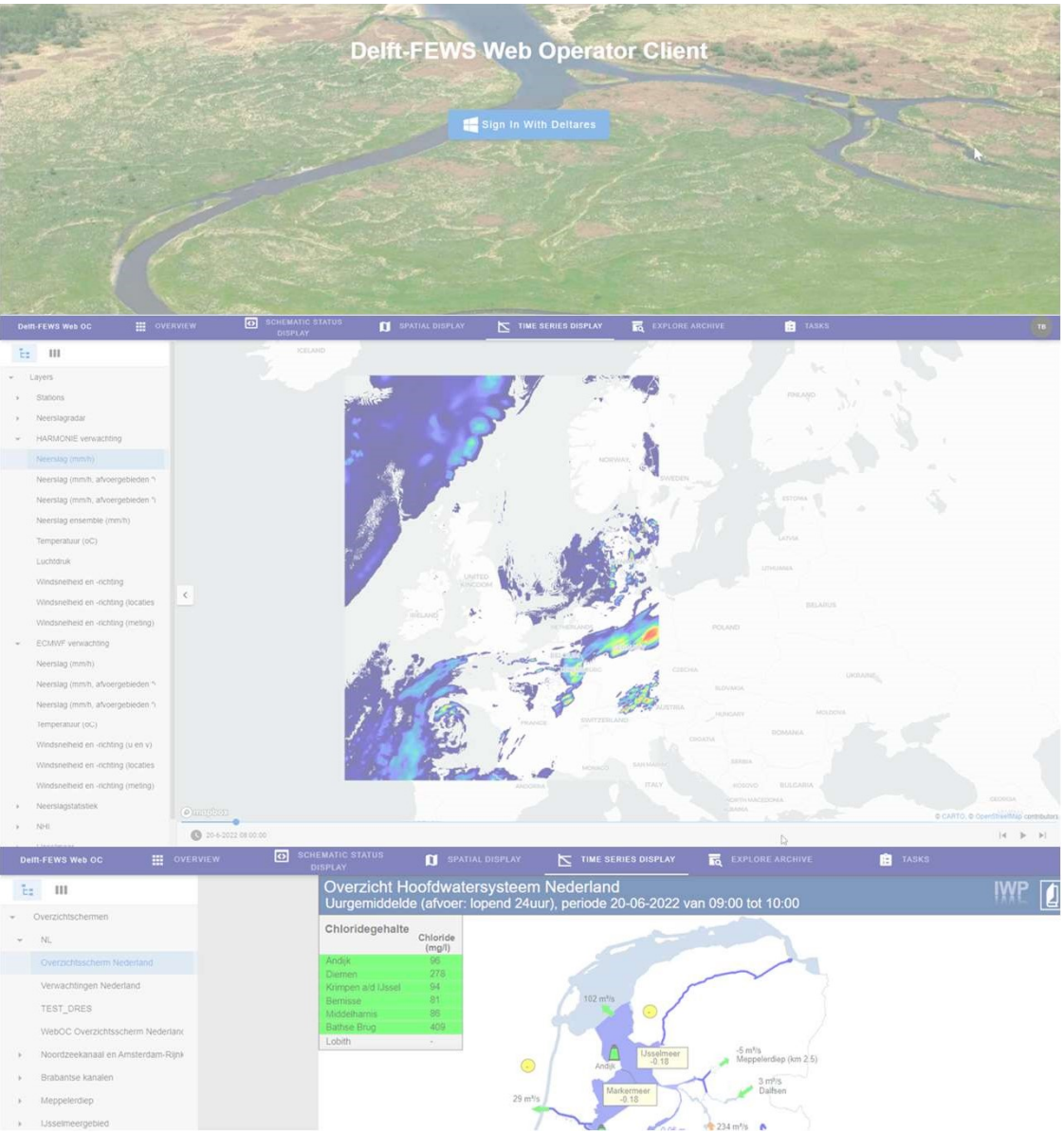


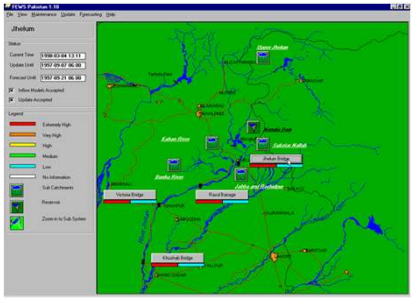

Deltares

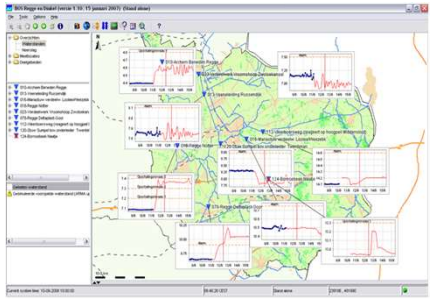
# Delft-FEWS WEB OC

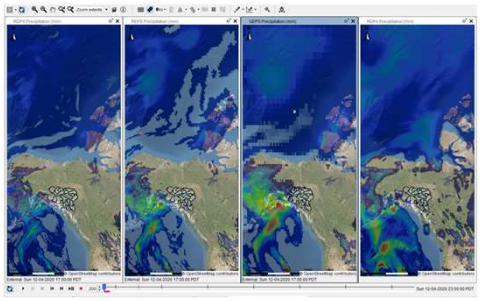
Daniel Twigt

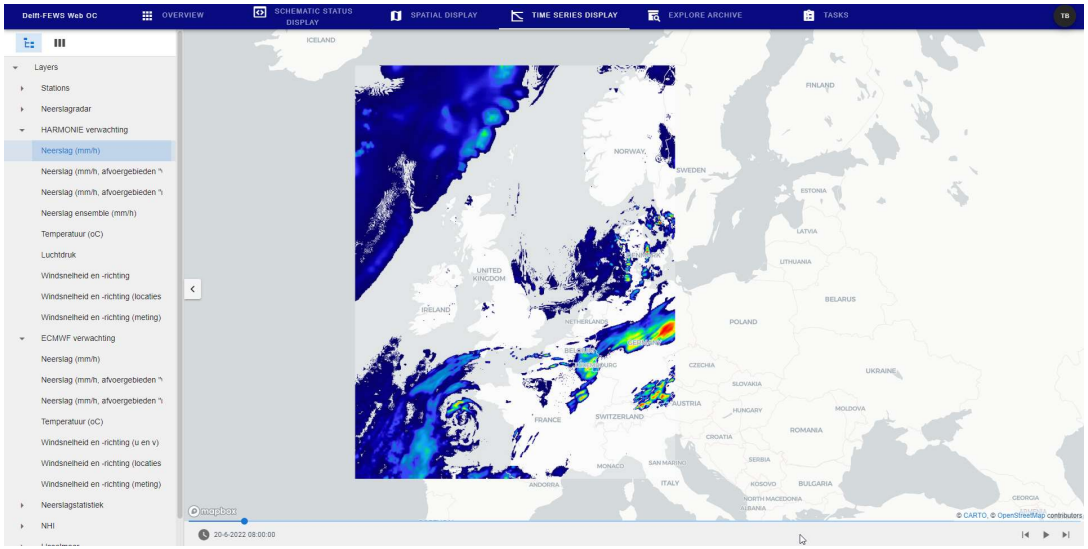
2022/08/24

1997 ⟵ Delft-FEWS desktop OC ⟶ Now







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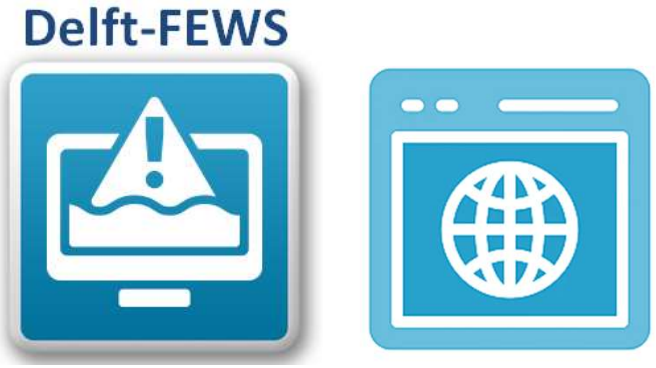
# Reasons for developing the Web OC (1)

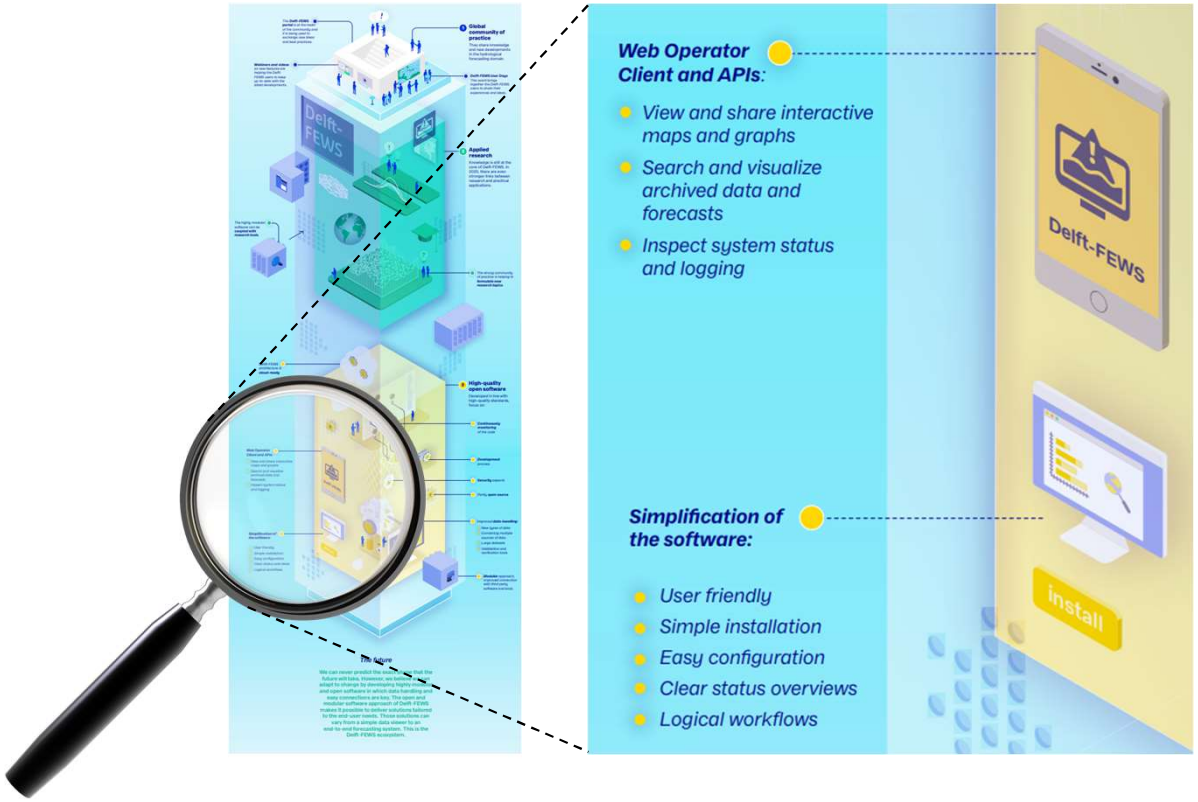
- Increased **mobility** → fast access through browser, also from mobile devices
- Increased **flexibility** → the intention to have further options to customize the interface to user needs
- Increased **modularity** → possibility to incorporate into existing online environments already in use by clients
- **Easier deployment** → compared to Desktop OC

# Reasons for developing the Web OC (2)

- **Technological** developments → benefit from all the technological developments and 3rd party functionality available for the web
- Improvements to **performance and security of Delft-FEWS web-services** → because of the development of a secure and performant Web OC
- Need from the international FEWS community and prospective new FEWS users to have a lightweight web interface as **part of the overall Delft-FEWS product**



# Delft-FEWS Vision 2025




https://oss.deltares.nl/web/delft-fews/vision-2025

# Timeline – status update

| | |
|---|---|
| Q4 ‘20: | International User Days presenting Web OC plans: Vision 2025 |
| Q1-Q3 ‘21: | Define use-cases and key assumptions and MVP |
| | First steps towards technical architecture: Involve both Deltares and external collegues |
| | Budgetting MVP |
| Q4 ‘21: | Development Sprint 1<br>Development Sprint 2 |
| Q4 ‘21: | International User Days presenting Web OC progress |
| Q1 ’22 | Third party testing of reusability Web OC building blocks |
| Q1 ’22 | Development Sprint 3 |
| | Start with UX/UI Design |
| Q2 ’22 | Development Sprint 4 |
| Q2 ‘22: | NL User Days presenting Web OC progress |

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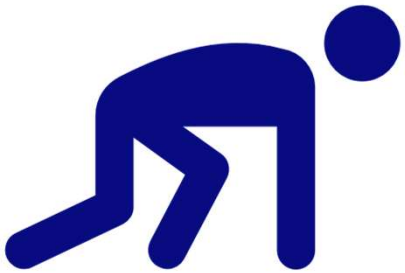
# Key starting points

Key technical starting points as presented during 2020 and 2021 User Days:

- The Web OC will connect to the **Delft-FEWS web services** to interact with other Delft-FEWS components.
- The Web OC will serve **expert users** primarily.
- Web OC will **not be a clone of the existing Desktop OC** regarding functionality and design.
- The Web OC will be a **responsive web application**, building on experience gained in prior web applications developed by Deltares



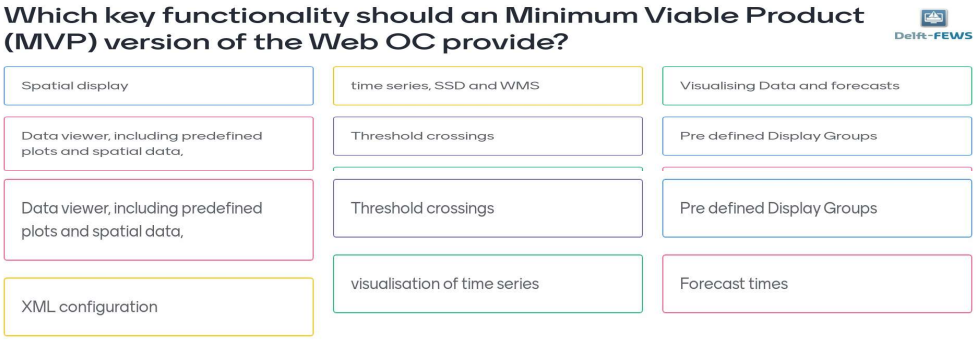
# Summary of key MVP features

Functional:

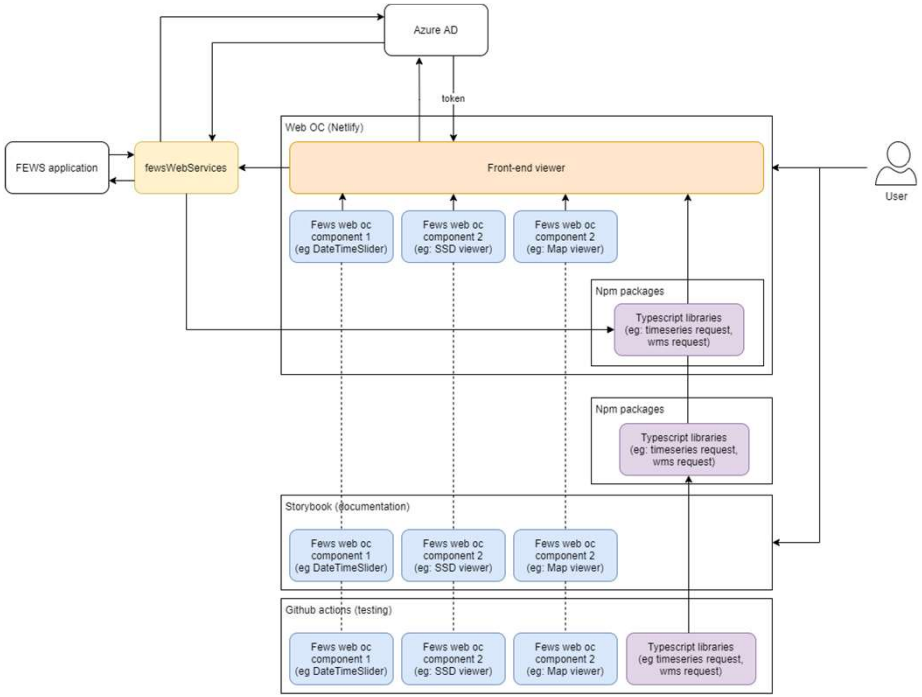
- Visualize data (time series, map fields, SCADA displays, also including associated information such as thresholds and attributes)
- Dispatching jobs
- Visualize monitoring information

Non-functional:

- Security
- Performance
- Testing, release management
- Configurability*



# Technical Design: key building blocks




| | |
|---|---|
| fewsWebServices | Interface with Delft-FEWS system |
| Typescript libraries (eg: timeseries request, wms request) | TypeScript libraries to interact with fewsWebServices |
| Fews web oc components | Components to include in front-end GUI |
| Front-end viewer | Web OC implementation |

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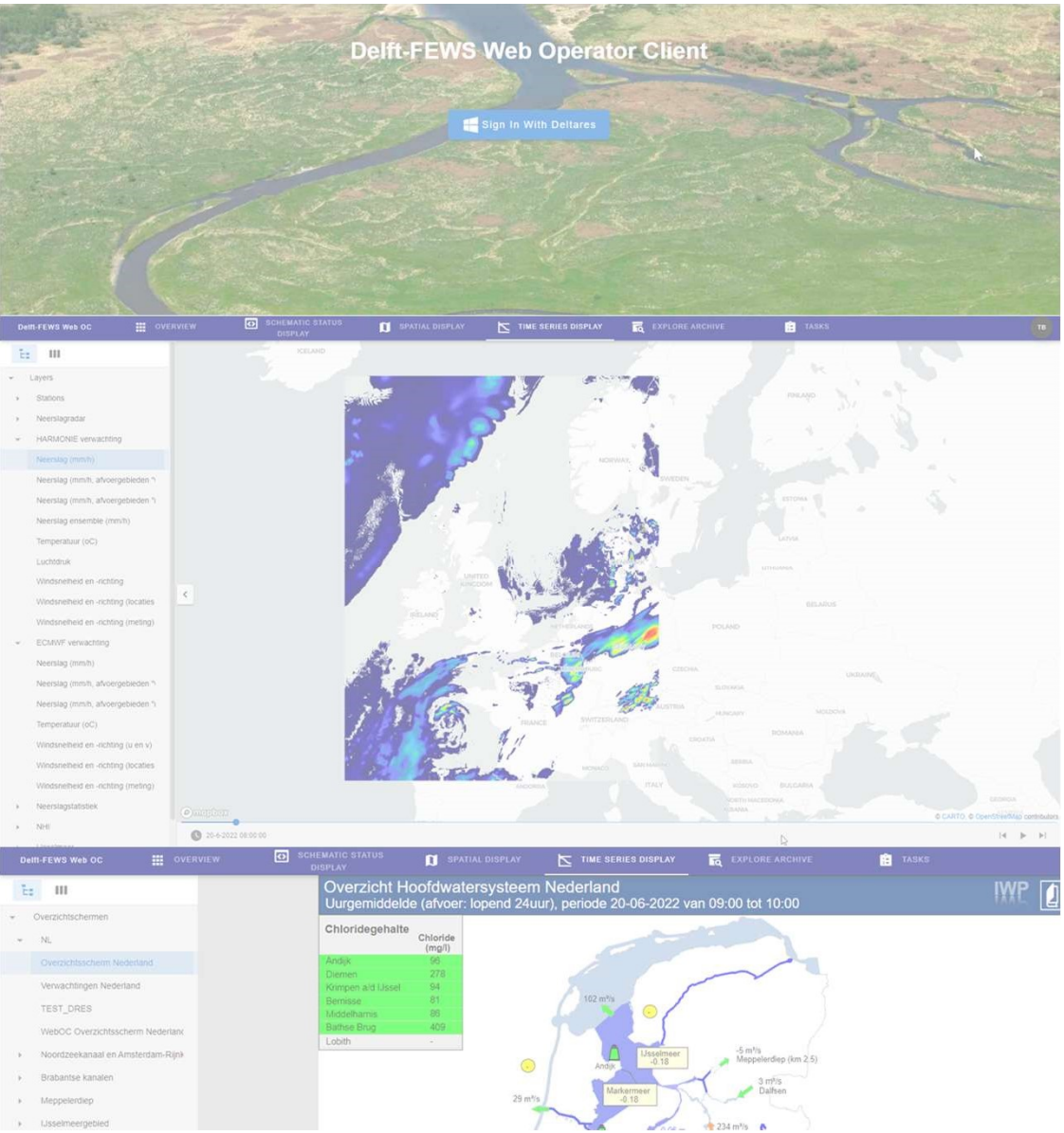
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HARMONIE verwachting
ECMWF verwachting
Overzicht Hoofdwatersysteem Nederland
Uurgemiddelde (afvoer: lopend 24uur), periode 20-06-2022 van 09:00 tot 10:00
Chloridegehalte
Chloride (mg/l)
Andijk 90
Diemen 278
Krimpen a/d IJssel 94
Bemisse 81
Middelharnis 86
Bathse Brug 409
Lobith -
102 m³/s
IJsselmeer -0.18
Andijk
Markermeer -0.18
-5 m³/s
Meppelerdiep (km 2.5)
3 m³/s
Dalfsen
29 m³/s
234 m³/s

# Status


WORK IN PROGRESS

fewsWebServices

# FewsWebServices improvements (1)

Work carried out thus far: improvements to **performance and security of Delft-FEWS web-services** in consequence of the development of a secure and performant Web OC

- Web OC equivalent of Topology nodes: GET Topology nodes
- Visualize display groups on the Web: GET Display groups
- Extend WMS getCapabilities regarding data availability
- Proper versioning of endpoints
- Implement JSON schemas for new PI REST endpoints
- OpenAPI specification response for endpoints


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fewsWebServices

# FewsWebServices improvements (2)

Work carried out thus far: improvements to **performance and security of Delft-FEWS web-services** in consequence of the development of a secure and performant Web OC

- XML schemas for fewsWebServices property configuration
- Authentication/Autorization: Delft-FEWS WebService support for Open ID Connect (PI/SSD/WMS)
- Automated ZAP scan on OWASP security risks
- Steps taken towards continuous deployment of fewsWebServices
- Integration testing using Postman test collection

fewsWebServices | Typescript libraries (eg: timeseries request, wms request) | Fews web oc components

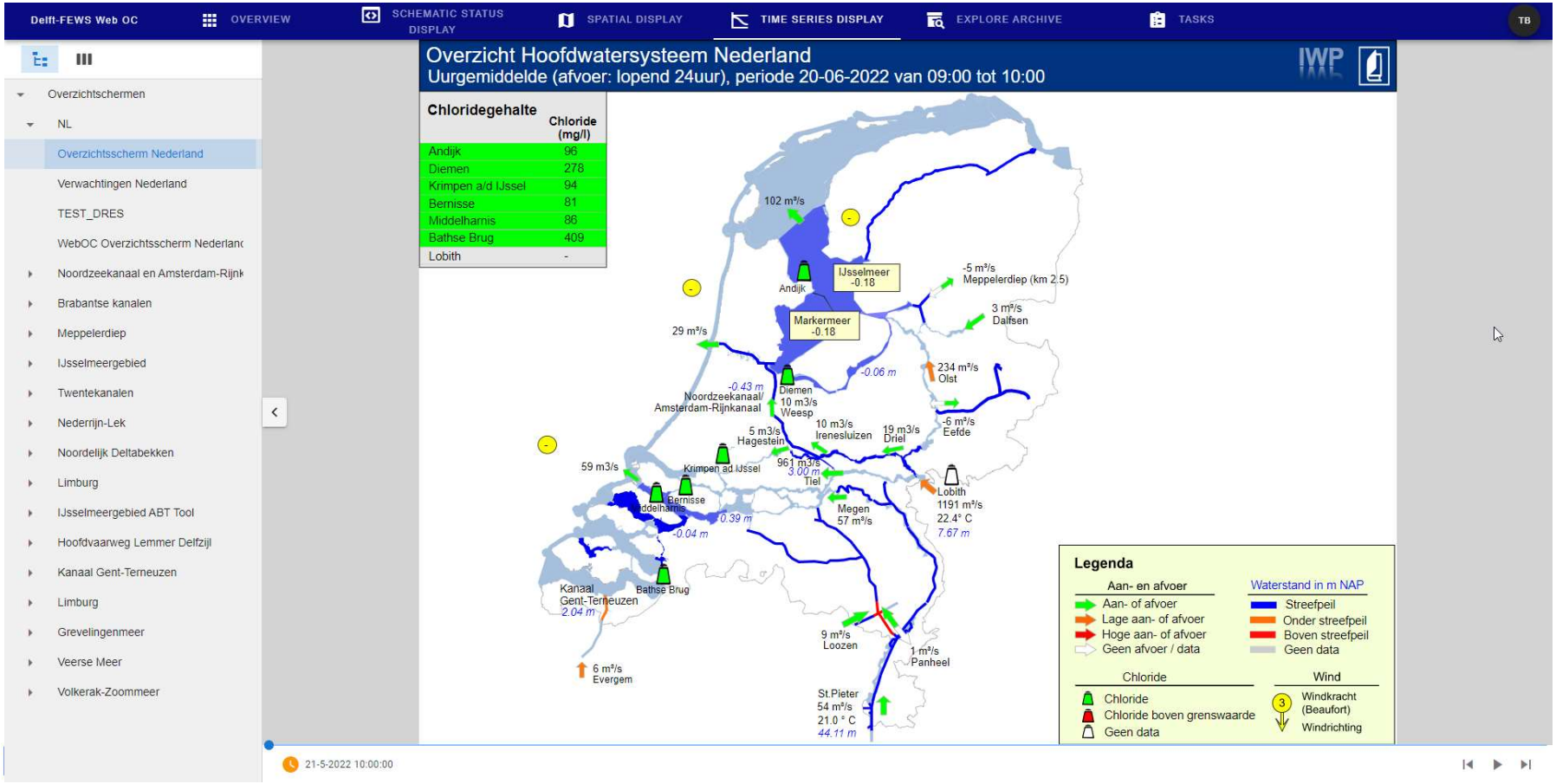
# MVP – Web OC sign in


- Using OpenID Connect / Oauth2, for both Web OC front-end and fewsWebServices
- FEWS permissions respected by FewsWebServices
- Example using Deltares authentication service, but can be connected to authentication services of FEWS users

# MVP – Schematic Status Display

Typescript libraries (eg: timeseries request, wms request)

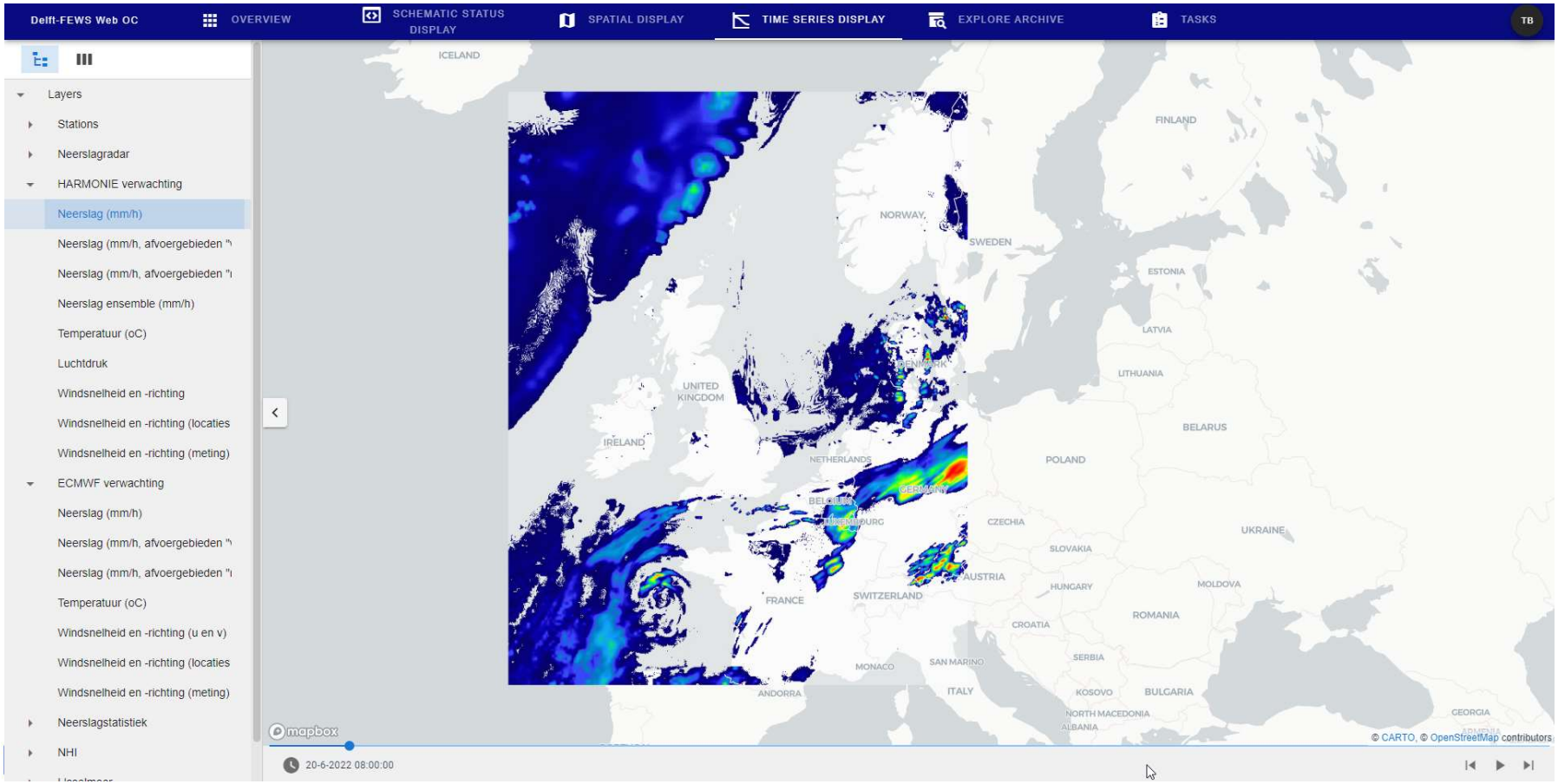
Fews web oc components



# MVP – Spatial Data

Typescript libraries (eg: timeseries request, wms request)

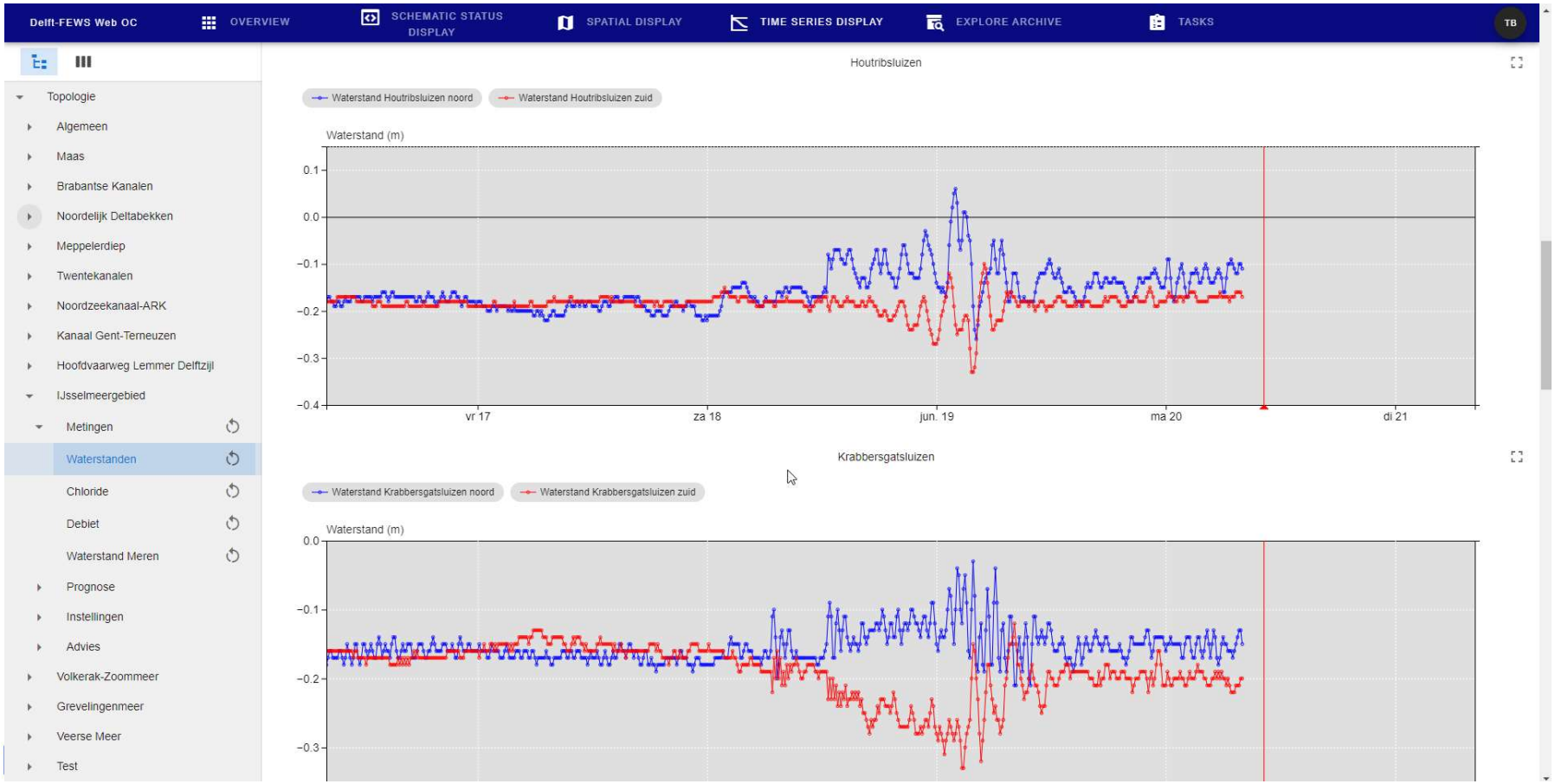
Fews web oc components



# MVP – Topology / DisplayGroups

Typescript libraries (eg: timeseries request, wms request)

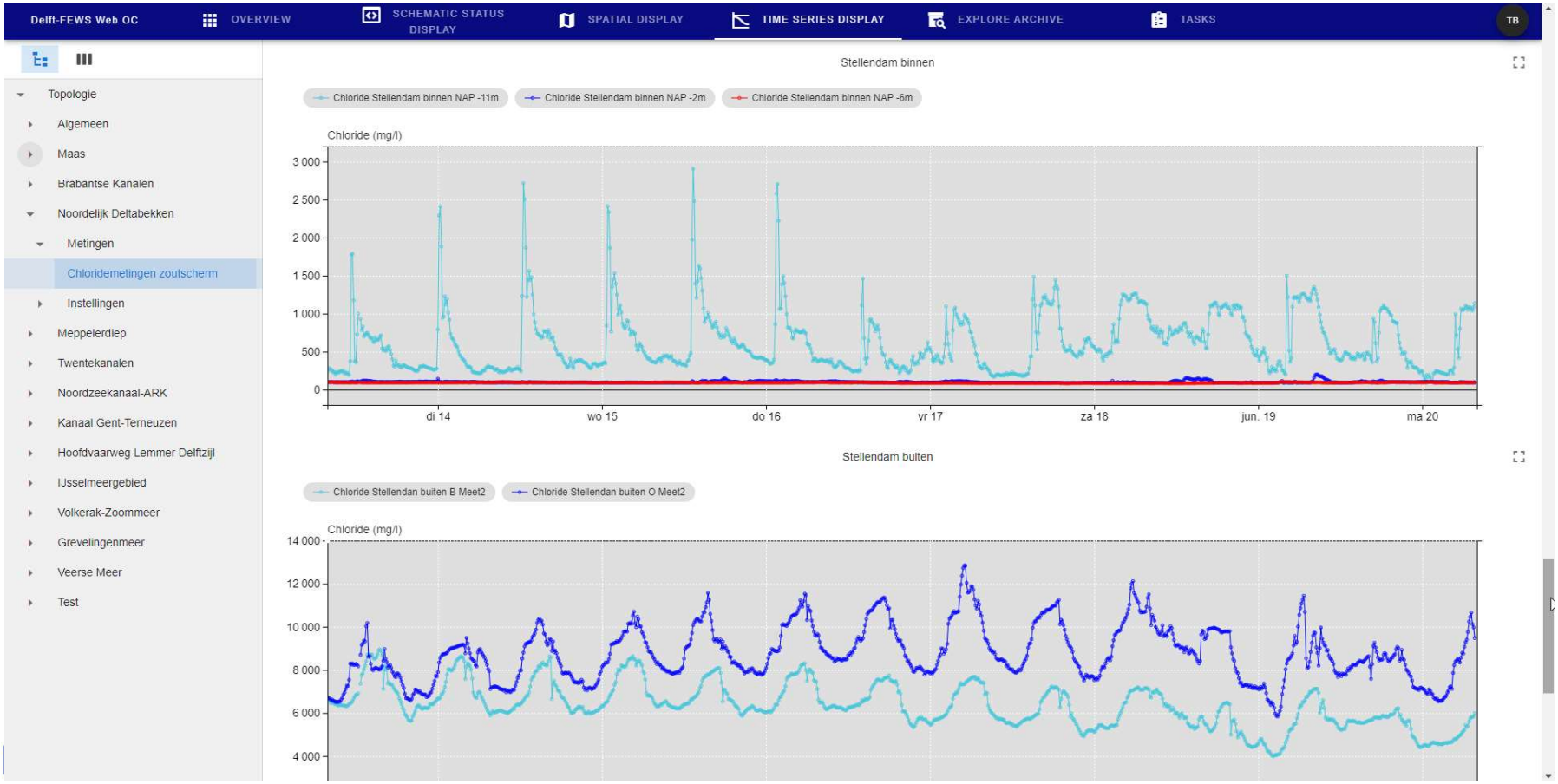
Fews web oc components



# MVP – Topology / DisplayGroups

Typescript libraries (eg: timeseries request, wms request)

Fews web oc components

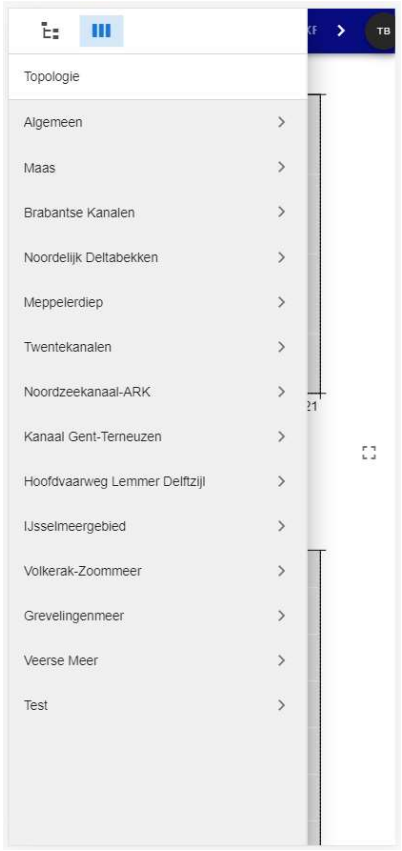


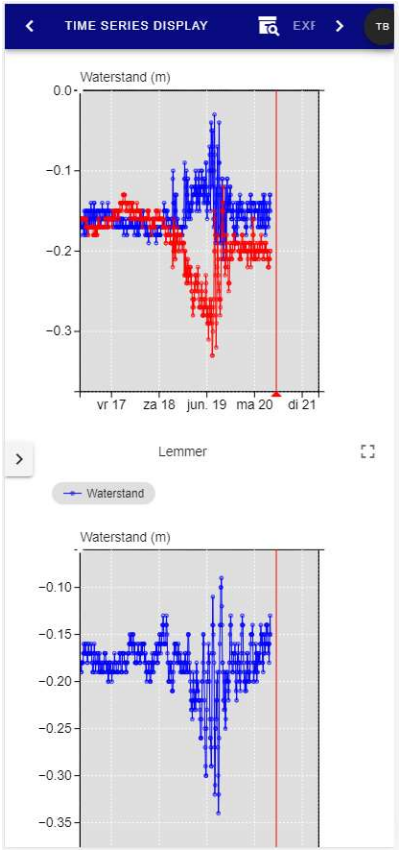
Typescript libraries (eg: timeseries request, wms request)

Fews web oc components

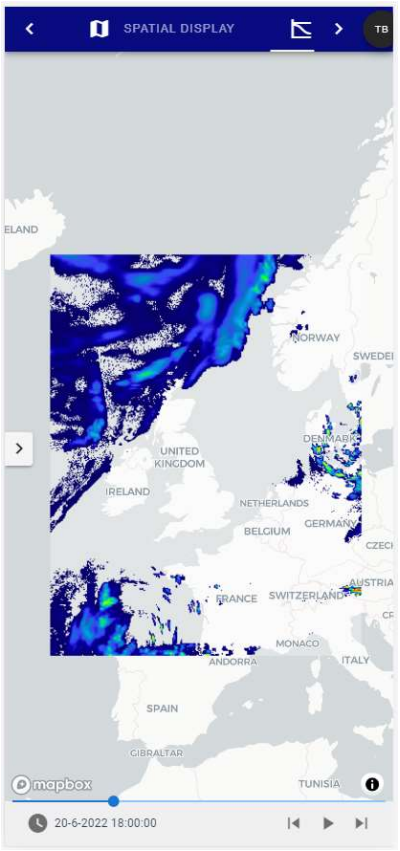
# MVP – Responsive design

The Web OC will be a responsive web application → MVP focus on Desktop use.

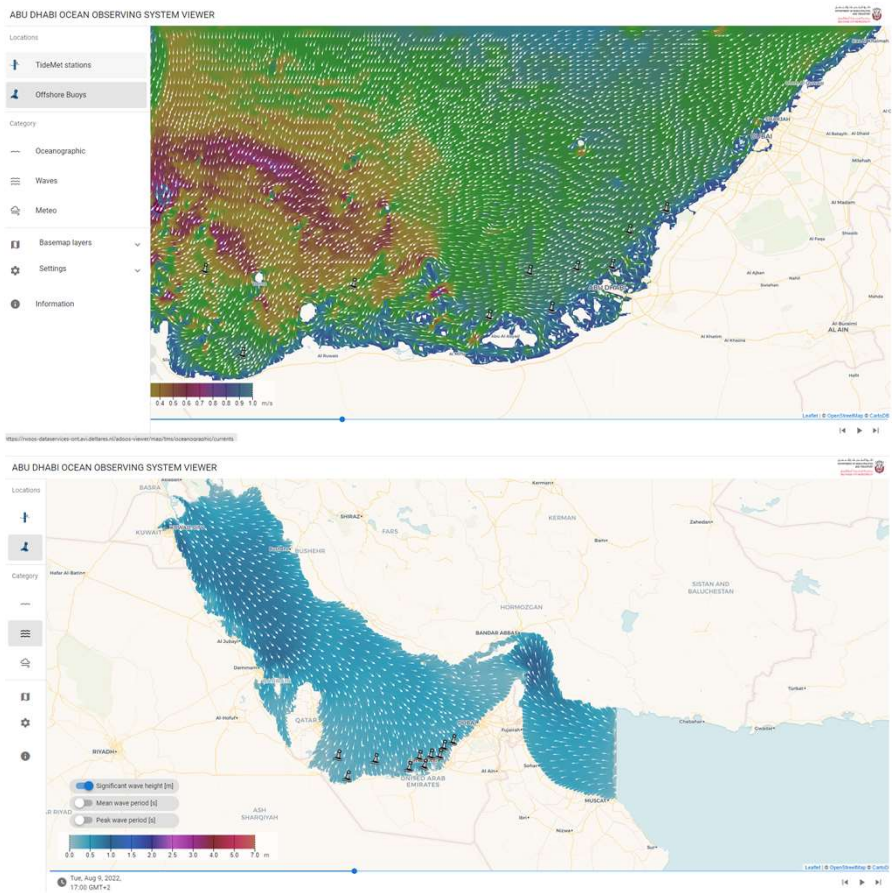


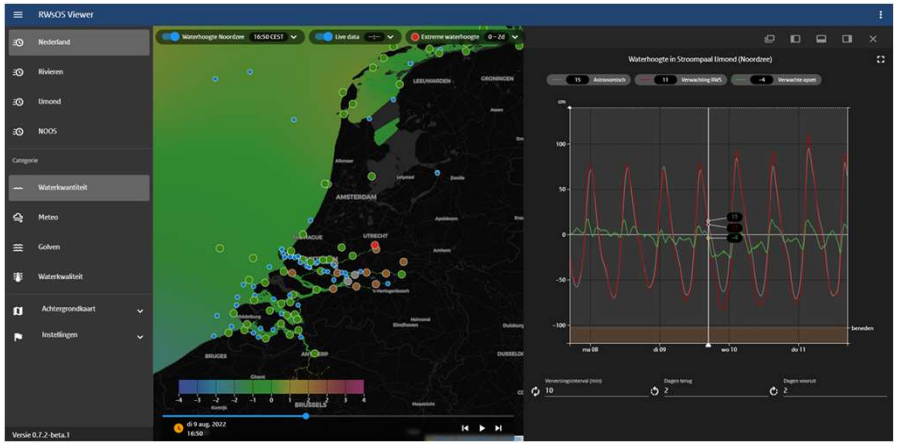







# Examples already using Web OC components




*Not full Web OC implementations yet!*

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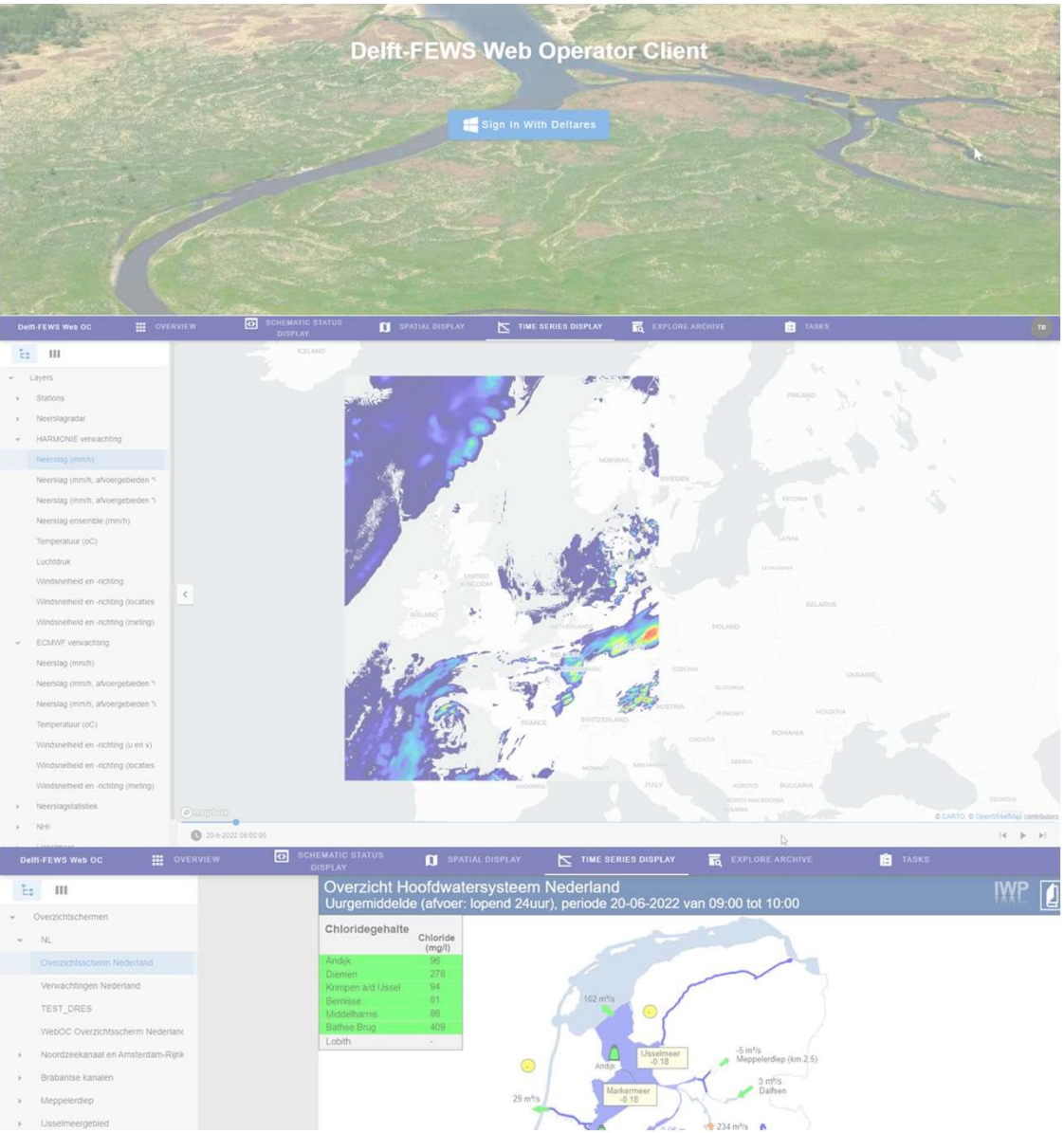
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NHI
Overzichtsschermen
NL
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Verwachtingen Nederland
TEST_DRES
WebOC Overzichtsscherm Nederlanc
Noordzeekanaal en Amsterdam-Rijnk
Brabantse kanalen
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IJsselmeergebied
Overzicht Hoofdwatersysteem Nederland
Uurgemiddelde (afvoer: lopend 24uur), periode 20-06-2022 van 09:00 tot 10:00
IWP
Chloridegehalte
Chloride (mg/l)
Andijk 90
Diemen 278
Krimpen a/d IJssel 94
Bemisse 81
Middelharnis 86
Bathse Brug 409
Lobith -
102 m³/s
IJsselmeer -0.18
Andijk
Markermeer -0.18
-5 m³/s
Meppelerdiep (km 2.5)
3 m³/s
Dalfsen
29 m³/s
234 m³/s

# UX/UI design

# Design User Interface

**Goal:** Web OC will not be a clone of the Desktop OC, be will (re)consider a User Interface which provides an improved User Experience to the users

- New design will be according to modern standards
- Modern look and feel
- Aim to provide a flawless user experience, goal: minimizing strain on users when navigating through a page
- Process to be guided by experienced UX designers

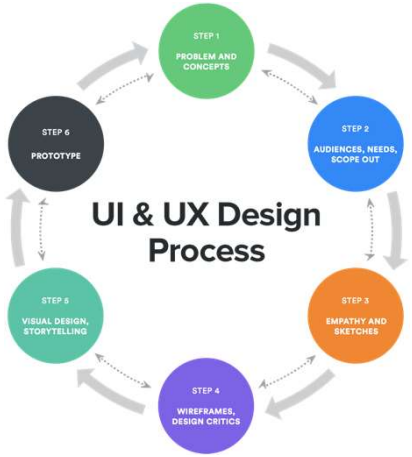
# Design User Interface

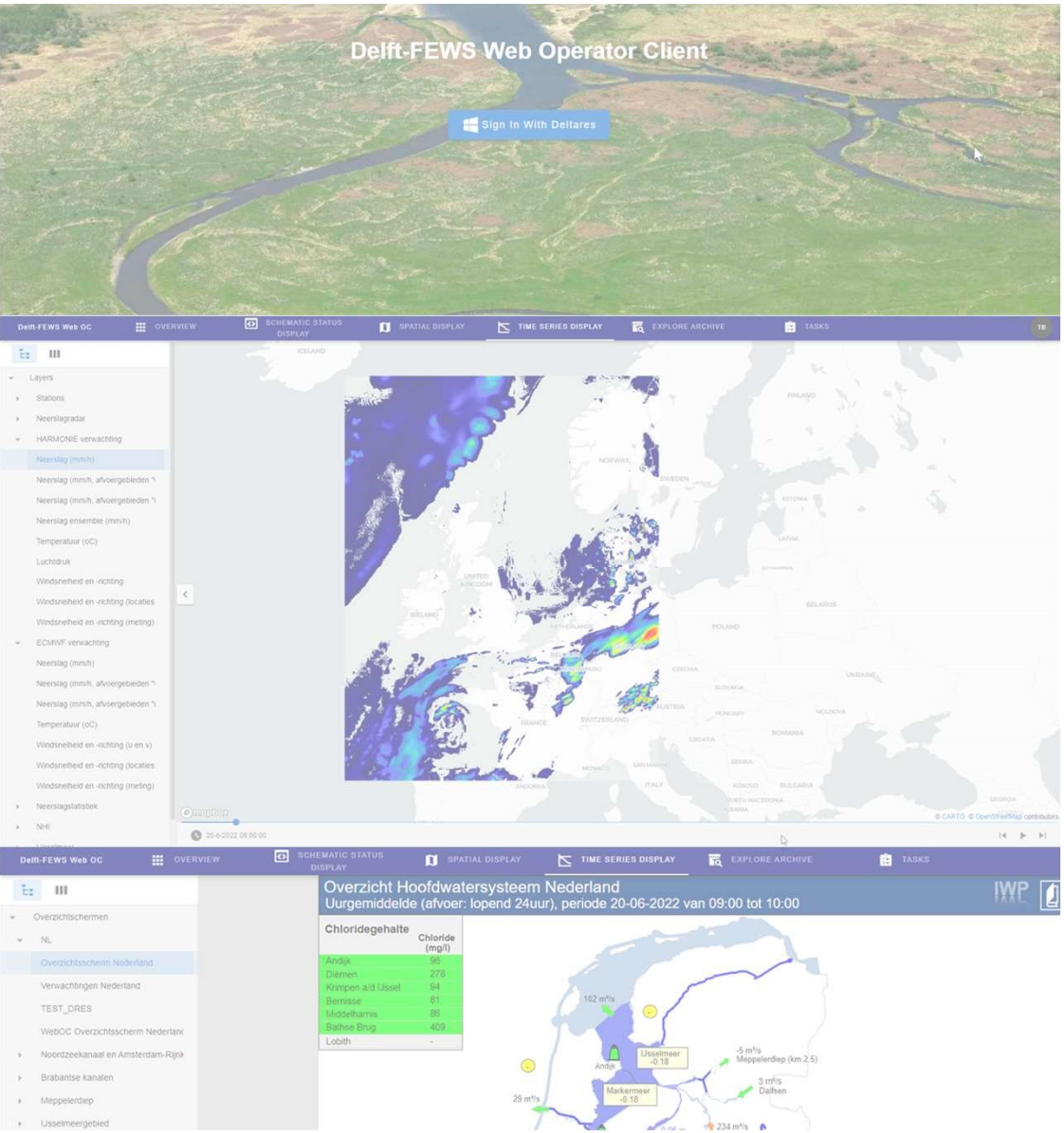
Currently in the process of designing the new Delft-FEWS interface

1. **Getting user feedback:** carrying out interviews with Delft-FEWS users interested in using the Web OC. To date, interviews with around 15 Delft-FEWS users from 3 clients to get feedback on their ideas, wishes, experiences with Delft-FEWS and challenges in current operational work
2. **Connecting the dots:** summarizing user feedback to get a first set of requirements for UX/UI design.

The coming months we will carry out more interview, will aggregate results and start with:

3. **Designing the interface:** making a first functional design of the Web OC and later a technical design.
4. **Feedback sessions and testing:** get first feedback from users on the new design and iteratively build towards a final user interface design

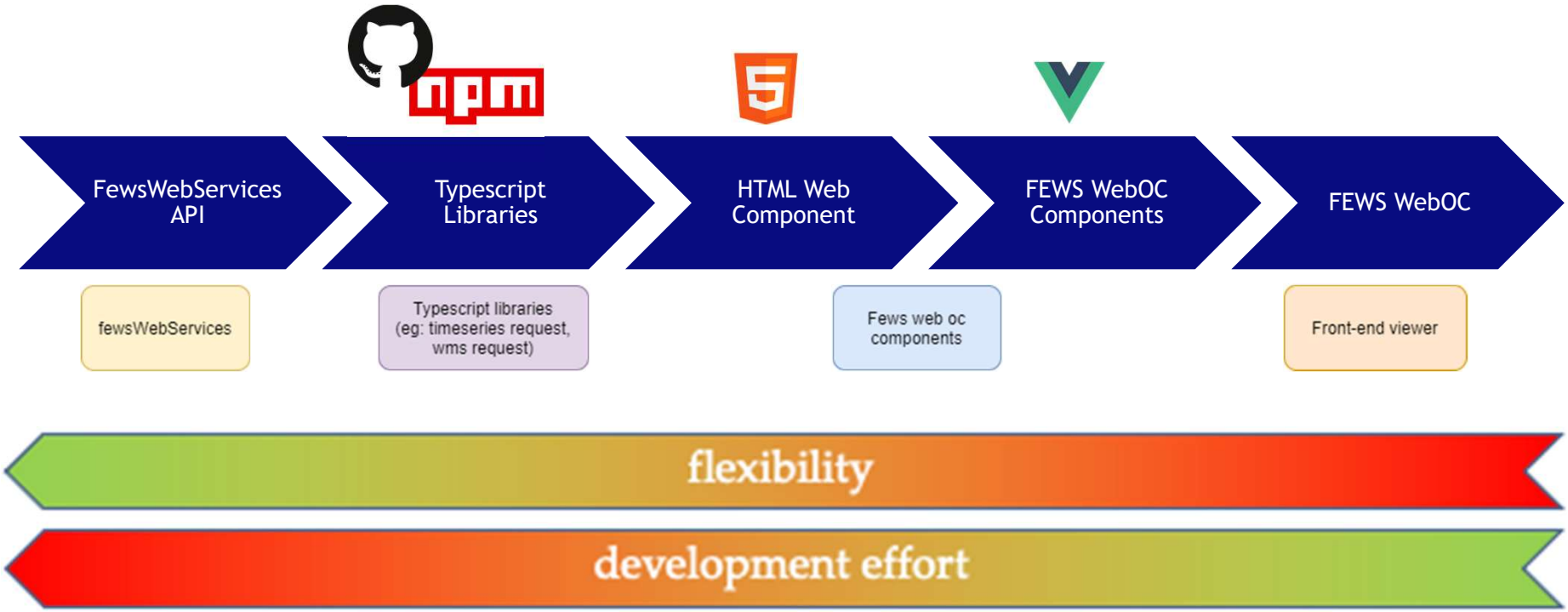





# Collaboration

# Third-party collaboration

Different ways to use and re-use Web OC and Web OC components by 3rd parties:

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# Testing our assumptions: innovation sprint with Hydrologic

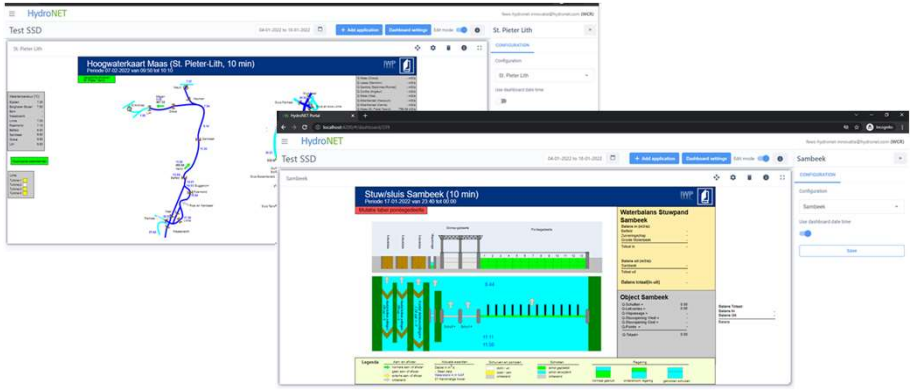
**Goal:**

- Test (Re-)use of web services, libraries and componenten of Web OC
  - What is involved from a technical point of view?
  - Can we get this working with a limited effort?
  - Is this useful / is there added value in doing this?
- Providing feedback on developments (mutual)

Format:

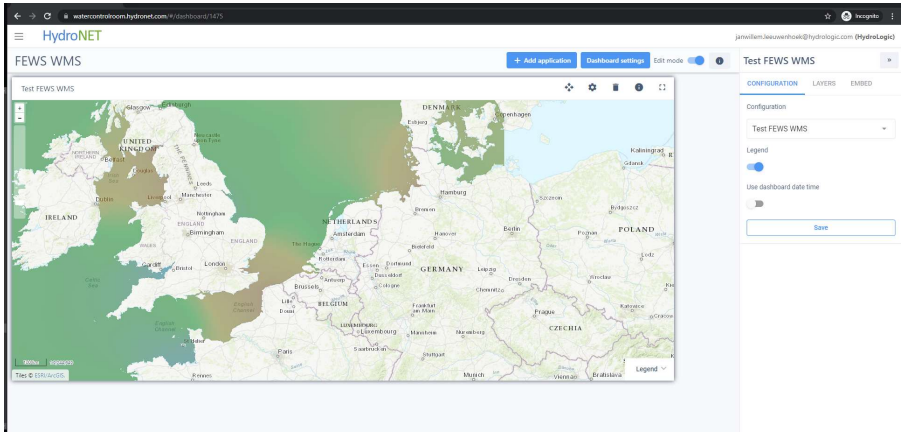
- Three days of collaboration
- Focus on technology: can we get it working?
- Own time and initiative from both parties

# Some results




Example Web OC components integrated in HydroNET during innovation sprint:

SSD panels from FEWS application shown in HydroNET, using UI component, libraries and web services as developed for Web OC




Map layers from FEWS application shown in HydroNET, using web services and (potentially) libraries as developed for Web OC, rather than copying source data

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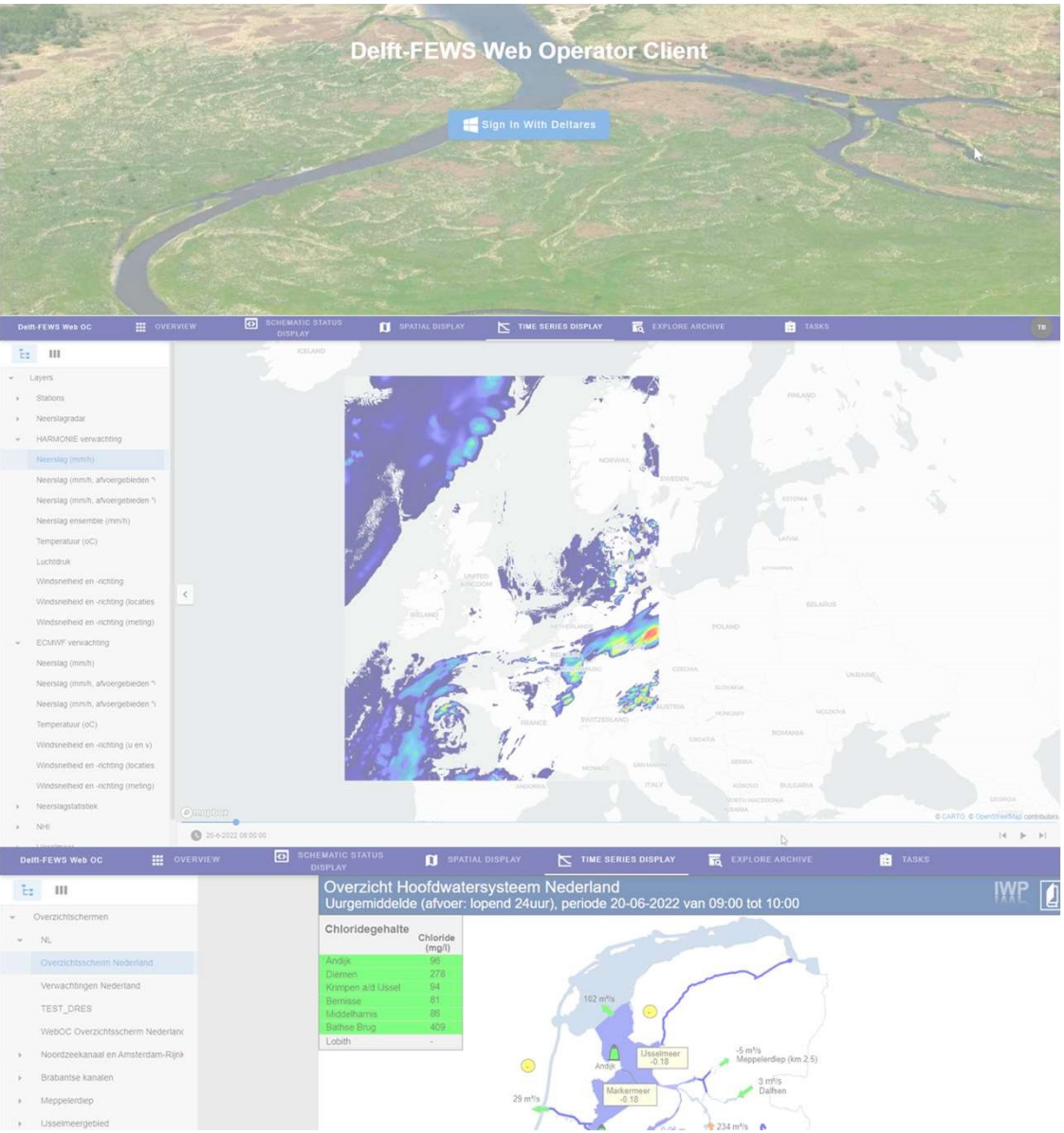
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Dalfsen
234 m³/s

# Next steps

# MVP - Next steps in Q3 and Q4 2022

Functionality which is presently on top of our backlog:

**Spatial data**
- Show data availability

**Graphs**
- Display Groups linked to Topology
- Data browser / Filters

**Installation**
- Provide Plug-and-Play Web OC package for beta-testers.
- Embedded PI Service for testing purposes in 2022.02

**Archive browser**
- First steps towards exploring the FEWS archive via the Web

UX / UI DESIGN

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# Questions?


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tom.bogaard@deltares.nl

Simone.deKleermaeker@deltares.nl