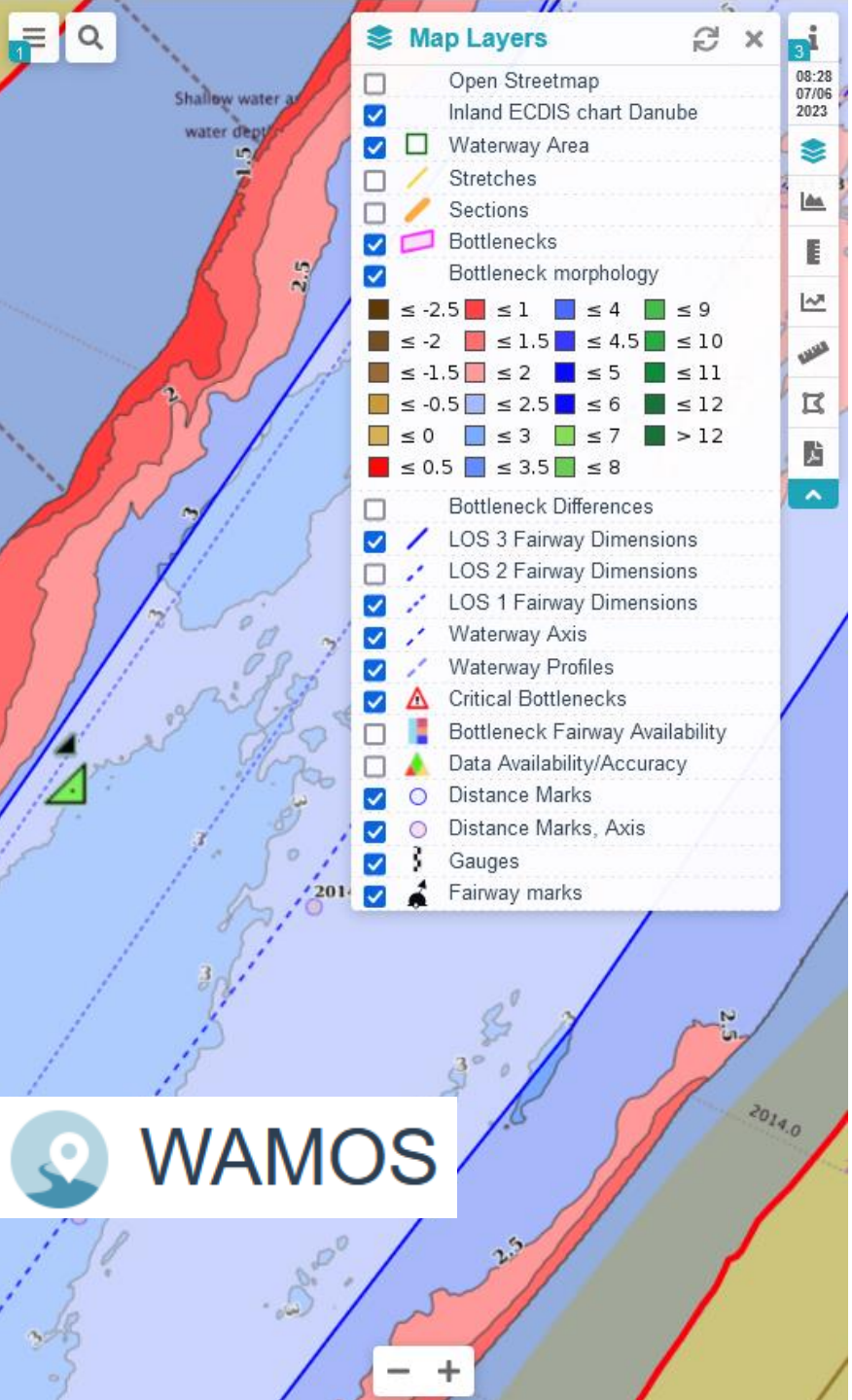
Co-financed by the Connecting Europe Facility of the European Union

Preparing FAIRway 2 works in the Rhine-Danube Corridor

Waterway Monitoring System “WAMOS 2.0” – the journey towards harmonised Danube waterway data continues

14th Meeting on the Follow-up of the Joint Statement on Guiding Principles on the Development of Inland Navigation and Environmental Protection in the Danube River Basin (Zagreb)

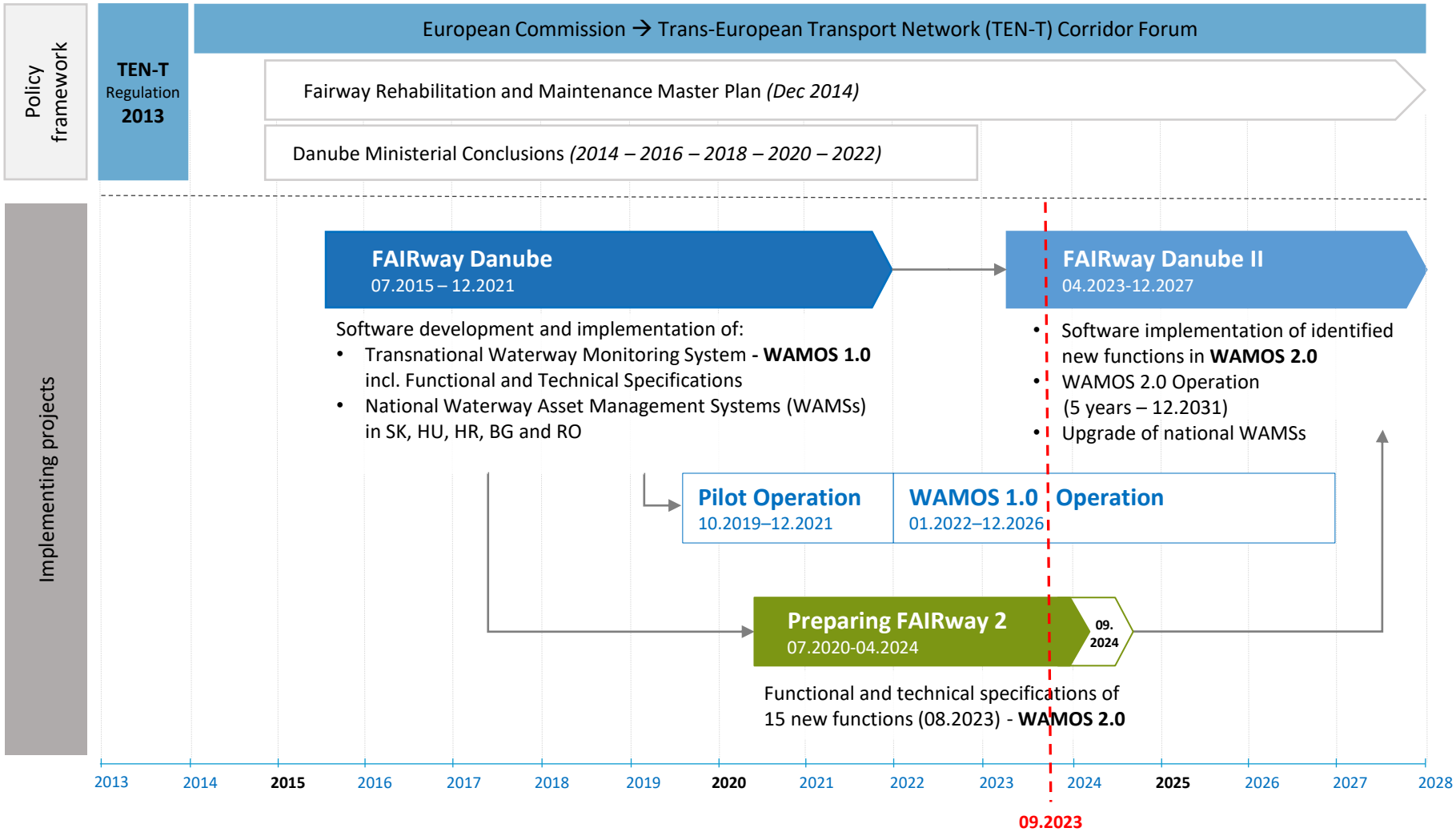
13.09.2023, Susanne Bachl/viadonau

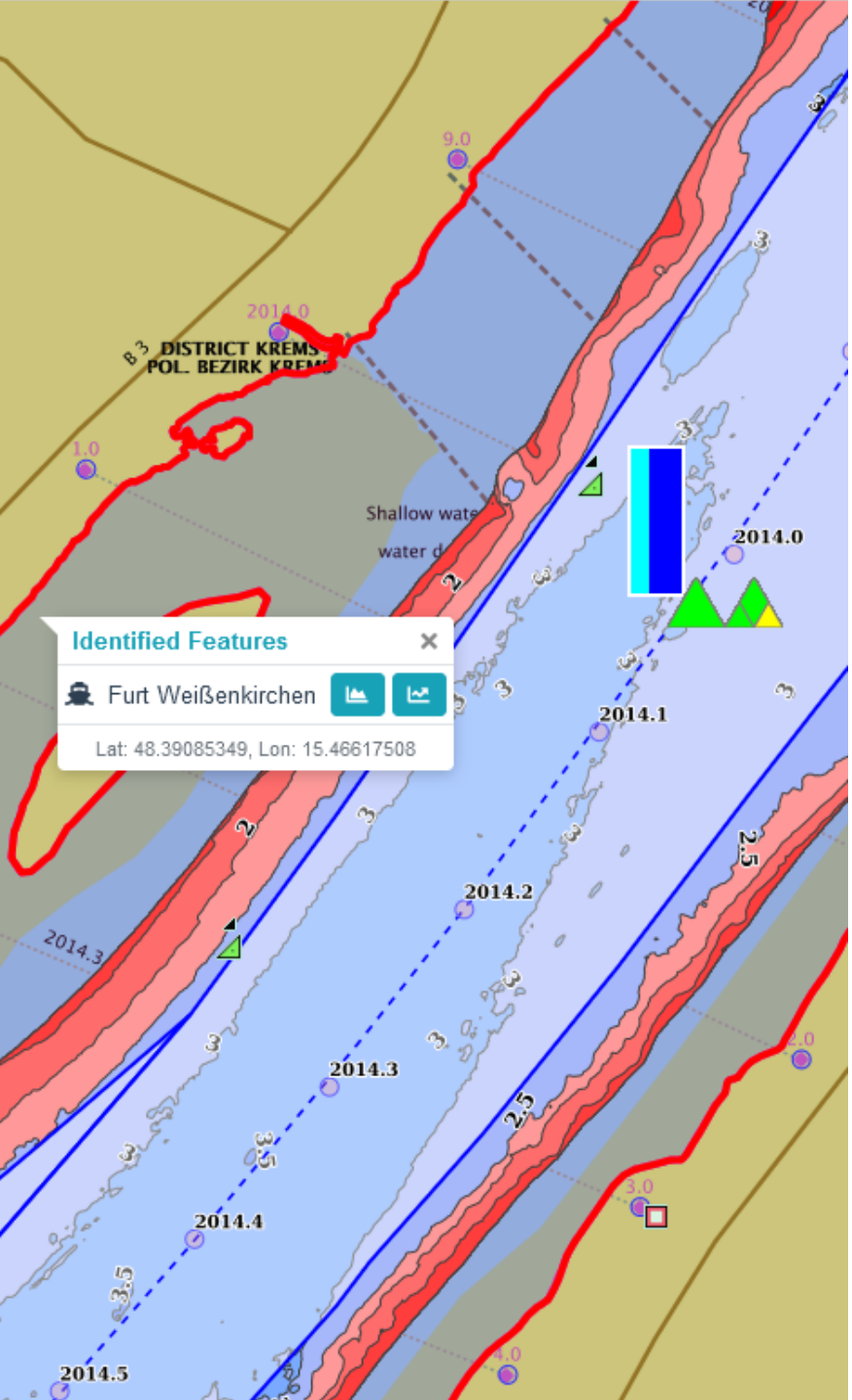


Content

- Overview of FAIRway projects from the WAMOS perspective
- Introduction WAMOS: current functions & analysis
- WAMOS 2.0: possible future functions
- WAMOS timeline and outlook

FAIRway *projects from the WAMOS perspective*





WAMOS

Transnational Waterway Monitoring System

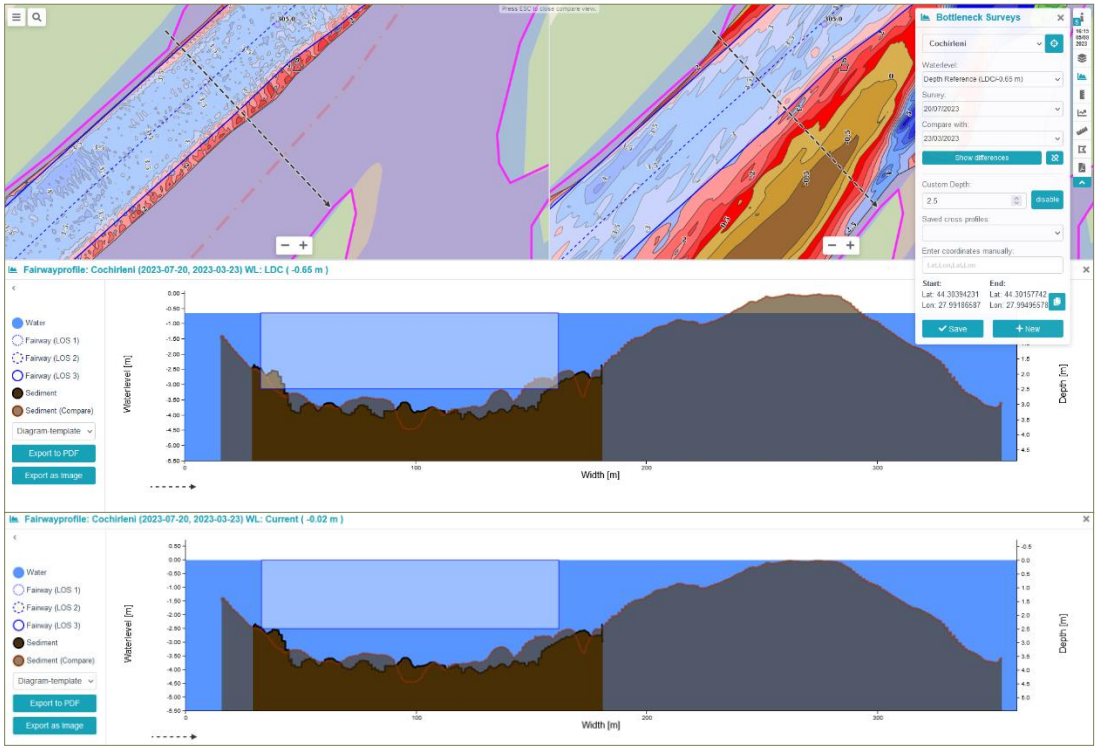
- Collects hydrological and hydrographical data from the riparian Danube Waterway Administrations into one system
- Offers harmonized display and analysis of the data
- Web application
- Available for registered users only (Waterway Administrations)

WAMOS

Current functions & analysis

River Morphology in Bottlenecks

Bathymetric survey data & cross section profiles through the river bed (with compare function)



WAMOS

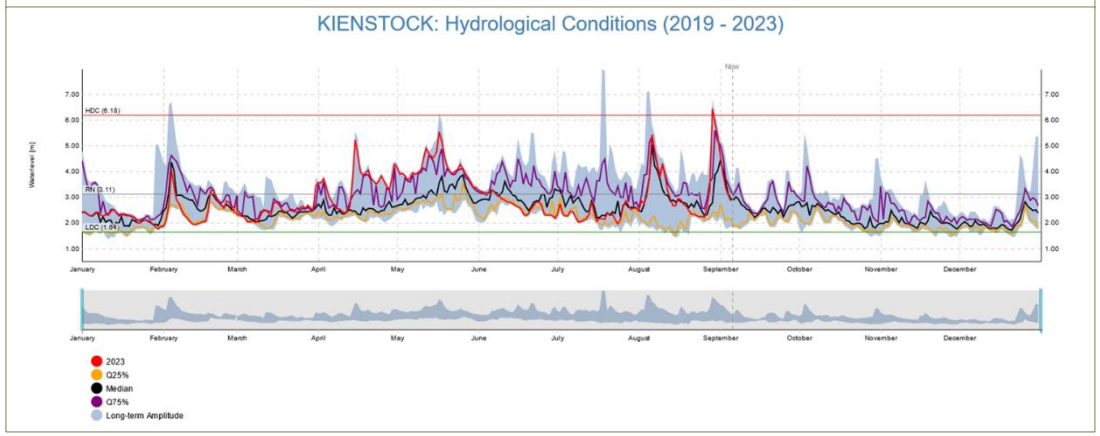
Current functions & analysis

River Morphology in Bottlenecks

Bathymetric survey data & cross section profiles through the river bed (with compare function)

Water-Levels & Hydrological Conditions

Current and historic water levels, inclusive forecasts and long-term evaluation



WAMOS

Current functions & analysis

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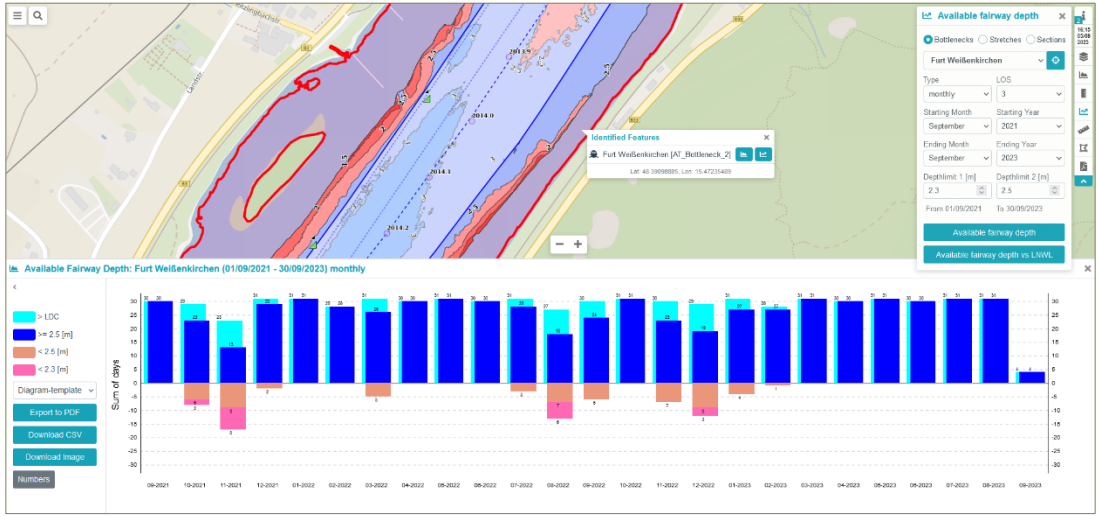
Water-Levels & Hydrological Conditions

Current and historic water levels, inclusive forecasts and long-term evaluation

Fairway Availability

For different Levels of Service



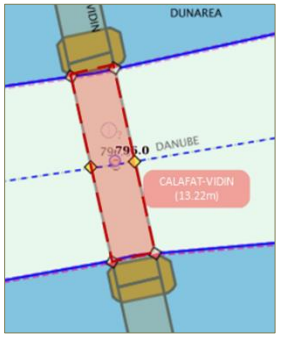
WAMOS 2.0

Possible future functions (1)

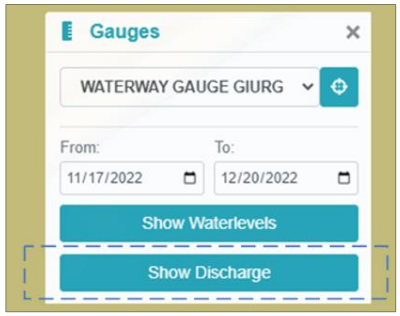
- Integration of new fairway related data

  To improve the data basis for the analytical functionalities and reporting

  - Bridge Clearance
    - Historical/actual/forecasted information
    - Available Bridge Clearance statistics



  - Discharge
    - Historical/actual/forecasted information
    - Enhancement of existing gauge information



Note: images are illustrations of how this function could be implemented in WAMOS

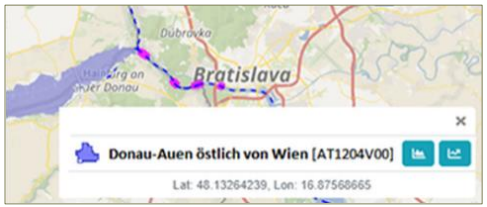
WAMOS 2.0

Possible future functions (2)

- Environmental layers

  To combine environmental and navigational parameters display at a glance

  - Display of Natura 2000 Sites on the map:
    - Habitats and Birds Directive Sites



  - Visualisation of environmental monitoring results on the map
    - Central inventory of national available data (existing and new) with details information, compare function and reporting

      → difficulties: languages, data formats

Note: images are illustrations of how this function could be implemented in WAMOS

WAMOS 2.0

Possible future functions (3)

- Reporting

  To bring transparency and comparability into reporting of navigability status, maintenance efforts and possible gaps

  - Reporting on GNS process - TENtec GNS Key Performance Indicators

    Tabular and graphical reports on Available Bridge Clearance and Available Fairway Depth including a geographical representation of both on the map

  - Reporting within National Action Plans (NAP)

    Statistics for NAP (focuses on the Rehabilitation and Maintenance Measures) in a user friendly way in a predefined template

WAMOS 2.0

Possible future functions (4)

- Export to External Systems

  To act as a data provider for harmonised riverbed morphology data

  – Retrieval of surveying results including bottleneck contours and shallowest point information by external systems via WMS/WFS

- Additional improvements of current functionalities

  To improve the user experience and improve the systems acceptance

  – Proposals for GUI improvements of existing and new functions, including suggestions for the extension of the reporting functionality

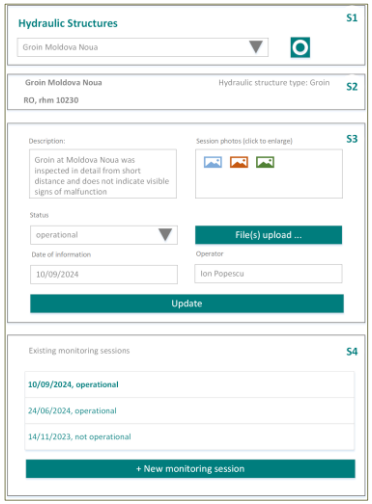
WAMOS 2.0

Possible future functions (5)

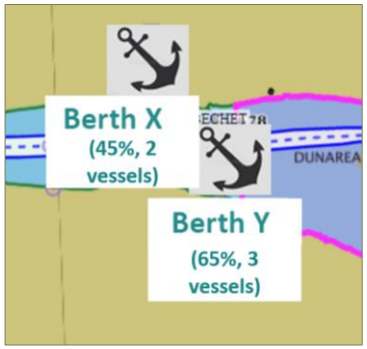
- Waterway Assets related modules

  To assist waterway administrations

  - Inventory and status monitoring of hydraulic structures
    - Display on the map
    - Manage and monitor data over time
    - Combination with surveying results



  - Inventory and utilisation monitoring of public mooring places/anchoring infrastructure
    - Display of occupancy rates and statistics



Note: images are illustrations of how this function could be implemented in WAMOS

WAMOS 2.0

Possible future functions (6)

- Waterway Assets related modules (cont.)

  To assist waterway administrations

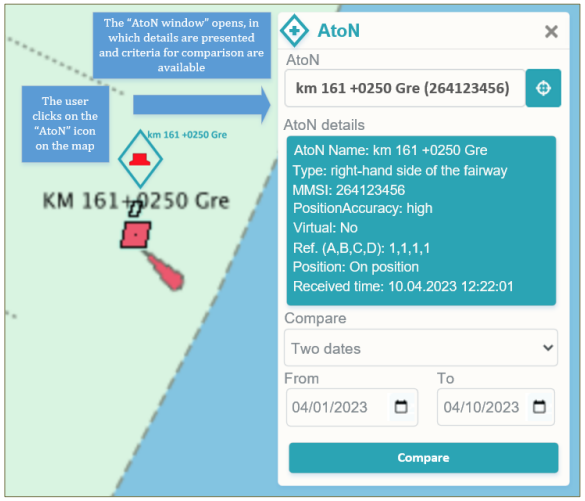
  - Rehabilitation and maintenance measures (RMM)
    - Analytical and Table view with reporting
  - Dredging module
    - Manage dredging areas and volume calculation
    - Long term evaluation statistics
  - Harmonised processing and provision of bottleneck related information
    - Manage static bottleneck relevant data
    - Calculation of the shallowest survey point
    - Calculation of the effective fairway availability
    - Provision to external users

WAMOS 2.0

Possible future functions (7)

- Traffic data support for waterway management

  To analyse the fairway by comparison and collection of information

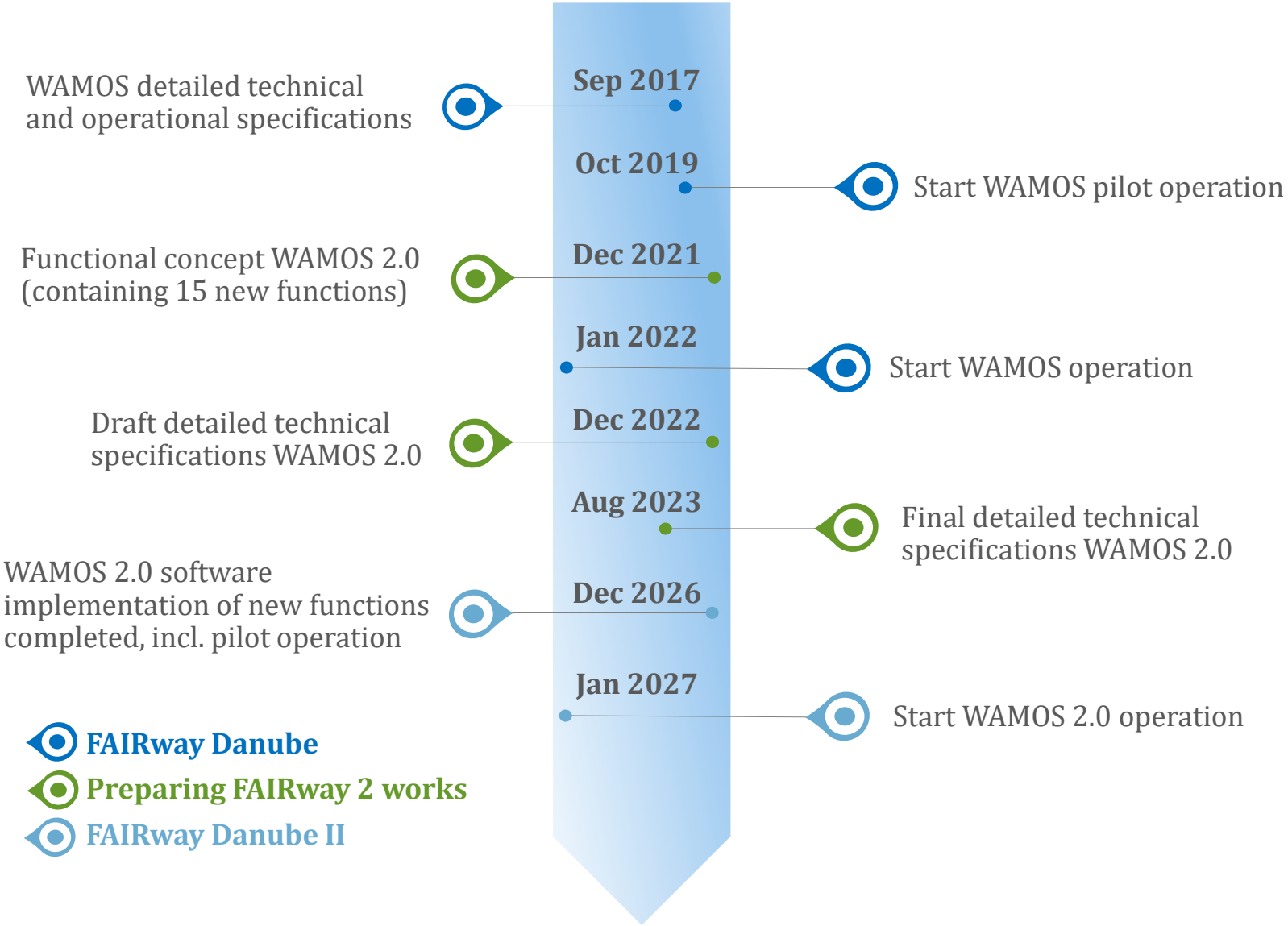


  - Integration of AIS Aids to Navigation (AIS AtoNs)
    - Display on the map
    - Detail information
    - Position comparison over time

  - Traffic Density Mapping Service – integration of vessel traffic information
    - Overlay on the map with filters for display

Note: images are illustrations of how this function could be implemented in WAMOS

WAMOS 2.0 - *Timeline and outlook*



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Thank you for your attention!

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