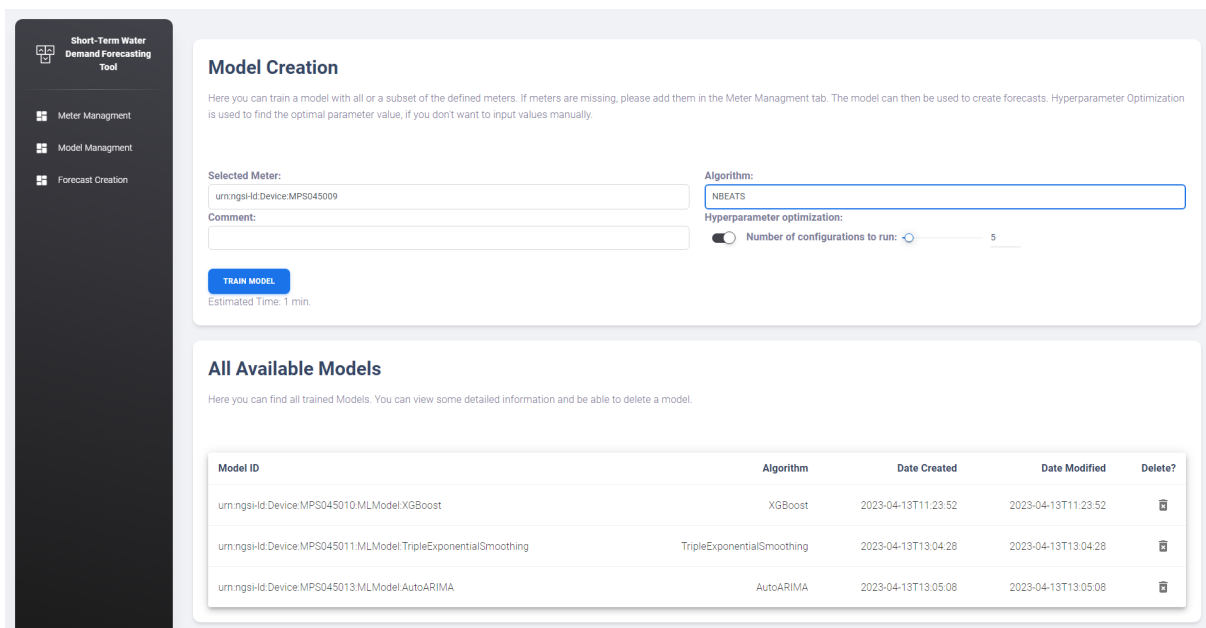




Product factsheet




Short-term demand forecasting tool

Software solution
Service offering



The screenshot shows the 'Model Creation' interface of the Short-Term Water Demand Forecasting Tool. The interface includes a sidebar with navigation options: Meter Management, Model Management, and Forecast Creation. The main content area is titled 'Model Creation' and contains the following elements:

- Model Creation Header:** A brief description stating that users can train a model with all or a subset of defined meters. It mentions that Hyperparameter Optimization is used to find the optimal parameter value.
- Form Fields:**
 - Selected Meter:** A text input field containing 'urn.ngsi-Id:Device:MPS045009'.
 - Algorithm:** A dropdown menu currently set to 'NBEATS'.
 - Comment:** An empty text input field.
 - Hyperparameter optimization:** A toggle switch that is currently turned off, followed by a slider for 'Number of configurations to run' set to 5.
- Train Model Button:** A blue button labeled 'TRAIN MODEL' with the text 'Estimated Time: 1 min.' below it.
- All Available Models Section:** A section titled 'All Available Models' with a description: 'Here you can find all trained Models. You can view some detailed information and be able to delete a model.' Below this is a table listing trained models.

Model ID	Algorithm	Date Created	Date Modified	Delete?
urn.ngsi-Id:Device:MPS045010:MLModel:XGBoost	XGBoost	2023-04-13T11:23:52	2023-04-13T11:23:52	
urn.ngsi-Id:Device:MPS045011:MLModel:TripleExponentialSmoothing	TripleExponentialSmoothing	2023-04-13T13:04:28	2023-04-13T13:04:28	
urn.ngsi-Id:Device:MPS045013:MLModel:AutoARIMA	AutoARIMA	2023-04-13T13:05:08	2023-04-13T13:05:08	

Description

Two main components:

1. Backend service that allows to train models and create water demand predictions. The service is reachable through its own REST API (documented in OpenAPI), as well as through the Orion context broker (FIWARE).
2. Frontend service that is used to interact with the backend and visualize forecasts or model training results. This component is optional in case a frontend service already exists at the user's organization where the product can be integrated.

Training material for the short-term demand forecasting tool is available at <https://youtu.be/6vR797Oainl>.

Target audience

Water utility that has the software engineering capabilities to integrate the tool into their system. The user that interacts with / applies the tool needs to be able to use a browser and interpret data from the water domain (e.g., water demand line plots).

Actors, their roles and interactions

The tool is meant to be used by water utilities. Depending on their expertise, they might need help from external IT experts to integrate the tool into their system before it can be applied.

Unique selling points

The tool offers a wide variety of algorithms to create water demand forecasts, ranging from traditional, purely statistical methods to modern deep learning approaches. It is possible to automatically discover the best performing method for the specific use case or alternatively choose the method that the user has the most trust in already.

Technical requirements

Software engineering expertise to integrate the components (FIWARE components + backend + frontend) into the network and system of the water utility. All components are provided in form of docker containers. Additional expertise is required to install smart meter devices and connect them to the system such that the pre-processed smart meter data is accessible to the tool. The tool comes in form of docker containers and is thus independent of the specific OS.

Software data

- License: Open-source.

URL

<https://github.com/iwwtech/bws-short-term-forecasting>

Technology applied by the product

- [Water recovery technologies for water reuse](#)

Technology Readiness Level

Level 6

Case Study applying the product

East Frisia, Germany



<https://mp.watereurope.eu/d/CaseStudy/19>

Related tags

Residential

Water demand

Industrial

Agricultural

Machine learning