

IWW Water Centre

## Developing a standardized maturity model for water supply 4.0

Digitalization sets one of the most relevant development fields in the water sector. A research project of IWW Water Centre is currently developing a standardized maturity model for water supply 4.0 filling the gap between existing strategies and future visions related to digitalization.

The overall goal of the R&D project is to develop a standardized maturity model for operators, organizations and asset owners with regards to digitalization of water supply. Output of the project will be an adaptable model to evaluate water infrastructures focused on drinking water supply. The approach is methodologically grounded on an existing maturity model for industrial production processes that has been applied in various companies of different sectors and types of businesses. Specific characteristics of water infrastructure have to be addressed in the standardized maturity model for water supply smart to enable operators to analyze their digital development path systematically. The model shall answer the following strategic questions:

- Where are we standing now?
- What digital development opportunities do exist?
- Where do we want to go and what is beneficial for our company in its specific context?

Important objectives of the project are: (i) the development and validation of the maturity model and (ii) the development and provision of a web-based self-assessment tool for further dissemination and easy application and setting-up to the operators.

### Methodology

The maturity model for water supply 4.0 is conceptually based on the acatech Industry 4.0 Maturity Index and follows a state

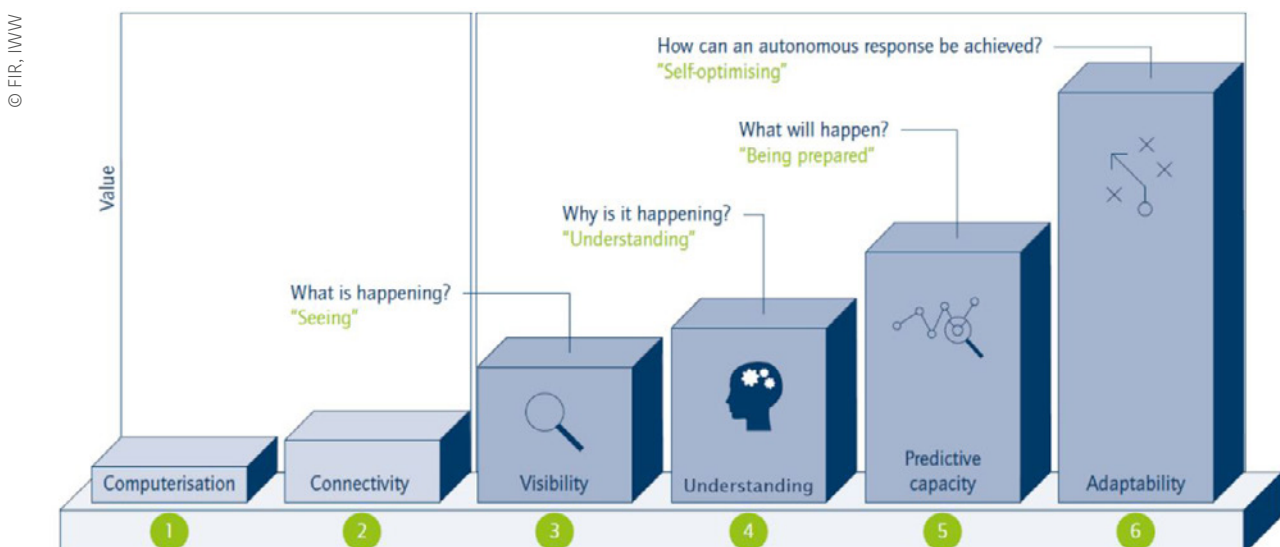
of the art maturity modeling approach. The supplier's digital transformation process is represented by a sequence of six value-based maturity levels (**Figure 1**) defined as

1. computerization,
2. connectivity,
3. visibility,
4. understanding,
5. predictive capacity/ability to predict and
6. adaptability.

Accomplishing the next level, the water supplier gets one step further on the path of digital transformation towards a learning and agile organization that can quickly adapt to changing conditions.

To assess digital maturity levels, various capabilities in the main areas resources, information systems, culture and organizational structure are defined within different scopes and achievement criteria. For each capability specific requirements will be defined in the project, which are linked to the six maturity levels. As a result, the fulfillment of the capabilities of each area determines the development stage of each main area.

Secondly, the capabilities are analyzed for all main administrative and technical processes of drinking water supply. This approach allows a differentiated analysis of water supply system from source to tap on main process level related to the main targets.



**Figure 1:** Six development stages in the maturity assessment for water supply 4.0

## Project profile .....

► **Name of project:** Development of a standardized Maturity model for water supply 4.0

**Type of project:** R&D-Project including piloting and case study based validation, programming and provision of a web-based self-assessment tool

**Duration:** October 2017 until November 2018

**Key words:** maturity model, digitalization, process evaluation, smart water systems, drinking water supply 4.0

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**Funder:** DVGW Deutscher Verein des Gas- und Wasserfaches e.V. - Technisch-wissenschaftlicher Verein - (German association for gas and water)

**Partners:** Forschungsinstitut für Rationalisierung (FIR) e.V., Institute for Industrial Management at RWTH Aachen University, Germany, MOcons GmbH & Co. KG, Mülheim an der Ruhr, Germany

These targets are defined related to German standards in so-called performance characteristics: quality of supply, security of supply, customer service, sustainability and economic efficiency.

## Benefits and outcomes

Expected outcomes of the project solve different challenges of the drinking water sector. The most important one is filling the gap between existing strategies and future visions related to digitalization. The methodology to be developed allows firstly to evaluate the own status quo and secondly to set-up fields of action towards a more digital and smarter service of supply in the future. Furthermore, the project is characterized by an active involvement of different water suppliers (bulk and direct suppliers; small, medium and large suppliers; public and private suppliers). Involved suppliers play the role of piloted case studies to evaluate the operational capability of the maturity model including its associated web tool on the one hand. On the other hand, the validation of evaluation results in terms of different maturity levels for main processes and assets in drinking water supply will be an additional success factor.

The concept can be expanded to other public infrastructure sectors, e. g. wastewater.

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