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## Smart water management —

### Part 2: Data management guidelines

Gestion intelligente de l'eau —

Partie 2: Lignes directrices pour la gestion des données

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~~CP 401 • Ch. de Blandonnet 8 • CP 401~~

~~CH-1214 Vernier, Geneva, Switzerland~~

~~Tel. Phone: + 41 22 749 01 11~~

~~Fax + 41 22 749 09 47~~

~~E-mail: [copyright@iso.org](mailto:copyright@iso.org)~~

~~Website: [www.iso.org](http://www.iso.org)~~

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## Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see [www.iso.org/directives](http://www.iso.org/directives)).

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This document was prepared by Technical Committee ISO/TC 224, *Drinking water, wastewater and stormwater systems and services*.

A list of all parts in the ISO 24591 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at [www.iso.org/members.html](http://www.iso.org/members.html).

## Introduction

To better manage the entire life cycle of water systems, water system owners and operators continually improve ~~the~~ operational efficiency, reduce costs and communicate to stakeholders or other systems. In addition, they ~~must~~ address safety, regulatory and public authority requirements. One effective approach to achieving these goals is to take advantage of data generated by water systems.

Information-sharing facilities and models established based on these data can provide optimal solutions for the owner or operator of the water systems to meet stakeholder demand for, ~~among other things, e.g.~~ drinking water production, transmission and distribution, asset management, risk management, wastewater collection and sanitation, stormwater management and water resource protection. Over the past few years, advances in digital technologies have enhanced the capabilities of data generation; meanwhile, data-processing capacities have also significantly improved.

With the rapid development of new digital technologies, the data generated from water systems are increasing drastically. This “data explosion” has enabled the delivery of new services that:

- ~~\_\_\_\_\_~~ increase ~~the~~ operational efficiency of assets and networks~~;~~
- ~~\_\_\_\_\_~~ reduce or optimize ~~CapEx~~ capital expenditures and ~~OpEx~~ operating expenses;
- ~~\_\_\_\_\_~~ allow better anticipation and assessment of risks~~;~~
- ~~\_\_\_\_\_~~ enable a smaller environmental footprint~~;~~
- ~~\_\_\_\_\_~~ enhance regulatory compliance~~;~~
- ~~\_\_\_\_\_~~ support oversight and substantive accountability to local or national stakeholders~~;~~
- ~~\_\_\_\_\_~~ improve the level of service to ~~the~~ water system customers ~~and so on.~~

However, large-scale data also dramatically increase the requirements on ~~the~~ data storage and data transfer facilities. In addition, it is important to ensure that large-scale data do not result in negative impacts on the environment. Therefore, data management is a ~~great~~ challenge ~~to~~for water system owners and operators.

To ensure that the data and information generated by water systems produce maximal values, proper data management approaches should be applied in organizations ~~related to~~that work with water systems, ~~such as e.g.~~ using consistent nomenclature, specifying ownership rules, performing data validation and applying standardization and normalization.

## Smart water management —

### Part 2: Data management guidelines

#### 1 Scope

~~The goal of this~~This document ~~is to provide~~provides a general foundation for data management in ~~water services,~~ systems and facilities, ~~emphasize related to drinking water, wastewater and stormwater.~~ It emphasizes data as an asset and ~~introduce~~introduces basic rules ~~to achieve~~for efficient data acquisition, storage and processing. It ~~is meant~~aims to help water system owners and operators manage water facilities more efficiently based on large-scale data.

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# ~~Smart water management~~ — Part 2: Data management guidelines

## ~~1~~ Scope

~~This document provides data management guidelines for systems and services relating to drinking water, wastewater and stormwater.~~

The following aspects are within the scope of this document:

- ~~—~~ management of data as an asset in water systems;
- ~~—~~ data management principles and guidelines;
- ~~—~~ people organization around in relation to data management.

~~This document is applicable to public or private water utilities of any size or scope that want to design, develop, implement, operate and maintain smart water management systems.~~

## 2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 24513, *Service activities relating to drinking water supply, wastewater and stormwater systems — Vocabulary*

## 3 Terms and definitions

ISO/FDIS 24591-2

For the purposes of this document, the terms and definitions given in ISO 24513 and the following apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- ~~—~~ ISO Online browsing platform: available at <https://www.iso.org/obp>~~https://www.iso.org/obp~~
- ~~—~~ IEC Electropedia: available at <https://www.electropedia.org/>~~https://www.electropedia.org/~~

### 3.1

#### data

set of values of qualitative or quantitative variables

[SOURCE: ISO 21378:2019, 3.1]

### 3.2

#### artificial intelligence

##### AI

branch of computer science devoted to developing *data* (3.1)(3.1) processing systems that perform functions normally associated with human intelligence, such as reasoning, learning and self-improvement

[SOURCE: ISO/IEC/IEEE 24765:2017, 3.234]

### 3.3

#### ~~internet~~**Internet of things**~~Things~~

#### **IoT**

infrastructure of interconnected entities, people, systems and information resources, together with services, which processes and reacts to information from the physical and virtual world

[SOURCE: ISO/IEC 20924:2021, 3.2.4]

### 3.4

#### **data flow**

movement of *data* ~~(3.1)~~**(3.1)** through the active parts of a data processing system in the course of the performance of specific work

[SOURCE: ISO/IEC 2382:2015, 2121825, modified — Notes to entry removed.]

### 3.5

#### **privacy**

right of individuals to control or influence what information related to them may be collected and stored and by whom that information may be disclosed

[SOURCE: ISO/IEC TR 26927:2011, 3.34]

### 3.6

#### **digital twin**

digital asset on which services can be performed that provide value to an organization

Note 1-to entry:-The descriptions comprising the digital twin can include properties of the described asset, ~~internet~~**industrial Internet of things**, Things ~~(3.3)~~, collected data, simulated or real behaviour patterns, processes that use it, software that operates on it, and other types of information.

Note 2-to entry:-The services can include simulation, analytics such as diagnostics or prognostics, recording of provenance and service history.

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[SOURCE: ISO/TS 18101-1:2019, 3.9, modified — Example removed.]

### 3.7

#### **data governance**

property or ability that needs to be coordinated and implemented by a set of activities aimed to design, implement and monitor a strategic plan for *data asset* ~~(3.10)~~**(3.10)** management

Note 1-to entry:-More information on data governance can be found in ISO/IEC 38505-1:2017.

Note 2-to entry:-A strategic plan for data asset management is a document specifying how *data management* ~~(3.8)~~ is to be aligned to the organizational strategy. This term has the same meaning as strategic asset management plan ~~(SAMP)~~ defined in ISO 55000 with a data point of view.

[SOURCE: ISO/IEC 20547-3:2020, 3.7, modified — Note 1 to entry revised, Note 2 to entry removed **and** **Note 3 to entry given as Note 2 to entry.**]