

ISO/IEC 11179-34**Information technology — Metadata registries (MDR) —****Part 34:
Metamodel for computable data registration**

Technologies de l'information — Registres de métadonnées (RM) —

Partie 34: Métamodèle pour l'enregistrement des données calculables

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This document was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 32, *Data management and interchange*.

This document is part of the fourth modularization of ISO/IEC 11179. This document brings into ISO/IEC 11179 the ability to register information about computable data.

A list of all parts in the ISO/IEC 11179 series can be found on the ISO and IEC websites.

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Significant scientific discoveries are increasingly achieved through complex and distributed computations and data analyses. These computations and analyses always involve processing files through a series of steps and transformations, usually called a pipeline or a workflow.

Data pipelines typically use multiple pieces of software, each of which typically has multiple versions available, multiple input parameters, multiple outputs, and possibly platform-specific configurations. As with experimental parameters in a laboratory protocol, small changes in computational parameters can have a large impact on the scientific validity of the results.

To reproduce and verify scientific discoveries, details of pipelines need to be documented and shared, including the protocol, procedures, or metadata associated with them. The more analysis steps and the more complicated a pipeline, the greater the need for a standardized mechanism of communication. A detailed communication helps ensure responsibility, reproducibility, and the ability to verify protocol, track provenance information, and promote interoperability.

This document is inspired by the IEEE 2791-2020^[1], which aims to improve communication of bioinformatics protocols and data to facilitate bioinformatics workflow related exchange and communication between regulatory agencies, pharmaceutical companies, bioinformatics platform providers and researchers. Although IEEE 2791-2020 has a bioinformatics background and application areas, the concepts and methods it expressed are applicable to a broader field of scientific research. A mapping table is included in [Annex A](#), showing the relationship between domains and fields in IEEE 2791-2020 and classes and attributes in this document.

ISO/IEC 11179-3 specifies the structure of a Metadata Registry (MDR) and provides a metamodel for registry common facilities. That metamodel is intended to be extended by other parts of ISO/IEC 11179 for specific purposes.

This document provides a specification of the extensions to the registry metamodel specified in ISO/IEC 11179-3 to enable the registration of metadata about computable data. Registration of metadata about computable data are like a manifest describing all details related to input files, output files, and the pipeline used to process these files. The intent is to facilitate efficient communication and interoperability among different platforms, industries, scientists, and regulators and to improve reproducibility and replicability.

In [Clauses 6](#) and [7](#), this document uses **bold** font to highlight terms which represent metadata objects specified by the metamodel.

EXAMPLE **Computable_Data** (see [7.2.2.1](#)) is a class each instance of which models computable data.