

Factsheet – Step 6

Data standards

What are data standards?

Data standards are established conventions or rules that specify how data is structured, represented, and exchanged within a particular context or domain. These standards ensure consistency and interoperability, enabling different systems and applications to communicate and share data effectively. Data standards can cover various aspects of data, including its format, syntax, semantics, and transmission protocols.

Key aspects of data standards

1. **Format:** Data standards define the structure and format of data, specifying how information should be organized. This includes guidelines for representing text, numbers, dates, and other types of data.
2. **Syntax:** Standards provide rules for the arrangement of elements within a data structure. This ensures that data can be correctly interpreted and processed by different systems.
3. **Semantics:** Data standards define the meaning of data elements and how they relate to each other. This helps ensure a common understanding of information across different systems.
4. **Interoperability:** Standards facilitate interoperability by allowing systems from different vendors or organizations to exchange data seamlessly. When systems adhere to the same standards, they can understand and interpret each other's data.
5. **Transmission protocols:** Data standards may also specify the protocols and methods for transmitting data between systems. This ensures that data can be exchanged reliably and securely.

6. **Regulatory compliance:** In some cases, data standards are mandated by regulations or industry bodies to ensure compliance with certain requirements. Adhering to these standards helps organizations meet legal and regulatory obligations.

Examples of data standards

1. **eXtensible Markup Language (XML):** A markup language that defines rules for encoding documents in a format that is both human-readable and machine-readable.
2. **JavaScript Object Notation (JSON):** A lightweight data interchange format commonly used for asynchronous browser/server communication.
3. **Health Level Seven (HL7):** A set of international standards for the exchange, integration, sharing and retrieval of electronic health information.
4. **ISO 8601:** A standard for representing dates and times to ensure consistency in date and time formats.

In the field of agriculture, there are also more specialised data standards and associated organisations, including:

1. **AgGateway:** AgGateway is an organisation that develops and promotes standards for electronic agriculture data exchange. They work on initiatives such as the Precision Ag Council (PAC) and the ADAPT framework, which provide guidelines for the consistent exchange of agricultural information.
2. **ISO 11783 (ISOBUS):** This international standard specifies a communication protocol for the electronic control of tractors and implements. It enables interoperability between different agricultural equipment and systems.
3. **OGC Sensor Web Enablement (SWE):** The Open Geospatial Consortium (OGC) has developed SWE standards, including the Sensor Observation Service (SOS) and SensorML, which are used in agriculture for sharing and integrating sensor data.
4. **AgXML:** AgXML is an XML-based standard developed by AgGateway for the exchange of agricultural business information, such as crop production data, inventory management, and agronomic practices.

5. **GS1 System for Identification and Traceability:** GS1, a global standards organisation, provides a framework for unique identification and traceability of agricultural products. This helps in tracking products throughout the supply chain, from farm to table.
6. **Global Record of Organic Farms (GROF):** GROF is an initiative that aims to standardize information related to organic farms globally. It defines a common set of data elements to describe organic farms and their practices.