

2.3.4 Data Taxonomy

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On the surface, Data may appear to be a simple, straight forward concept that “everyone” understands but it's not. It is actually a complex concept with multiple facets and interpretations. Data is generally considered a plural term with the singular form being **datum**, however, common usage allows for data to be considered as singular with the singular-plural differentiation being restricted to academic and scientific usage. ¹⁾

A more formal definition of data is provided by the Organisation for Economic Co-operation and Development (OECD)²⁾:

Characteristics or information, usually numerical, that are collected through observation.

In essence, Data are individual elemental, facts, statistics, or items of information, often numeric, that are collected through observation. Technically, data is a set of qualitative or quantitative values about one or more persons or objects,³⁾ while a datum (singular of data) is a single value of a single variable.⁴⁾

Unfortunately, the terms “data” and “information” are commonly used interchangeably. Nevertheless, these terms have distinct meanings and are part of a larger framework defining an increasingly ordered set of cognitive layers. See: [Appendix I: Cognitive Model](#).

At the lowest layer of the Cognitive Model, data forms the basis for the other layers with each layer above being a transformation of the layer(s) below. For example, at the lowest Business Management cognitive layer is the *Data* layer, which includes basic data like sales data, revenue, profits, and stock prices. The next layer of the Cognitive model is for *information* that is usually an association of data to each other. For example, stock prices as related to profits. The next layer is *knowledge* which might be a correlation of how profits is related to stock price. At the highest layers of the cognitive models – *Understanding* and *Wisdom* – data, information and knowledge is presented in the form of data visualizations (e.g., scatter plots, heat maps, and network models).

Data has been described as the new oil of the digital economy.⁵⁾⁶⁾

There are several taxonomies that cover Data within a DIDO. These taxonomies are not additive in nature but also not mutually exclusive. For example, any data within the DIDO can have a Cognitive classification, as well as, a state and/or a digital taxonomy. A piece of data can be classified as **Knowledge**, **At Rest**, and a **Coin**; or might just as easily have been classified as **Understanding**, **In Motion**, and a **Non-Fungible** asset.

Data taxonomies are described in detail in the following sections:

- [2.3.4.1 Cognitive Taxonomy of Data](#)
- [2.3.4.2 State of Data Taxonomy](#)
- [2.3.4.3 Type of Data Taxonomy](#)

- [2.3.4.4 Data Model Taxonomy](#)
- [2.3.4.5 Data Lifecycle Taxonomy](#)
- [2.3.4.6 Geographic Jurisdiction Data Governance Taxonomy](#)
- [2.3.4.7 Data Memory Taxonomy](#)
- [2.3.4.8 Object Data Taxonomy](#)
- [2.3.4.9 Error Taxonomy](#)

Data is a complex concept that, unfortunately, when employed as a term is overloaded. Generically, it can describe any of a range of concepts from a simple data point to the complex range of data and their associations. In the [Cognitive Model](#) data is just one level in the human cognitive hierarchy.

In any data project, there are likely to be two components. The first is the data collected, assembled, or generated. Think of it as the raw content in the system. It could be hourly temperature readings from a sensor, the age of individuals in a survey, recordings of individual voices, or photographs of plant specimens. The second component is the data system in which the data is stored and managed.⁷⁾

We usually do not think of data content as separate from the system in which it is stored; however, this distinction is very important from the perspective of intellectual property rights. The question is what, if anything, is protected by [Copyright](#). Under U.S. law, data that is merely factual has no copyright protection; it is not possible to copyright facts. Not all data is in the public domain. A project might, for example, use copyrighted photographs because the photographs are part of the project's "data." In many cases, the data in a data management system, as well as, the metadata describing that data will be factual, and hence not protected by copyright.

A database, on the other hand, can have a thin layer of copyright protection. Deciding what data needs to be included in a database, how to organize the data, and how to relate different data elements are all creative decisions that may receive copyright protection.

Because of the different copyright status accorded to databases and their data content, different mechanisms are required to manage each. Copyright can govern the use of databases and some data content (that which is itself original). In contrast, contract law, trademarks, and other mechanisms are required to regulate factual data.

The third word in the acronym DIDO is Data, therefore every [node](#) manages and controls data. The data within a node is classified as either: [ledger data](#), [ancillary data](#) or [external data](#).

☐ [\[char\]](#)This section has been heavily revised -- need to review

¹⁾
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²⁾ ³⁾
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