

Data vs. Information

One very well known (and controversial) database in use today is the NSA database. They collect records of cell phone calls made in the United States, emails, texts, Facebook posts and so on. What is primarily stored is information about phone calls, including the caller, receiver, length of the call and the time and date of the call. This data is metadata. This data means very little without context, however. Records are related to other fields, so the NSA can organize the data and preform traffic analysis. That is why the metadata they collect: call times, locations, etc. correspond to a specific phone number. Now you know who made the phone call and where and when they called from. For example, the number 58 means nothing in a database unless it is organized and given context. You have to give the 58 context and organization by specifying “this phone call lasted 58 seconds between these two addresses in these two locations at this time on this day.” This is the difference between data and information, and the only way to accurately convey information is through an organized and contextual database structure.

Data Models

Three types of data models are hierarchical, network, and relational. Hierarchical and Network are outdated models and not preferred over the relational database model. This model is organized from the top down, with each layer down becoming more complex. In the hierarchical structure, each record can only have a single parent which is a major restriction. In the network model, many to many relationships are allowed and thus records can have more than one parent. Unlike the hierarchical model, multiple records can still be linked to the same file. However, data is only stored once in each table, preventing duplication and increasing performance. Each item has a reference to other tables and can easily create and remove references when needed. This is why the relational database model is so widely used today.

Using XML may be a simple and clean way to store your data. XML may be useful for storing addresses that all include a state, city, and street address. All records have the same number of fields and it is easy and structured. Something more complex, however, like the database for a large business may be different. That could require a relational database, which would be a more reliable form of storing complex information.

