**Traditional and contemporary methods of Data Modelling**

1. **What is Data Modelling**

Data Modelling is “the act” of creating a data model (physical, logical, conceptual etc.), and includes defining and determining the data needs of an organization, and its goals. The act of Data Modelling defines not just data elements, but also the structures they form and the relationships between them. Developing a data model requires that the architects (Data Modellers) work closely with the rest of the enterprise to establish goals, and the end users of the information systems, to establish process.

A data model contains “data elements” (for example, a customer’s name, or an address, or the picture of an airplane) which are standardized and organized into patterns, allowing them to relate to each other. The model defines how data is connected, and how data is processed and stored inside the computer system. For example, a data element representing a house can be associated with other elements, which in turn, represent the color of the house, its size, address, and the owner’s name. How the information is organized varies from one model to the next. Data Modeling, databases, and programming languages are interdependent, and have evolved together.

1. **Stages in Database development**

Databases have evolved in basically four phases, and these phases tend to overlap:

* Phase included the development of Database Management Systems (DBMS) known as hierarchical, inverted list, network, and during the 1990s, object-oriented Database Management Systems.
* Phase II is described as relational, and introduced SQL and SQL products (plus a few nonSQL products) starting about 1990.
* Phase III supported Online Analytical Processing (OLAP), which was developed around 1990 (along with specialized DBMSs) and continues to be used today.
* Phase IV introduced NoSQL in 2008, supporting the use of Big Data, no-relational data, graphs, and more.

1. **The Growth of No-Relational Models**

One of NoSQL‘s advantages is its ability to store data using a schema-less, or no-relational, format. Another is its huge data storage capabilities, referring to its horizontal scalability. Rick van der Lans, an independent analyst and consultant stated:

*“The Data Modeling process is always there. You can look at that role in a simple way, by thinking of it as a process that leads to a diagram. In the process of creating the diagram, you are trying to understand what the data means and how the data elements relate together. Thus, understanding is a key aspect of Data Modeling.”*

1. **Using various data models and paradigms**

Because the data is structureless, a variety of data models can be used, after the fact, to translate and map out the data, giving it structure. With NoSQL, it is common to store data in a variety of locations (horizontal scalability), providing a variety of potential data model translations. This storage technique is called polyglot persistence.

1. **The current situation with NoSQL databases**

Because of their flexibility, and large data storage capacity, NoSQLstyle data stores have become popular. However, NoSQL databases still have a long way to go, in terms of evolution. According to the research report “ Insights in Modeling NoSQL”, it was discovered many organizations haven’t included a data model into their NoSQL systems. Not too surprisingly, they also found these same organizations wanted to build and use a data model, and to increase the staff having Data Modeling skills.