20. Basic Node-Link Paradigm

20.1 Introduction

As we have seen in the previous chapter, hypermedia allows multimedia information to be connected to one another via associative links. In a most general sense, hypermedia can be seen as a special technology dealing with big repositories that hold multimedia documents. More precisely, hypermedia deals with data structures imposed on a collection of multimedia documents.

![Figure 20-1 Associative links in documents](image)

Thus, hypermedia is a special type of database. The database is not simply a bucket full of multimedia documents, but is structured, and also large, much like the information stored in most databases.

![Figure 20-2 Repository of multimedia documents](image)

Despite the fact that we consider hypermedia to be a special kind of database application, there exist a number of special features which distinguish a hypermedia application from other database applications. Thus hypermedia deals with multimedia
documents which cannot be seen as normal database records or tuples having a predefined meta-structure.

Multimedia documents have their own unique, internal structure. The author of such documents controls the exact structure of the document. Thus:

1. The first important difference is that hypermedia technology does not separate structure and content of multimedia documents.

2. The second important difference between conventional databases and the hypermedia technology is that hypermedia technology does not utilise the concept of predefined meta-structure (i.e. the concept of database schema).

![Figure 20-3 Differences database and hypermedia technologies](image)

### 20.2 Node-Link Model

In accordance with a so-called ‘Basic Hypermedia Paradigm’, multimedia documents (i.e. chunks of multimedia data) are called nodes.

The cross-references or relations between nodes are called links. Conceptually, a link is a connection between two documents. Links are directed, i.e. there is a source document and a destination document. In other words, a document may have a number of links emanating from the document, and there may exist a number of links pointing to the document.

Together, nodes and links form what is called a hyperweb.

It should be especially noted that the basic node-link paradigm supposes that information on all links emanating from a particular node is stored into a database as a part of such node definition. This situation is termed as embedded links.

The concept of embedded links has a number of important consequences:

1. Links are unidirectional, i.e. can be traversed only in forward direction (i.e. from a source document to a destination document)

2. All links emanating from a particular node cease to exist when the node is deleted.