

Database File System

An Alternative to Hierarchy Based File Systems

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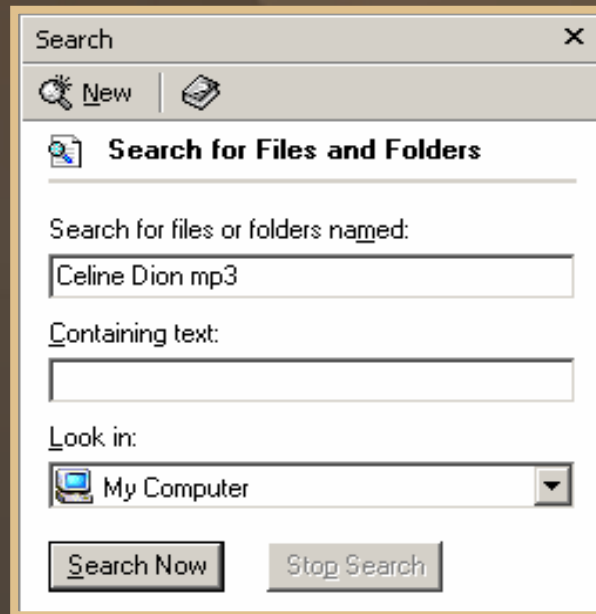
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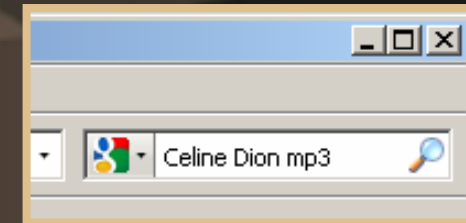
Glossary

- ◆ Daemon
 - ◆ A Linux concept refers to a service or a program working in the background
- ◆ DBFS – Database File System
 - ◆ An Alternative file system, based on database concepts
- ◆ Filter
 - ◆ Set of search criteria for a file
- ◆ KDBFS – KDE Database File System
 - ◆ An alternative KDE file manager, designed for Database File System
- ◆ KDE - The K Desktop Environment
 - ◆ An open-source desktop environment for Linux
- ◆ Konqueror
 - ◆ The default KDE file manager, designed for Hierarchical File System
- ◆ HFS - Hierarchical File System
 - ◆ The common structure of the current file systems, which consists of tree of files and folders
- ◆ Metadata
 - ◆ Data about data, refers to the set of attribute about a certain file
- ◆ View
 - ◆ A filter's output

Let's find a file...



Local hard drive?

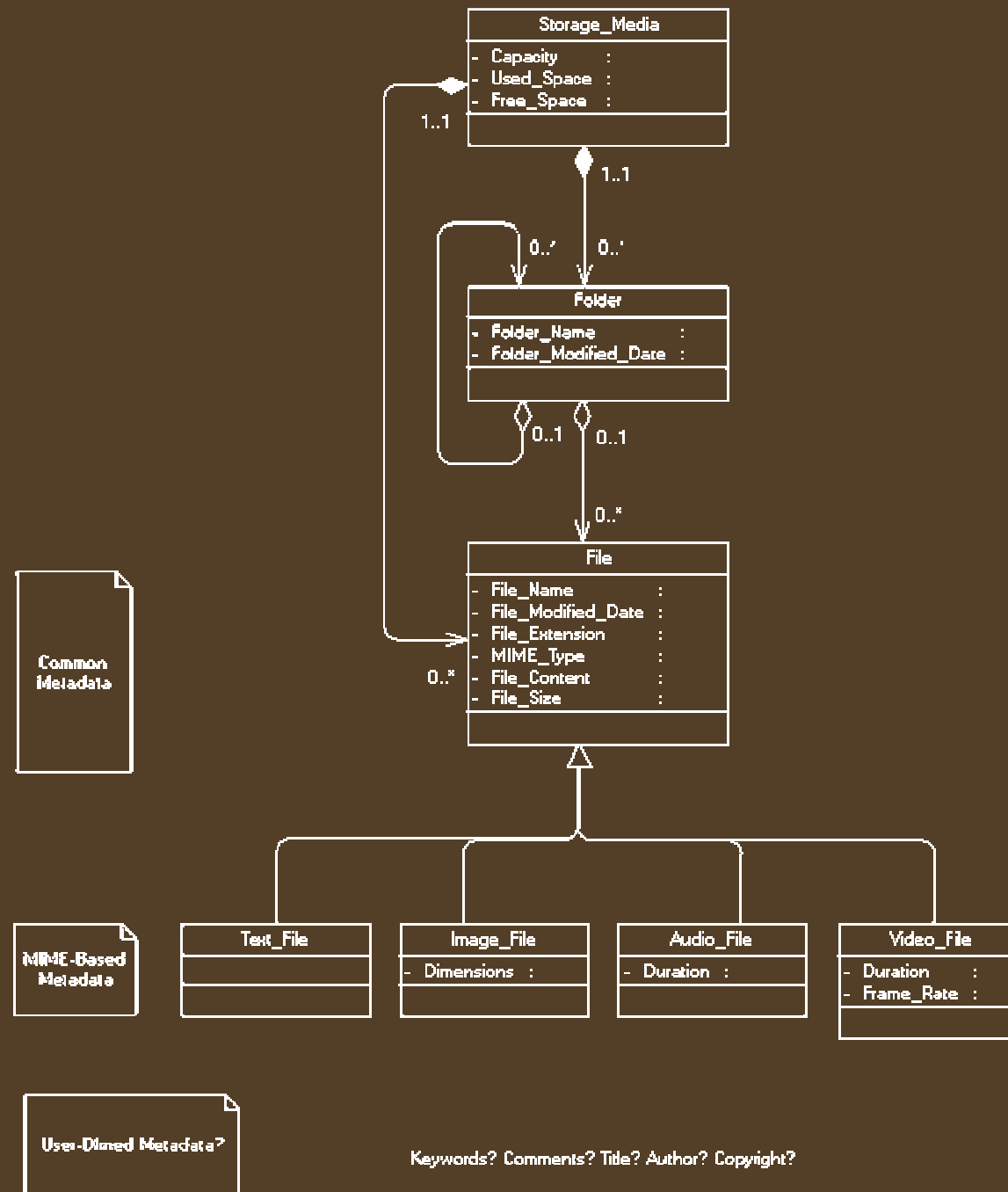


...or the enormous internet?!

A common solution...

- ◆ A new kind of software emerged, to help user to store files and their metadata together in a one database.
- ◆ Something like:
 - ◆ iTunes
 - ◆ iPhoto
 - ◆ Picasa
- ◆ But there are still limitations over there!
Take a look...

Current Situation: Hierarchical File System (HFS)



Hierarchical File System

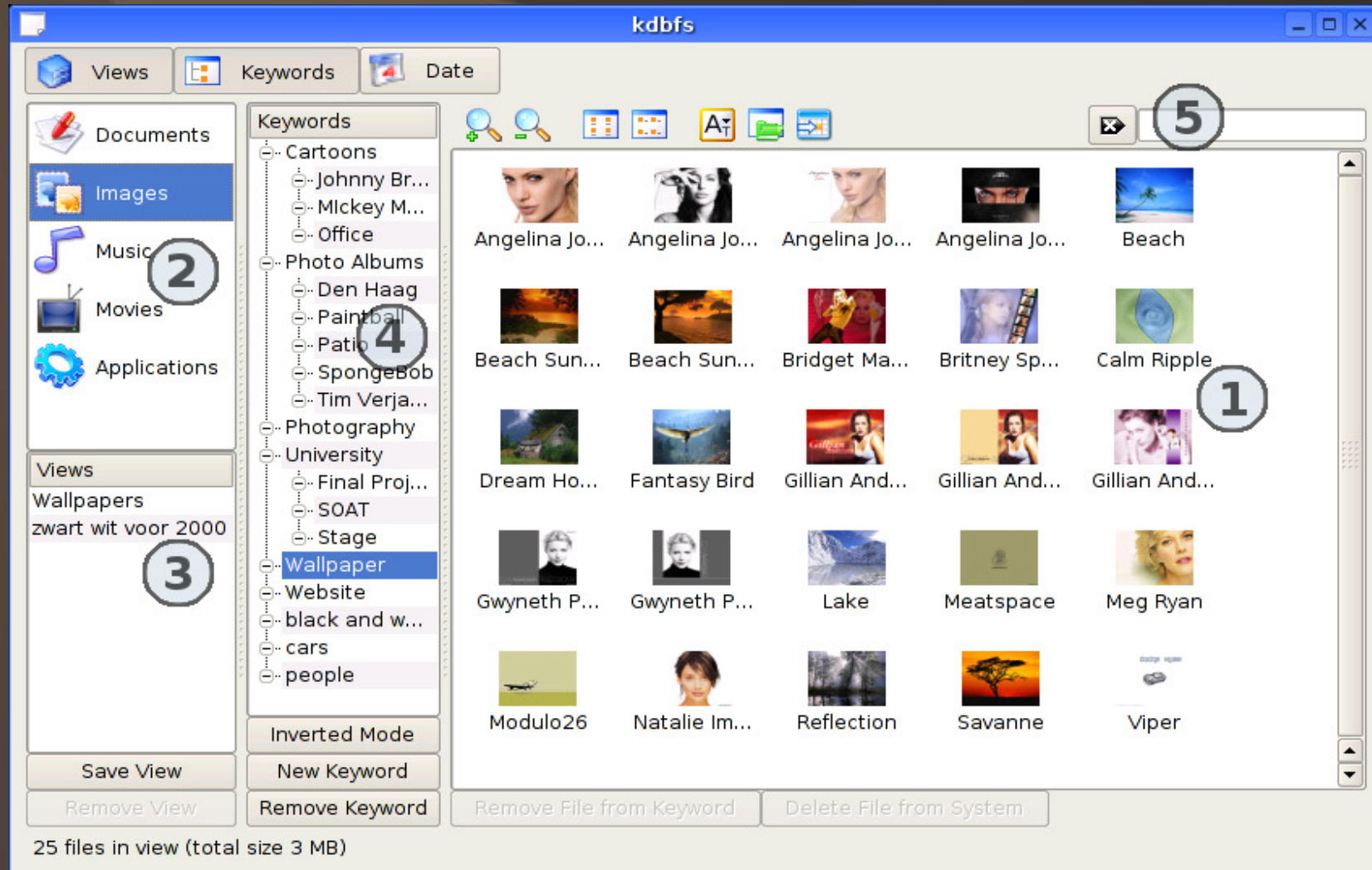
- ◆ HFS
 - ◆ Made to **store** things in some (reasonable) logical location.
 - ◆ It only supports a few types of meta-data:
 - ◆ file-name, file-type, file-size, modification-date...

- ◆ We need a File System
 - ◆ Made to **categorize** and **find** things.

Database File System – An overview

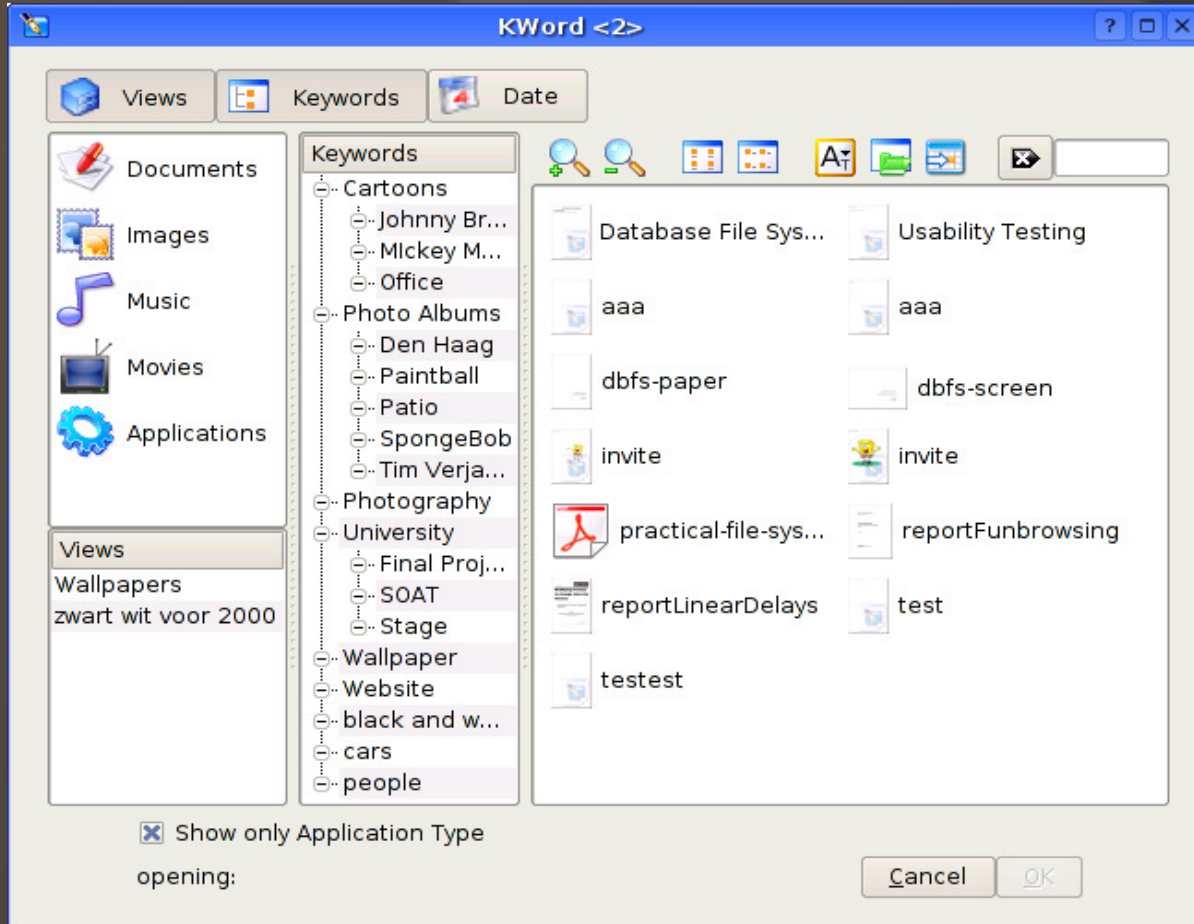
- ◆ It stores files without any restrictions.
 - ◆ multiple files can be stored with the exact same meta-data.
- ◆ It is almost like storing all files in one directory, but without the need for unique names.
 - ◆ So it's considered as **faceted** system
- ◆ **Keywords** can do what directories can and more.

Database File System – An overview

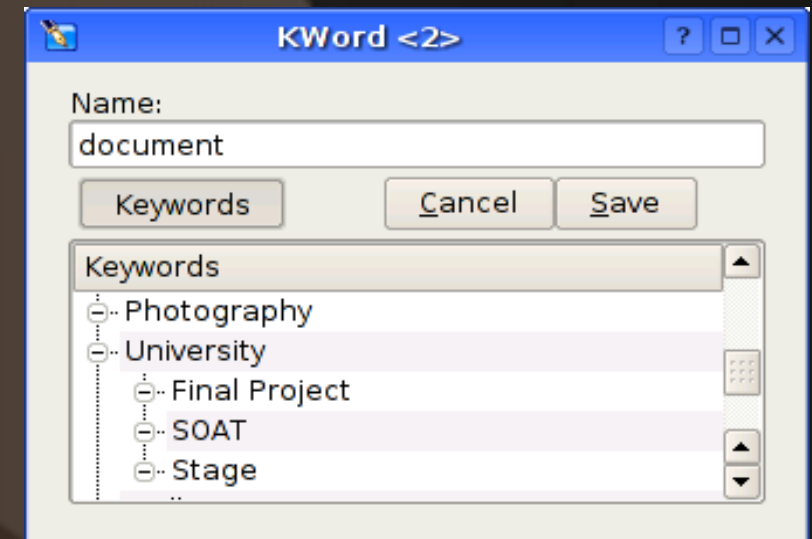


- KDBFS
- ◆ 2 >> 5: Filter: Search or Query
 - ◆ 1: View: Filter's output

Database File System – An overview



Opening a File



Saving a File

Database File System - Internally

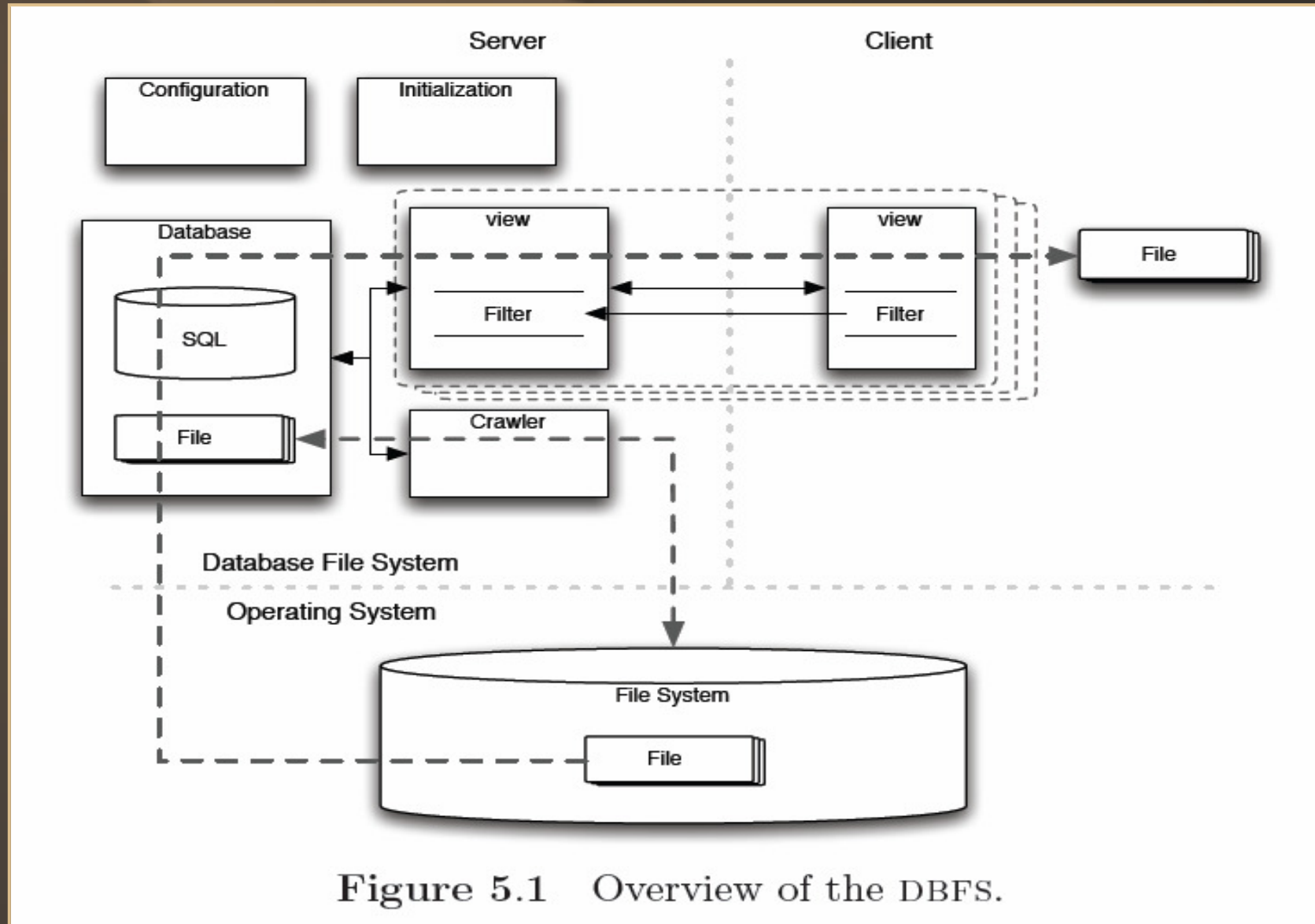
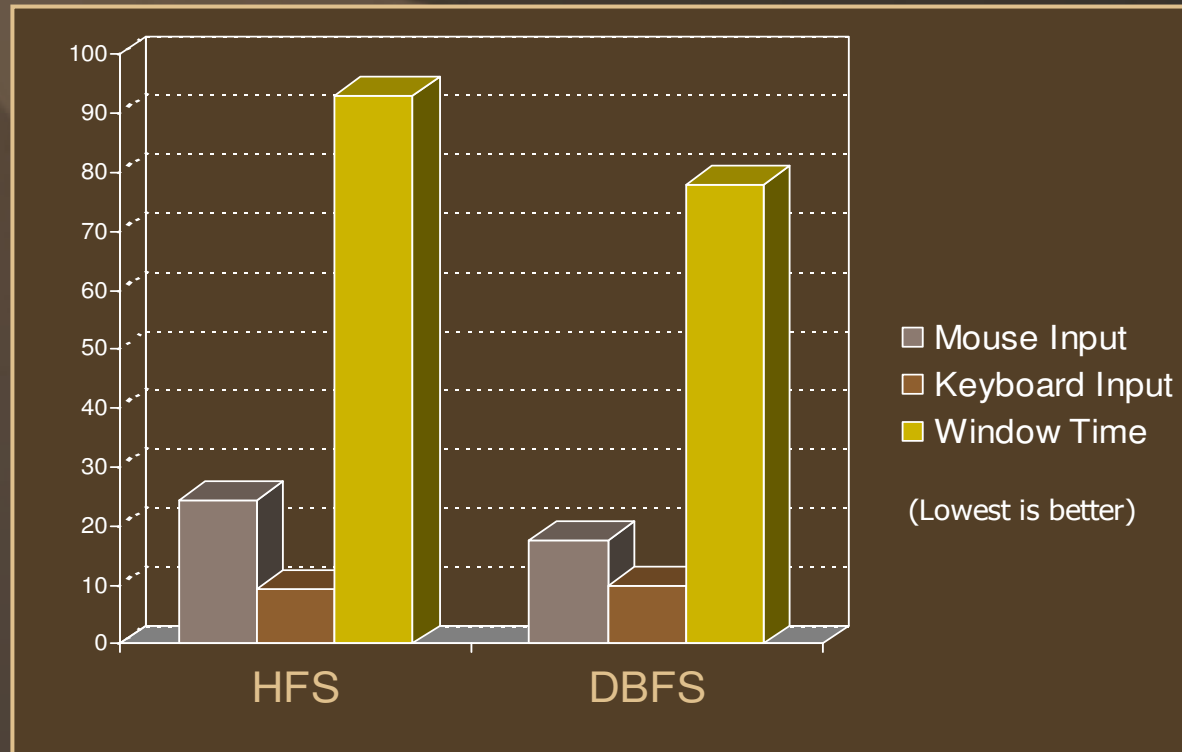


Figure 5.1 Overview of the DBFS.

Database File System - Internally

- ◆ The **DBFS** has been implemented as a daemon service for Unix-like systems, which integrates an SQL library and accepts connections from clients.
- ◆ The clients are the open-file and save-file dialogs in the open-source K Desktop Environment **KDE**, together with a standalone file manager, called **KDBFS**, which replaces **Konqueror**, the original KDE file manager.
- ◆ The daemon service is called *dbfsd* and runs in the background.
 - ◆ It does not actually store files,
 - ◆ It only stores references to files on the hierarchy based file system.

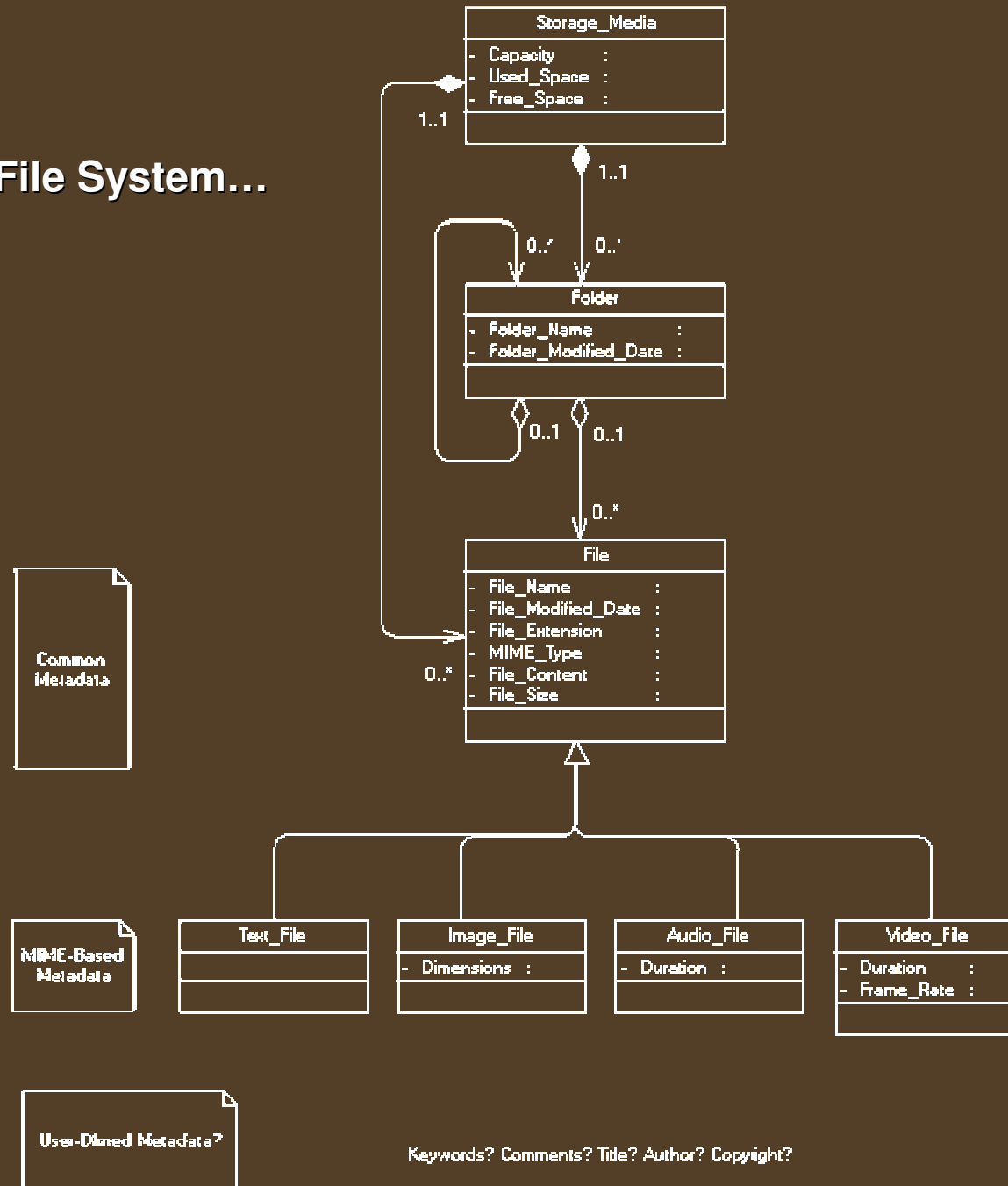
Database File System - Internally



	HFS	DBFS
Mouse Input	24.5	17.5
Keyboard Input	9.2	9.8
Window Time	93	78

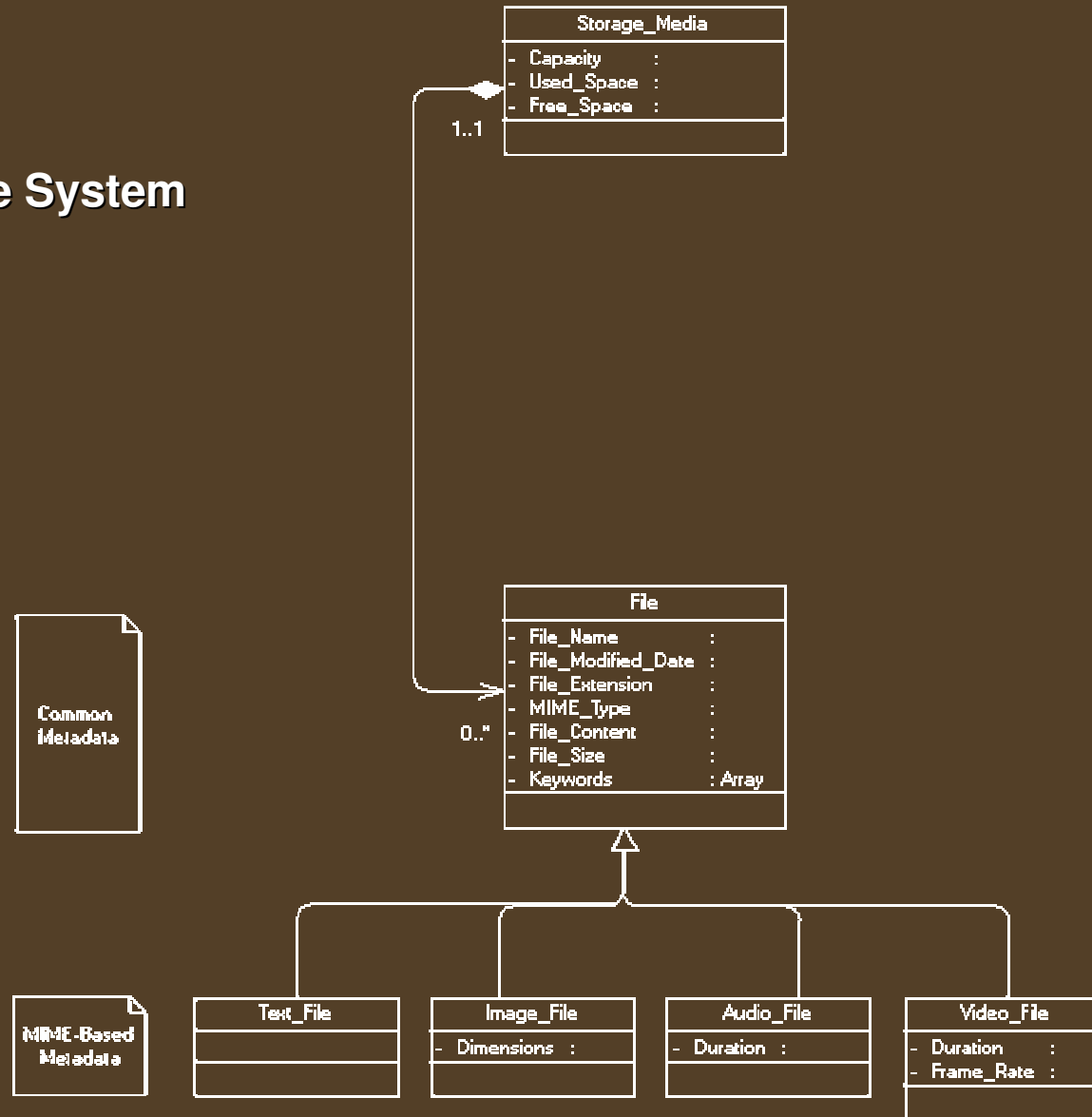
Conclusion

From Hierarchical File System...



Conclusion

To
Database File System



Keywords instead of Folders

◆ **Source:**

- ◆ O. Gorter, Database File System: An Alternative to Hierarchy Based File Systems, University of Twente, August 2004.

Thanks for Listening

