

**Digital Library Services  
for Research and Higher Education**

A Contribution to the

**IBM DB2 Digital Library and Media Workshop in Jena,  
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by

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# Overview

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- Introduction to GWDG
- Implementation of IBM DB2 Digital Library
- Current Projects
- Consulting
- Requirements Engineering
- User Scenarios

## **GWDG:**

- computing and competency center for Max Planck Society and the University of Göttingen
- jointly founded by Lower Saxony and Max Planck Society in 1970
- research in computer science
- training of technicians and scientists
- computer museum

## **RESOURCES:**

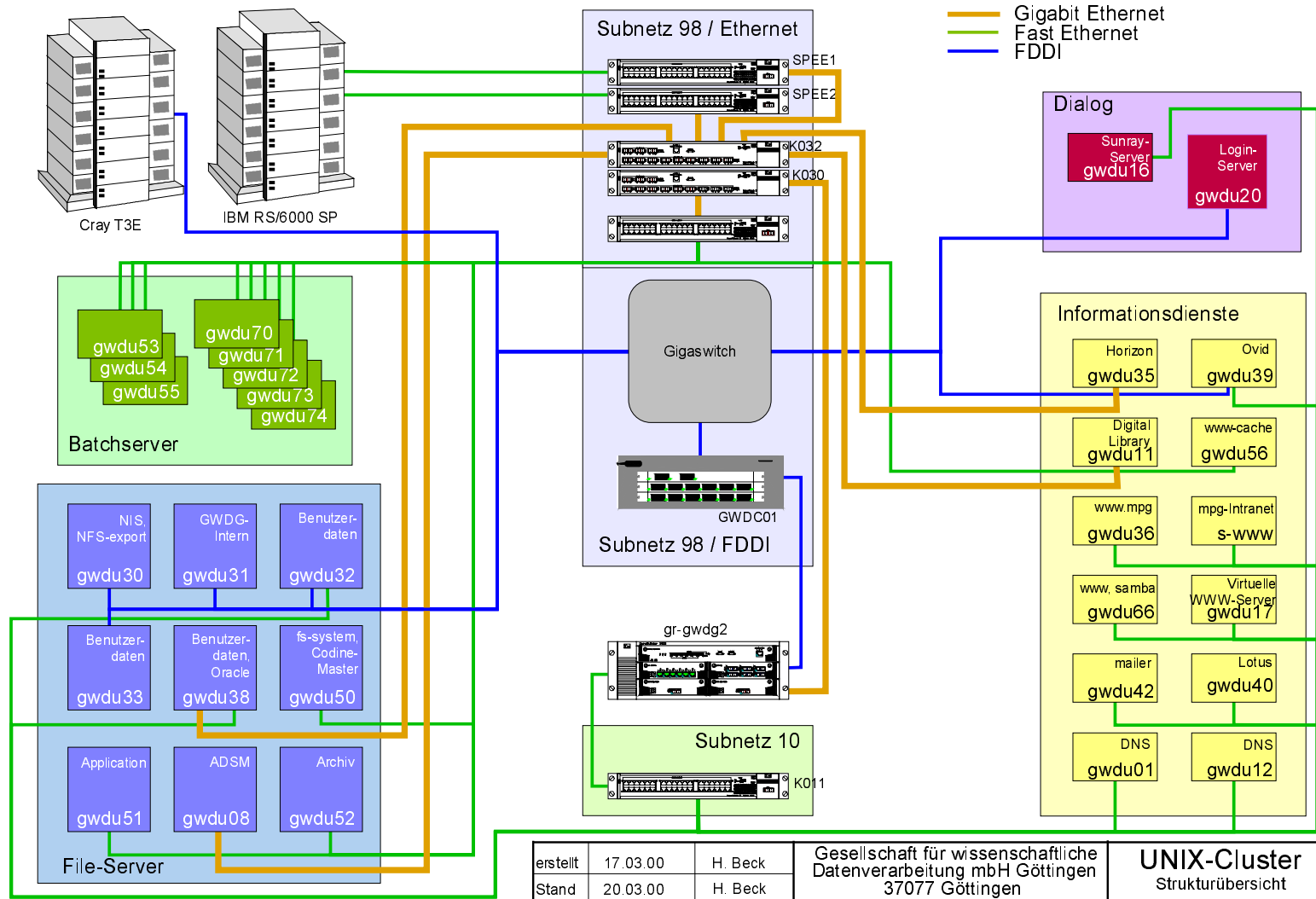
- Parallel Computers: IBM RS/6000 SP with 156 CPUs and 115 GB RAM / Cray T3E with 40 CPUs and 10 GB RAM
- UNIX Workstation Cluster / PC Network
- operation and organization of highspeed network GÖNET with several fast connections to LWN and B-WiN

- backup/archiving system using ADSM
- professional output devices for presentation of academic results, (e.g. printing on demand service)

## **SERVICES**

- operation and administration of networks and servers
- consulting and expertises for IT solutions in scientific environments
- training of users and administrators

# Introduction to GWDG



# Implementation of DL

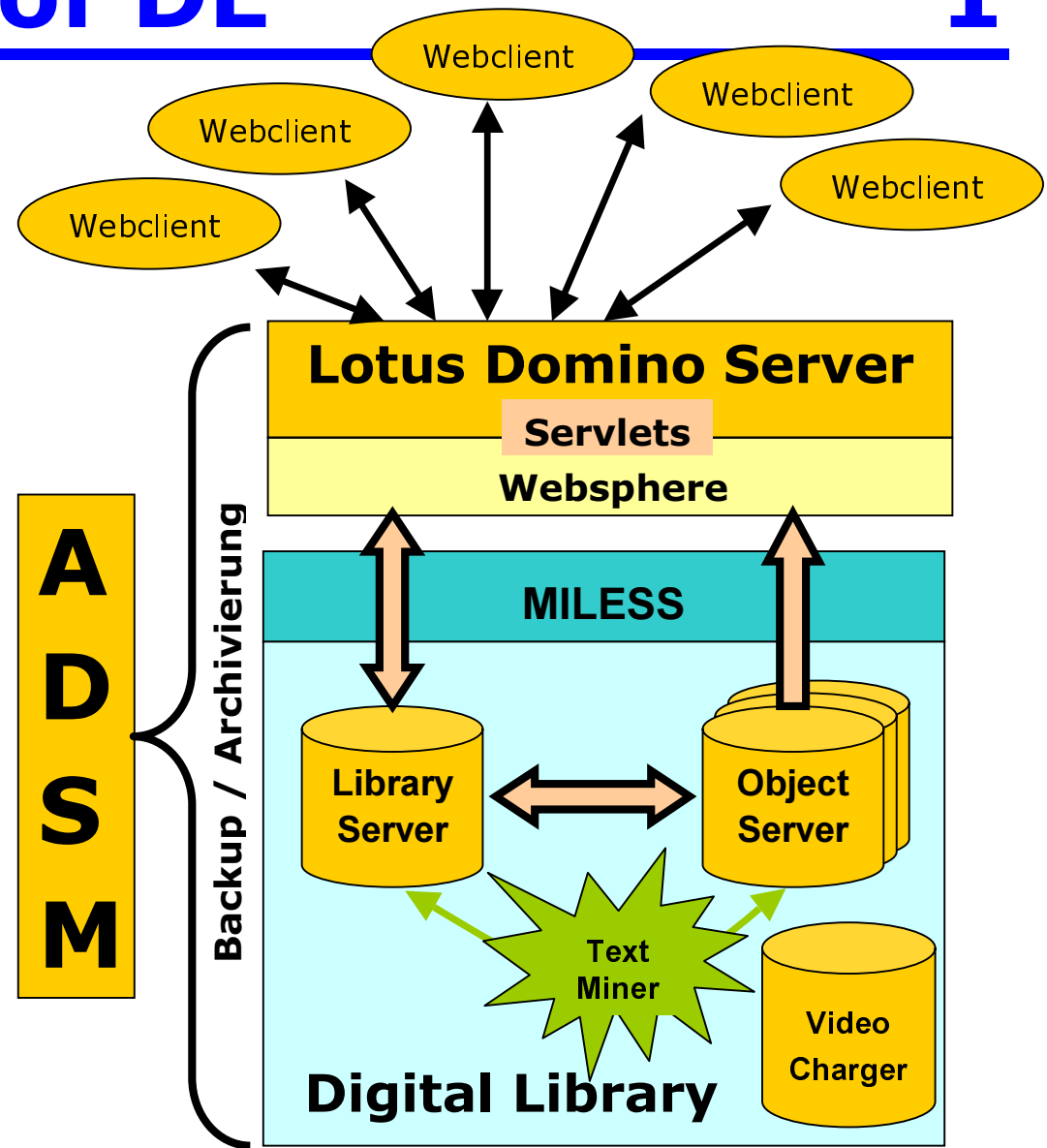
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## HARDWARE

- RS/6000 H50 with 4 processors and 2 GB RAM
- connection to ADSM and tape server
- future plans: migration to the SP

## SOFTWARE

- DL Server / Text Miner / QBIC
- MILESS code
- Lotus Domino Server
- future plans: integration of Videocharger



## **MELISSA:**

- scientific cooperation with Bayerische Staatsbibliothek (BSB) and Ludwig-Maximilians-Universität München
- distributed multimedia system for publishing and editorial work
- **Aim:** establishing a virtual faculty for historical science

## **Components:**

- multimedia encyclopedia for the historical sciences
- system for managing university multimedia publications

## **Solution:**

- basis: DL and MILESS
- integration of Lotus Domino Server for editorial workflow
- adaption to specific document structures in the humanities

## HITISH-GENEPAIN:

- cooperation with the Max Planck Institute for Experimental Endocrinology (Hannover)
- High-throughput Gene Expression Analysis System (specially developed robotors and microscopes)
- **Aim:** visualize three dimensional gene expression pattern, e.g. in the mouse brain

## Web accessible database:

### Recherche:

- interactive visualization of gene expression patterns
- search for expression patterns, approximations and similarities
- comparison of patterns



## **Production:**

- laboratory notebook functions
- import image data
- interactive analysis of 3D images

## **FUTURE PROJECTS**

- image archives for biochemical Max Planck Institutes
- digitization of traditional archives (MPG, University of Göttingen)
- databases for special scientific purposes in the field of humanities containing multimedia documents

## **SERVICE:**

- providing solutions for content management tasks
- finding the appropriate solution together with the customer

## **PROBLEMS:**

- DL requires a huge investment of personal and financial resources
- customers want tailor-made applications for very specific problems
- solution involves whole department(s) or institute(s), i.e. many people with different opinions

## **PREREQUISITES:**

- There has to be a need.
- There has to be an agreement on this need and on its possible satisfactions.

- The management has to be involved in the decision.
- Financial and personal resources have to be provided by the customer.

## CONCLUSION:

- ☞ At the moment the computing center cannot offer DL as a solution ready for utilization to its customers.
- ☞ Viable DL projects require that DL itself is an integral part of a scientific venture, not just support for the everyday workflow.
- ☞ There has to be a joint cooperation with a scientific institute to develop an individual solution using DL.
- ☞ The GWDG sees its commitment to DL rather as a **research task** than as a **service**.

## THE DESIGN PROCESS

- communicate with customer to determine his needs
  - collect, organize, model requirements
  - describe requirements in both formalized and common speech
- ☞ During a project, this process never stops. Requirements are never completely recorded, moreover, they are constantly changing.

## Requirements

### Functional requirements

- what the system will do
- what the system won't do

### Non-functional requirements

- interface

- usability
- performance
- security
- scalability
- legal requirements

## **Boundary conditions**

- customers / users
- prerequisites: personal / financial / technical resources
- project environment
- costs
- risks and breakpoints
- documentation

## "PLAYERS"

1. computing center
2. customer (scientists/institutes)
3. third-party companies

## SCENARIOS: ROLES AND TASKS

### Computing center and customer as equal partners:

- determining requirements
- describing use cases and user scenarios
- creating a datamodel
- developing applications
- implementing and administrating applications
- long-term maintenance and further development

## **Advisory function of computing center (involving a third-party company):**

- managing contact between third-party company and customer
  - taking part in design process
  - helping customer to articulate requirements
  - giving advice regarding the contract of software development
  - implementing and administrating applications
  - long-term preservation of documents
- 👉 At the moment, the GWDG cannot adopt the role of a simple service provider for DL, there has to be a close teamwork of computing center and user to develop useful applications.
- 👉 In the future, we hope to be able to build standardized applications which fit the needs of a number of institutes, e.g. image archiving in biochemical research.