Re-engineering

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Do you remember this?
Libraries in the ’70s

• Collections of paper based material
• Each library catalogued their own acquisitions, using locally adjusted rules.
• A rule of thumb: the same costs for cataloguing as for purchasing an object
• Info about the library’s items were printed on catalogue-cards and filed in cabinets.
• A library had many different catalogues; depending on document status: on order, document received, cataloguing in process, etcetera.
• Large libraries had several branches, each branch maintained a card catalogue of their own holdings
Computers in Libraries in the early 70’s

- A few projects involving computers were found, in Europe and USA, for producing local catalogues, as
  - sorted lists
  - books
  - microfilms

- The first circulation systems used punched cards

- Library of Congress (LC) developed a metadata standard for bibliographic descriptions: the *MARC standard* (Machine Readable Cataloging)
The situation in Trondheim

1970: The Library at NTH and SINTEF/RUNIT agreed to investigate the use of computers in the library

1972: SINTEF/RUNIT, NTH Library and AVH Library agreed on a joint project with the ambitious goal:

**To develop a computerized library system for ALL internal routines**
- acquisition
- cataloguing
- circulation
- search
- serials control
Project Organization

The libraries approached the project with the opinion that the work could be done by data experts alone with minimal involvement from the libraries.

RUNIT had to insist that librarians should be included in the project team:

“no librarians in the team – no project”

At last a project team was established with

• an IT person as Project Leader and with
• two part time librarians from each of the two libraries
RUNIT offered an excellent Development Environment

RUNIT was an active and creative research community, combining data center operation, teaching, research and consultancy

The Library Automation Project cooperated with other RUNIT projects, using and testing their methods and tools, giving feedback for improvements and providing new ideas for relevant research topics

Topics of particular importance:
– Information Systems analyses
– Database Management systems
– Performance Engineering
Design objectives

• Create an online system with shared catalogues, for participating libraries; vertical integration within a library; horizontal integration between libraries
  ⇒ Harmonization of routines and standards
  ⇒ The system must be searchable for anyone; public as well as library personnel

• Master plan and detailed systems analysis to be done prior to programming (the ”think first – program later” approach)

• Bibliographic data shall be written once; starting in the ordering department(s). The record shall later be verified, changed, and expanded by the other processes in the libraries.

• When there are more than one copy of a document, local information shall be added in for the specific copy (e.g. physical location, classification)

• Each physical object shall have a unique identifier, a DOKID, to be used also in the circulation sub-system.
Information Analysis

• The new system was based on a detailed information analysis, analyzing the whole library information structure; creating new work processes, developing detailed requirements prior to coding and data base design.

• We had a good (experimental) tools for assisting in the information analysis and design;
  – CASCADE from RUNIT’s Information Systems group.
  – RA/1 DB system from RUNIT’s Database Group
Figure 1: The Ordering department, *Receiving a Proposal for buying an object*

Legend:
Ver: Verification process; C: Control process, Prop: Proposal; PropA: Accepted Proposal, PropR: Rejected proposal

*Bibliographic Catalogues*: MK: Main Catalogue; O1: AkseCat; O2: GjennomsynKat; O3: OrderingCat; Bib: bibliographies; B: Budgets
Harmonization of routines and standards

The importance of expertise in librarianship as well as in IT was stressed:

- Several Expert User Groups were established:
  - Expert User Group on Cataloguing and the
  - Expert User Group on Acquisition.
- All participating libraries and the Project Group were represented
- The groups’ main objectives:
  - to develop the user requirements for the subsystems
  - harmonizing rules and work procedures inside as well as between the libraries
  - to test the prototypes and prepare guidelines for using the computerized modules
- Challenges:
  - different “cultures”
  - different terminology
  - differences in the problem solving approach
  - sometimes even in the human values
Agreements about:

• A common Metadata-format for bibliographic descriptions (BIBSYS-MARC)
• Cataloguing rules
• Classification; classification systems, keywords (subject headings)
Serarch for "A Doll’s House"
203 hits (Oct. 2010)

Record in BIBSYS-MARC

*000  $a 921405642
*008  $c eng $a p $b v
*020  $a0-486-27062-9 $b h.
*082g $a 839.922[S]
*100  $a Ibsen, Henrik $d 1828-1906
*241  $a Et dukkehjem $w dukkehjem
*245  $a A doll's house $c Henrik Ibsen $w doll's house
*250  $a Dover-thrift ed.
*260  $a New York $b Dover Publications $c 1992
*300  $a VII, 72 s.
*899  $a Ibsensamlingen $b NB

Tagged record with holdings

Source: The Library Database
Record ID: 921405642
Title: A doll's house / Henrik Ibsen
Author: Ibsen, Henrik 1828-1906
Year: 1992
Printed: New York : Dover Publications
Original title: Et dukkehjem
Edition: Dover-thrift ed.
Pages: VII, 72 s.

NB - NB/BRU, Ibsen (ib.) (Til bruk på NB Oslos lesesal)
NB - NB/BRU, Småtr. 428 (h.) (Til bruk på NBOs lesesal)
Immature technology, possible stumbling blocks

Some design solutions were ahead of the technological state-of-the-art:

• Only upper case letters were available in the 1970’s on our equipment. An interim solution was developed.

• The operating systems were not designed for multi-using => a one-user system. An ad-hoc solution was developed.

• Limitations in the data nets: only one library at a time could use the system

• Only tele-type terminals were available the first years. BIBSYS required full screen terminals. Two UNISCOPE-100 were bought in 1974 – the first in Norway
• BIBSYS has been in operation for many decades. The design principles from the 1970s resulted in a system which has outlived the many technical developments:
  – It is used by more than 100 Norwegian university-, college- and research libraries, including the Norwegian National Library.
  – 16,226,730 documents are registered in the database

• The computer programs have been re-written, adjusted and expanded several times over the years to fit with the continuously changing technology.

• Today: harmonization with global systems and collections
What did we do right?

We started with a pioneer approach.

– **We were able to work without a large bureaucracy during the first years.**
– We were not bothered with people who wanted to lead without understanding what they were leading.
– This gave us flexibility, and flexibility is important for a pioneer project.

Other **important factors:**

– The Library Automation project started with a detailed information analysis
– **Participatory design.** The users of the system, the librarians, were included in the project loop from the beginning
– The project was deployed in a technological environment with a wide area of technological expertise
What did we learn?

We followed
Langefors’ approach to information systems development
It worked!

Many of the IT fiascos of the time did it differently, and
• Developed large Information Systems consisting of small “Software Islands”
• Used a “program first- think later” approach, with no requirement analysis
• Ended up with inconsistent data models and metadata formats
• Registered the same information over and over again, in different subsystems

Is the state-of-the-art better today?
• Yes, marginally better
• BUT: too many of yesterday’s errors are repeated also today
• Do IT people, and their superiors, have the right knowledge and education?
• Too many are re-inventing the wheel, providing ”old wine in new bottles”
• Why? Too few bother to learn about previous research and experiences?