

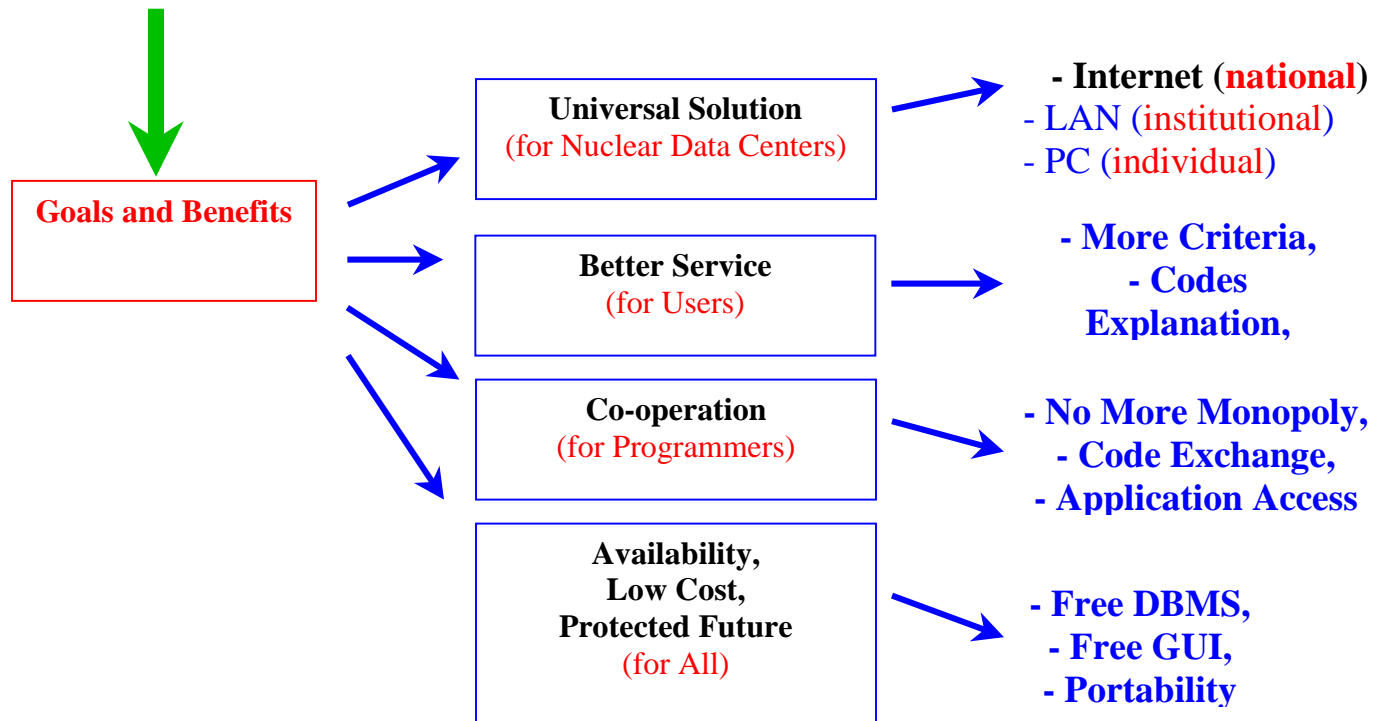
Project “Nuclear Reaction Database Migration” in NDS-IAEA.

V.Zerkin, IAEA-NDS

Nuclear Reaction Databases:	EXFOR, CINDA, ENDF
Nuclear Data Services:	data retrievals (Web, CD) and DB-maintenance
*Migration to New Technology:	<ul style="list-style-type: none"> Relational Databases + Platform Independent Programs
Basic Elements of Technology:	<ul style="list-style-type: none"> - Languages: Java, SQL, C; - Operating Systems: <u>Linux</u>, <u>Windows</u>, <u>*(!)VMS</u> - Databases: MS-Access, MySQL, SyBase, others

Result of the “Migration” Project:

New Generation of Nuclear Databases and Services



*Remark: in NDS approach, the term “Migration” changed its original meaning to the development of a new nuclear database software system, which can be used on many platforms including VMS.

Features	Databases and services	
	Old	New
Operating System	VAX (Alpha)-VMS	Linux, Windows, others
Database	DBMS: technology of 1960-80s	any Relational: MySQL, Access, etc.
Cost	\$ 30,000-100,000 (expensive)	\$100-5,000 (or free)
Languages	Fortran-77: old-style	Java, SQL, C, Pascal, Basic, Fortran, etc.
Further development	only in major Centres	in any place
Access to data	Web, Telnet	Web, Telnet, TCP/IP, on CD-ROM
PC-Applications (CD)	difficult, limited	easier, no limitations
Application development	only on VMS	on any platform (OS, DBMS, language)
Developments	Done in NNDC (BNL, USA), 1985-2000, ~4 programmers	Co-operation established in 2000: - NNDC (BNL,USA): Nuclear Structure - ENSDF: Evaluated Data - NSR: Bibliography - NDS (IAEA): Nuclear Reactions - EXFOR: Experimental Data - CINDA: Bibliography - ENDF: Evaluated Data Schedule: ready for use - 2004

Important dates:

- 1999:** - universal EXFOR reading program
- EXFOR/Access Retrieval System (CD-ROM)
- 2000:** - Testing of programming technologies and DBMS's
- Programming technology selected: Java+JDBC on Windows, Linux with Access, MySQL, SyBase
- Collaboration NDS-NNDC was established for Nuclear Reaction Databases EXFOR, CINDA, ENDF with labor sharing:
- Common: db-schema, user's and system requirements, installation in NNDC
- NDS (V.Zerkin) - software design, programming, installation
- NNDC (V.McLane) - criticism, tests, usage in NNDC environment
- Loading EXFOR via Java to Access, MySQL, Sybase
- 2001:** - Approach selected for Web retrieval: Java-Servlets
- EXFOR Web-retrieval system is done, installed in NDS and NNDC
- 2002:** - EXFOR and Dictionaries: loading via XML
- CINDA loading, Web retrieval started
- EXFOR maintenance started on Linux/SyBase, Manual started
- EXFOR+CINDA/Java2 Standalone Retrieval System for CD-ROM
- 2003:** - EXFOR management: regular updates begun in NNDC in parallel with VMS
- CINDA-Web retrieval finished, installed in NDS and NNDC
- CINDA-compilation/updating: started
- Workshop in Vienna, 1-5 December 2003:
"Relational Databases for Nuclear Data Development, Dissemination and Processing: EXFOR-CINDA Implementation, Maintenance and Compilation"

Completion (June, 2003)

DB	Schema	Load	Update	Compilation	Web	CD-ROM	Utilities
EXFOR	Done	Done	Done	-	Done	Done	80%
CINDA	Done	Done	50%	20%	70%	Done	20%
Dictionary	Done	Done	Done	-	-	33%	0%
ENDF	33%	0%	0%	-	0%	0%	+

Size of programs (February, 2003): 36,300 lines (Java: 26,900; C: 9,400)