A case study of software implementation: IFPA (ISIS FRBR Prototype Application)

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Outline

• Background

• FRBR & ISIS

• The IFPA Prototype

• Prototype architecture

• Conclusion

• Live demo
Background: FRBR

- FRBR (Functional requirements for bibliographic records) conceptual model
  - New conceptual approach developed by IFLA as basis of future cataloging
    - Glenn Patton (OCLC): “FRBR model is revolutionary. The (computer) catalogue is not seen as a sequence of bibliographic records and a replica of the traditional card catalogue, but rather as a network of connected data, enabling the user to perform seamlessly all the functions.”
  - “FRBR Final Report” draft published in 1998
  - Entity-Relationship based approach for the representation of the “objects” involved in cataloging
    - 3 groups of entities: bibliographic (group 1), responsibility/ownership (group 2) and subject (group 3)
    - Relationships between these entities
Background: FRBR (cont.)

- Bibliographic entities “expanded” in a 4-level hierarchical model (Work Expression, Manifestation, Item)
- Primary relationships within the 4-level hierarchy
- Other relationships among bibliographic entities
Background: FRBR (cont.)

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- Each bibliographic level has specific relationships with responsibility entities

```
WORK

EXPRESSION

MANIFESTATION

ITEM

PERSON

CORPORATE BODY

is created by

is realized by

is produced by

is owned by
```
Background: FRBR (cont.)

- Work only has subject relationships
FRBR & ISIS

• The challenge

  − FRBR model: a complex relational structure
  − Implementation of such structure in the CDS/ISIS environment (basic problems)
    • FRBR is not a data model as it is too generic: some implementation choices required
    • Fully normalized database highly recommended
    • Relationships and their management
    • Possible use of some advanced techniques, such the ISISPascal programming (DOSISIS and WINISIS) for relationship editing and navigation
The IFPA Prototype

• **Who:** just me, Roberto Sturman (btw a university librarian, not a professional programmer!)

• **What:** a prototype developed for personal interest

• **Why:** to experiment the flexibility of the ISIS software applied to the FRBR relational context

• **When:** 1999-2005

• **Where:** http://pclib3.ts.infn.it/frbr/FRBR.htm (project hosted by University of Trieste)
Prototype architecture

• 3 user interfaces

  - DOSISIS (ver. 3.08)
    • Supports all the prototype functions: browsing/searching, navigation and data/relationship editing, all performed by a framework of ISISPASCAL utilities called Bex

  - WINISIS (ver. 1.5 – build 3)
    • Browsing, searching and navigation only supported
    • (based on some ISISPascal programming)

  - WEB-GENISIS (ver 3.xx)
    • Browsing, searching and navigation only supported
    • (some formats and javascripts adapted for navigation)
Prototype architecture (cont.)

• Database structure

  - All FRBR entities and their relationships stored in one database
    • Fully normalized database (no data duplication)
    • Different record types (FRBR entity types): bibliographic, responsibility, subject
    • Each entity record holding all the attributes and all its relationships

  - MARC-like structure of records
    • Entity attribute fields (block 4xx)
    • Entity relationship fields (blocks 1xx-3xx)
Prototype architecture (cont.)

- Relationship management
  - Relationship architecture
    - Related record IDs stored in dedicated fields
    - 2 kinds of relationships (reciprocal & not reciprocal)
  - Relationship editing (DOS version only)
    - Dedicated not-standard worksheets
    - Related entities captured by look-up lists
  - Relationship display
    - ISIS REF() and L() standard ISIS formatting functions
  - Relationship navigation
    - Execution of hidden search expressions
Conclusion

● **Pros & cons of the prototype implementation**
  - (-) Beta software, not for production environment
  - (-) Limited no. of relationships (sample database)
  - (-) Quality of the ISISPascal programs (I am a librarian, not a professional programmer)
  - (+) Unexplored features (mainly based on ISISPascal programming)
    - Managing relationships (DOSIFPA navigation & editing)
    - Formatted display of data during editing (DOSIFPA)
    - Browsing of records by dynamic formatting (WINIFPA)
    - FRBR recursive relationship display

● **Current status & future development**
  - IFPA: for its author a concluded experiment
  - Implementation shortly available for download under the GNU GPL license

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Live demo

- WINISIS interface
- DOSISIS interface
- (WEB interface accessible online)
  http://pclib3.ts.infn.it/frbr/wwwisis/FRB2.01/FORM.HTM
Live demo (cont.)

- WINIFPA interface (search form)
Live demo (cont.)

- WINIFPA interface (list of retrieved records)
Live demo (cont.)

- WINIFPA interface (record details)
Live demo (cont.)

- WINIFPA interface (related Expressions)
Live demo (cont.)

- WINIFPA interface (FRBR tree)
Live demo (cont.)

- **DOSIFPA interface (list of retrieved recs)**

```plaintext
ID=000215 r WORK The Pilgrim's progress [Bunyan, John]
ID=000216 b PERSON Bunyan, John
ID=000217 w WORK The Pilgrim's progress. anonymous adaptation
ID=000218 r WORK Romeo and Juliet [Shakespeare, William]
ID=000219 b PERSON Shakespeare, William
ID=000220 r WORK Romeo and Juliet. motion picture [Zeffirelli
ID=000221 b PERSON Zeffirelli, Franco
ID=000222 r WORK William Shakespeare's Romeo and Juliet. mot
ID=000223 b PERSON Lurhmann, Baz
ID=000224 b PERSON Morris, Alexander
* deleted record *

[ID=000226] MANIFEST. Recreational problems in geometry [ID=000006]

[ID=000226] [MANIFESTATION] - 1.GROUP (BIBLIOGRAPHIC)
Recreational problems in geometric dissections

```
Live demo (cont.)

- DOSIFPA interface (record details)
Live demo (cont.)

- DOSIFPA interface (navigation menu)

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Live demo (cont.)

• DOSIFPA interface (related Expressions)
Live demo (cont.)

- DOSIFPA interface (FRBR tree)
Live demo (cont.)

- DOSIFPA interface (editing worksheet)

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Live demo (cont.)

- DOSIFPA interface (editing - dict. terms)
Live demo (cont.)

- DOSIFPA interface (edit. - expanded term)
Live demo (cont.)

- DOSIFPA interface (edit. - virtual linked recs)

```
[Area Prompt MS-DOS]


ID=000019 ↑lr EXPRESS. Six suites for unaccompanied cello. musical
MFN: 19 39/50 2/3

SIX SUITES FOR UNACCOMPANIED CELLO
13 [ID=000021] 1
SIX SUITES FOR UNACCOMPANIED CELLO
13 [ID=000022] 1

================================ END OF DATA ================================

SIX SUITES FOR UNACCOMPANIED CELLO
Six suites for unaccompanied cello. Mercury. 1991. 3 compact discs. [Mercury records]
13 [ID=000022]


Downward relationships
```

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Thank you!

Any questions?

Project homepage:
http://pclib3.ts.infn.it/frbr/FRBR.htm

On-line demo (WEB interface):
http://pclib3.ts.infn.it/frbr/wwwisis/FRB2.01/FORM.HTM

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