

Slide 1

*Functional Requirements for  
Bibliographic Records (FRBR)  
and the development of  
Resource Description and Access (RDA)*

*The Future of Cataloging: a PALINET Symposium  
The College of Physicians, Philadelphia, PA*

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I'm going to be talking about FRBR and its counterpart for authority records, FRAD, and a bit about RDA.

Frankly, I've spent the past year (and more) talking about RDA, and I'm tired of it. So I welcome the opportunity to talk about something else – although RDA does creep back into my talk at various points.

## Cataloging: Past, Present & Future

- Future: challenges and opportunities
- Past: the grand tradition of Anglo-American and international cataloging
  - Panizzi — Cutter — Lubetzky
  - ISBD — FRBR — IME ICC
  - RDA
- Present: interesting possibilities
- Constant: our catalogs serve the needs of our users

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The topic of today's symposium is the future of cataloging. Our theme is the challenges and opportunities that the future offers.

At the same time, however, we need to remember that catalogers are working within the grand tradition of Anglo-American cataloging. I will have occasion to refer to Panizzi and Cutter and Lubetzky and their contributions.

I will touch on the continuation of their work by IFLA: the ISBDs, FRBR, and the recent international meetings of experts on an international cataloging code.

The tradition continues to develop (contrary to Michael Gorman, it didn't end with the ISBDs in the late 70s).

The present offers interesting possibilities.

The one constant through all of this: We create catalogs to serve the information needs of our users.

**FRBR and RDA**

- **FRBR**
  - Clustering of works
  - Relationships
  - User tasks
- **RDA**
  - Application of FRBR/FRAD
  - Designed for a Web-based cataloging environment

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So what do FRBR and RDA offer to improve the effectiveness of our catalogs and cataloging?

I'm going to discuss three features of FRBR that make for better catalogs:

FRBR is . . .

a model that provides a principled basis for the clustering of works;

a model that emphasizes bibliographic relationships;

and a model at the center of which is a set of user tasks that structure and justify the entire exercise.

RDA is being designed as an application of the FRBR/FRAD models

Further, it is being designed particularly to be effective in a Web-based cataloging environment.

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## FRBR 101

- Entity-relationship model
- Three groups of entities:
  - Work, Expression, Manifestation, Item
  - Person, Family, Corporate Body
  - Concept, Object, Event, Place
- Attributes
- Relationships
  - Between item, manifestation, expression, and work
  - Between a resource and persons, families, corporate bodies responsible
  - Among different entities: work-to-work, person-to-person, person-to-corporate body

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I'm not going to explicate the FRBR model. So this is FRBR 101 in about 5 minutes.

FRBR is an entity-relationship model.

FRBR defines three groups of entities:

Group 1: The different aspects of any resource:

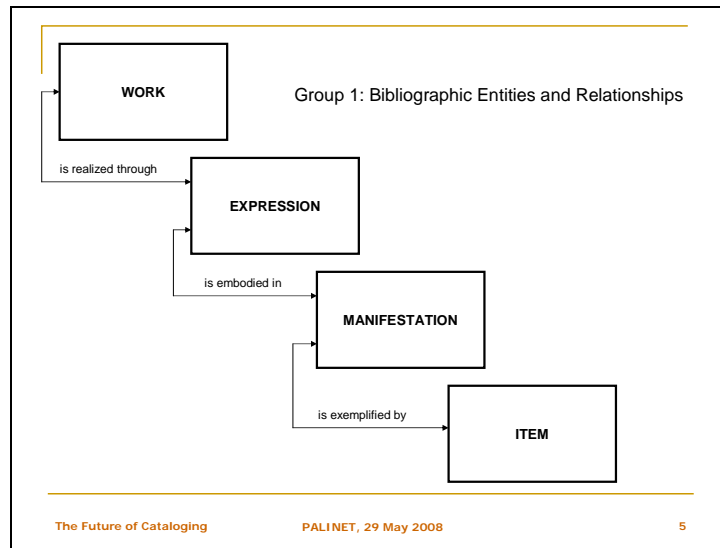
Group 2: The entities that are responsible for resources:

Group 3: The entities that (along with the other entities) identify the subject of a work:

Each entity is described by recording its attributes.

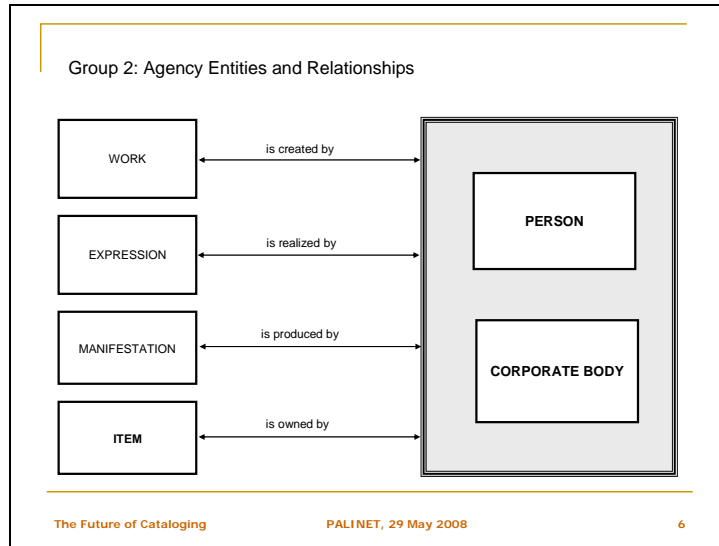
The model provides for several types of relationships:

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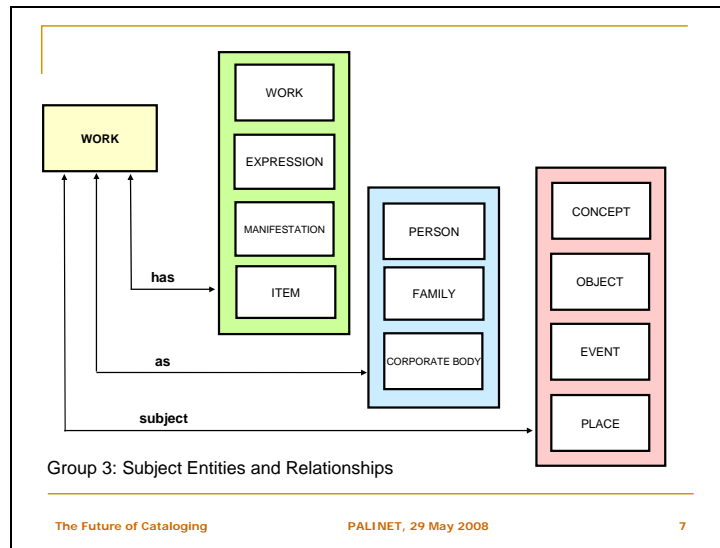
. . . between item, manifestation, expression, and work for a given resource;

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. . . between a resource and those responsible for it;

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. . . between a work and its subjects;

. . . and among different entities: work-to-work, person-to-person, person-to-corporate body (I don't have a slide for that!)

## FRBR: opportunities and challenges

- The model helps . . .
  - . . . to *think* about current practices and standards
  - . . . to *talk* about how catalogs should function
- Focus on **catalogs**, not **records** !
  
- Basic challenge:
  - Catalogers describe **manifestations**
  - Users want content (**works**)

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So what does the FRBR model offer catalogers and catalog designers?

. . . a new way to think about current practices and standards

. . . a new way to talk about how catalogs should function

The focus is on catalogs, not records.

A perfect record in an imperfect catalog (sound familiar?) doesn't serve anyone's needs.

The basic challenge is best articulated in an insight (one of many) from Martha Yee: Catalogers describe manifestations (information carriers), but users want information content (works).



## FRBR in the real world

- Works existing in a single manifestation      78%
- Works existing in a single expression      16%
- Works existing in multiple expressions      6%
- Works existing in 8+ manifestations      1%

■ Yet these are the works most often sought,  
the great monuments of our culture

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FRBR shows us how to bridge the gap between carriers and content.  
FRBR offers a way of grouping manifestations under the works they contain.

OCLC Research offered a quantitative definition of the issue:

Based on a sampling of WorldCat, they estimated that

78% of works exist in a single manifestation

16% of works exist in a single expression

6% of works exist in multiple expressions

1% of works have more than 8 manifestations

Yet that 1% accounts for a disproportionately large number of holdings (individual items held in libraries).

Those are the works most often sought by users, the great monuments of our culture.

## FRBR in the real world

- Life gets interesting when you start breaking works into groups
  - Revisions 53%
  - Translations 26%
  - Aggregations: Collected/Selected works 9%
  - Formats 7%
  - Performances ???
- Challenge: to present results in a meaningful way
- Premise: describe each manifestation, but display meaningful groupings

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When grouping manifestations under the works they contain, the trick is to organize the results in a meaningful way.

Life gets interesting when you start grouping:

The OCLC study attempted to characterize the nature of groupings by what FRBR calls expressions:

Revisions account for the majority of expressions, more than twice the number of translations.

Collections and selections and different formats also occur in significant numbers.

The OCLC study did not break out performances, but these can be particularly complex: consider the numerous performances – and recordings – of musical and dramatic works.

So the challenge is to present results in a meaningful way

I propose the following premise: Catalogers describe each manifestation, but catalogs must turn this into an organized display of meaningful groupings.

British Museum 1841

ACOSTA (CRISTOVAL).  
Tractado de las drogas, y medicinas de las Indias  
Orientales, con sus plantas. *Burgos*, 1578. 4<sup>o</sup>  
Another copy.  
The same. *Ital.* *Venetia*, 1585. 4<sup>o</sup>  
Another copy.  
♣ Tractado en loor de las mugetes. *Venetia*, 1592. 4<sup>o</sup>  
ACOSTA (DUARTE NUÑEZ DE). *See* NUÑEZ.

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I want to show an extended example of how this might be done, taken from Panizzi's classic printed book catalog of the British Museum.

Barbara Tillett used this example to illustrate that FRBR concepts are not at all new.

I'll use it to make a different point.

Here is an edited display of the entry under one author.

British Museum 1841

ACOSTA (CRISTOVAL).  
Tractado de las drogas, y medicinas de las Indias  
Orientales, con sus plantas.

Work 1

Tractado en loor de las mugetes.

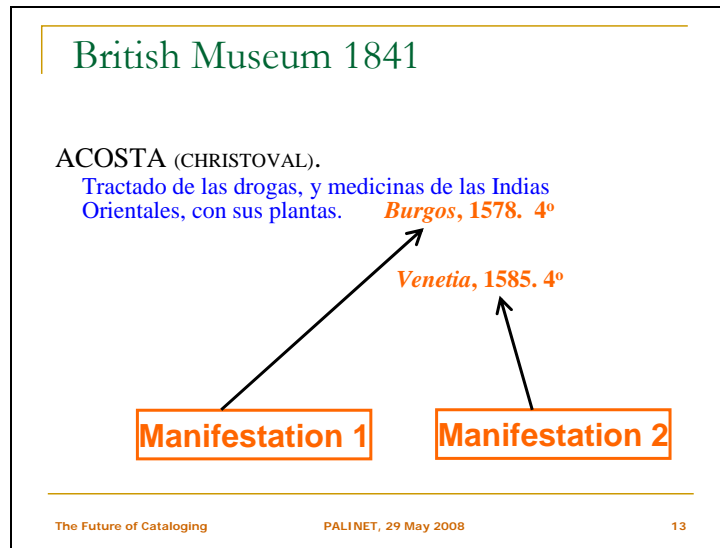
Work 2

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The diagram consists of two blue-bordered boxes labeled 'Work 1' and 'Work 2'. An arrow points from 'Work 1' to the title 'Tractado de las drogas, y medicinas de las Indias Orientales, con sus plantas.' Another arrow points from 'Work 2' to the title 'Tractado en loor de las mugetes.'

We have two works of one person, Christoval Acosta. These are all of his works brought together for the user in this catalog display. The title proper from the original work is used to name the work.



The first work, the tract on drugs and medicines in the East Indies, appeared in two manifestations – one published in Spain in 1578 and another in Venice in 1585. The British Museum entry displayed the place and date and format as attributes of these manifestations in order to identify them.

British Museum 1841

ACOSTA (CRISTOVAL).  
Tractado de las drogas, y medicinas de las Indias  
Orientales, con sus plantas. *Burgos, 1578. 4º*

Another copy.

Item 2

Item 1

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For the first manifestation, the Museum had two copies – one implied by the presence of the first description and the second specifically indicated by the words “Another copy.”

These are the FRBR items.

British Museum 1841

ACOSTA (CRISTOVAL).  
Tractado de las drogas, y medicinas de las Indias  
Orientales, con sus plantas. *Burgos*, 1578. 4<sup>o</sup>  
Another copy.  
The same. *Ital.* *Venetia*, 1585. 4<sup>o</sup>  
Another copy.



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The second manifestation is actually of a new expression, an Italian translation that was published in 1585 in Venice – also with 2 copies.

There wasn't space to show the British Museum shelf-marks (call numbers), but these would have been present for each item in the catalog.

So we are displaying for the user attributes of the work, expression, manifestation, and item for these 4 copies held by the British Museum.

British Museum 1841

ACOSTA (CRISTOVAL).  
Tractado de las drogas, y medicinas de las Indias Orientales, con sus plantas. *Burgos*, 1578. 4º  
Another copy.  
The same. *Ital.* *Venetia*, 1585. 4º  
Another copy.  
Tractado en loor de las mugetes. *Venetia*, 1592. 4º

Work 2      Manifestation      Item

The diagram shows three colored boxes: a blue box labeled 'Work 2', an orange box labeled 'Manifestation', and a pink box labeled 'Item'. An arrow points from 'Work 2' to the third entry. Another arrow points from 'Manifestation' to the third entry. A bracket on the right side of the third entry points to the 'Item' box, indicating that the third entry represents a single item.

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The second work, for which there is only one expression, is displayed with its manifestation information and the existence of the item is again implied.

So we have one author, two works, three expressions, three manifestations, and five items.

All four FRBR group 1 entities are represented, and are displayed in a clear, conventional manner.

This is a remarkably concise, but powerful, display. All the important attributes to support resource discovery are present, and the relationships are made clear by layout and typography.



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The screenshot shows the WorldCat.org search results for the author Cristóbal Acosta. The results are listed in a numbered format with the following details:

- 1. Trattato della historia, natvra, et virtv delle droghe medicinali, ed altri semplici rarissimi...** [Christoval Acosta]. Con... figure... Nuouamente recato dallo Spagnuolo nella nostra lingua...  
by **Christoval Acosta**  
Language: Italian Type: Book  
Publisher: Venetia : Francesco Ziletti, 1555.
- 2. Tractado de las drogas y medicinas de las Indias orientales con sus plantas debuxadas al biuo**  
by **Cristóbal Acosta**  
Language: Spanish Type: Book Microform  
Publisher: Leiden : IDC, [19-]
- 3. Tratado en loor de las mugeres y dela castidad, onestidad, constancia, silencio, y iusticia**  
by **Cristóbal Acosta**  
Language: Spanish Type: Book  
Publisher: Venetio por Iacomo Cornetti, 1592.
- 4. Tratado en loor de las mugeres, y dela castidad, onestidad, constancia, silencio, y iusticia: con otras muchas particularidades, y varias historias ...**  
by **Cristóbal Acosta**  
Language: Spanish Type: Book Microform  
Publisher: In Venetia, Presso Giacomo Cornetti, 1592.
- 5. Histoire des drogues, espisceries [sic] et de certains médicamens simples, qui naissent és Indes et en l'Amérique...**  
by **Garcia da Orta, Christoval Acosta, Nicolás Monardes, Prospero Alpino, Antoine Colin, Charles de L'Écluse**  
Language: French Type: Book Microform  
Publisher: Á Lyon : aux despens de Jean Pillehotte, 1619.

At the bottom of the page, there is a footer with the text: "The Future of Cataloging PALINET, 29 May 2008 17".

Compare this display from WorldCat.org as the result of a search for the same author.

I don't mean to pick on OCLC; WorldCat.org was the most convenient place where I was likely to find multiple works, expressions, and manifestations by this author. And this was the default display for a simple search.

However, this display is typical of what today's catalogs do:

They redisplay the records catalogers create – in this case descriptions of individual manifestations; they select (globally – for all records) the same limited set of elements; they make no attempt to eliminate duplicate information; and they make minimal effort to group the records.

There are days when I am nostalgic for the nineteenth-century printed book catalog! Such an elegant – and (more to the point) such an informative – presentation of bibliographic information.

With the power of current technologies, we can surely do as well as the book catalog. But we seldom do.

## FRBR: Relationships

- Cutter's objectives ...
- ... restated by Lubetzky for Paris Principles, 1961
- ... restated in the Statement of International Cataloguing Principles being drafted by the IFLA Meeting of Experts on an International Cataloguing Code (IME ICC)

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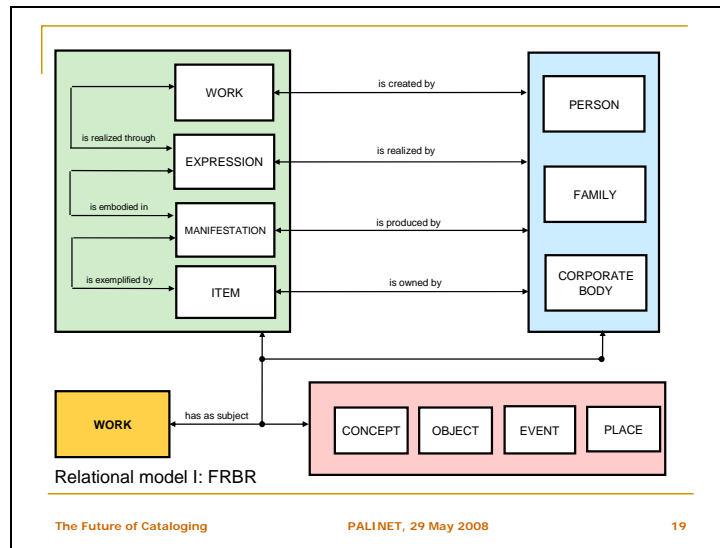
The design of catalogs is based on traditional principles, beginning with Cutter's objectives of the catalog, restated by Lubetzky for the Paris Principles in 1961, and further restated in the Statement of International Cataloguing principles being drafted by the IFLA IME ICC.

These principles define the objectives of resource discovery – what a user should be able to do using our catalogs – and these objectives can be reduced to a set of relationships:

- . . . between an author and his or her works,
- . . . between the expressions of a particular work,
- . . . between a work and its subjects,

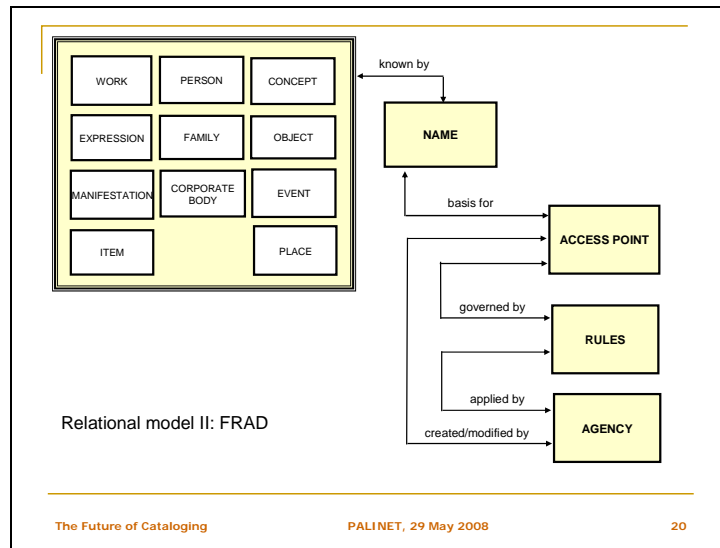
etc.

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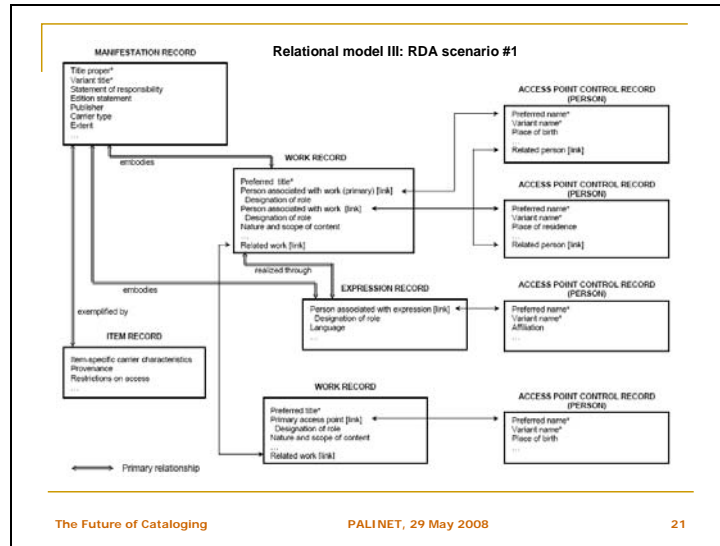
The proper environment for a catalog based on relationships is a relational database. FRBR provides one relational model.

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The Functional Requirements for Authority Data model – soon to be issued – extends this model to include **access points** for **names** of entities.

In the FRAD model, the **access point** is based on the **name** by which an entity is known, formulated and normalized according to a particular set of **rules** applied by the cataloging **agency**.



RDA integrates these two models in one of our implementation scenarios. In this relational model, all entities are treated as objects in a relational system. Relationships are expressed as links between objects. However, group 2 entities such as persons – and even works and expressions – are represented by access points, as in FRAD.

## Relational model IIIa: RDA

- **ALL** FRBR entities described as separate objects in a relational system
- Relationships expressed as links between objects using **identifiers**
- **Access points** established by various agencies under various rules linked to entities
- **VIAF** model

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We have come to realize that RDA itself offers the possibility of extending the model further:

In this model, all FRBR entities are described as separate objects in a relational system, including persons, families, and corporate bodies — the person, not the access point for the name of the person.

These are neither bibliographic records nor authority records, but simply records describing each entity.

Relationships are expressed as links between objects using identifiers.

Access points established by various agencies under various rules are each separate objects (much like authority records) linked to the entities whose names they control.

A given entity may have more than one access point — different agencies using different rules may create different access points.

This is the model being used by the Virtual International Authority File, which clusters authority records for access points created by various national cataloging agencies for the same persons, corporate bodies, works, etc.

This is the sort of relational model suggested by RDA.

## Relationships

- **Challenge:** Getting from our present flat structure to a relational structure
- The entire infrastructure for cataloging must change:
  - Shared databases
  - Vendors
  - Local systems
  - User interfaces

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This relational structure offers powerful tools for information discover and retrieval. The challenge is getting from our present flat structure to a relational structure. This is a very large issue; it means that the entire infrastructure for cataloging must change:

- the standards for encoding and display;
- the shared databases we use as resources for cataloging;
- the vendors who maintain systems at all levels;
- the local systems each institution uses to create and maintain their data;
- the user interfaces we use to present data to our users.

## User tasks

- User tasks are a central to the FRBR model
- FRBR goes beyond lists of entities, attributes and relationships
- User tasks allow designers
- ... to evaluate the importance of all these elements,
- ... to judge the effectiveness of the model and its application

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Which brings us back to the FRBR user tasks.

User tasks are a central feature of the FRBR model

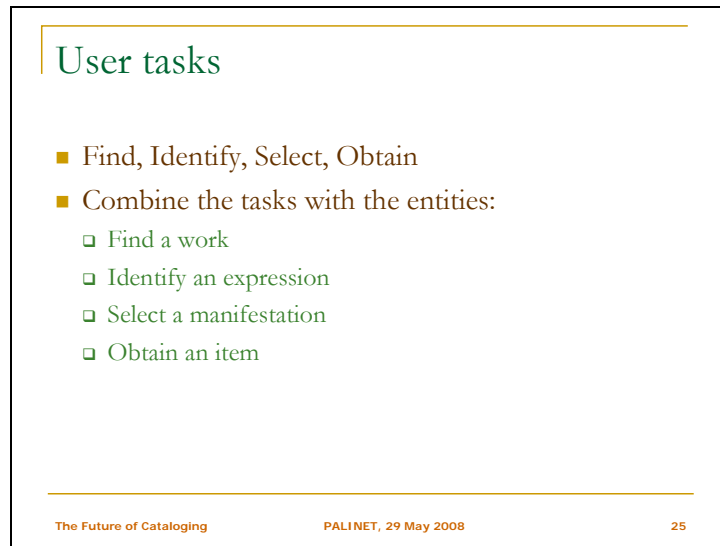
FRBR goes beyond lists of entities, attributes, and relationships.

The user tasks defined in FRBR allow catalog designers

. . . to evaluate the importance of all those elements and what purpose they should serve

. . . and to judge the effectiveness of the model and of any application of the model.





User tasks

- Find, Identify, Select, Obtain
- Combine the tasks with the entities:
  - Find a work
  - Identify an expression
  - Select a manifestation
  - Obtain an item

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The four FRBR user tasks are

FIND, IDENTIFY, SELECT, and OBTAIN

FRBR uses these tasks in combination with the entities to analyze the elements that make up the catalog:

For instance, what is required

. . . to find a work?

. . . to identify an expression?

. . . to select a manifestation?

. . . or to obtain an item?

And this is just the beginning: there are other combinations that are equally important for analysis and implementation.

The final chapter of FRBR is an attempt to answer these questions, to recommend which tasks are fundamental to resource discovery, which elements are essential to fulfilling these tasks. The result is a recommended set of basic elements to be included in records created by national bibliographic agencies.

FRBR confronts us with the unavoidable challenge of meeting the needs of our users.

RDA will be ...

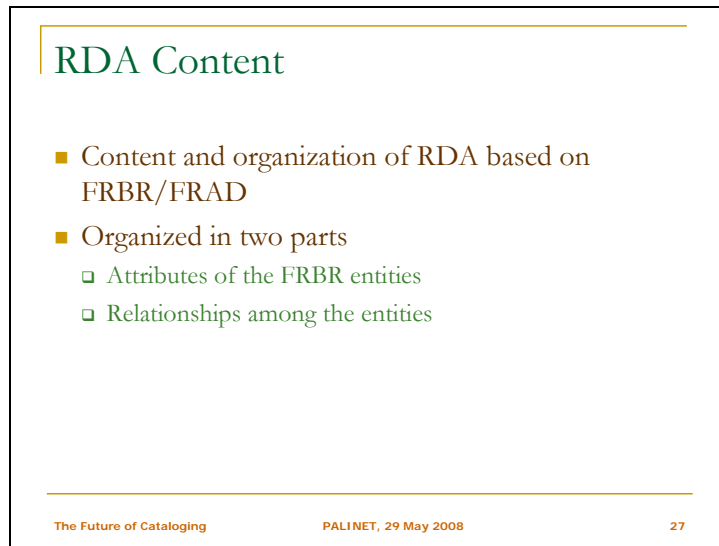
- A new standard for resource description and access
- Designed for the digital environment
  - Description and access of all digital (*and* analog) resources
  - Resulting records usable in the digital environment (Internet, Web OPACs, etc.)
  - Developed as a web-based product

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Finally, RDA:

According to the Strategic Plan for RDA, RDA will be a new standard for resource description and access designed for the digital environment – by which we mean that it will support description for digital (and analog) resources, that resulting records will be usable in the digital environment, and that RDA will be developed as a web-based product.

I won't discuss these objectives in detail, but I will return to the second of these by way of closing.



## RDA Content

- Content and organization of RDA based on FRBR/FRAD
- Organized in two parts
  - Attributes of the FRBR entities
  - Relationships among the entities

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Both the content and the organization of RDA is based on the FRBR/FRAD models.

RDA is organized in two parts:

Attributes – with chapters defining the attributes of each FRBR entity

and Relationships – with chapters defining the different sorts of relationships that exist between the entities.

**RDA: Web-based cataloging environment**

- Support for relational database structures
- Rich element set for describing bibliographic resources
- Elements and vocabularies formally defined, registered, and addressable through resource identifiers
- Separation of standard for recording data from the standard for encoding data and the standard for displaying data
- Can use common Internet standards such as XML
- Data can be manipulated with standard Internet tools, rather than custom-designed library software

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RDA is very much designed to support relational database structures.

It contains a rich element set for describing bibliographic resources.

RDA elements and vocabularies are being formally defined, and registered, and will be addressable through resource identifiers.

RDA insists on the separation of the standard for recording data (RDA) from standards for encoding or displaying data.

Using RDA, catalogers and catalog designers can use common Internet standards such as XML, as well as standard Internet tools, rather than relying on custom-designed library software.

We hope that these features of RDA will allow catalogers and catalog designers to meet the challenges of creating effective resource discovery tools to meet the needs of future catalog users.

Sources

- **FRBR:**  
[http://www.ifla.org/VII/s13/frbr/frbr\\_2008.pdf](http://www.ifla.org/VII/s13/frbr/frbr_2008.pdf)
- **FRAD:**  
<http://www.ifla.org/VII/d4/Franar-ConceptualModel-2ndReview.pdf>
- **RDA:**  
<http://www.collectionscanada.gc.ca/jsc/>

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The text of FRBR, and of the last draft of FRAD, are available at these URLs.

Further information on RDA is available on the JSC website.