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Exploring semantic relationships in filmographic data

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Isn't there enough semantics in conventional databases?

We have:

- Entities a.k.a. tables
- Attributes a.k.a. columns
- Relationships (one-to-many, many-to-many)
- Restrictions (e.g. referential integrity)

All very good as long as we can define the meaning of everything at design time

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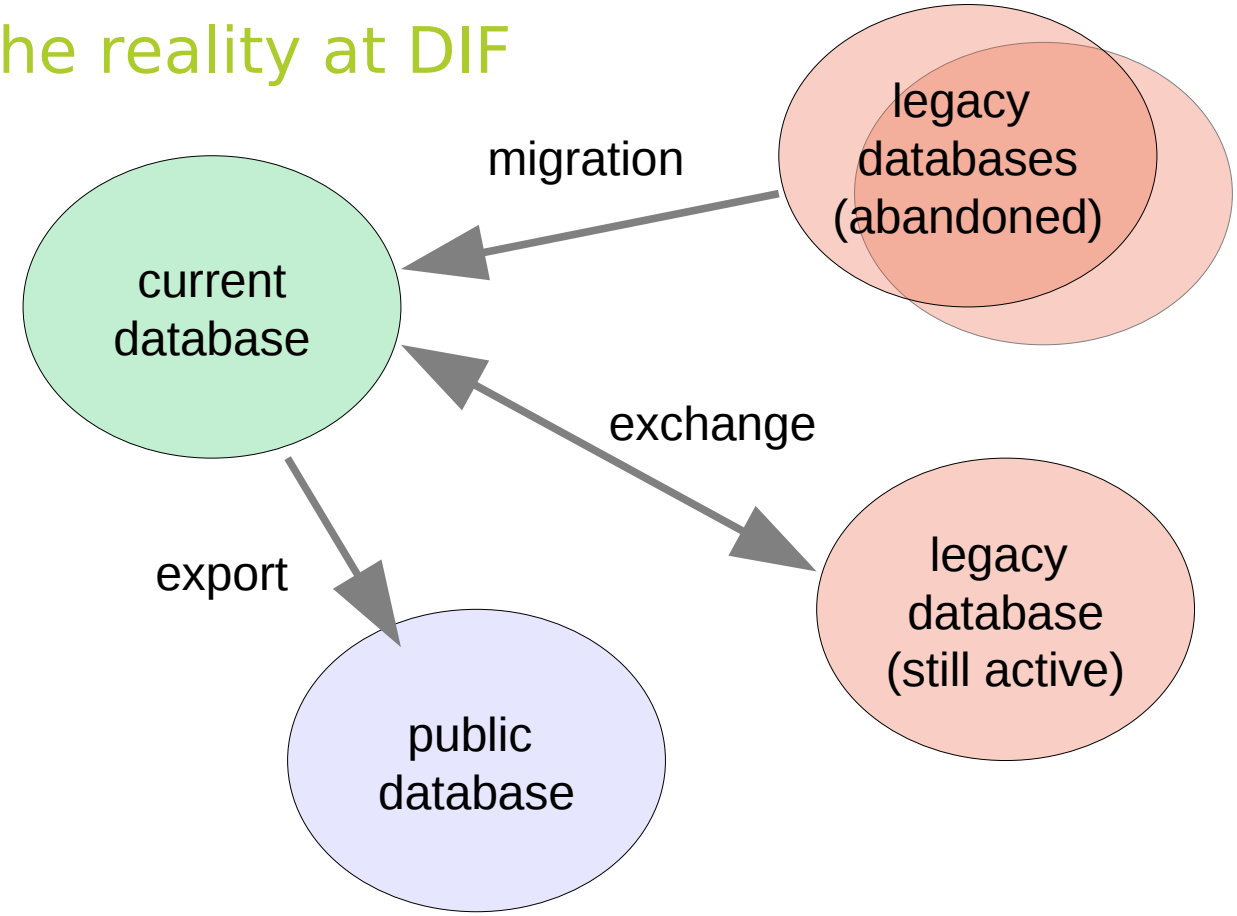
The reality at DIF



Each is a conceptual universe of its own

Implicit semantics

		first screening
...	...	15 July 1967

- in which country?
  - may be inferred as long as this is not a multinational co-production
- what kind of screening?
  - may be inferred as long as all dates refer to public theatrical screenings

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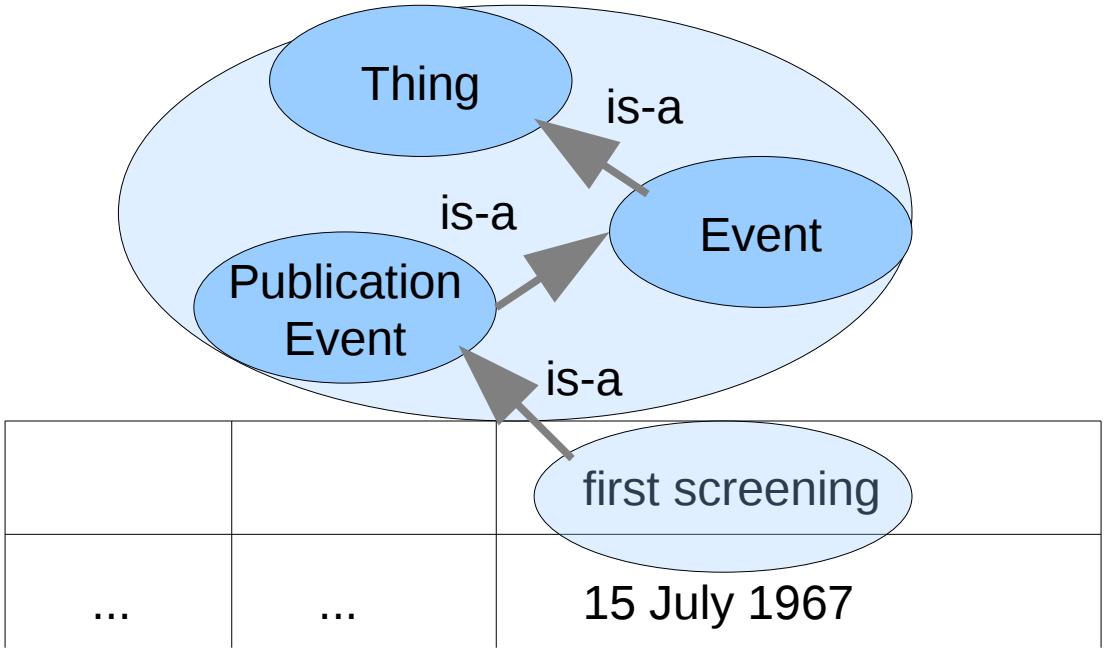
There is often more to tell ...
... but no sensible place to put it

		first screening	notes
...	...	15 July 1967	first screening in France: 09 Jul 1967; re-released in Germany, May 1975

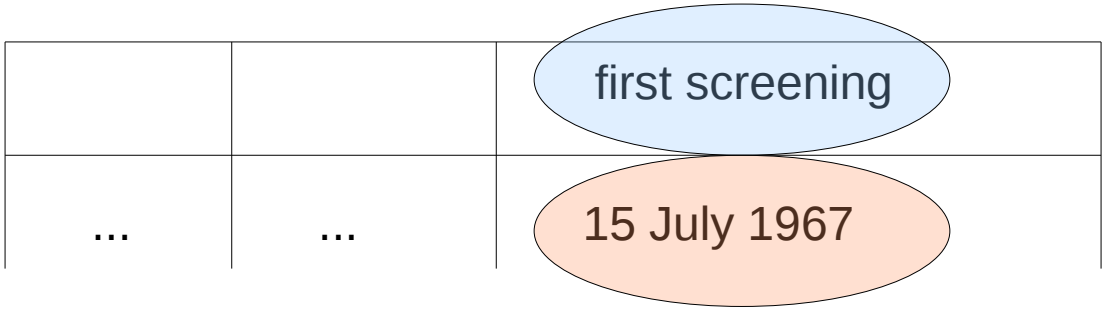
- Modifying a database model is expensive
- Ad-hoc solution is often „just add another column“

Adding semantics: The first step



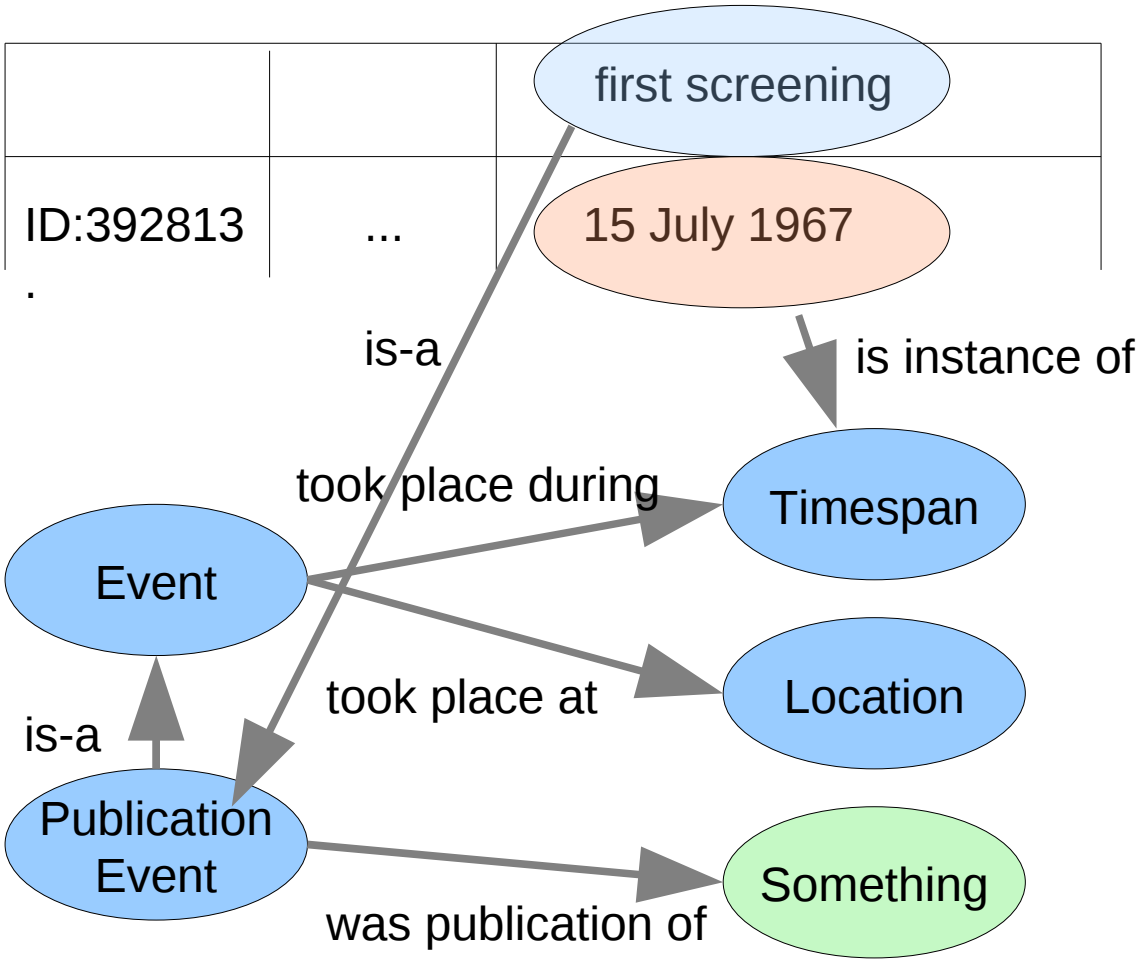
- Reference models help to explain what we mean
- We can explain it to us, and to others

How do these relate to each other?

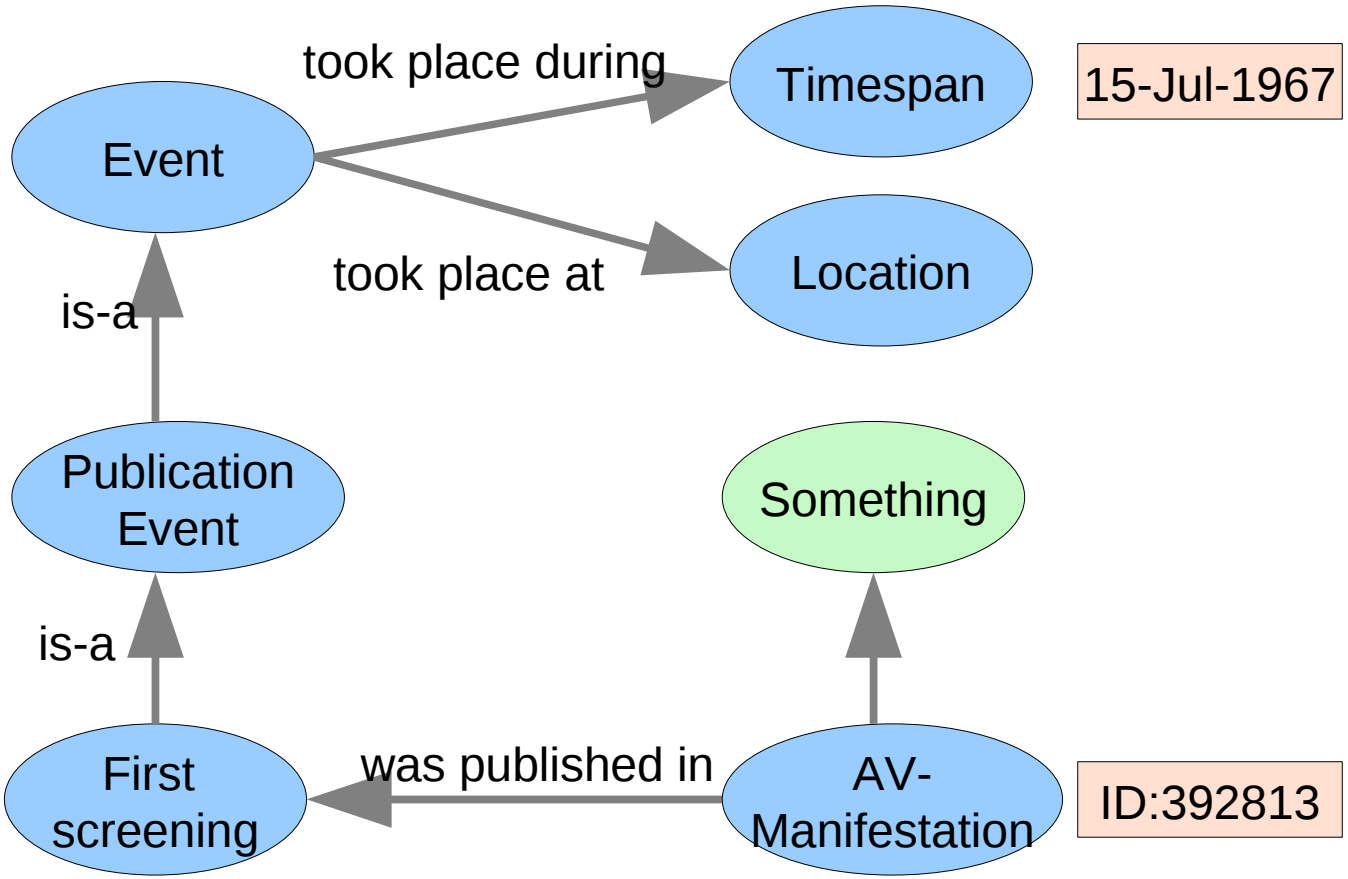


- In what way can „15 July 1967“ be a property value for „first screening“?
- What follows from „first screening“ being an event?

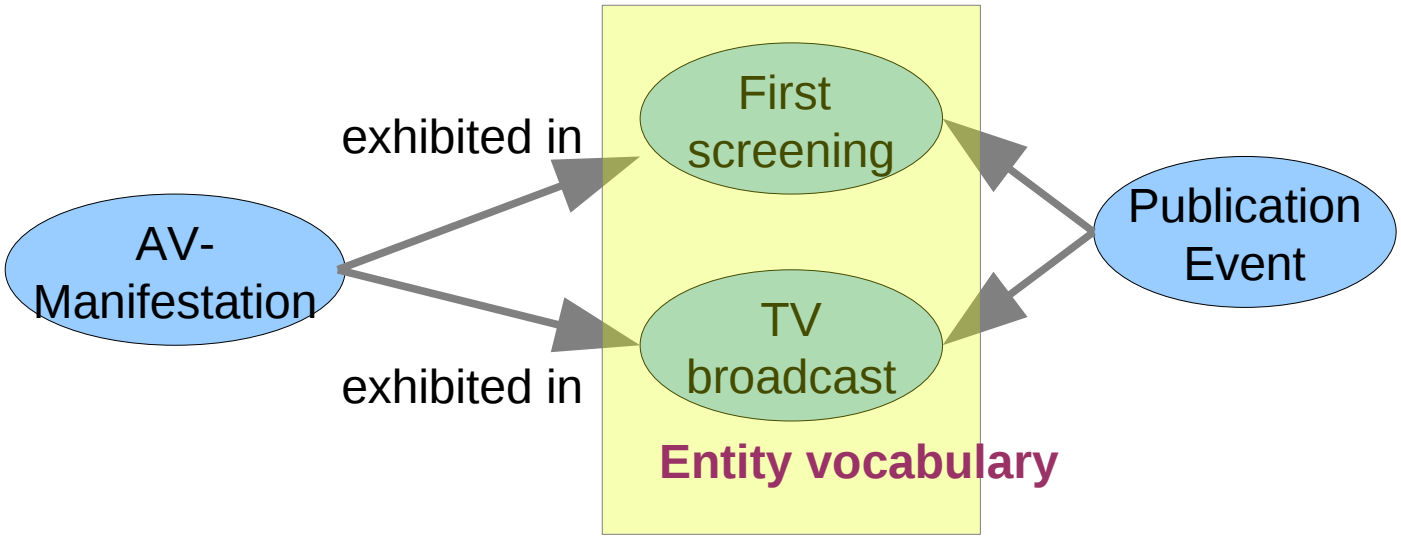
Reference model to the rescue, again!

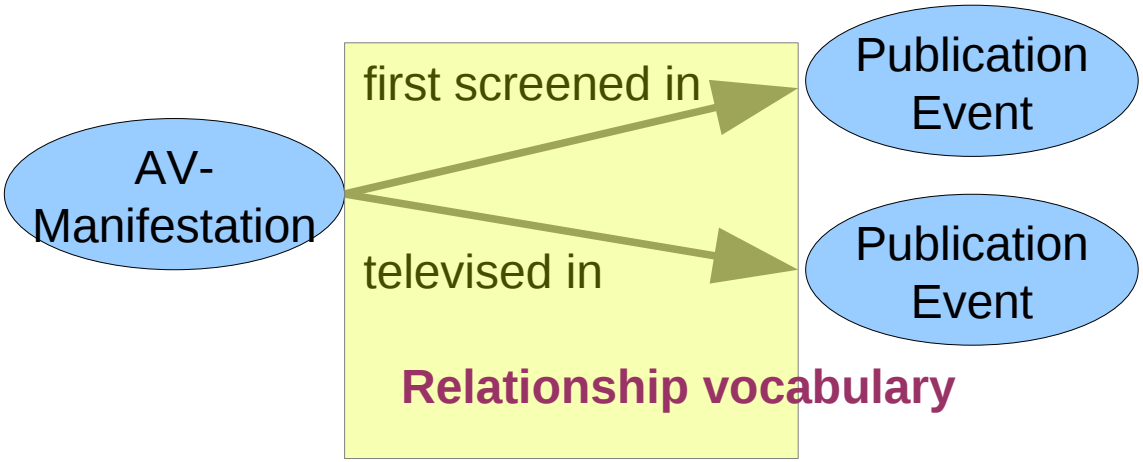


Re-arranging our interpretation



Entities or relationships?





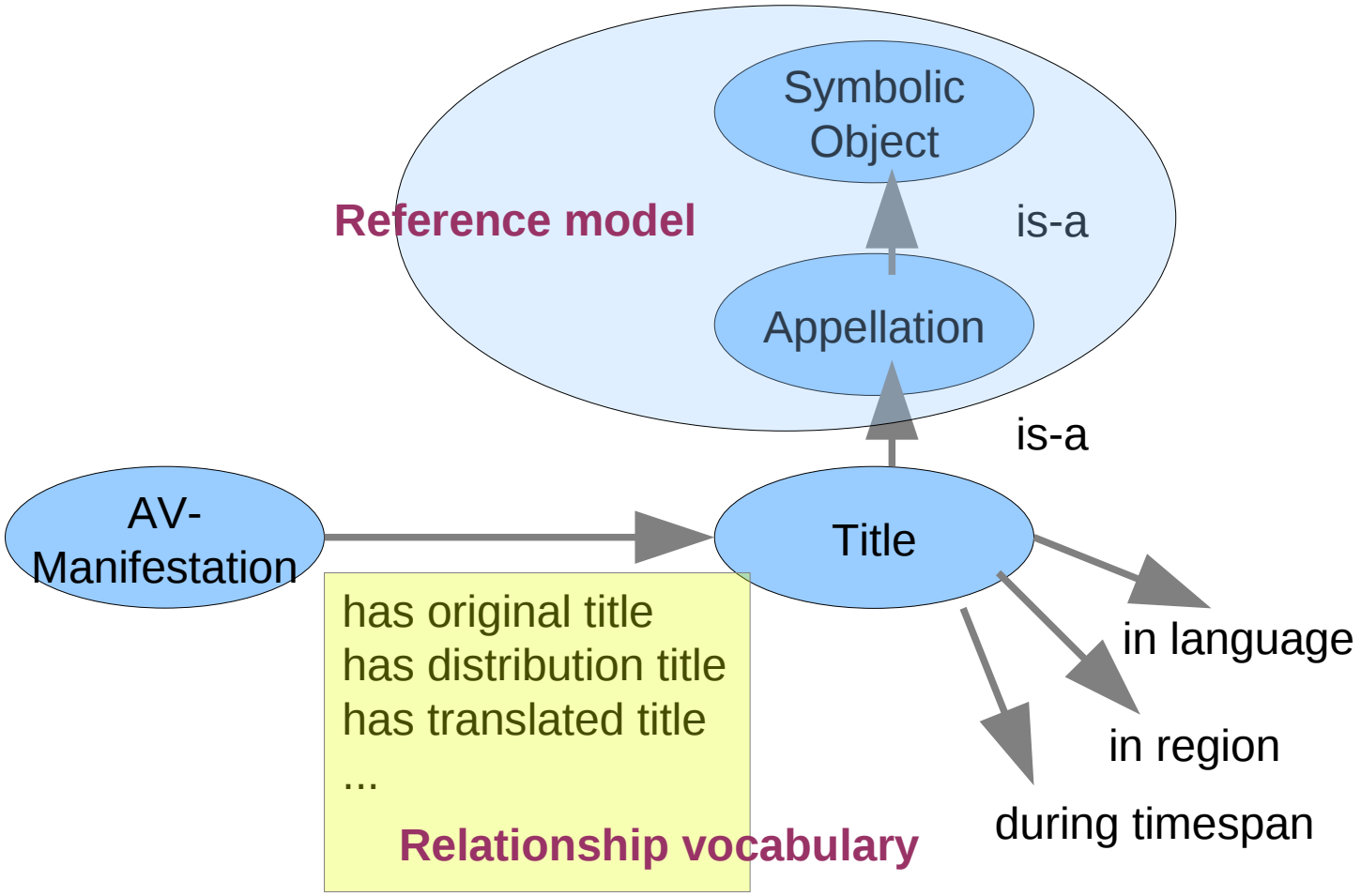
A case for relationship vocabularies

(From a legacy database input form):

Original Title	
Translated Title	
Distribution Title	

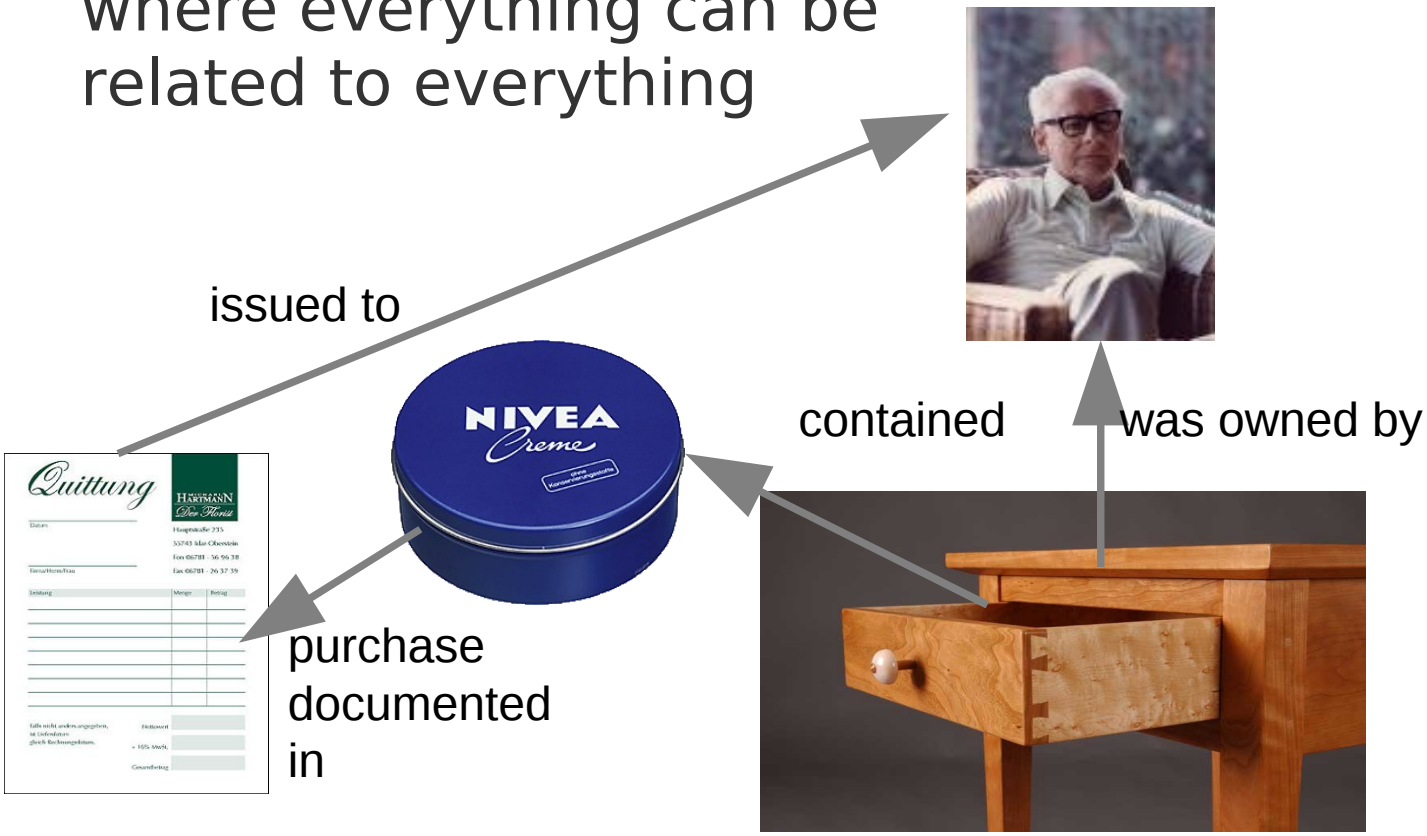
- What if there are several original titles (e.g. in a co-production)?
- Into what language is the second title translated?
- What country does the third title refer to?

Putting titles into context

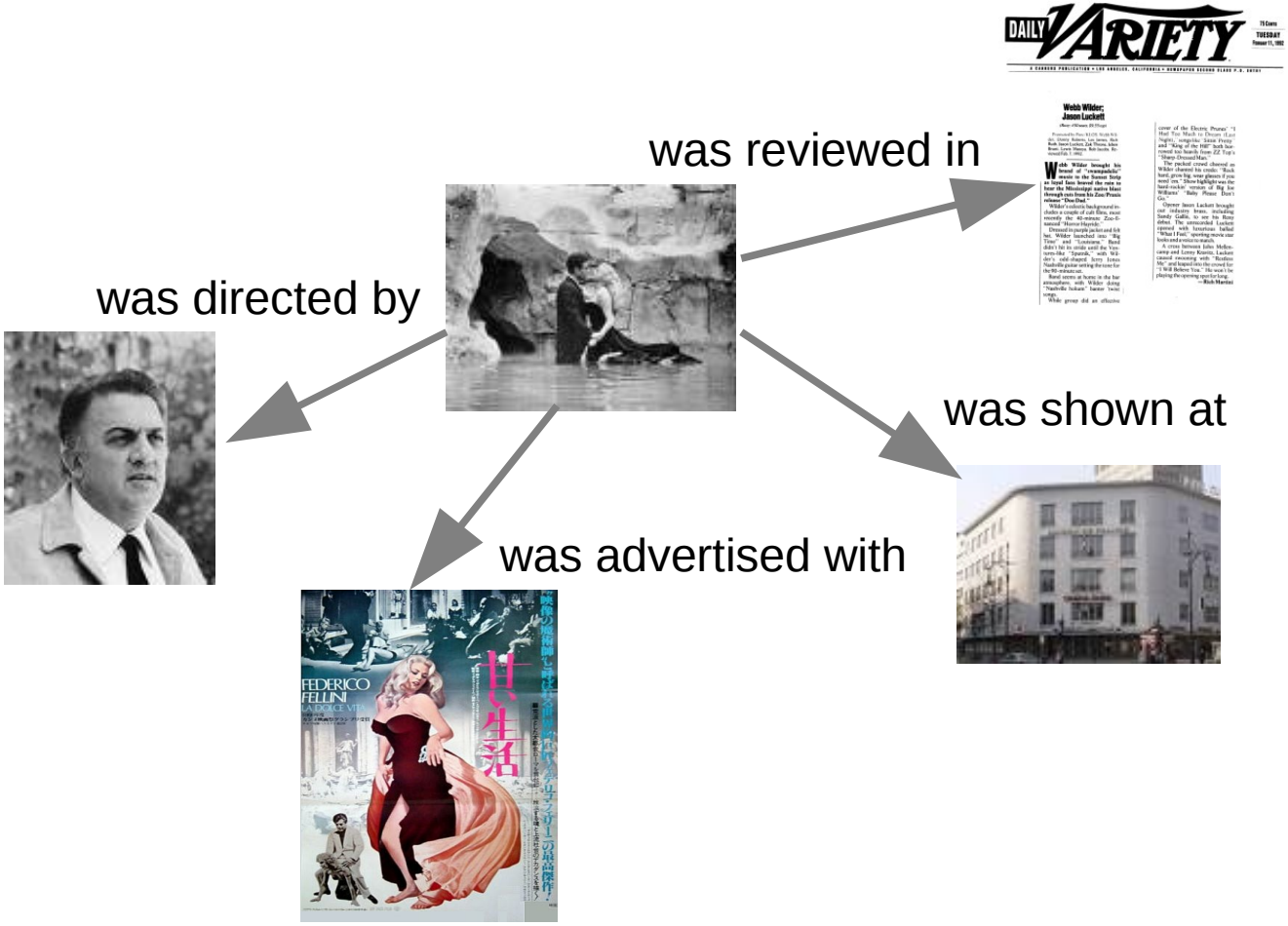


Relationship vocabularies in practice

- Museums have pioneered databases where everything can be related to everything



Filmography is about context, too



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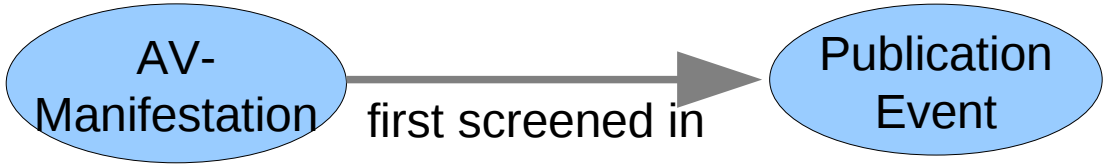
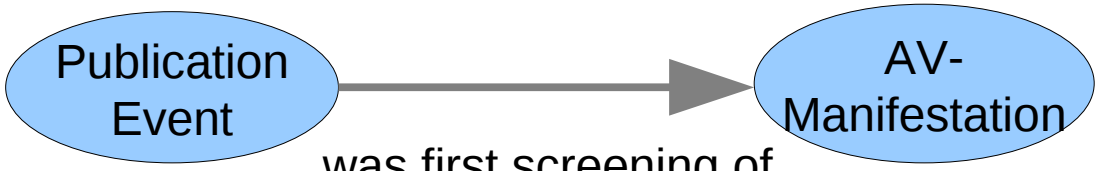
Expressing a relationship ...



Subject **Predicate** **Object**

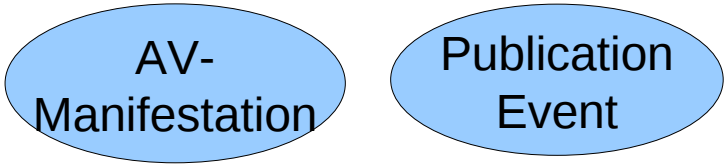
... and its inverse form



Subject **Predicate** **Object**

Defining relationships

first screened in



Property	**Domain**	**Range**
defines: **Predicate**	defines: **Subject**	defines: **Object**

- RDFS and OWL are the most common formal languages used for such definitions
- They are also useful for representing reference models

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Does this work in practice?

- Yes, it does.
- DIF has introduced the concept in 2003 to avoid repeated changes to the data model.
- The DIF database now contains almost a million subject-predicate-object triples.
- To date, no modifications to the data model have become necessary.

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Is this just database technology?

- No, it isn't.
- It can be used as a data modelling principle, but there is much more to it.
- Some call it the foundation of the „Semantic Web“.

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From local database records to distributed resources

A library

was reviewed in

A film archive

was directed by

A biography collection

was shown at

A geographical information system

was advertised with

An art museum

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Lots of hard work ahead ...

- Consolidate everything that can be named in different ways into shared vocabularies,
- and keep them updatable.
- Assign these vocabularies to the relevant parts of the EFG data model.

Example: Identical statements in different forms

An element value:

<AspectRatio ID="157">**1.33**</AspectRatio>

<Aspect>**4:3**</Aspect>

<Ratio>**volbeeld**</Ratio>

A relationship name:

430 $n **Originální název**

<TitleType>**Original Title**</TitleType>

<TitelTyp>**Originaltitel**</TitelTyp>

Example: Identifying relationship names in various forms

as XML attribute value:

<role xl:href="/Code/key/ROLE//KLI" xl:title="**Klipp**"/>

as MARC subfield value

430 $n **Originální název**

as XML element name:

<**DIRECTOR**>...</DIRECTOR>

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Aligning EFG vocabularies with external vocabularies

- Candidates:
  - LoC Moving Image Genre-Form Guide
  - FIAF Glossary
  - EBU P/META Concept Schemes
  - MPEG-7 Concept Schemes
  - SMPTE Metadata Registry
  - LoC Thesaurus of Graphic Materials
  - … and various others