



CRM extensions

FRBR₀₀ and CRMInf

DiXiT Farewell Party

Martin Doerr

Center for Cultural Informatics
Institute of Computer Science
Foundation for Research and Technology - Hellas

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Extending the CRM

- **The CRM standardizes only **stable** concepts for information **sharing**.**
 - **local** extensions are **encouraged** for **subjective** concepts and **local** practices
 - ➔ **using** the CRM starts with **1 property** and does **not restrict** data to CRM
- **We have now created a **modular** structure**
 - Maintaining a core so that all **extensions are** (property) **specializations**
 - ➔ All more detailed **facts can be reached** by **querying core** concepts
 - ➔ For being interoperable, **no** more **restriction** of **data** to a “core vocabulary”!
- **What is “**core**” is not historical, not community domination, but the **dynamic** result of applying **functional** principles.**
- CRM is an **open invitation to extend** it by sharing, respecting and evolving common concepts:
 - **The CRM becomes an open “family of models”**



Outcome: CRM compatible Extensions

- **FRBRoo: modelling the new library practice of IFLA (approved)**
 - a causal model of intellectual creation and derivation
 - how to identify intellectual content
 - the thing and the word: integrating museum and library perspectives

- **PRESSoo: modelling journals and serials (approved)**

- **CRMInf: who said that? – from data to knowledge (under review)**
 - integrating data with their scholarly **justification**
 - being validated with scholarly **annotations**



Outcome: CRM compatible Extensions

- **CRMsci: a Scientific Observation model (under review)**
 - generalizes over **INSPIRE, OBOE, SEEK, Darwin Core**
 - generalizes concepts of **units of matter** and their “(physical) **genesis**”
 - introduces concept of **observation** and data **evaluation**
 - validated in **archeology, biodiversity** and **geology**

- **CRMarchaeo/CRM_{BA}: an Excavation model (under review)**
 - introduces concepts of stratigraphy and excavation
 - being validated by archaeological records



Outcome: CRM compatible Extensions

- **CRMgeo: a Spatiotemporal model (to be reviewed)**
 - integrates CRM with OGC standards
 - a complete model of phenomena occupying spacetime (consistent with modern physics)
 - integrates geometry- and semantics-derived topological relations
 - core concepts being integrated into CRM

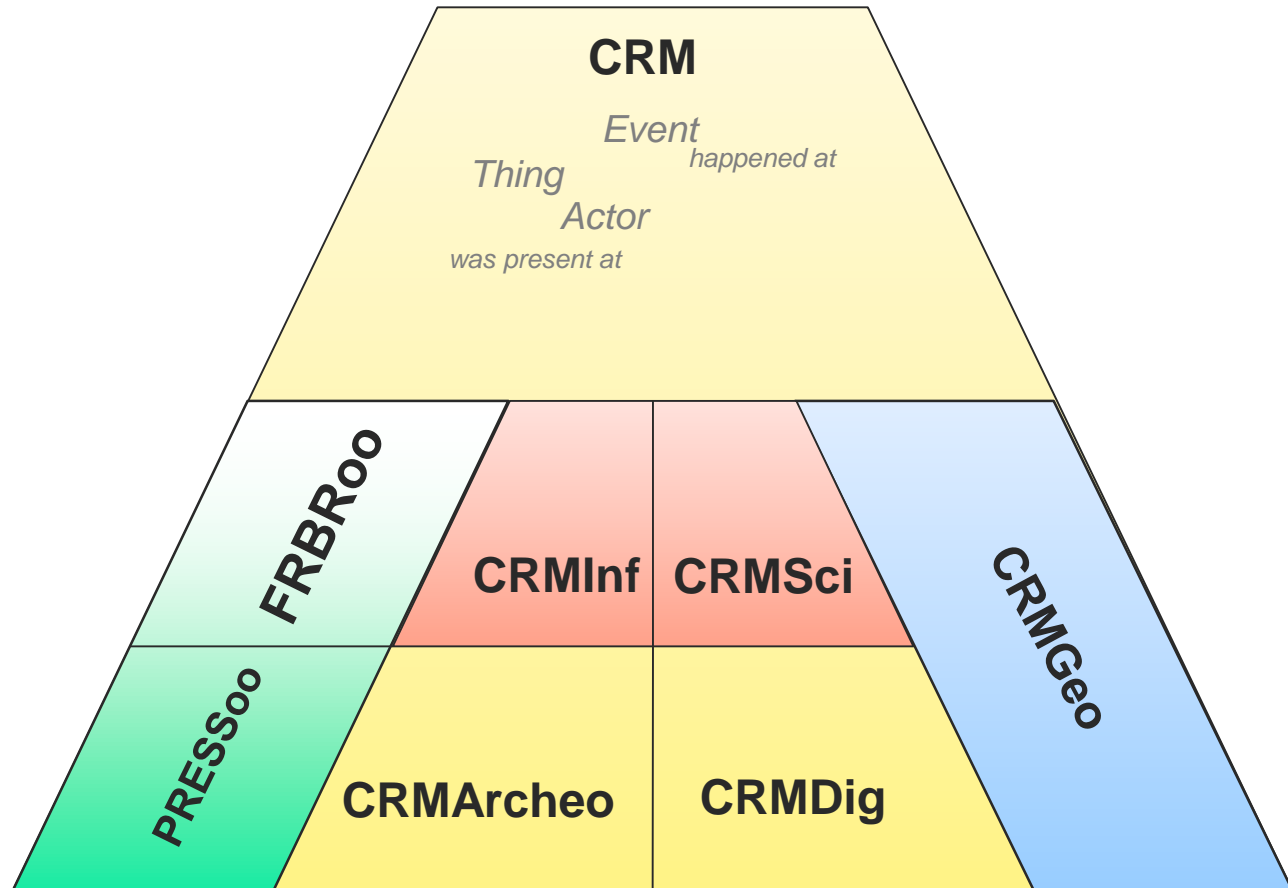
- **CRMdig: a model of Digitization processes (to be reviewed)**
 - validated in European & US projects, to be adapted to CRMsci

- **....give us your extension for review and approval !**



CIDOC CRM extension suite

CIDOC
Conceptual Reference Model (CRM)



*Few concepts,
high recall*



*Special concepts,
high precision*



- **FRBR₀₀ :**
 - **“who’s idea was that?”**
 - **“do you have a translation of...?”**



- *The Functional Requirements for Bibliographic Records (FRBR)*
 - developed 1992-1997 by IFLA (now being complemented by the Functional Requirements for (Subject) Authority Data (FRAD/FRSAD))
 - A core ER model to integrate library objects by content relation : 4+6 Entities, 97 attributes, 34 relationships
 - Based on new requirement to make derivation/intellectual relations/equivalences accessible to bibliographic access/search?
 - Might result in a new library practice
- *Innovations:*
 - Definition of stages/ abstraction levels of intellectual products: Work, Expression, Manifestation, Item (precise distinctions debated for many years).
 - Clusters publications and items around the notion of derivation and common conceptual origin across stages / abstraction levels.
- *Lacks: any explicit notion of the processes behind.*



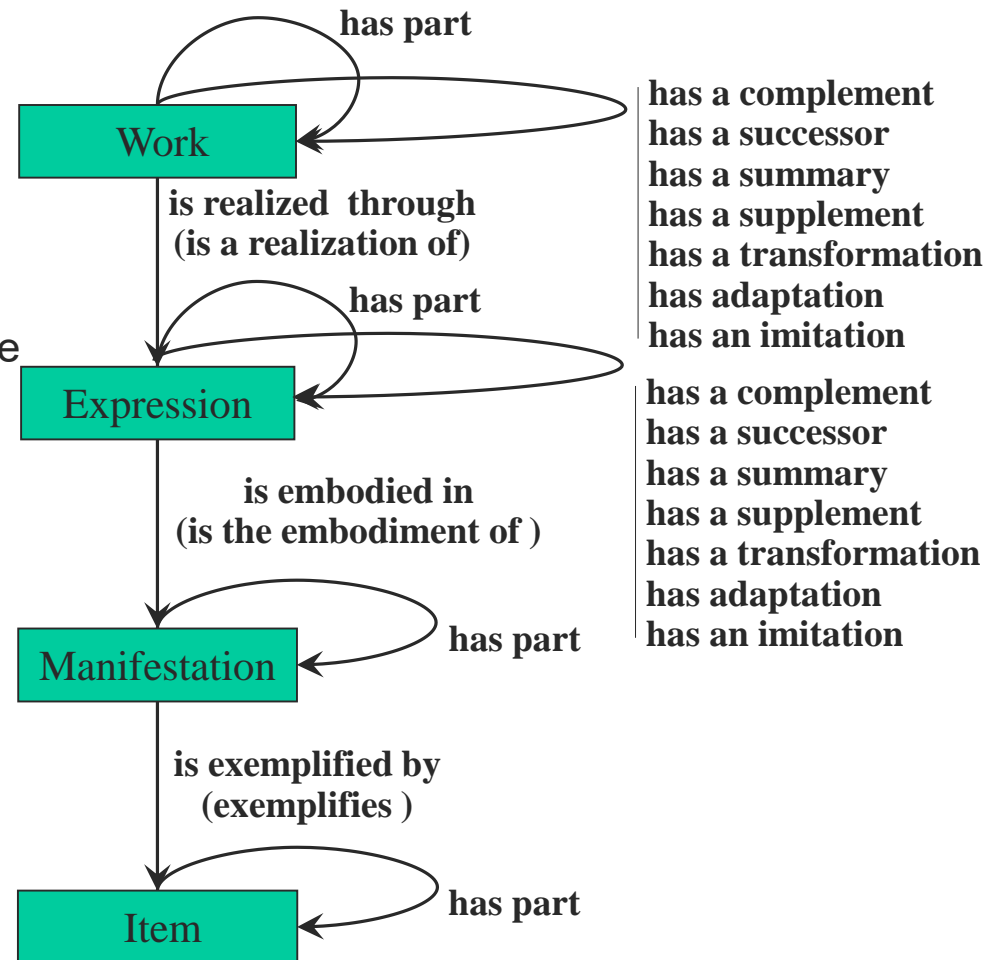
FRBR : Abstraction Levels

“a **distinct** intellectual or artistic **creation**...
there is no single material object
one can point to as the work...”

“the intellectual or artistic realization of a work in the
form of alpha-numeric, musical, or choreographic
notation, sound, image, object, movement, etc”

“the physical embodiment of an expression of a
work...all the physical objects that bear the same
characteristics...
...**may be only a single physical exemplar**...”

“a **single exemplar of a manifestation**...”



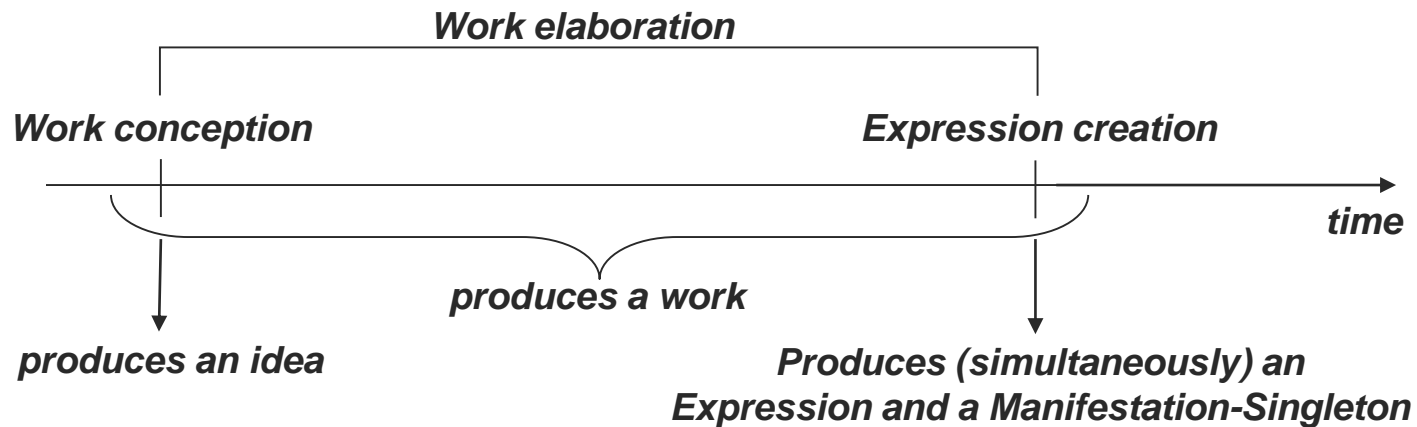
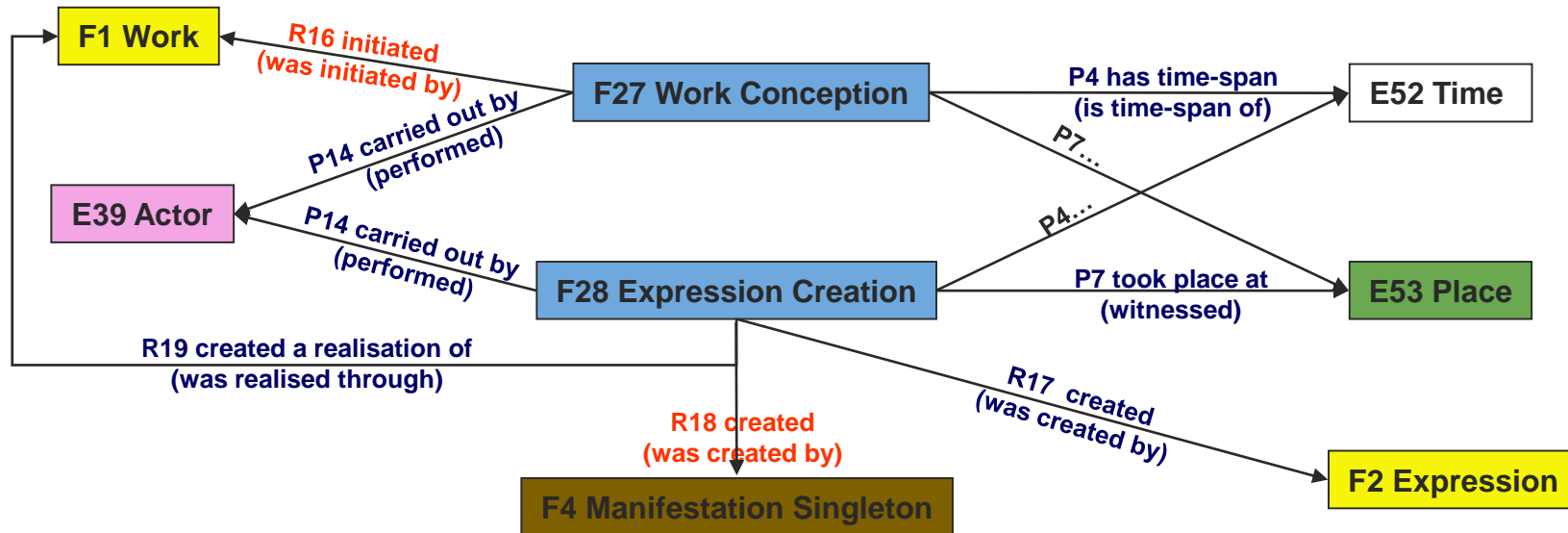


Conception of FRBR₀₀

- *Scope of FRBR₀₀:*
 - *processes creating and mediating content,*
 - *evidence of content,*
 - *inferred abstraction of content (expression => work!)*
- *Innovations:*
 - Theory of identifying immaterial objects
 - Connecting material and intellectual production (“externalization”)
 - Explicating the publication work (publishing houses, graphics designers, illustrators)
 - Coherent theory of performances, content and recordings
 - A new intellectual content relationship: “incorporation” !
 - Adaptation of CRM:
 - *(Information Object => Propositional /Symbolic divide)*
 - *Identifier definition & construction (librarians have the best models of identifiers!)*



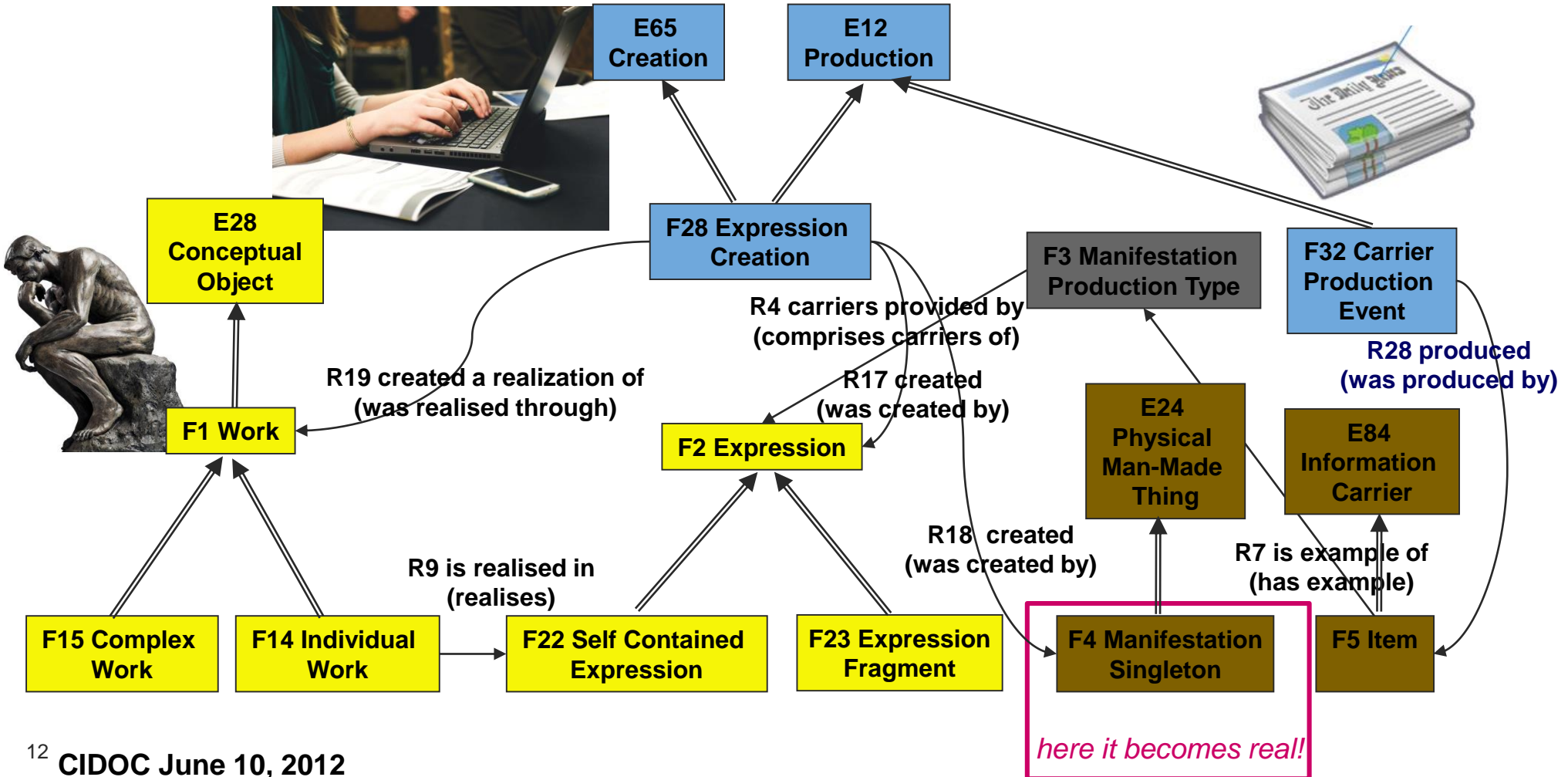
The Process View: "Externalization"





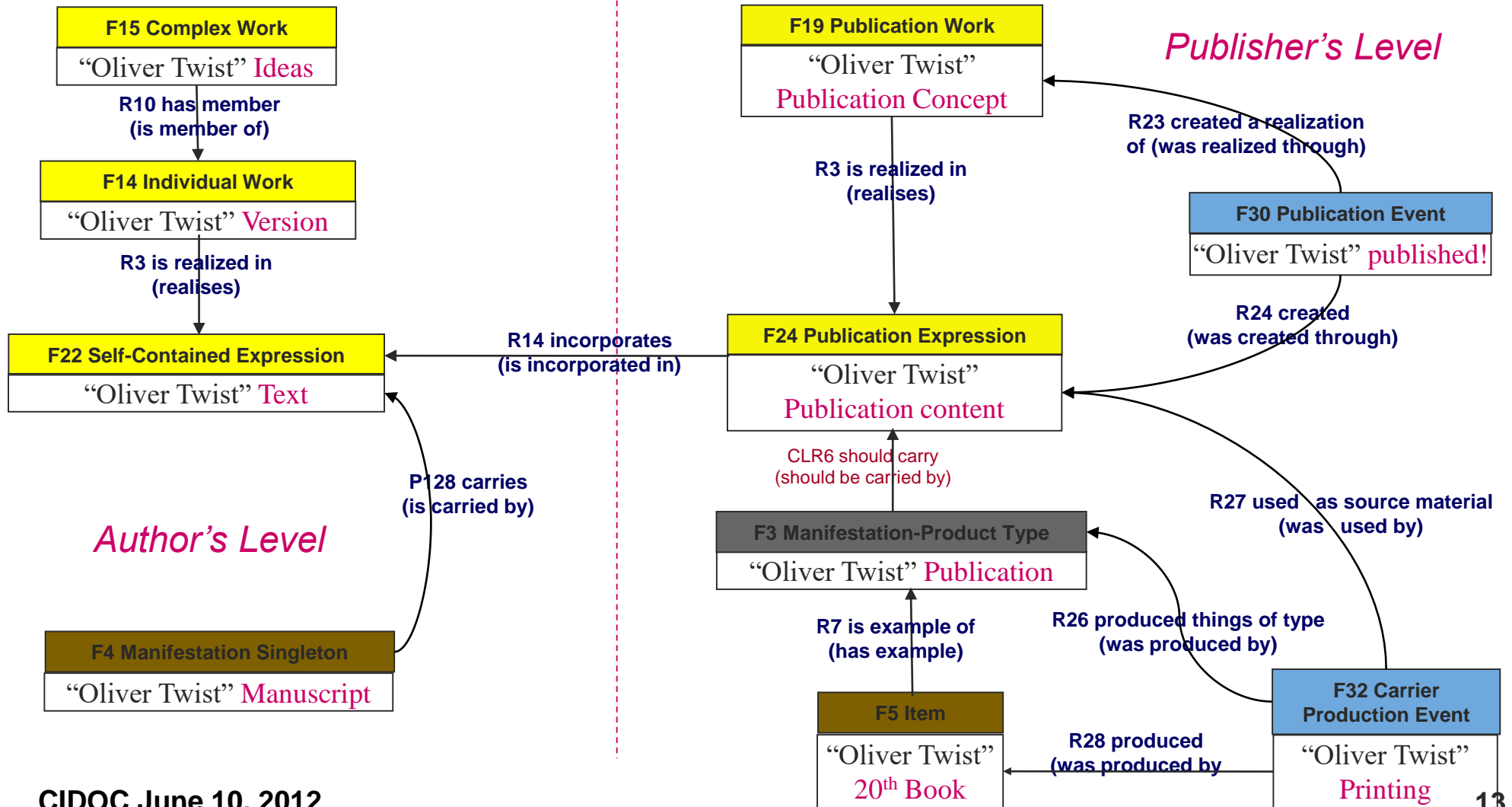
The Externalization

A Causal Interpretation of FRBR



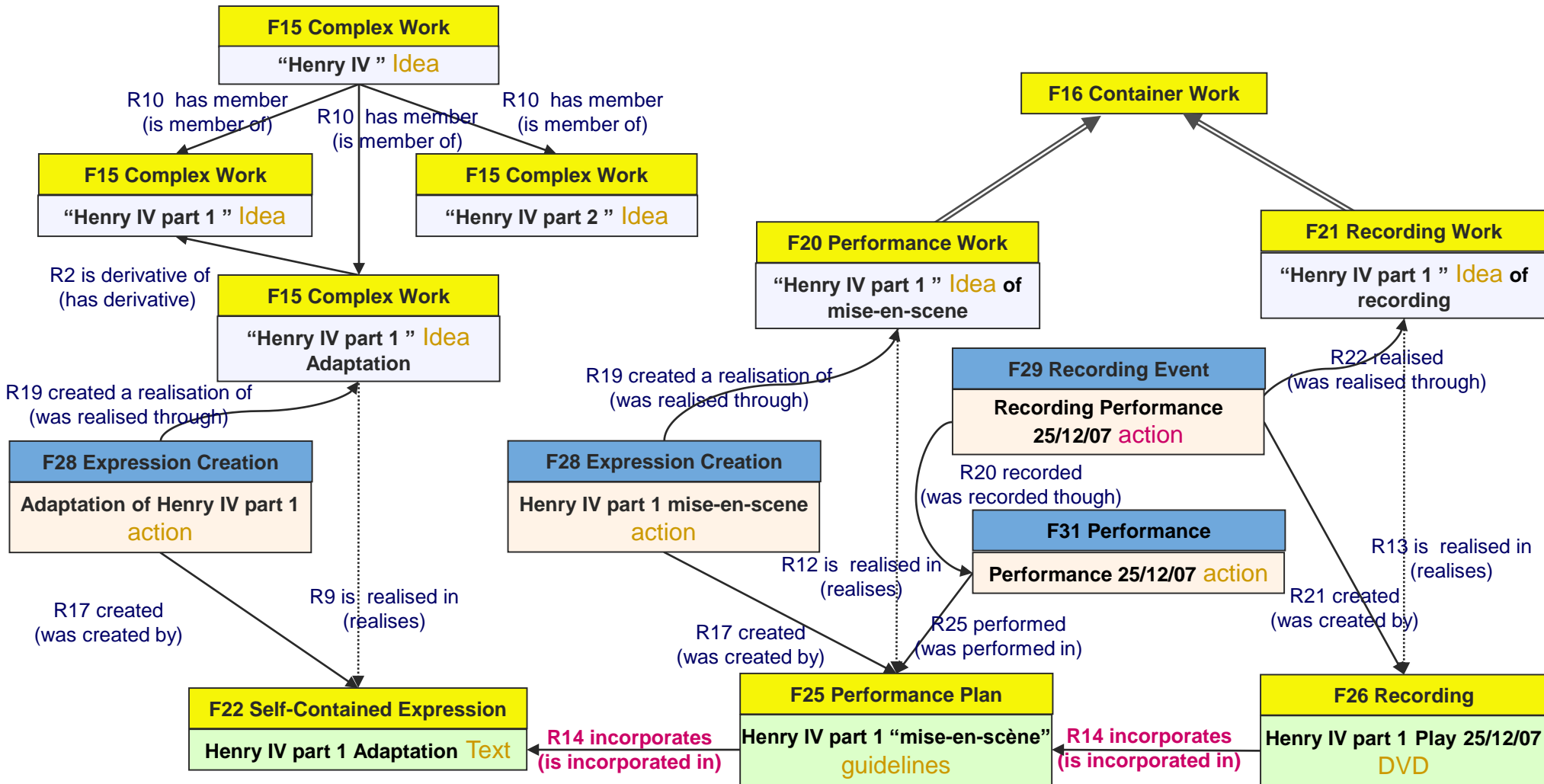


Publication Work - An "Identity Crisis"

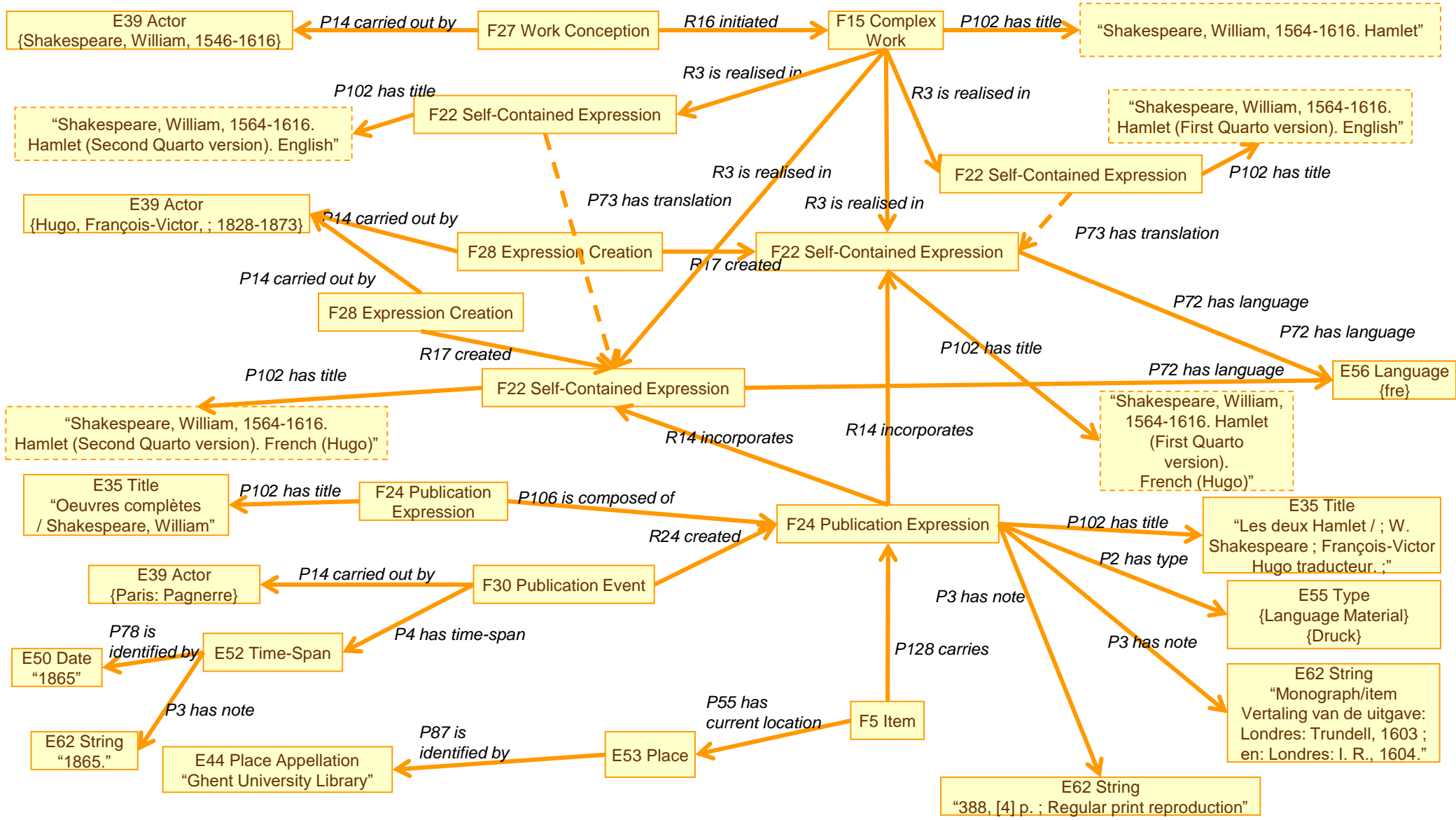




Performing Arts : An “Added Value” Chain



Example according to FRBR_{OO} by Patrick LeBoeuf





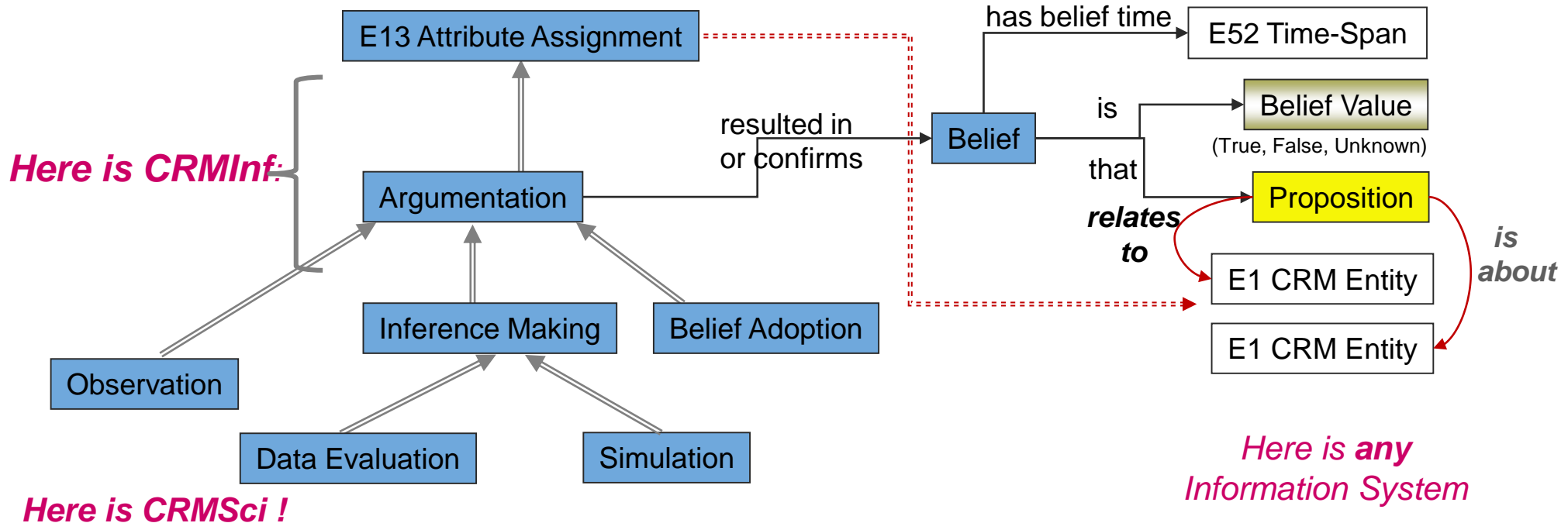
CRMInf :

“why is it true that?”

*A model for **Annotation,**
Argumentation and
Provenance Documentation*



The Three Sources of Scientific Knowledge



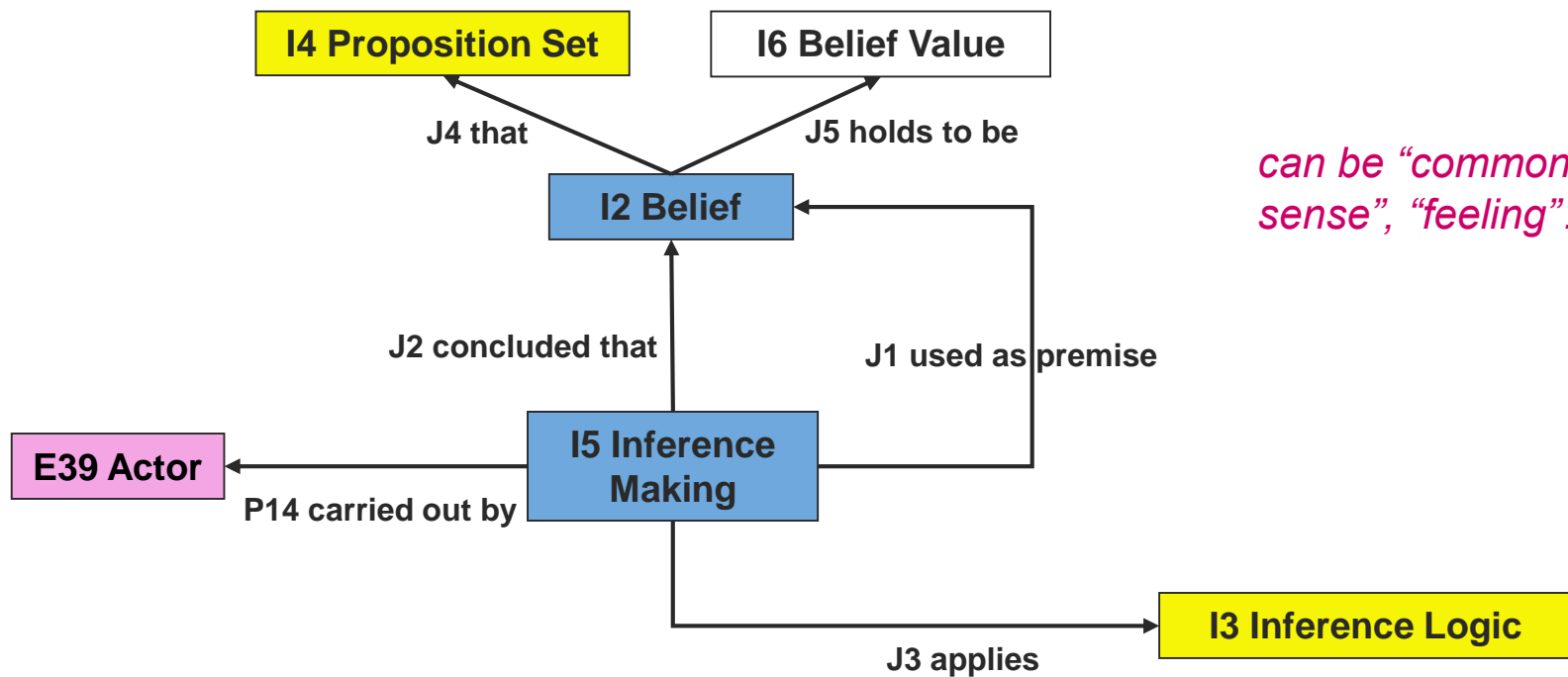
CRMSci:

Knowledge from observation, data evaluation and (computer)simulation

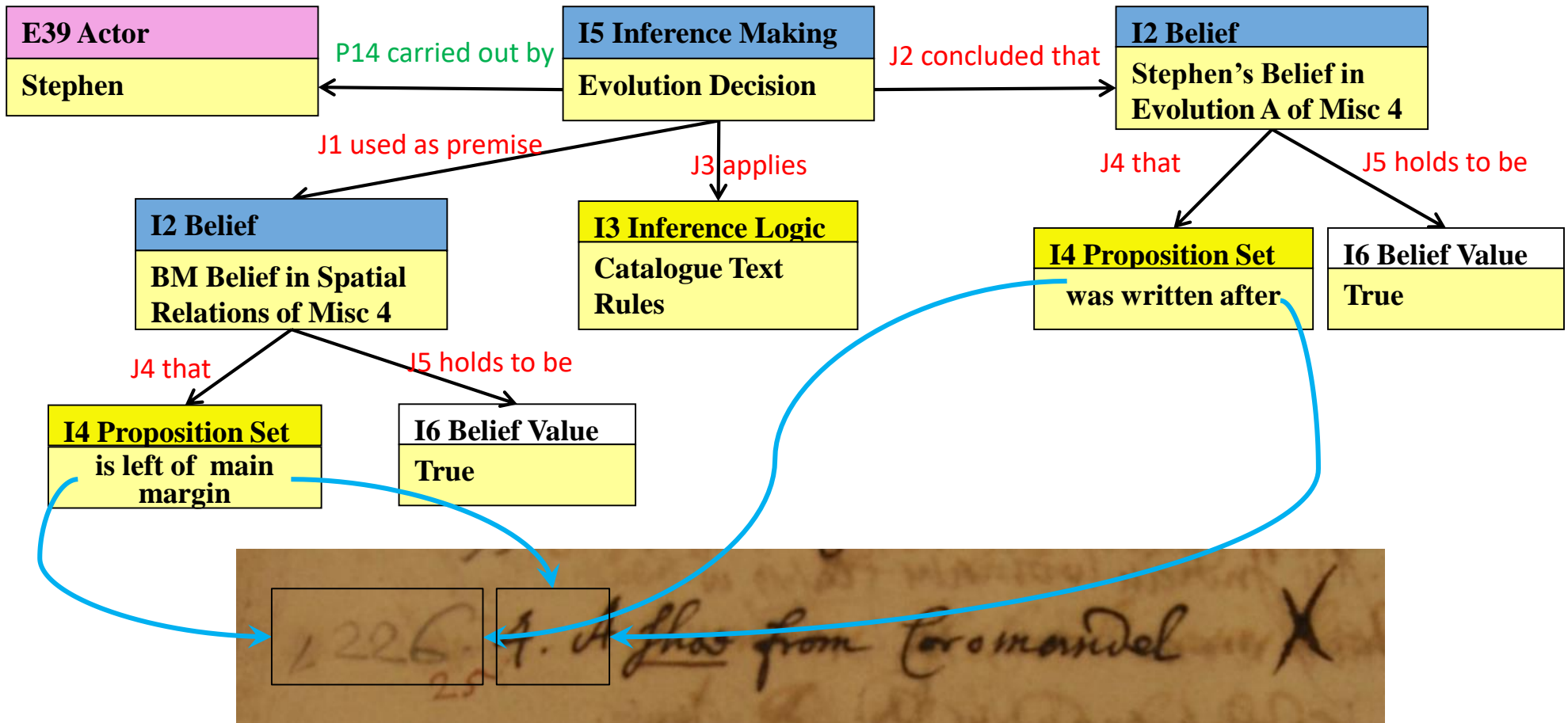
(engineered from OBOE, SEEK, INSPIRE Darwin Core etc)



Simplified Inference Making



Modelling beliefs about old inventory numbers



Hans Sloane collection inventory entry

Proposed Epistemological Core Model of Sciences

