

The INKASS Information Ontology for Knowledge Asset Trading

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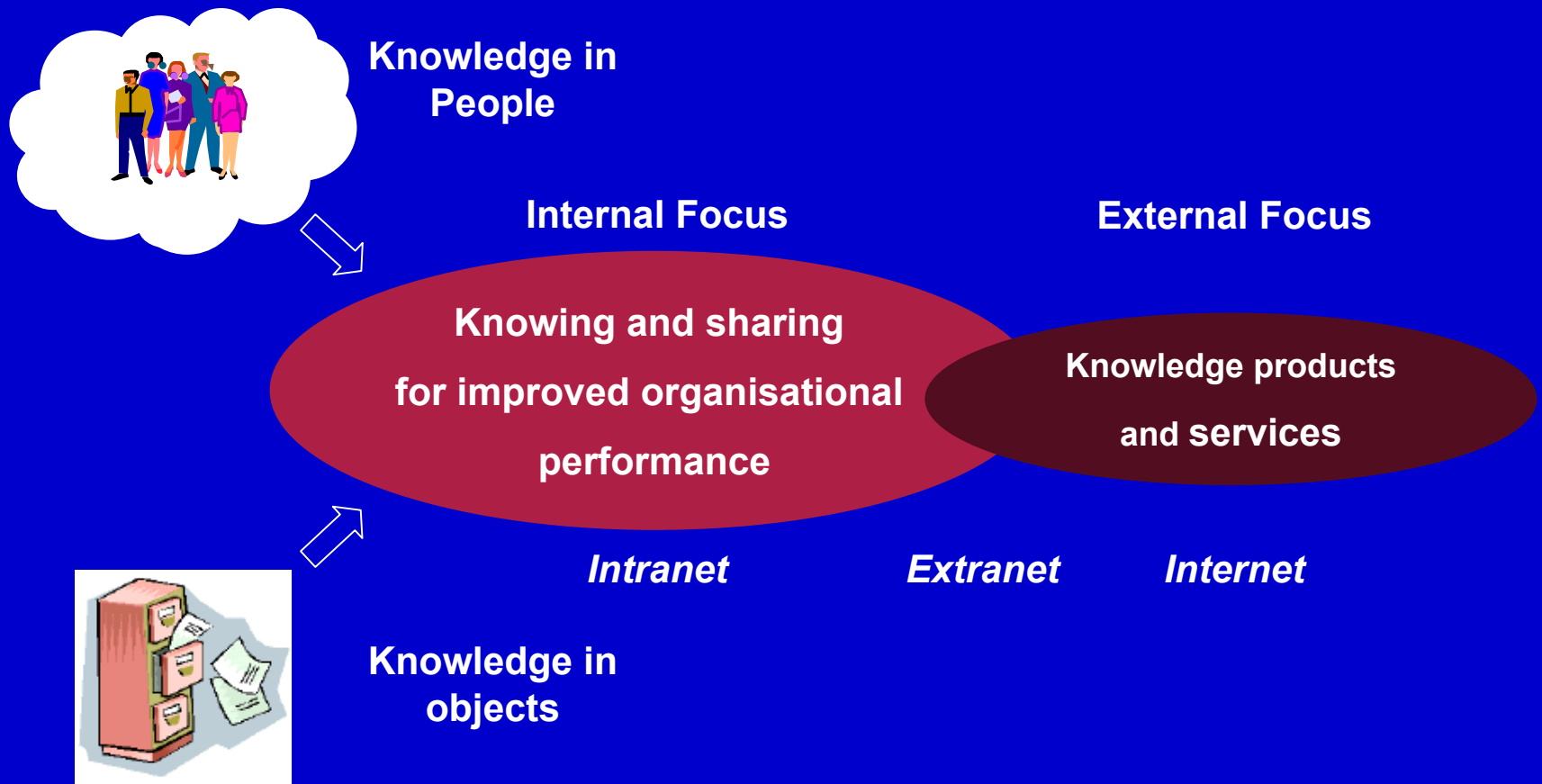




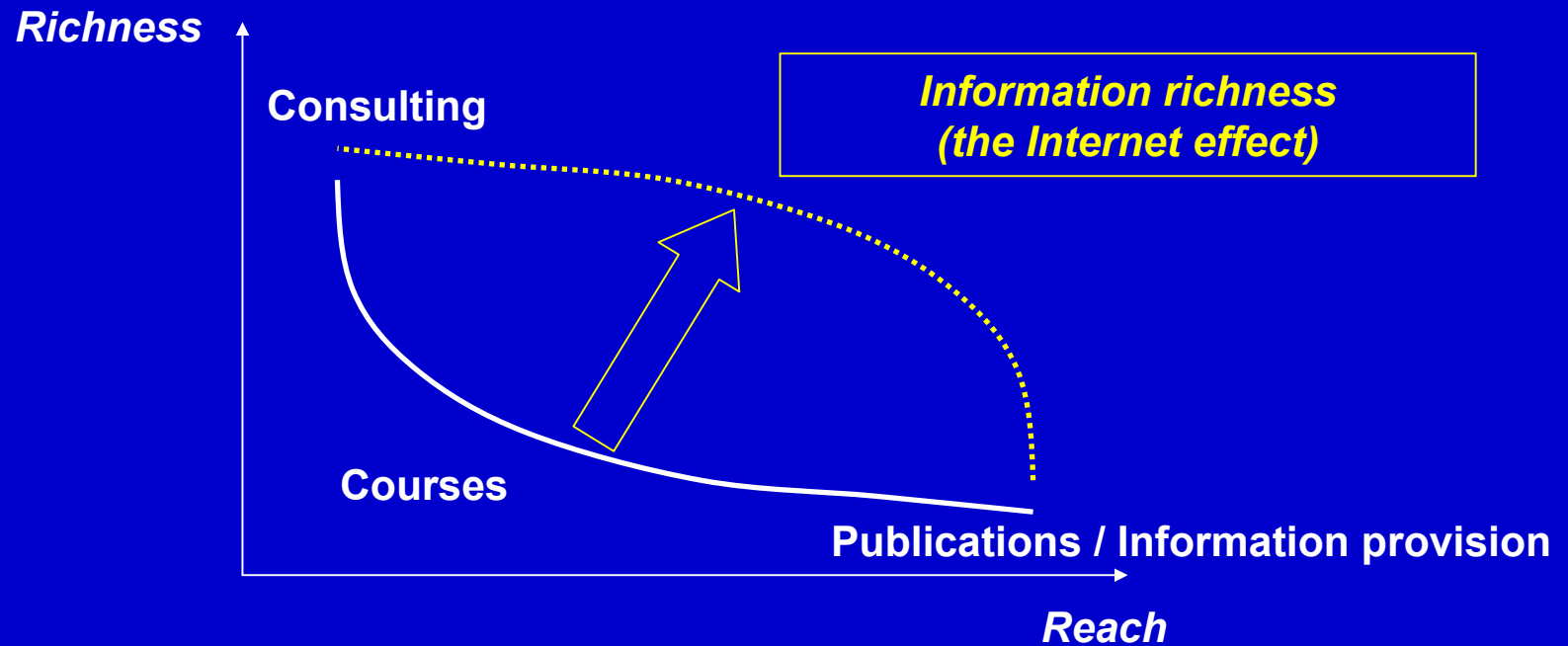
Motivation: Two major business trends in the last 10 years

- Disintegration of traditional organizational structures and re-integration in virtual organizations
 - Topics: distributed collaboration, coordination, information exchange, ...
- Focus on knowledge as a production factor
 - Question: can knowledge be considered a good traded in electronic marketplaces?

The intersection of Knowledge Management and e-Business: Exploiting internal knowledge externally...



...through the Internet effect



Source: Evans and Wurster, HBR

INKASS is a European RTD Project which runs 2002 - 2004

**PLANET
ERNST
& YOUNG**

- Greek management
consultancy company



**DFKI - the German
Research Center for
Artificial Intelligence**

ICCS / NTUA

Institute of
Communication and
Computer Systems
National Technical
University of Athens



**EMPOLIS –
Germany –
based supplier
of content and
information
access
management
solutions**



**TWI – UK-based
Research and
Technology
Organisation**



**University of St Gallen,
and more specifically
the institute of Media
and Communication
Management**



**Athens Chamber of
Commerce and Industry
(ACCI)**



Overall objective: an electronic marketplace for sharing and trading knowledge assets



**ICT tools for
knowledge
trading in
e-marketplaces**

**Business
models
and
pricing
systems**

**Pilot marketplaces
in business
management and
engineering
areas**



Problem: Knowledge is a product with some special characteristics

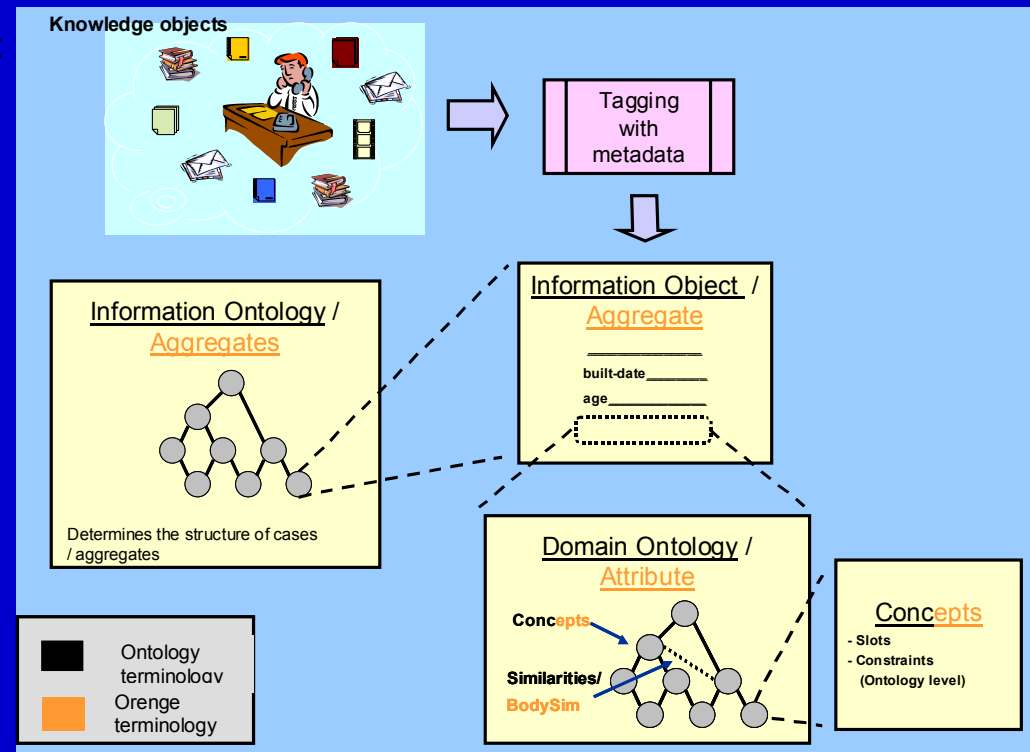
- highly contextual
- valuable only if put in context
- requires correct timing
- requires trusted relationships to foster
- highly associated with the person that possesses it
- ...

Overall Philosophy of INKASS Knowledge Trading Platform

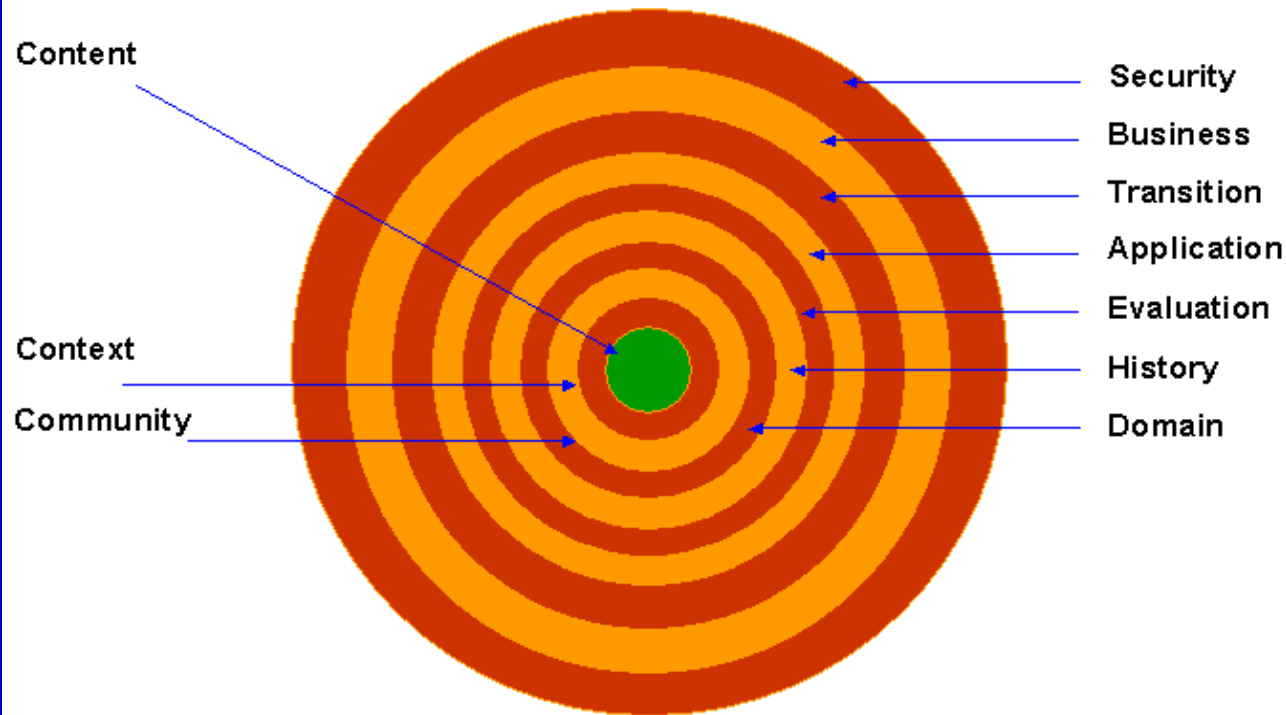
- **Knowledge:** embedded in or transferred via
- **Knowledge Objects** (like documents, consulting services, etc.) represented as
- **Information Objects** technically:
- **Cases**

+

- **Links**
- **Aggregates**
- **Transactions, Contracts**
- **Similarities**



The Information Ontology constitutes the metamodel for Information Objects



Facets should cover the generic aspects, yet being extendable for specific customers

Information-Object-Description

Content	
Context	→
Community	
.....	

Context-Description-Object

Orga-Context	
Sit.-Context	↓

Abstract Class

Situational-Context-Description-Object

Tools	
Processes	

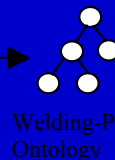
is-a

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Instance
User 1

TWI-Situational-Context-Description-Object

Tools	
Processes	→
Materials	



Welding-Process-Ontology

Instance
User 2

PLEY-Situational-Context-Description-Object

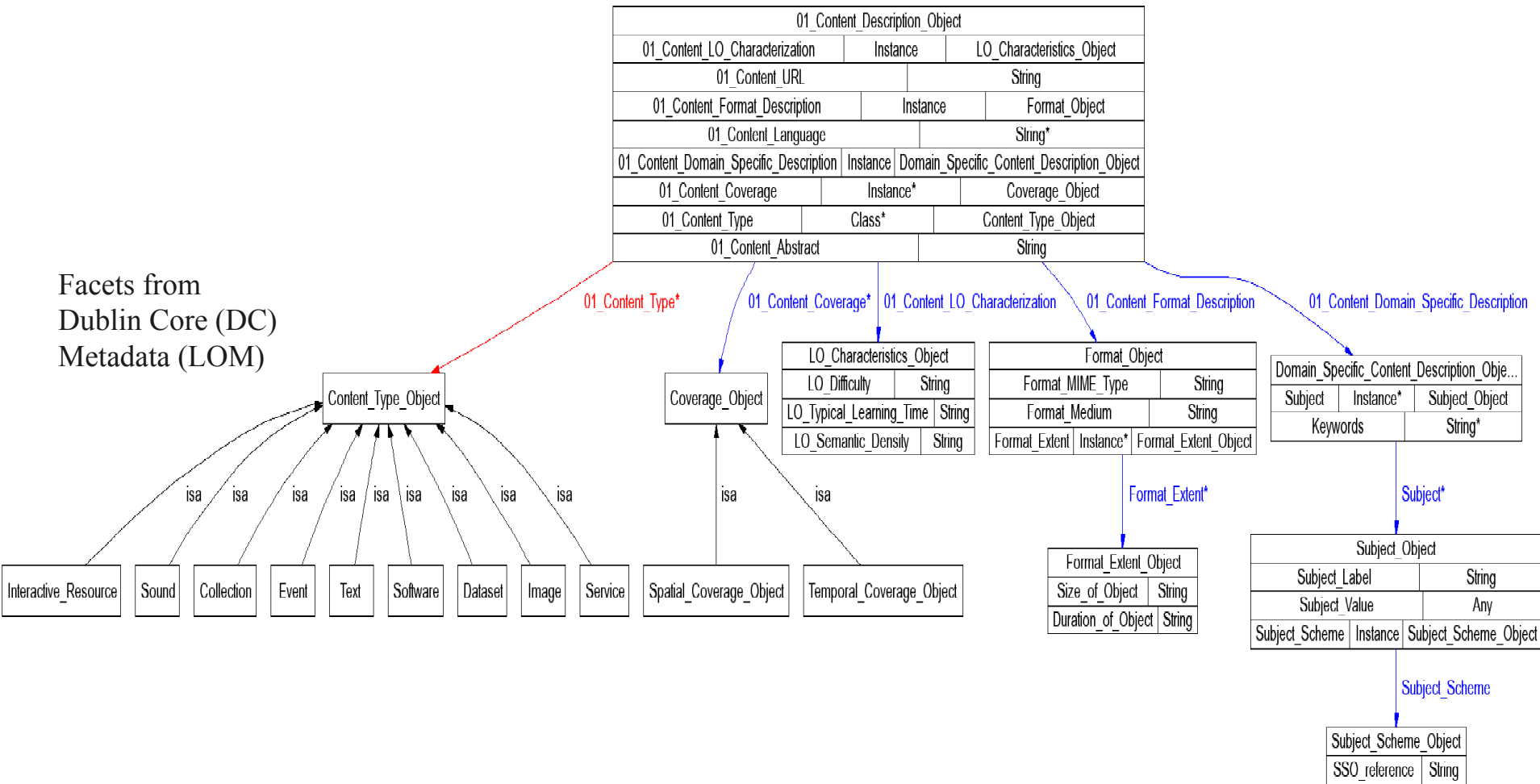
Tools	
Processes	→
Clients	



Consulting-Process-Ontology

Example: The **Content** facet talks about "what is in the Information Object"

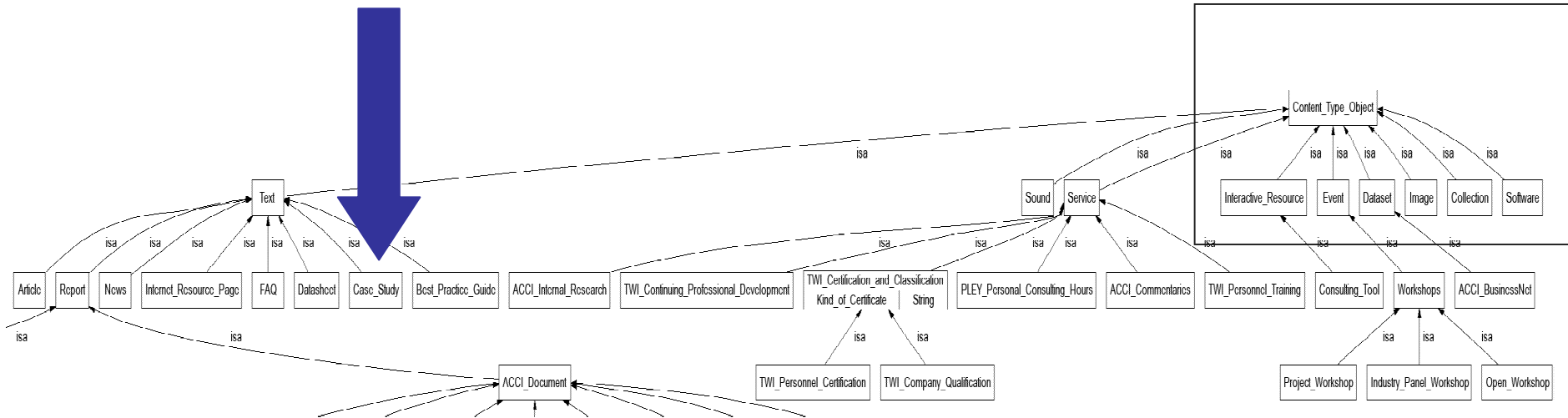
Facets from
Dublin Core (DC)
Metadata (LOM)



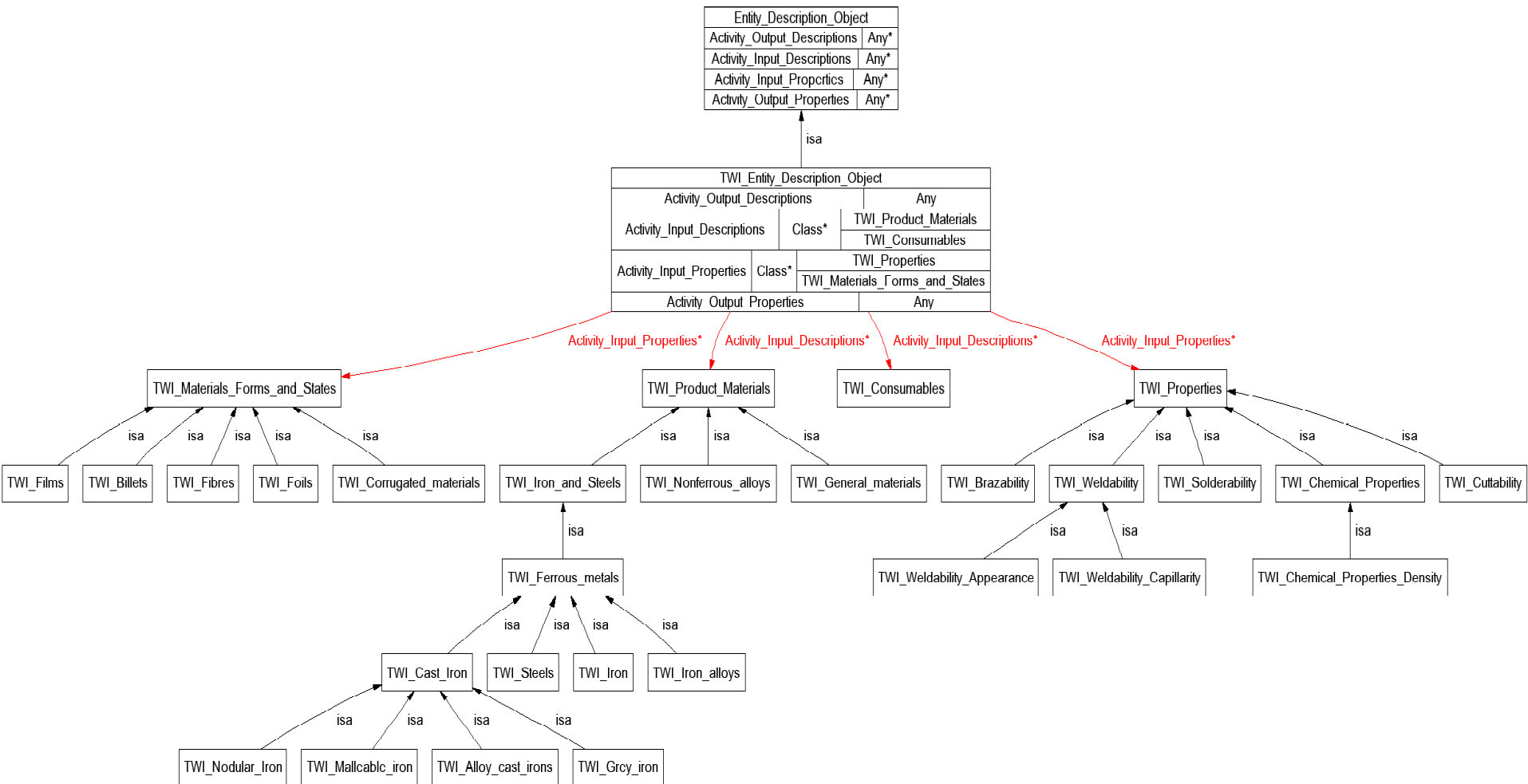
Application-specific content-facet extension in the ontology

extension: „case study“

before



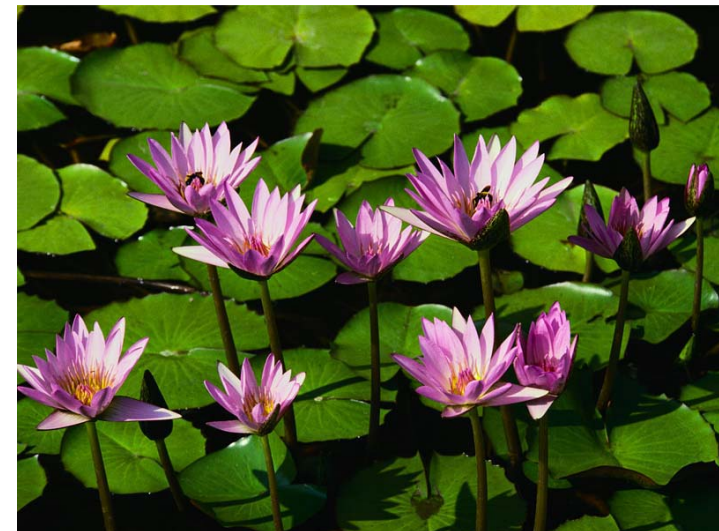
Example: The **CONTEXT** facet talks about potential application situations of an I.O.





Summary: Major Messages

- You could / should think about knowledge trading
- Knowledge trading should be built upon declarative I.O. models
- „The more declarativity, the better”: represent contracts, user profiles, trading actions, search activities, ...
- A de facto standard for Information Ontologies about Knowledge Trading seems interesting (cp. LOM)
- First cut has been delivered, some issues are still open





Some open questions

- Some facets have not yet been investigated in detail:
 - Legal facet, transition facet (pre-, postconditions)
- Representation approach sufficient?
 - Similarities are already „more than usual“
 - Sometimes we have interrelationships between description facets
- Case-specific tailorization realistic?



Vielen Dank!



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Information Ontology facets (2/2)

1. **content facet:** about, physical manifestation
2. **context facet:** target use circumstances
3. **community facet:** agents interacting with their roles, rights, and responsibilities
4. **domain facet:** background ontologies
5. **history facet:** creation, modification, and change history of an IO
6. **evaluation facet:** quality assessment information, e.g. measures describing for an IO
 - Intrinsic features (e.g. internal redundancy, DB consistency, data model compliance with standards)
 - The creation process (e.g., ISO 9000 compliant procedure),
 - Customer feedback (qualitative or quantitative)
7. **method facet:** technical requirements for the application (e.g. Powerpoint)
8. **transition facet:** effect of IO
9. **business facet:** data and information to trade the IO, in particular pricing information.
10. **legal aspects:** in particular all IPR (intellectual property rights) issues
11. **security facet:** how to ensure secure transaction (payment, knowledge transfer, etc.)

Example of facet extension needs for TWI

Case Studies:	Description of a concrete problem and how it is solved
Relevance Packages:	List of advantages and facilities a technology could provide in a certain context
Literature Summaries:	Summaries of the relevant literature
Structured FAQ Collection:	Concise answers to frequently asked questions
Knowledge Summaries:	Brief information on the most popular processes, technologies and materials. Essential knowledge risks and benefits relevant to a technical area.
Suppliers Data:	Relevant data about the major suppliers
Standards & Directives Package:	Collection of different Standards and Directives which are relevant in the specific context
Training needs assessment:	Online multimedia training courses
Best Practice Guide:	In-depth guide to technologies and processes which allows a broad comparative look across a field
Research Reports:	Different reports and articles about the relevant results of research
Commentaries:	Comments made by an expert at a specific document
Recommendations:	Collection of documents which are recommended by an expert



State of the art in today's knowledge marketplaces:

1. Knowledge *content* representation is usually weak
 - Typical: classification to a hierarchy of subjects
 - Potential usage context rarely described
2. Ignorance or proprietary+patchy approaches to
 - evaluation of knowledge quality
 - community aspects
 - feedback mechanisms
 - ...
3. Context-bound information object descriptions.
No efforts towards Self-containedness for Exchange between systems
4. Quite different Information Ontologies:
 - Existing standards seem not be used or integrated