Rights management through Digital Objects

Norman Paskin The International DOI Foundation

doi>

Digital Objects

doi>

- Digital Object is "A logical entity or data structure"

  = digital material (data)

  + unique identifier etc. (metadata)

- "Digital objects provide a means of organizing and identifying content for purposes of storage, access or distribution... ...metadata may include restrictions on access to digital objects, notices of ownership, and licensing agreements..."

  (www.xiwt.org/documents/ManagAccess.html)

Digital Objects approach is in use now:

- Underlying technical infrastructure: Kahn et al (1995+)
  - e.g. www.xiwt.org/documents/ManagAccess.html
  - Components e.g. Handle system: www.handle.net
- DOI: Digital Object Identifier www.doi.org (1998)
  - applied this generic infrastructure to intellectual property (Creations); provided some specific rules re appropriate metadata, policies
  - International DOI Foundation (IDF)
- Indecs: Interoperability of Data in E-Commerce (1998) www.indecs.org
  - provided basis for DOI metadata approach.   Part funded by IDF. Strongly influenced ONIX, MUZE, etc
- Indecs2: (2001) extend indecs to all aspects of rights
  - initiated by IDF . More on this later.

Called for by content community

- "..to unify in one scheme music, audiovisual, document management, internet engineering, digital libraries, copyright registration and object based software"

- "..maximise utility of digital objects; enable core interoperability; enable integration of disparate sourced data; ability to trace ownership to manage rights"

- requirements:
  - protect legacy investments
  - enable interoperability
  - provide link between digital and physical
  - maintain privacy of users
  - have persistence
  - standard syntax
  - global scalability
  - global uniqueness
  - global meaning

Digital
Rights
Management

Rights management through Digital Objects

This presentation makes three propositions:

υTrading intellectual property (*rights management*) requires <u>representations</u>
- Just like trading physical property
- Structured representations

ϖ *Structured representations* for Rights transactions need consistent interoperable <u>pieces of "metadata"</u>

ω *Using representations* in rights transactions needs a consistent <u>dictionary</u> of defined terms and their relationships
- Now being built (indecs 2)

υ Representations

Can we learn about
"trading intellectual property"
from
"trading physical property" ?

Trading property

- When a house changes hands nothing physically changes.
  - Looking at a house will not tell you who owns it. A house that is yours today looks exactly as it did yesterday when it was mine.
- Property is not the house itself but an economic concept *about* the house
  - embodied in a legal <u>representation</u>.
- A formal property representation is something separate from the asset it represents.
  - Having such representations is what enables trading:

Trading property

"Imagine a country where nobody can identify who owns what, addresses cannot easily be verified, people cannot be made to pay their debts, resources cannot conveniently be turned into money, ownership cannot be divided into shares, descriptions of assets are not standardized and cannot easily be compared, and the rules that govern property vary from neighbourhood to neighbourhood or even street to street. You have just put yourself into the life of a developing country or former communist nation"
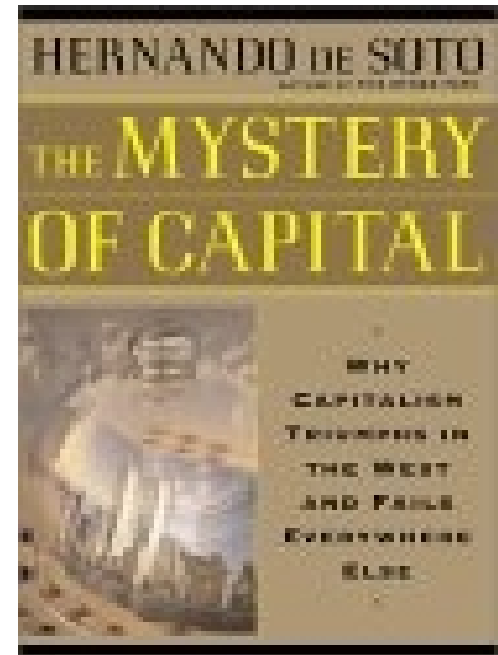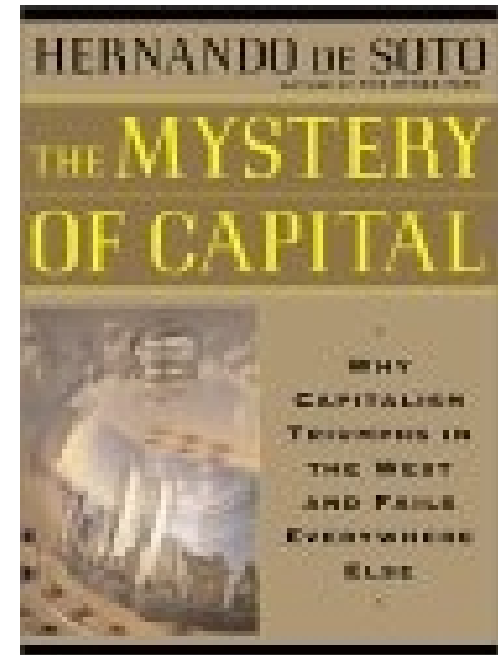

"The Mystery of Capital: Why Capitalism Triumphs in the West and Fails Everywhere Else" by Hernando de Soto (2000)

Trading property

"One of the most important things a formal property system does is transform assets from a less accessible condition to a more accessible condition, so that they can do additional work. Unlike physical assets, _representations_ are easily combined, divided, mobilized, and used to stimulate business deals. By uncoupling the economic features of an asset from their rigid, physical state, a representation makes the asset "fungible" - able to be fashioned to suit practically any transaction."

"The Mystery of Capital: Why Capitalism Triumphs in the West and Fails Everywhere Else" by Hernando de Soto (2000)

Representations are what is traded

- Physical property:
  - *representations* e.g. deeds, mortgages, are traded (not the physical bricks etc.)
- Intellectual property:
  - *representations* e.g. licences, files, are traded (not the abstract Work etc.)

Representations must be structured

- Representation = not just an inventory but a *structured entity*, such as a deed
- "to facilitate the comparison and combination of assets (standard descriptions)"
- "crafted so as to facilitate the easy measurement of an asset's attributes"

Rights management: trading intellectual property

- "*Digital* Rights Management" simply means that these representations are digital
  - DRM = *digital management* of rights = digital management of physical, digital, abstract entities
- but still structured
  - "to facilitate the comparison and combination of assets (standard descriptions)"
  - "crafted so as to facilitate the easy measurement of an asset's attributes"
- An "information object" or "digital object"
  - Having *identity, structure, management*
  - *Some structured accessible data of the asset's attributes*

Trading intellectual property

> υ Trading intellectual property (*rights management*) requires <u>representations</u>

- *We need to have representations, providing structured data about the assets*

- *What does this structured data need to be?*

ϖ Describing rights using data

Primary rights events (claims, deals) are
described using pieces of data:

Rights Statement ("claim")
[party] owns [right] in [creation] in [time] and [place]

Rights Agreement ("deal")
[party] agreed with [party] in [time] and [place] that
[event]

Pieces of "rights metadata" used
in each semantic structure

ϖ Describing rights using data

Primary rights events (claims, deals) are described using pieces of data:

Rights Statement ("claim")
[party] owns [right] in [creation] in [time] and [place]

Rights Agreement ("deal")
[party] agreed with [party] in [time] and [place] that [event]

Creations typically have standard identifiers e.g. DOI , which may have associated structured data, or act as keys to get data

Describing rights using data

Secondary rights events (licences) are also described using pieces of data:

Permission
[party] can [verb] [amount] to [creation] at [time] in [place].

Prohibition
[party] can't [verb] to [creation] at [time] in [place].

Requirement
[party] must [verb] [amount] to [creation/party] at [time] in [place].

Rights Transfer
[party] can [grant right] to [party] in [creation] at [time] in [place].

Describing rights using data

Pieces of "rights metadata" used in each semantic structure

Permission
[party] can [verb] [amount] to [creation] at [time] in [place].

Prohibition
[party] can't [verb] to [creation] at [time] in [place].

Requirement
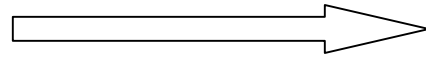[party] must [verb] [amount] to [creation/party] at [time] in [place].

Rights Transfer
[party] can [grant right] to [party] in [creation] at [time] in [place].

What are these pieces of "rights metadata"?

A mix of data from
many sources:

1 Rights "events" ⟹ Statements,
agreements,
transfers,
permissions,
prohibitions,
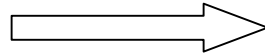requirements,
assertions,
approvals

What is rights metadata?

A mix of data from
many sources:

1 Rights "events"

2 Descriptive
metadata

⟹

Creations,
Creation types,
contributor roles,
user roles,
tools,
classifications,
measures

What is rights metadata?
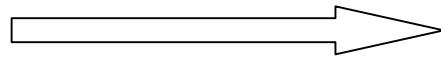
A mix of data from
many sources:

1 Rights "events"

2 Descriptive
metadata

3 Legal terms ⟹ Rights,
persons,
intellectual property

What is rights metadata?

A mix of data from
many sources:

1 Rights "events"

2 Descriptive
metadata

3 Legal metadata

4 Financial metadata ⟹ **Terms, conventions**
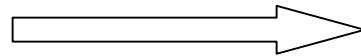
These sets of "rights metadata" are
standardized and maintained in different
places.

Distributed rights management

This mix of data from many sources is used in many different places by different people in chains of rights events:

```
statement  →  agreement  →  transfer

assertion    agreement         agreement  →  permission

              permission                   →  prohibition

                etc                        →  requirement
```
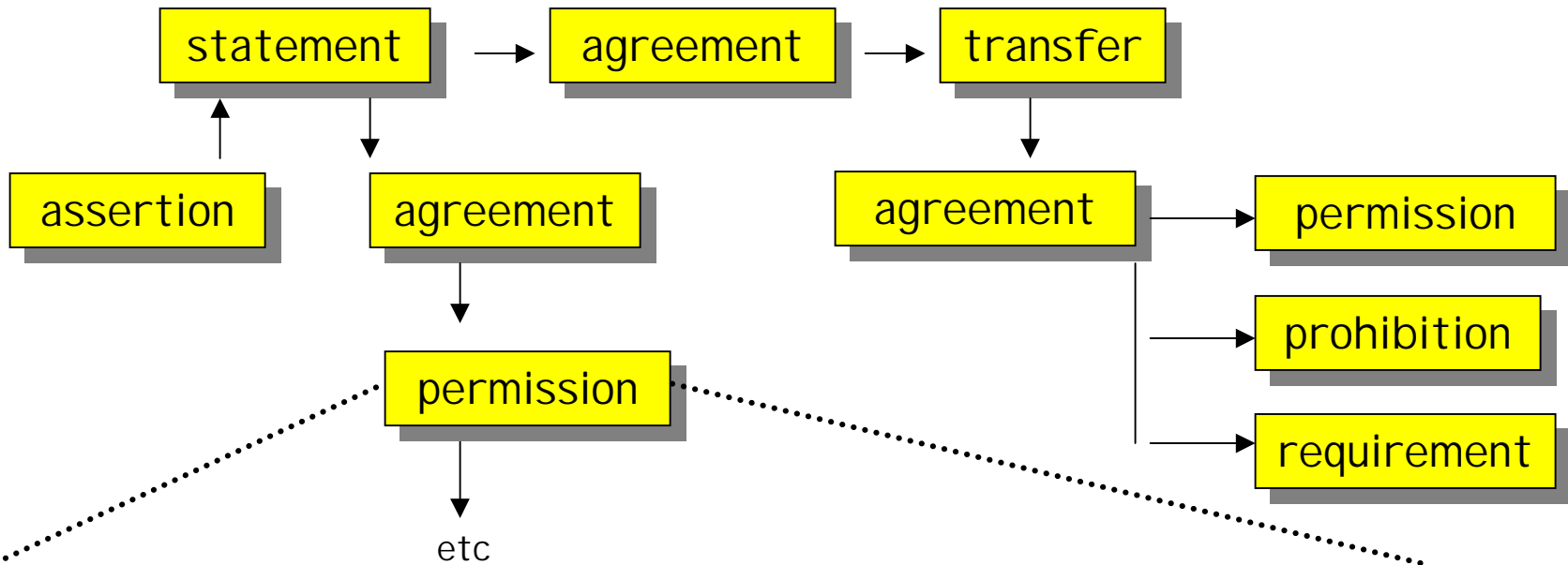
[party] can [verb] [amount] to [creation] at [time] in [place].
Each entity can be expanded to reveal more data

Distributed rights management

```
  ┌──────────┐      ┌──────────┐      ┌──────────┐
  │ statement │ ───→ │ agreement │ ───→ │ transfer  │
  └──────────┘      └──────────┘      └──────────┘
     ↑    │                                  │
     │    ↓                                  ↓
┌──────────┐  ┌──────────┐           ┌──────────┐        ┌──────────┐
│ assertion │  │ agreement │           │ agreement │ ───→   │ permission │
└──────────┘  └──────────┘           └──────────┘        └──────────┘
                   │                       │             ┌──────────┐
                   ↓                       ├────────→    │ prohibition │
              ┌──────────┐                 │             └──────────┘
              │ permission │                │             ┌──────────┐
              └──────────┘                 └────────→    │ requirement │
                   │                                     └──────────┘
                   ↓
                  etc
```
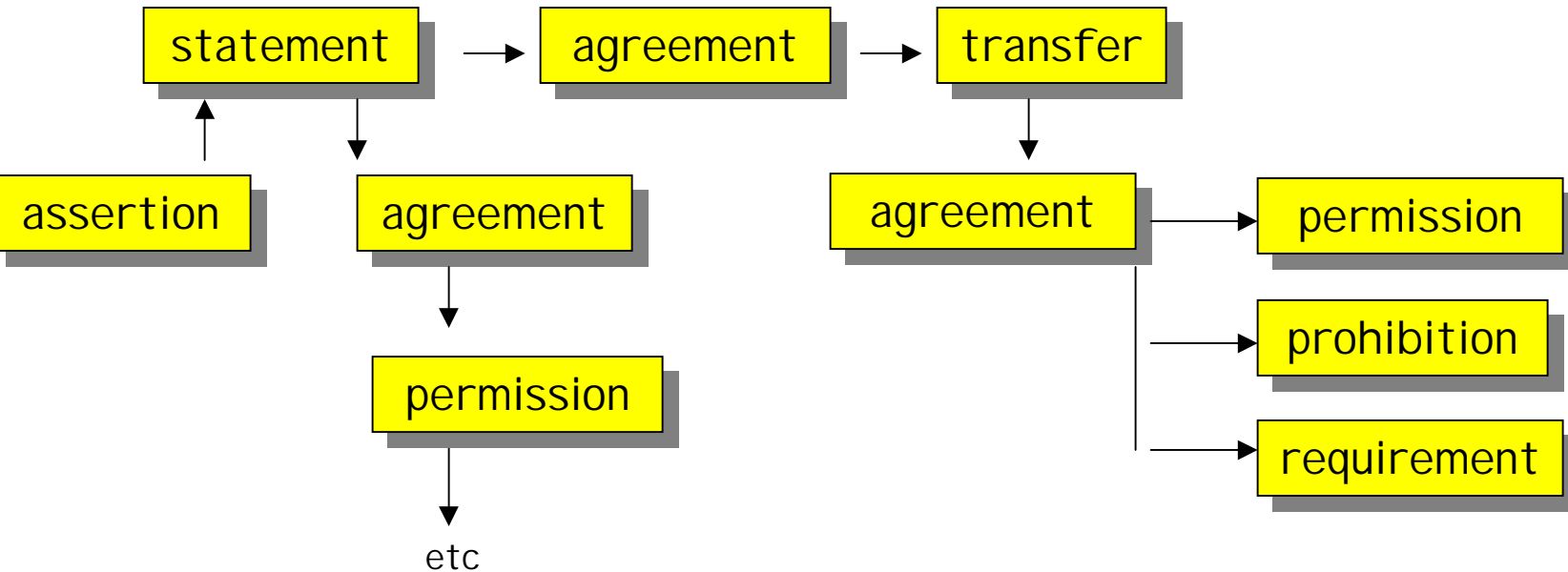
Each of these is <u>an information object</u> which may need to link to or use information objects in other databases.

The information used by each must therefore be standardised/interoperable

Getting rights metadata

access to "rights metadata" – getting data about each of these objects - could mean:

- Access free-form text description (the "dc:rights" approach): e.g. "© 1996 Random House"

- Access elements defined in a specific application schema: e.g. "Publisher=Random House, copyrightDate=1996"

- Allocate identifiers to "rights *digital objects...*" which themselves have attributes (DOIs for more than just creations e.g. agreement)

Increasing sophistication
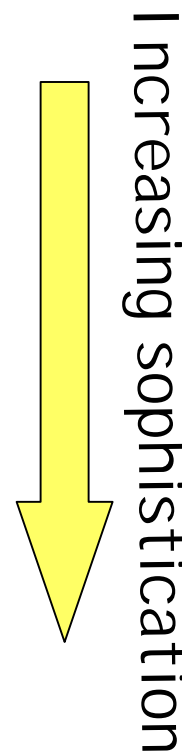
Whichever approach is chosen…

Trading intellectual property

ϖ *Structured representations* for Rights transactions need consistent interoperable pieces of "metadata"

This easy interoperation is not yet possible. We need a means of marshalling these "pieces of metadata from many sources"

- *recognised in discussions on ontologies, the "semantic Web", MPEG-21, many DRM activities*

ω   Using representations

Is there a way of getting to this "interoperation of data from many sources"?

Yes: work already done which shows how

indecs (www.indecs.org)

Interoperability of **D**ata in **E**-**C**ommerce **S**ystems

Multiple partner work 1998-2000 (EC, standards bodies, commerce, and non-commercial) - a broad cross-section of international bodies representing all aspects of the content industries' value chain from creators to users.

Produced principles for structured metadata and basis for a data dictionary for interoperability

Used by DOI, ONIX, Muze, etc

Applicable to other structured approaches e.g. SMPTE (and creates means of interoperability with them)

Now being extended to rights transactions

indecs2 context

Indecs2: extend and deepen the indecs work into rights transactions

Established in response to:

- MPEG-21 call for requirements (February 2001)

- W3C activity on DRM

- OeBF Rights and Rules WG Proposal

- increased awareness of lack of DRM interoperability among many initiatives

indecs2 structure

Initial proposal by International DOI Foundation (IDF) and EDItEUR.

Feasibility study funded by IDF, spring-summer 2001. Project managed by RightsCom Ltd.

A consortium from technology, rights owners and rights managers.

WIPO hosting two review meetings.

Status: Consortium finalized. Project under way with delivery in December.

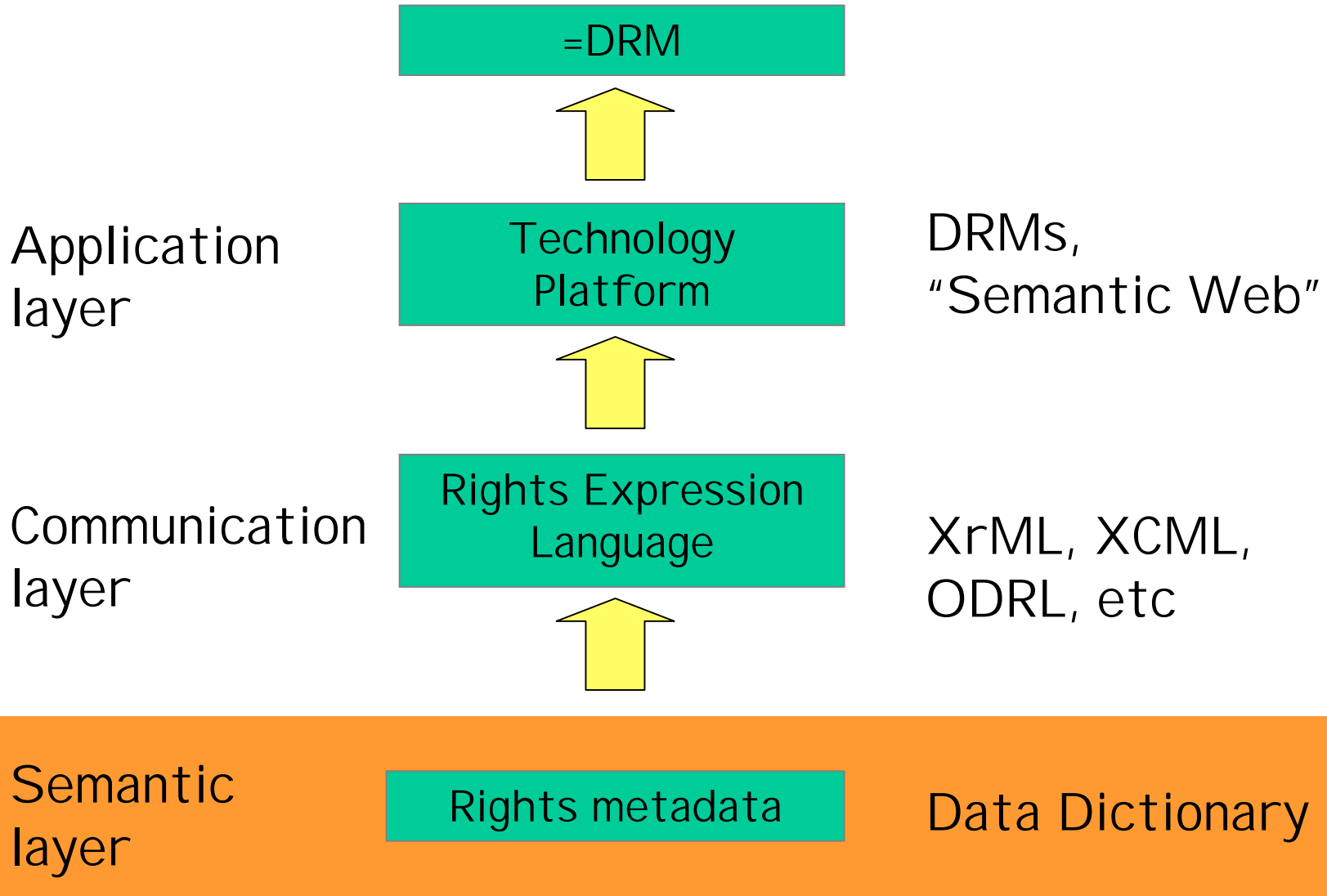# indecs2 consortium initial partners

[to be announced at meeting]

indecs 2 objective

To produce a Rights Data Dictionary as a candidate for the common "semantic layer" standard for digital rights management.

Provide a base semantic layer to build on

=DRM

Application layer

Technology Platform

DRMs, "Semantic Web"

Communication layer

Rights Expression Language

XrML, XCML, ODRL, etc

Semantic layer

Rights metadata

Data Dictionary

Indecs 2 work

Not starting from zero: will use existing indecs work, DOI descriptive work, DOI data dictionary etc. (will provide some central elements of the dictionary, e.g. contributor, creation and derivation types) and add to these.

Will deliver:

- A database containing a dictionary of defined terms and their semantic relationships

- A "proof of concept" demonstrator.

- Input to MPEG21 and other standards forums

Rights management through Digital Objects

Summary:

υ Trading intellectual property (*rights management*) requires <u>representations</u>

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ω *Structured representations* for Rights transactions need consistent interoperable <u>pieces of "metadata"</u>

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- Now being built (indecs 2)

Approach is in use now: Handle, DOI , indecs, indecs2

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Norman Paskin

n.paskin@doi.org

The International DOI Foundation

www.doi.org