

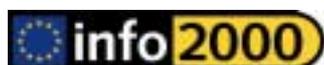


Putting Metadata to Rights

Summary Final Report

< Indecs >

Interoperability of Data
in E-commerce Systems



This project is supported under the
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1. The <indecs> Initiative: an Overview

<Indecs> was designed as a fast track, infrastructure project aimed at finding practical solutions to interoperability affecting all types of rights-holders in a network, e-commerce environment.

The project focused on the practical interoperability of digital content identification systems and related rights metadata within multi-media e-commerce. It was an international effort intended to generate a formal structure for describing and uniquely identifying intellectual property (IP), the people and businesses involved in trading IP on the Internet, and the agreements people make about those online sales.

The intent was that such a structure would provide the foundation for online commercial transactions for copyright works in all media including text, audio visual, music and multimedia works. The work of the project was directed towards ensuring filmmakers, musicians, visual artists and writers (as well as their producers and publishers) could receive fair payment for work traded in the digital world.

<Indecs> objectives were to deliver a series of proposals for technical standards, whether formal or *de facto*; the most significant of which was to be derived from the data model itself, along with guides to its implementation. To promote adoption of such standards, the project aimed to build an international consensus supporting implementation of the <indecs> schema and related tools. The end result sought was widely accepted technical standards to manage intellectual property commerce in the network environment.

Technical work undertaken in the project was interspersed with evaluation and dissemination activities designed to solicit feedback and promote awareness of the initiative.

The <indecs> initiative was successful in all aspects of work and succeeded in:

- ✓ raising awareness about metadata and interoperability in e-commerce,
- ✓ developing a comprehensive metadata framework,
- ✓ developing relevant cross-sectoral tools/products,
- ✓ establishing an Indecs Framework organisation to carry on project work, and
- ✓ moving towards commercial implementations.

There is wide-spread knowledge and interest in the <indecs> initiative internationally within the creative industries across all major sectors. Several <indecs> participants are currently working on developing specific <indecs>-based multimedia xml data interchange formats or schemas using the <indecs> model as its basis, including:

- MUZE Inc (through its MerchEnt service),
- EDItEUR (through the EPICS data dictionary) and the ONIX International interchange specification, and the
- International DOI Foundation (IDF).

At the close of the project, <indecs> partners established a not-for-profit, membership **Indecs Framework Limited** organisation. The Framework organisation holds the <indecs> IPR rights and has the goal of working with partners to move forward the work of the <indecs> initiative.

2. Project Support and Funding

The <indecs> project was primarily funded under the European Commission, MMRCs, INFO 2000 Programme. In addition, commercial funding sponsorship for supplementary project activities, which enhanced the scope of the work undertaken, was made available by following organisations.

- International DOI Foundation (International Digital Object Identifier Foundation)
- REAL Software Systems Ltd.
- MUZE Inc.
- Publishers Licensing Society
- VISTA Computer Services

The 17-month project began work in November 1998 and formally ended as a European Commission funded project in March 2000. The work of the <indecs> initiative will be carried on under the Indecs Framework Company established upon the formal close of the project.

3. <Indecs> Partners, Affiliates and Joint Interim Committee

The consortium of <indecs> partners was made up of 11 organisations. Among the partners there was international representation from rights owners, a company specialising in database management and an administrative partner. <Indecs> partners included European organisations, some with Europe-wide or global operations, and some with specific U.S.A. and Australian relationship ties. This mix of partners promoted global involvement of rights owner representative groups. The following organisations make up the consortium of <indecs> partners.

Four societies representing creators and/or publishers in different sectors

- Author's Licensing and Collecting Society (ALCS) (UK, literary works, Author's society)
- MCOS on behalf of MCPS/PRS (UK, musical works, Composer/publisher societies)
- VG BILD-KUNST (Germany, visual arts, creator's society)
- Société des Auteurs et Compositeurs Dramatiques (SACD) (France, audiovisual and visual arts, creator's society)

Two organisations representing producers in different sectors

- International Federation of the Phonographic Industry (IFPI Secretariat)
(International/UK-based, sound recordings, trade association)
- EDItEUR (European/UK-based, book/serial/electronic publishers/libraries)

Three organisations representing multimedia and reprographic rights:

- KOPIOSTO (Finland) (Co-ordinating Partner)
- CEDAR (Netherlands)
- Copyright Agency Limited (CAL) (Australia)

One database compiler/provider:

- MUZE UK (UK subsidiary with US parent)

One administrator:

- Education for Change Ltd. (EFC) (UK, consultancy)

An "Affiliate" status was used for those organisations not formally a partner to the project, but having a high degree of interest in the work of the project. This Affiliate Status promoted broad-based participation by international trade associations and other key stakeholders to the <indecs> initiative.

- Refer to annex A for a list of Affiliate organisations to the <indecs> project. In addition, a listing of Affiliate organisations to <indecs> is published on the project website (www.indecs.org), with links to the Affiliate organisations' websites.

Together, the <indecs> partners and Affiliates represented the creators, producers and distributors of a significant proportion of the global intellectual property domain. In supporting the <indecs> project, they shared a vision of the requirement for interoperability between systems designed to support different types of content.

The Joint Interim Committee (JIC) was established in response to the clear call by <indecs> affiliates and other 'stakeholders' at the July 1999 Evaluation Conference for a participatory and consultative approach to the work undertaken by <indecs>. The request was for an approach which made possible the involvement of stakeholders in the development and operation of the various tools and standards identified by the project.

JIC Membership was open to any organisation with an interest in the successful continuation of the work begun by <indecs>, including <indecs> partners, affiliates, sponsors and other stakeholders. Membership was international in scope, with representation from a broad spectrum of organisations with interests in e-commerce issues. There was no financial commitment required to become a JIC member, other than the costs, which might be incurred in attending consultation meetings.

The main role of the JIC was advisory with 2 main tasks: (1) to oversee the completion of technical project work and (2) to advise on a strategy for the future management of project outputs. This advisory role contributed to the work of the project and directed the partners to address issues and concerns in various sectors.

Plans are to hold a final JIC consultation meeting following the formal end of the project with the purpose of addressing governance and membership issues of the newly established Framework Company. It is also anticipated that the Indecs Framework Company will establish a consultative avenue for stakeholders, through a forum or other processes.

4. <Indecs> Metadata Framework

The <indecs> framework encompasses a metadata model, and a high-level metadata dictionary, principles for mappings to other schemas, and a Directory of Parties Proposal.

There is strong support and recognition of the principles and assumptions underlying the <indecs> framework. It offers a strong foundation with the building blocks for supporting practical interoperability in e-commerce.

The following are recognised by the <indecs> metadata framework:

- metadata relating to all types of *creations*,
- the integration of descriptive metadata with *commercial transactions and rights*,
- a generic attribute *structure* for all entities,
- the central nature of *events* in the development of interoperable metadata; and
- that as far as possible metadata should be created once and used for different purposes.

The <indecs> metadata framework is based on four guiding principles for the development of “well-formed” metadata to support effective e-commerce. In practice it is rare that any one of these is fully realised. The extent to which they are will determine the ultimate usefulness and resilience of any given metadata schema.

The principle of Unique Identification

Every entity should be uniquely identified within a unique namespace.

The principle of Functional Granularity

It should be possible to identify an entity whenever it needs to be distinguished.

The principle of Designated Authority

The author of an item of metadata should be securely identified.

The principle of Appropriate Access

Everyone requires access to the metadata on which they depend, and privacy and confidentiality for their own metadata from those who are not dependent on it.

- For a complete and detailed description of the <indecs> Metadata Framework and all of its constituent parts, refer to the “***The <indecs> Metadata Framework: Principles, Model and Data Dictionary***” (June 2000), authors: Godfrey Rust, MUZE Inc. and Mark Bide, EDItEUR, published on the project website (www.indecs.org).

Metadata model

The generic metadata model is the foundation work of <indecs>. This model is best described as a data model with a formal structure for describing and uniquely identifying intellectual property.

The <indecs> metadata model is the result of several years of gestation, with focused technical work under the <indecs> project. The <indecs> model was developed with reference to constituent and related schemas.

The basis of the model is the assumption that it is possible to produce generic systems to handle metadata for all creation types. The <indecs> model is designed to function at a high level and accommodate creations with intellectual property value from a full gamut of creation types (e.g., books, sound carriers, videos, photographs) and creative sectors. The <indecs> model is already generally compatible with many major schemas such as the copyright societies' CIS, the recording industry's DCMS, the library community's FRBR, the museum/archive community's CIDOC reference model, and the book industry's EPICS/ONIX.

The <indecs> model is designed to describe the fundamental structure and relationship of people to creations at various levels using a generic language. It is not limited to one type of creative endeavor or sector. Thus, it is a model, which is capable of supporting varied applications and which has the capacity to accommodate new creations not yet envisaged.

E-commerce standards need to support the widest range of applications for all types of 'content', many of which are not yet envisaged. The <indecs> model is therefore designed to describe the fundamental structure and relationships of people and stuff, not to support any particular application, so that the standards and tools it leads to will be as powerful and durable as possible.

Metadata Dictionary

The metadata dictionary holds all of the information on <indecs> metadata elements, their names, iids, definitions, relationships and mappings to elements in other schemas. The data dictionary is made up of two parts. One is focused on commercial and descriptive terms (the "commerce namespace") and the other exclusively with legal terms (the "legal namespace" – proposed, but not developed).

Development of the "commercial namespace" part of the dictionary was inter-related to mapping work and development of the multimedia xml interchange format. By the close of the project, a core dictionary defining nearly two hundred high level elements and addressing structure and syntax issues was completed.

Work on the "legal namespace" part of the dictionary was deferred and will be addressed by the <indecs> Framework Company. Preliminary discussions on this have been held with the World Intellectual Property Organisation (WIPO).

The <indecs> dictionary continues to develop. However, some significant technical questions remain about the most effective way to deploy this activity (see Metadata Registry below). It is likely that further sections of the <indecs> dictionary will be developed and published in conjunction with the International DOI Foundation and EPICS/ONIX initiative. The development of the commercial namespace dictionary and the formal mapping of other schemas is an on-going process which is linked to implementation of xml data interchange format activities.

Work will also continue in the Indecs Framework on the development of detailed vocabulary for rights agreements and related transactions.

Mapping

Mapping activity was the main means of testing the model for interoperability and revising the model, as required. This mapping tested both the validity of the <indecs> schema itself and provides the specification of the tools necessary for interoperation between different schemes. In general, mapping was a collaborative activity done with the active involvement of the principals of the schema or project concerned.

Some or all of the elements of the following schemas were mapped in the development of the <indecs> model:

Schema	Sector
CIS (Common Information System) including ISWC, IP, ISAN	Author's rights (CISAC)
Dublin Core	Web discovery
FRBR (Functional Requirements for Bibliographic Records)	Libraries (IFLA)
DCMS	Recording industry (IFPI)
SMPTE Data Dictionary	Audiovisuals (SMPTE)
EPICS/ONIX	Books (EDItEUR)

The IDF (International DOI Foundation) has developed schemas based on <indecs> implementations and will use the <indecs> principles and subsequent mappings.

Where the mapping activity exposed structural problems in either the <indecs> schema or the related project, this led to improvement. The mapping exercise was the main means of proving and correcting the <indecs> model.

It is recognised that some anomalies and ambiguity will remain when mapping is completed. Mapping enables these to be documented so that <indecs>-compliant technology can recognise and present 'best fit' or alternatives to users.

Directory of Parties

A major accomplishment of the <indecs> initiative is "Directory of Parties" proposal which was produced in co-operation with other metadata initiatives (in early stages of the project this was referred to as the "Directory of Persons").

Work in this area was required because to operate e-commerce, people need to be uniquely identified. Those people may be individual human beings or 'legal people (companies and the like)' who make and use creations and have rights in them. Names although useful, are inadequate because they are far from unique and recently change over time. So a mechanism for the unique and persistent identification of parties is an essential underpinning of the entire <indecs> schema.

While unique identifiers are fundamental in commercial activities such as banking and credit card transaction, on the whole personal identification systems are an underdeveloped area in bibliographic and rights-based systems. There are, however, some international identifiers already established or in development.

The <indecs> "directory of parties" proposal offers a "proposal" on how to enable these and other existing and emerging initiatives to interoperate so that people can be identified unambiguously throughout the network.

The aim of this aspect of <indecs> work was to develop consensus on the structure, function and operation of a commonly accessible directory of parties. This has resulted in a general specification for the establishment of such a directory or network of directories.

The directory should allow any person participating in the making or use of a creation, or in a deal relating to intellectual property, to be unambiguously identified while at the same time protecting both the privacy of individuals and commercial confidentiality, as far as this is possible and appropriate.

The proposal completed under the project is called, "Directory of Parties outline specification" and sets out the issues relating to the structure, function and operation of a commonly accessible Directory of Parties. It is a comprehensive policy paper with a full discussion of issues, a review of current initiatives and work, the issues involved in striving for interoperability in this area, and a plan for proceeding on creating a Directory of Parties.

As with the <indecs> schema as a whole, the Directory of Parties proposal is not considered a replacement for existing schemes for the identification of participants in intellectual property domain where these already exist. Rather, it proposes a way forward for achieving interoperability.

- **The Directory of Parties: outline specification** paper is published on the project website (www.indecs.org).

Metadata registry

The aim of this area of technical work was to work towards achieving consensus on the structure, function and operation of a commonly accessible metadata registry for namespaces and their component metadata values. It was anticipated that this would lead to the development of a high level specification for the establishment of such a directory (or network of directories).

This metadata registry is not for registering the metadata itself, but the different rules, and attributes and values which different metadata schema use. It is an essential tool to allow metadata to be translated from one schema to another, using the <indecs> generic model.

A registry should allow any person or application automatically to locate and interpret any metadata value from an <indecs> registered schema and translate it into an appropriate value from any other <indecs> registered schema. The structure should interoperate with other such registries, if any, in the intellectual property domain.

Work in this area is dependent upon work on other aspects of the <indecs> schema, and thus was not finalised during the project. It became clear that the development of the dictionary through mapping and the management of a registry were one and the same activity. It also became clear, through the definition of the relationship of the three different "layers" of attribution in the metadata model, that an effectively structured registry would have to function at a higher level of complexity than had yet been undertaken in any comparable registry activity.

Standards proposals

It is anticipated that certain aspects of the output from the <indecs> project will be put forward for formal standardisation. The project has established direct liaisons with a number of relevant standards bodies including various [ISO/IEC](#) committees, [NISO](#) and [MPEG7](#), and (through various partner and affiliate memberships) with [WC3](#) and [IETF](#).

5. Evaluation and Consultation Activities

Project evaluation and consultation activities were comprehensive and achieved international coverage of the initiative.

- hosting major evaluation/dissemination conferences
- making strategic presentations to key stakeholders
- consultative and participatory approach with key stakeholders
- developing an affiliation status for international rights organisations
- securing commercial sponsorship (supplementary to European Commission MMRCS, INFO 2000 funding)
- initiating an interim advisory body to the project (with international representation)

Three major international conferences with broad-based participation from all sectors were held (London, United Kingdom; Washington, D.C. U.S.A.; Sydney, Australia).

These conferences were held at key stages in the project and provided invaluable forums for informing key stakeholders about the initiative, as well as soliciting feedback about technical work and planning for the governance of the <indecs> initiative post-funded project.

- *Metadata Evaluation Conference*
7-8 July 1999, London, United Kingdom
 - *Launch Conference – Names, Numbers and Networks*
15 November 1999, Washington, U.S.A
 - *Putting Rights to Works*
9-10 March 2000, Sydney, Australia
- Copies conference reports and presentations made at the conferences are published on the project web site (www.indecs.org).

6. The Future (post-project European Commission Project)

- The <indecs> project formally ended in March 2000 - but its work will continue.

At the close of the project, <indecs> partners established a not-for-profit membership organisation, called the ***Indecs Framework Ltd***, to carry forward the work of the initiative.

The Indecs Framework is a not-for-profit, membership organisation, incorporated as a limited company in the United Kingdom. Founding members of the Framework include several <indecs> partners and affiliates, including the book standards group, EDItEUR, the International DOI Foundation, the International Federation of Phonographic Industries (IFPI), data providers, MUZE Inc., the Australian Copyright Agency, CAL, and Joint Finnish Copyright Organisation, Kopiosto.

The new <indecs> Framework organisation will safeguard the intellectual property developed during the project, as well as oversee further technical work to support the implementation of interoperable standards for content identifiers and metadata, especially in the area of rights management. There will be a very close operational relationship with the International DOI Foundation (IDF).

The work of the Framework Organisation will concentrate on identification and vocabulary issues, and have three main strands:

- (1) Three technical forums (virtual and real) will be run jointly by <indecs> and the International DOI Foundation. These will oversee <indecs>/DOI implementations in (a) identifiers and metadata (b) resolution and (c) data interchange.
- (2) An <indecs> rights project to define metadata standards for IP rights, agreements and business rules; alongside this <indecs> will continue to explore the development of a related "legal namespace".
- (3) The development of the "directory of parties" proposal.

As a permanent organisation, the Indecs Framework will establish formal relations with the various standardisation and other initiatives within ISO, W3C and elsewhere. It will continue discussions with WIPO, and will actively support the ambitious MPEG21 multimedia standards initiative, which is seen as the best hope for achieving effective levels of co-ordination across the daunting range of standards activity which has been triggered by the digital content revolution.

The Framework's management and business model are under consideration, as well as terms of membership or participation. Details will be announced at a later date, and formally communicated to <indecs> stakeholders.

Earlier plans in two specific areas - a generic multimedia indecs-xml, and publication of a more comprehensive metadata dictionary and registry have been postponed.

Several <indecs> participants, including MUZE Inc (through its MerchEnt service), EDItEUR (through the EPICS data dictionary and its new subset, the recently announced ONIX International specification) and the IDF are engaged in developing specific XML DTDs or schemas with the <indecs> model as its basis. Some of these utilise the Resource Description Framework (RDF). The partners agreed that it was too early in the life cycle of XML and RDF schemas and metadata vocabulary for a comprehensive multimedia composite XML schema.

Work is in progress by some <indecs> partners and other relevant organisations to seek funding to move forward the work initiated under <indecs> on the Directory of Parties.

The Framework Organisation will continue to work alongside other complementary standards initiatives. It offers a permanent focal point to carry on the metadata and e-commerce work initiated under the <indecs> project.

7. <Indecs>/International DOI Foundation (IDF) Partnership

Discussions between the Framework organisation and IDF (International DOI Foundation) are underway with the view to examine ways in which the two complementary initiatives can work together.

There is also a proposal to form collaborative technical work groups with the International DOI Foundation (IDF) which would involve stakeholders to various aspects of technical work. The work groups are intended to provide interactive and collaborative forums for on-going technical work.

The proposed technical work groups are:

- Interchange
indecS-led and dealing with: indecs-xml etc
- Resolution
IDF-led and dealing with: Handle etc
- Identifiers and Metadata values
jointly dealing with: <indecS>terms, DOI genres etc

ANNEX A

Affiliate Organisations to the <indecs> Project

The following seventeen organisations formally affiliated with the <indecs> project.

- ALPSP (Association of Learned & Professional Society Publishers)
- APRA (Australasian Performing Rights Association)
- BBC (British Broadcasting Corporation)
- CISAC (International Confederation of Authors' and Composers' Societies)
- Content ID Forum (CIDf)
- Dentsu Communications
- FEP (Federation of European Publishers)
- IFLA UBCIM Programme (UBC/IM of the International Federation of Library Associations)
- IFRRO (International Federation of Reproduction Rights Organisations)
- IDF (International Digital Object Identifier Foundation)
- IPA (International Publishers Association)
- IPDA (International Performers Database Association)
- ISBN Agency
- ISSN (CIEPS) Agency
- STM (International Association of Scientific, Technical and Medical Publishers)
- RIAA (Recording Industry of America)
- U.S. Copyright Office