

**DSTC**

## The Indigenous Knowledge Management Project

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## Overview

- Project Goals
- Related Work
- Unique Requirements
- Solutions
- Prototype
- Applications
- Future Work

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## Indigenous Knowledge Management Project Goals

Developing IT tools to enable:

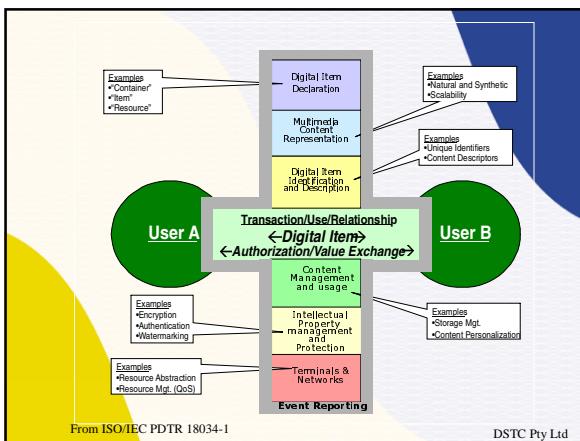
- Digital repatriation of indigenous knowledge;
- Traditional owners to define ownership, dissemination, access and copyright permissions;
- Support for customary laws and protocols;
- Enforcement of access and usage constraints;
- Protection against misappropriation;
- Proper attribution, compensation to traditional owners;
- Preservation of indigenous knowledge, cultures, history.

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## MPEG-21

- Multimedia Framework to enable transparent use of multimedia resources across a wide range of networks and devices
- Integration of standards for
  - content management
  - rights management
  - e-commerce
- Getting consumers to pay for multimedia delivery

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## MPEG-21 Results

- ISO/IEC 21000 (March 2001)
  - Part 1 : Vision, Technologies and Strategy
  - Part 2: Digital Item Declaration
  - Part 3 : Digital Item Identification and Description
  - Part 4: IPMP
  - Part 5: Rights Expression Language
  - Part 6: Rights Data Dictionary
  - Part 7: Digital Item Adaptation
  - .....

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## Example

- Video - “Stories from Dreamtime”
- Owner – Jagara Community Council
- Cost per homeview = \$5
- Pay to Account Id = 112234479

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## XrML Encoding

```

<WORK>
  <OBJECT type="video">
    <ID type="DOI">345.6789</ID>
    <NAME>Stories from Dreamtime</NAME>
  </OBJECT>
  <OWNER>
    <OBJECT type="Organisation">
      <NAME>Jagara Council</NAME>
      <ADDRESS>PO Box 2189, Brisbane, Qld 4101</ADDRESS>
      <PHONE>(617) 3844 5413</PHONE>
    </OBJECT>
  </OWNER>
  <RIGHTSGROUP name="HomeViewer">
    <RIGHTSLIST>
      <PLAY><FEE><MONETARY>
        <PERUSE value="5"><CURRENCY iso-code="AUD"/></PERUSE>
        <ACCOUNT> <ACCOUNTTO id="112234479"/> </ACCOUNT>
      </MONETARY></FEE></PLAY>
    </RIGHTSLIST>
  </RIGHTSGROUP>
</WORK>

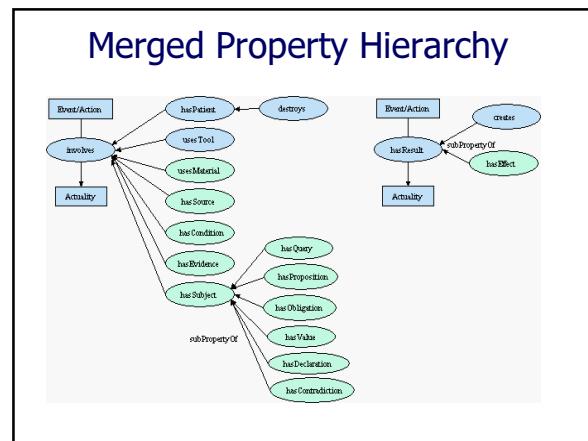
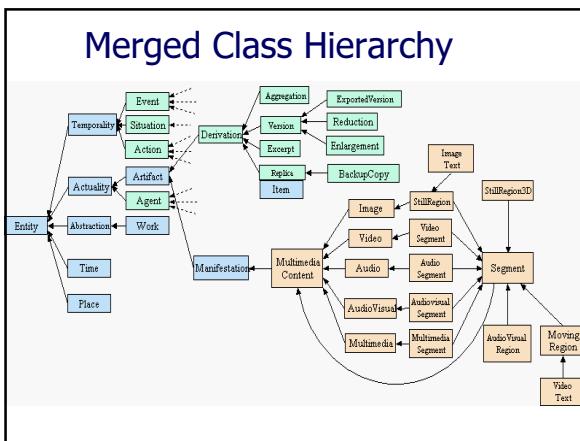
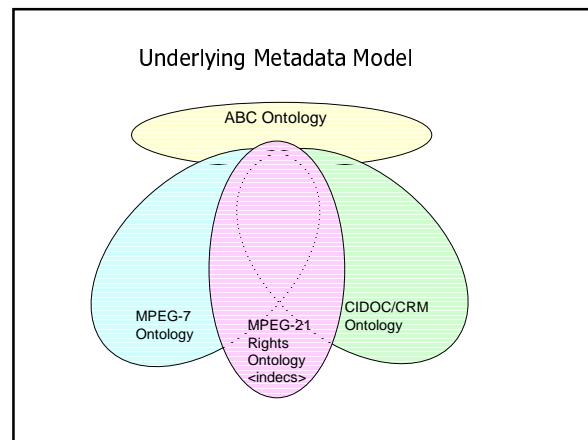
```

## Problems

MPEG-21, XrML:

- No underlying data model;
- Poor interoperability;
- Based on modern copyright laws;
- No support for customary laws;
- Patents.

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## Indigenous Knowledge

- Ownership and authorship – communal
- Originality – evolve over time
- Material form – oral or visual
- Duration – perpetuity
- Derivative works – allows exploitation
- Customary laws – not recognized

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## Customary Laws

- Highly variable
- How to translate to digital domain?
- Dynamic – social and environmental influences
- Laws themselves are secret
- Commonalities?

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## Access Restrictions

- Depend on the user's:
  - membership of a particular clan or tribe;
  - status within the tribe (uninitiated, initiate, elder);
  - role within the tribe (midwife, hunter, dancer);
  - gender;
  - relationship to people, animals, places or objects depicted in the resource.
- the death of people recorded in a resource;
- the context in which the resource will be reused or reproduced.

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## 'customary' constraint

```
<element name="customary">
  <complexType>
    <attribute name="test" type="string"/>
    <attribute name="request"
              type="string"/>
    <attribute name="warning"
              type="string"/>
  </complexType>
</element>
```

## Example test constraint 1

```
<permission>
  <copy>
    <constraint>
      <customary
        test="(user/tribalUnit@type=='clan')&&(user/tribalUnit/name=='Nunukal')"/>
    </constraint>
  </copy>
</permission>
```

## Example test constraint 2

```
<permission>
  <display>
    <constraint>
      <customary
        test="(user/status=='initiated')&&(user/gender=='male')"/>
    </constraint>
  </display>
</permission>
```

### Example test constraint 3

```
<permission>
  <display>
    <constraint>
      <customary
        test="((context/subject/person/deathDate != null) &&(currentDate <
        (context/subject/person/deathDate + 5))"
      />
    </constraint>
  </display>
</permission>
```

### Warning Constraint

```
<permission>
  <display>
    <constraint>
      <customary warning="Indigenous
viewers should be aware that the following
program may contain culturally sensitive
material - including images of people who
have
since died."/>
    </constraint>
  </display>
</permission>
```

### Request Constraint

```
<permission>
  <copy>
    <constraint>
      <customary request="Not to be
reproduced in a context which is
demeaning, offensive, or insulting to the
traditional owners."/>
    </constraint>
  </copy>
</permission>
```

### Application of constraints

- Collection
  - Group
    - Individual object
    - Part of an object
- Group of Users
  - Individual User

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### User profile

```
<xsd:element name="person">
  <xsd:complexType>
    <xsd:sequence>
      <xsd:element name="name" type="xsd:string"/>
      <xsd:element name="tribalName" type="xsd:string"/>
      <xsd:element name="tribalUnit" type="xsd:string"/>
      <xsd:element name="birthPlace" type="xsd:string"/>
      <xsd:element name="birthDate" type="xsd:string"/>
      <xsd:element name="deathDate" type="xsd:string"/>
      <xsd:element name="gender" type="xsd:string"/>
      <xsd:element name="status" type="xsd:string"/>
      <xsd:element name="role" type="xsd:string"/>
      <xsd:element name="mother" type="xsd:string"/>
      <xsd:element name="father" type="xsd:string"/>
      <xsd:element name="spouse" type="xsd:string"/>
    </xsd:sequence>
  </xsd:complexType>
</xsd:element>
```

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### Example: Dreamtime painting



Non-Aboriginal

Low-res image;  
Textual metadata

Aboriginal from different clan  
Low-res image;  
High-res image;  
Textual metadata;  
Audio file of  
dreamtime story

Aboriginal from same clan

Low-res image;  
High-res image;  
Textual metadata;  
Audio file of  
Dreamtime story;  
Video of artist

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**Indigenous Rights Management Project**

```

graph TD
    TO[Traditional Owners  
Owner Profile] --> DS[Trusted Server]
    DS --> DI[Digital Item]
    DI --> M[Metadata Policy Rules]
    M --> DI
    DI --> I[Images]
    DI --> T[Text]
    DI --> A[Audio]
    DI --> V[Video]
    I --> TI[Thumbnail weight=1a]
    T --> TT[Textual metadata & hyperlinks weight=2a]
    A --> RA[Realmedia Audio Story weight=2a]
    V --> RV[Realmedia Video of artist weight=4a]
    TI --> RU[Non-aboriginal User]
    TT --> RU
    RA --> RU
    RV --> RU
    RU --> DU[Deliver to User]
    RU --> AU[Aboriginal User]
    AU --> RU
    AU --> AAU[Aboriginal User from artist's clan]
    AAU --> DU
    AAU --> SP[SMIL presentation]
    SP --> DU
    SP --> SMIL[Generate SMIL synchronous cl and media presentation]
    SMIL --> DU
  
```

The diagram illustrates the Indigenous Rights Management Project architecture. It shows a Trusted Server managing Digital Items (Images, Text, Audio, Video) which are annotated with Metadata and Policy Rules. These items are then presented to Non-aboriginal and Aboriginal users, who can request digital items. The Aboriginal user also receives content from their artist's clan. The system then generates a SMIL presentation for delivery to the user.

**(B)Enter your metadata**

Resource\_ID: 200003  
Title: Child Dancer  
Creator: Sean Koopman  
Subject: Aboriginal Dance  
Description: A photograph of a Aboriginal child, in tradition attire, performing a tradition  
Publisher: DSTC  
Contributor: N/A  
Date\_Created: 12/01/01  
Date\_Updated: 12/05/01  
Type: Image  
Format: JPEG  
Identifier: http://www.dsc.edu.au:8088/bevan/resources/3.jpg  
Source: Australian National Museum  
Language: en  
Relation: N/A

**(B)Enter your metadata**

Gender: Unselected  
Role: Selected  
Tribal Unit: Status: Kinship: Ritual: Context: Group Access:  
 Unselected  
 Elder  
 Child

**Search Results - Netscape**

The following results matched your search for dance

Title	Type	Description	Link	SMIL
Dance Ethics Textbook	Text	This is a small extract from a textbook that gives a overview of aboriginal dance rituals	<a href="#">View Text</a>	<input type="checkbox"/>
Child Dancer	Image	A photograph of a Aboriginal child, in tradition attire, performing a tradition dance	<a href="#">View Image</a>	<input type="checkbox"/>
Dance Group	Image	A photograph of a traditional male dance group performing	<a href="#">View Image</a>	<input type="checkbox"/>

**Your Presentation - Netscape**

"dancer"

**Dance Rituals**

Aboriginal dance rituals usually go on for several days and are performed at various times throughout the year or legends. The Ilin spring festival of the Ami, for example, involves the annual rite of the "Pastai" dance, performed by three age groups. The three-day Pastai dance, held in the first month of the Oortsu, (April), held every other year in the tenth lunar month, is performed to celebrate the legendary race

**Automatic Presentation Generator**

The diagram shows the Automatic Presentation Generator. It starts with OAI archives (LoC, UIUC) which feed into a Semantic Inferencing process. This leads to an RDF model, which then feeds into an Interactive Search interface. The user interacts with this interface, which generates a SMIL presentation.

**Smithsonian Collaboration**

- National Museum of American Indian Cultural Resources Centre
- Interoperable Metadata Model for Multimedia in Museums
  - description, management, rights
- Indexing, Annotation, Search and Retrieval tools
- Video recording of rights agreements

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## Local Applications

- N.F.Nelson Report;
- Oodgeroo Nunukal Archives – Sacred Treaty Circles.

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## N.F.Nelson Report Record of Visit to Mission Stations 1936

Napranum, Mapoon, Aurukun  
and Momington Island Communities

## Oodgeroo Nunukal Archives



*"But I'll tell instead of brave and fine  
When lives of black and white entwine  
And men in brotherhood combine,  
This would I tell you, son of mine"*

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oodgeroo of the tribe noonuccal custodian of the land minjerribah

## TREATY

peace, prosperity &amp; healing sacred treaty circles

perhaps she will come again when the spirits of man and spirit of this land are once more together as one.

TREATY  
Elders  
Men  
Women  
Initiation

## References

- [http://archive.dstc.edu.au/IRM\\_project/](http://archive.dstc.edu.au/IRM_project/)
- <http://mpeg.telecomitalialab.com/>
- <http://metadata.net/harmony/>

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