Semantic Multimedia Management

- Multimedia Processes –

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Overview of Canonical Processes

- Premeditate
- Create
- Annotate
- Package
- Construct Message
- Organize
- Query
- Publish
- Distribute
Example: CeWe Color PhotoBook

Application for authoring digital photo books
Automatic selection, sorting and ordering of photos
  • Context analysis methods: timestamp, annotation, etc.
  • Content analysis methods: color histograms, edge detection, etc.
Customized layout and background
Print by the European leader photo finisher company

http://www.cewe-photobook.com
CeWe Color PhotoBook Processes

My winter ski holidays with my friends

Premeditate

Construct Message
CeWe Color PhotoBook Processes
CeWe Color PhotoBook Processes

Query

Organize

Automatic image selection
- Avoid similar images
- Avoid blurred and unsharp images
- Avoid low resolution images
- Favour images with bright colours
- Take personal rating (from Windows) into account

Backgrounds
- Automatic selection of backgrounds
- Use my images as background
- Use white backgrounds
- Use black backgrounds
- Use subtle backgrounds
- Use light backgrounds
- Use vivid backgrounds

Layouts
- Use largest images possible per page (show less background)
- Random distribution of images
- Tilted or overlapping images
- Panorama images
CeWe Color PhotoBook Processes

Publish

Distribute
Canonical Processes 101

Canonical: reduced to the simplest and most significant form possible without loss of generality

Formalization of each process in UML diagrams
- Process
- Process artifacts
- Process actors
- External world artifacts
Premeditate

Process where initial ideas about media production are established

- Design a photo book of my last holidays for my family
- Create argument-based sequences of videos of interviews after September 11
Create Media Asset

Process where media assets are captured, generated or transformed

Create Media Asset
  - <process actor> Creation Actor
  - <process artifact> Premeditate Artifacts (from Premeditate)
  - <process artifact> Message (from Construct Message)
  - <input> 1..*
  - <input> 1..*

Capturing
  - <process> Capturing
  - <involved> 1..*
  - <input>

Generation
  - <process> Generation
  - <involved> 1..*

Transforming
  - <process> Transforming
  - <involved> 1..*

<output> 1..*

Media Asset
  - <media asset> Media Asset
  - <involved> 1..*

Capture Device
  - <process actor> Capturing Device
  - <involved> 1..*

Generation Program
  - <process actor> Generation Program
  - <involved> 1..*

Editing Program
  - <process actor> Editing Program
  - <involved> 1..*
Annotate

Process where annotation is created
The annotation uses some controlled vocabularies

- *Subject matter annotations of your photos*
- *Rhetorical annotations in Vox Populi*
Process where process artifacts are logically and physically packed

- **Any Process Artifact**
  - Input given by a user

- **Package**
  - **Physical Package**
  - **Logical Package**

- **Multimedia Package**
  - Contains

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Process where a user retrieves a set of process artifacts based on a given query
Process where an author specifies the message they wish to convey

- *Our holiday was sporty, great weather and fun*
- *Create clash about whether war is a good thing*
Process where process artifacts are organized according to the message

- Organize a number of 2-page layouts in photobook
- Use semantic graph to select related video clips to form linear presentation of parts of argument structure

```
<<process artifact>>
Message
(from Construct Message)

<<input>>

0..1

<<process>>
Organize

<<output>>

<<composite artifact>>
Document Structure

contains

<<process artifact>>
Any Process Artifact

<<input>>

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Publish

Process where final content and user interface is created

- **Document Structure** (from Organize)
- **Media Asset for Publication**
- **Annotation for Publication**
- **Publish**
- **Published Document**
- **Publisher**
Process where final interaction between end-users and produced media occurs
Canonical Processes Possible Flow

- Premeditate
- Create
- Annotate
- Package
- Organize
- Construct Message
- Query
- Publish
- Distribute

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Community agreement, not “yet another model”
Large proportion of the functionality provided by multimedia applications can be described in terms of this model
Initial step towards the definition of open web-based data structures for describing and sharing semantically annotated media assets
Discussion

Frequently asked questions

- Complex processes
- Interaction
- Complex artifacts and annotations can be annotated

- Towards a more rigorous formalization of model
  - Relationship to foundational ontologies
  - Semantics of Annotations

Special Issue on Canonical Processes of Media Production

http://www.ifi.uio.no/MMSJ/upcomming.html
http://www.cwi.nl/~media/projects/canonical/

