MHEG – Multimedia and Hypermedia Expert Group

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Overview (1/2)

- Review (Hypertext, Multimedia, Hypermedia)
- Concepts
- Application
- Objective
- The family of MHEG Standards
Overview (2/2)

- Structure of MHEG
- MHEG-5
  - MHEG-5 Engine
  - The Components of MHEG-5
  - The Overview of MHEG-5 Classes
  - MHEG-5 Example
- Summary
- Reference
Review - Hypertext, Multimedia, Hypermedia

Hypertext
linked with static info

Multimedia
Time-dependent

Hypermedia
MHEG Concepts

What is MHEG?
- ISO/IEC 13522
- Coded representation of final-form MH information objects
- Interchanged across services and applications
  - Storage media, LAN, WAN, Broadcast Networks
Application of MHEG

- Growing all the time
  - CD-ROM based encyclopedias
  - Interactive books for learning
  - Video and News on Demanding
  - Interactive home shopping
  - Medical Application
MHEG Standard Objective (1/2)

- **Interchange**
  - Interchange facilities for various media types

- **Presentation**
  - Supports final-form presentation of multiple media types

- **Minimal Resource**
MHEG Standard Objective (2/2)

- Real-time
  - Real-time interchange and presentation of multimedia information
- Rapid Application Development
  - Provide high-level primitives
The family of MHEG Standard

- MHEG part 1-7

<table>
<thead>
<tr>
<th>Nickname</th>
<th>Complete Name</th>
<th>Status</th>
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<tbody>
<tr>
<td>MHEG-1</td>
<td>MHEG object representation—base notation (ASN.1)</td>
<td>International standard</td>
</tr>
<tr>
<td>MHEG-2</td>
<td>MHEG object representation—alternate notation (SGML)</td>
<td>Withdrawn</td>
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<tr>
<td>MHEG-3</td>
<td>MHEG script interchange representation</td>
<td>International standard</td>
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<tr>
<td>MHEG-4</td>
<td>MHEG registration procedure</td>
<td>International standard</td>
</tr>
<tr>
<td>MHEG-5</td>
<td>Support for base-level interactive applications</td>
<td>International standard</td>
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<tr>
<td>MHEG-6</td>
<td>Support for enhanced interactive applications</td>
<td>Draft international standard</td>
</tr>
<tr>
<td>MHEG-7</td>
<td>Interoperability and conformance testing for ISO/IEC 13522-5</td>
<td>Working draft</td>
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- MHEG-3 : Script extension to MHEG-1
- MHEG-4 : Registration procedure for identifiers used by the objects to identify a specific format for content data
The Structure of MHEG (1/3)

- MHEG Model (Operation Viewpoint)

Multimedia Data

Presentation Authoring S/W

Storage Media

Interactive Presentation

MHEG Object data

Multimedia data

MHEG Engine in Presentation System
The Structure of MHEG (2/3)

• MHEG Model (Engine Viewpoint)

Interchange

• MHEG objects are defined at the interchange point
The Structure of MHEG (3/3)

- MHEG model is Object-Oriented
  - Defines a number of Classes
    - Describe the way AV is displayed
    - Describe the way of user interaction
    - Describe the way of displaying control
  - The Properties of Class
    - attributes that make up an object’s structure
    - events that originate from an object
    - actions that target an object
MHEG-5

- MHEG-5 Engine
- The Components of MHEG-5
- The Overview of MHEG-5 Classes
MHEG-5 Engine

- Kernel of the client’s architecture
  - pure interpretation of MHEG objects
  - Issue I/O and data access requests to other components

- Performing 2 main tasks
  - Actual Presentation (UI)
  - Internal Operation
    - prepare presentation
    - manage MHEG-5 objects
The Components of MHEG-5 (1/2)

- Types of MHEG Classes
  - Structure of presentation and Grouping of objects Classes
    - Application class
    - Scene class
      - one scene can be active at one time
  - Content Classes
    - Each piece of multimedia data has its own MHEG objects
Types of MHEG Classes

- Behavior Classes
  - action class
    - events to be triggered sequentially or in parallel
  - link class
    - establish the relationship between events or objects

- User input Classes
  - push button
The Overview of MHEG-5 Classes (1/5)

- **Root (Base Class)**
  - Provide a uniform object identification mechanism
  - Notification of changes of an object’s running status
The Overview of MHEG-5 Classes (2/5)

- **Group**
  
  Grouping of objects in the Ingredient class as a unique entity of interchange

  - **Application**
    
    - The entry point that performs a transition to the presentation’s first scene
    - Made up of scenes and objects common to scenes

  - **Scene**
    
    - Contain a group of objects
    - One Scene can be active at one time
The Overview of MHEG-5 Classes (3/5)

- **Ingredient**
  - Common behavior for all objects that can be included in an Application or a Scene
  - Can contain either included content or a reference to an external data source
The Overview of MHEG-5 Classes (4/5)

- **Link**
  - Implements event-action behavior by a condition and an effect
  - Made up of event code, reference of object that triggers event, event parameter

- **Action**
  - Consist of a sequence of elementary actions

- **Presentable**
  - The common aspects for information that can be seen or heard by the user
Visible

- specialize the Presentable class with provisions for displaying objects
Summary

- MHEG-5 defines a final-form representation for application interchange
- Its objective is the following
  - Interchange
  - Presentation
  - Minimal Resource
  - Real-time
  - Rapid Application Development
Reference (1/2)

- Paper
  - "MHEG-5-aims, concepts, and implementation issues", M. Echiffre, C. Marchisio, P. Marchisio, P. Panicciari, S. Del Rossi, IEEE Multimedia, Vol.5 No.1, Page(s): 84-91
Additional Reference

- MHEG-5 Object Hierarchy
  - http://www.smartstudio.com/aboutMHEG.html