

DASE: Overview, Future Work and Challenges

Outline

- ▣ Specification Approach and Organization
- ▣ Layered Architecture
- ▣ Content Model
- ▣ Environment Model
- ▣ History, Schedule, Future Work
- ▣ Challenges

Specification Approach

- Adopt MPEG-2 Approach
 - Don't Specify Encoder
 - Do Specify Concrete Syntax and Protocols
 - Do Specify Constraints on Decoder Behavior
 - Don't Specify Decoder Implementation
- Not a Receiver Specification
 - A *content* and *system* specification such that authors/broadcasters can construct/emit content and receivers can implement system which conforms to behavior constraints.

Specification Organization

- Multiple Levels
 - Level delimits collection of functionality
 - Higher level systems support lower level content
 - Evolutionary development of specifications
- Multiple Parts
 - Enhances functional and specification modularity
 - Enhances opportunities for layering

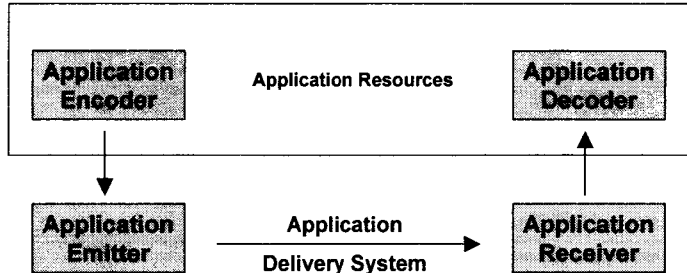
DASE Levels

- ▣ DASE-1
 - ▣ Local Interaction
- ▣ DASE-2
 - ▣ Remote Interaction
- ▣ DASE-3
 - ▣ General Web Interaction

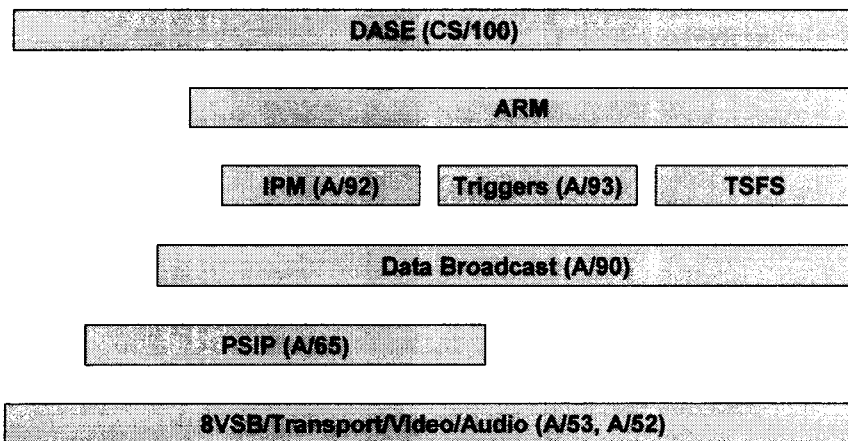
DASE Parts

- ▣ Part 1 – Introduction, Architecture and Common Facilities
- ▣ Part 2 – Declarative Applications and Environment
- ▣ Part 3 – Procedural Applications and Environment
- ▣ Part 4 – Application Programming Interface
- ▣ Part 5 – ZIP Archive Resource Format
- ▣ Part 6 – Security
- ▣ Part 7 – Application Delivery System – ARM Bindings
- ▣ Part 8 – Conformance

Layered Architecture



ATSC Delivery System Binding



DASE Multimedia Content

- ▣ Declarative Application (DA)
 - ▣ XHTML/CSS/DOM
- ▣ Procedural Application (PA)
 - ▣ JavaTV Xlet(s)
- ▣ Hybrid Application
 - ▣ DA with Embedded Xlet(s) (DASE-1)
 - ▣ PA with XHTML Browser Component (DASE-2)

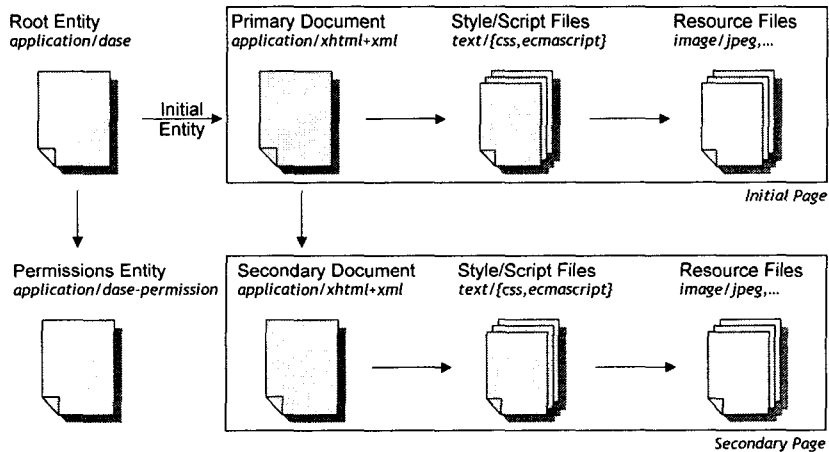
DASE Monomedia Content

- ▣ Graphics
 - ▣ JPEG, PNG, MNG
- ▣ Streaming Video/Audio
 - ▣ MPEG-2 Transport Stream
 - ▣ MPEG-2 Video ES, AC-3 Audio ES
- ▣ Non-Streaming Video/Audio
 - ▣ MPEG-2 Program Stream (DASE-2)
 - ▣ MPEG-2 Video ES, AC-3 Audio ES, Others Possible
 - ▣ audio/basic

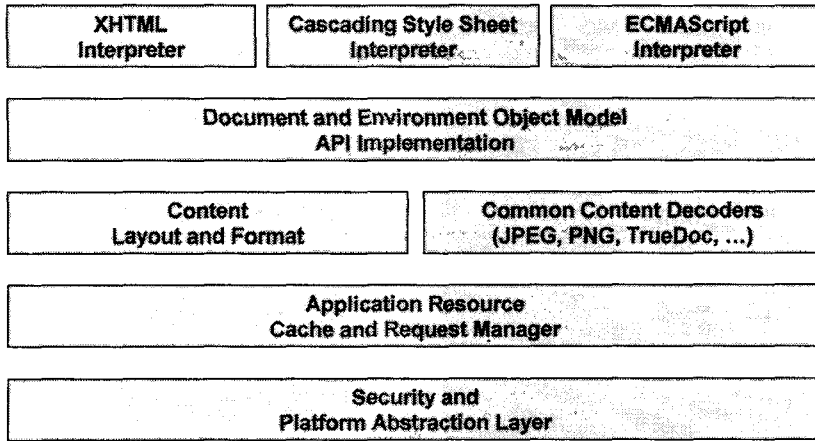
DASE Other Content

- Outline/Bitmap Font
 - TrueDoc (PFR)
- Triggers
- Archives
 - ZIP, JAR
- Security Metadata
 - Permission Requests
 - Digests, Signatures, Certificates (DASE-2)
- Application Metadata

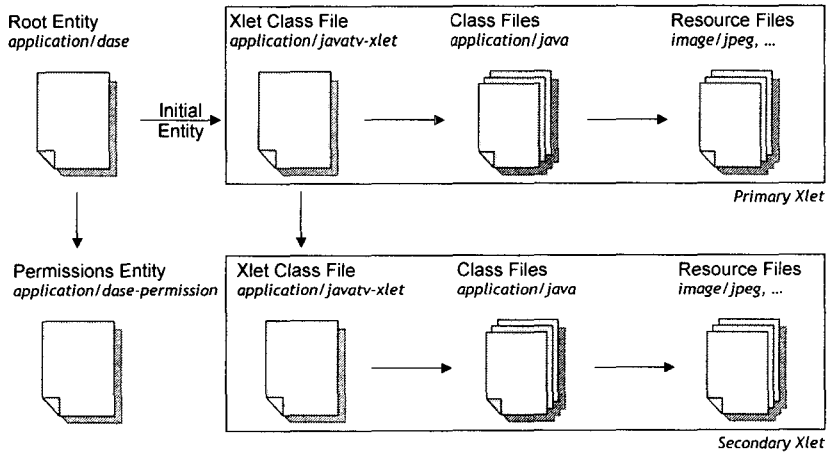
Declarative Application Structure



Declarative Application Environment



Procedural Application Structure



Procedural Application Environment

Java Byte Code
Interpreter or Compiler

Personal Java, JMF, JavaTV, HAVI UI, DAVID, W3C DOM, ATSC
API Implementation

Bulk-In JMF
Media Players and Data Sources

Common Content Decoders
(JPEG, PNG, TrueDoc, ...)

Application Resource
Cache and Request Manager

Security and
Platform Abstraction Layer

DASE History

- 11/97 T3/S16 DASE Adhoc
- 03/98 T3/S17 Chartered
- 02/01 1st T3 Ballot of DASE-1
- 08/01 2nd T3 Ballot of DASE-1
- 01/02 DASE-1 Candidate Standard
- 03/02 DASE-2 Requirements Finalized

DASE Schedule

- ▣ 09/02 DASE-1 Proposed Standard
- ▣ 01/03 DASE-1 Standard
- ▣ 01/03 DASE-2 Working Draft
- ▣ 06/03 DASE-2 Candidate Standard

DASE-2 Requirements

- ▣ Priority #1
 - ▣ Remote Interactivity
 - ▣ Enhanced Security
- ▣ Priority #2
 - ▣ Multiple, Persistent Applications
 - ▣ Persistent Plug-Ins, Resources
 - ▣ Synchronized Triggers
 - ▣ Non-Streaming Video/Audio
 - ▣ Declarative Content Component
 - ▣ Application Defined Security
- ▣ Priority #2 (cont)
 - ▣ Inter-Environment Comm.
 - ▣ Inter-Xlet/App Comm.
 - ▣ Cable Transport Bindings
- ▣ Priority #3
 - ▣ Declarative Graphics (SVG)
 - ▣ Declarative Synchrony (SMIL)
 - ▣ Audio Presentation Control
 - ▣ Printer Support

DASE-2 DAE Additions #1

- “javascript:” URI scheme
- “http:”, “https:”, “file:” URL schemes
- @viewport style rule
- W3C CSS TV profile support
- Active video format query and notifications
- Synchronized triggers

DASE-2 DAE Additions #2

- Inter-Environment Communications
 - Provide controlled access to specific procedural functionality
- Scalable Vector Graphics (SVG) Subset
 - `<object type="image/svg+xml" data="drawing.svg"/>`
 - `<html><head/><body><svg:svg>...</svg:svg></body></html>`
- Synchronized Multimedia (SMIL) Subset
 - `smil:par`, `smil:seq`, `smil:excl`, ... elements
 - `smil:begin`, `smil:end`, ... attributes

DASE-2 PAE Additions #1

- Additional Core Java Functionality
 - java.net.{Socket,URLConnection, HttpURLConnection, ...}
 - java.rmi.Remote (inter-xlet/application communication)
 - java.security (code signing group)
 - java.security.cert (X509 certificates)
 - javax.net.ssl.{SSLSocket, HttpsURLConnection}
 - javax.crypto (cipher input/output streams)
 - “http:”, “https:”, “file:” URL schemes

DASE-2 PAE Additions #2

- New Functionality Under Consideration
 - java.awt.Graphics2D
 - java.awt.color package
 - java.awt.image.BufferedImage
 - javax.sound.sampled package
 - org.atsc.ui.Browser extends org.havi.ui.HVisible

Challenges – Testing, Labeling

- DASE-1 Compliance Testing
 - Concluding IPR Agreement with Sun
 - Identifying Test Material Evaluation Group
 - Obtaining Test Material from Sun
 - Identifying License Custodian (ATSC?)
- DASE-1 Certification Process
 - Establishing Process and Administrator

Challenges – Harmonization

- OCAP/DASE Harmonization Activity
 - CableLabs invitation to discuss feasibility
 - Initial discussion in T3/S17 about possible goals
 - Initial meeting planned for late June
- ITU JRG-1
 - Identifying practical results beyond mere analysis

Challenges – Volunteerism

- DASE Standard Development
 - Volunteer Driven
 - Technical Proposals Needed
 - Technical Champions Needed
 - Web Page Manager Needed
- DASE Adoption
 - Existence Proof Is Persuasive
 - Implementations Needed for Trial Development

For More Information

- ATSC Web Site
 - <http://www.atsc.org>
- DASE Web Site
 - <http://www.dase.org>
- DASE Editors
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