

Wrappers and Metadata Progress Report

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Technology Inc (Original presentation
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Introduction

- ◆ EBU/SMPTE Task Force
- ◆ Metadata and Wrappers
- ◆ Creating new standards
 - new way of working
 - integration of existing practice
 - extension to new technologies

EBU/SMPTE Task Force Report

- ◆ Two year industry project
 - Focus on TV production facilities over the next decade and beyond
 - Looked at Compression, Networking, Metadata, File Formats (Wrappers) and Systems
- ◆ Final Report published Sept 1998
- ◆ Searched for technology which can be
 - Standardized but Extensible
 - Interoperable, Universally Applicable
- ◆ Most standardization projects are already under way

Metadata

- ◆ “the bits about the bits” (N Negroponte)
- ◆ One size may fit all applications
- ◆ But we need an Interoperability Architecture
- ◆ To cover everything we need to
 - Manage the media
 - vital parameters, names and locations
 - multiplex, heritage and composition info
 - Describe the media
 - keywords, feature extraction
 - origin and history

Wrappers

- ◆ “the things into which you stuff multiple media”
- ◆ One size does not fit all applications
- ◆ Instead, we need an Interoperability Architecture
- ◆ To cover the widest possible scope
 - both streaming and file-oriented use
 - simple and complex cases

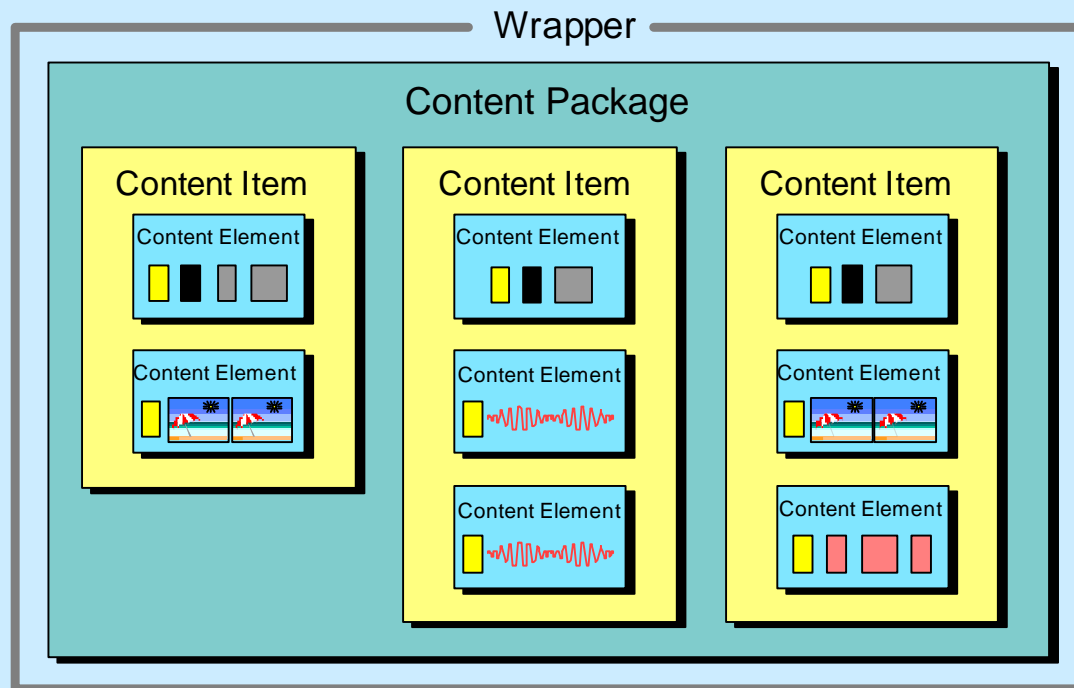
Interoperability Architecture

- ◆ Technology
 - Terminology and Data Model
 - Universal Labels
 - Registry of Metadata
 - Unique Material Identifier
- ◆ Operational Practices
 - Registry Procedures
 - Manufacturer Etiquette
 - Use of Templates

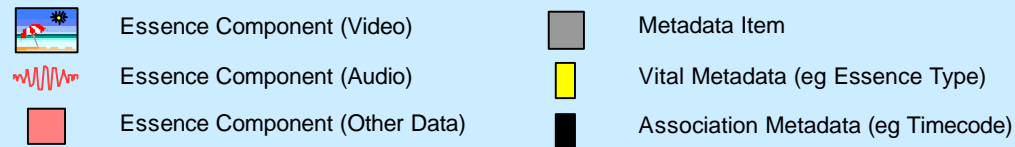
Terminology and Data Model

- ◆ Derived from DAVIC
 - Content Package
 - Content Item
 - Content Element
- ◆ Added
 - Content = Metadata + Essence
 - Essence Components
 - Metadata Items and Dictionary
- ◆ And lots more...

Logical Organization of Content



These are all Content Components:



◆ **Content = Metadata + Essence**

What Metadata Items?

- ◆ Unique Content Identifiers
- ◆ Signal parameters
- ◆ Description
- ◆ Program Multiplexing Information
- ◆ Metadata Collections
- ◆ Composition Information

Metadata Collections

Individual

Header 1	Label 1	Value 1
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Header 2	Label 2	Value 2
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Group

Header	Label	Tag x	Value x	Tag y	Value y	Tag p	Value p
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Packed

Header	Label	Value 1	Value 2	Value 3	Value 4
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SMPTE Registry

- ◆ A public lexicon of Metadata items
- ◆ To include precise definitions of meaning and usage
- ◆ To contain universal and domain-specific vocabulary
 - Registry of Standards
- ◆ To allow installation- or system-specific vocabulary
 - User Registry
- ◆ Registry Procedures being developed
- ◆ “Metadata Dictionary” standard now being balloted

Unique Content Identifiers

- ◆ Assigned when Material enters the System
 - Using a known algorithm to guarantee uniqueness
- ◆ Travels with the Material - Location Independent
- ◆ Vital for System Operation
 - Links the Catalogue to the Near-Line Server
 - Links the Browse Client to the Catalogue
 - Links the Near-Line Server to the Tape Archive
- ◆ Source Material, Transient Objects, Finished Program

Some Different Identifiers

Label	UMID	Ref	Instance	Core	Status
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Label	UMID	Ref	Instance
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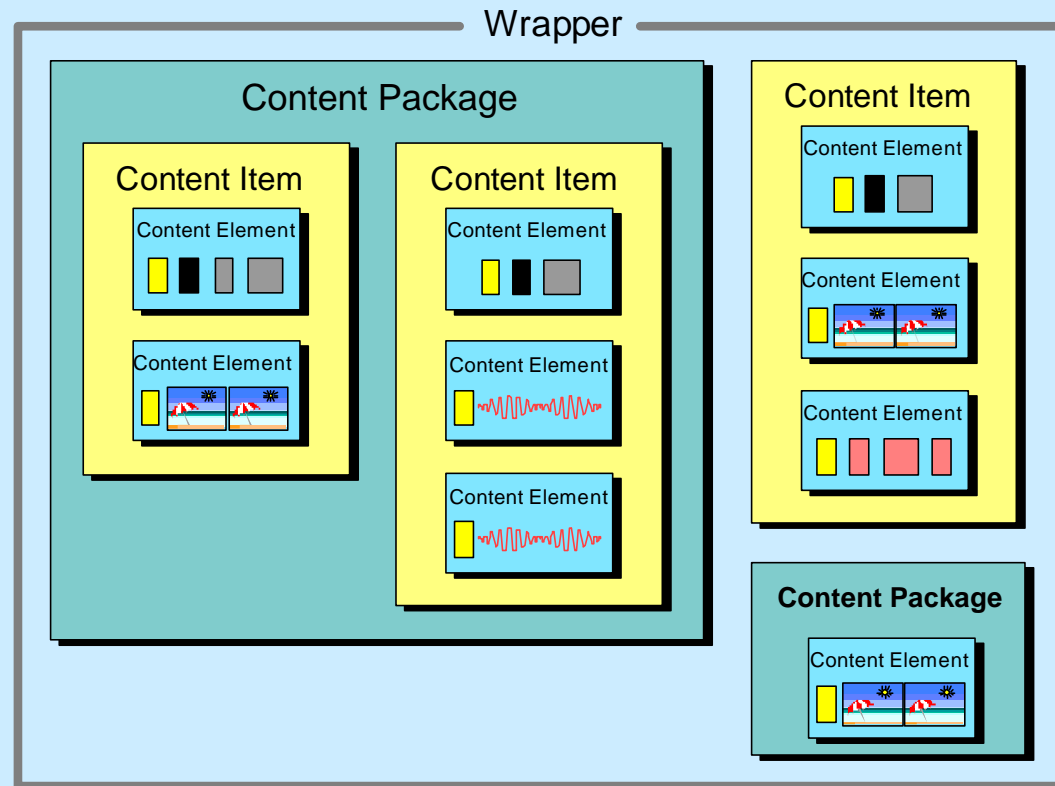
Label	ISAN	ISAN Value
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Label	UPID	UPID Value
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- ◆ Many different flavors in one category
 - more flavors can be added as needed
- ◆ Systems can work in generic and specific terms
 - “look for any Unique Content Identifier”
 - “what information does this identifier tell me?”

Simple Content Packages

- ◆ Familiar Essence
 - Video
 - Audio
- ◆ New types
 - Captioning
 - Enhancement
 - Virtual Studio
 - Script
- ◆ But structure is flat
- ◆ Easily described by templates



These are all Content Components:



Essence Component (Video)



Essence Component (Audio)



Essence Component (Other Data)



Metadata Item

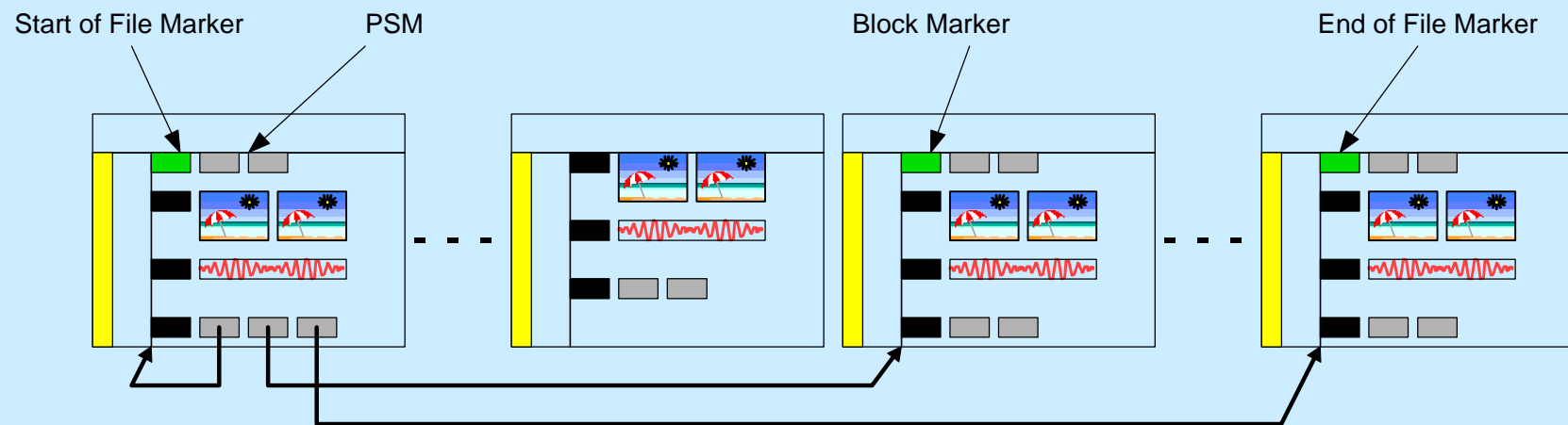


Vital Metadata (eg Essence Type)



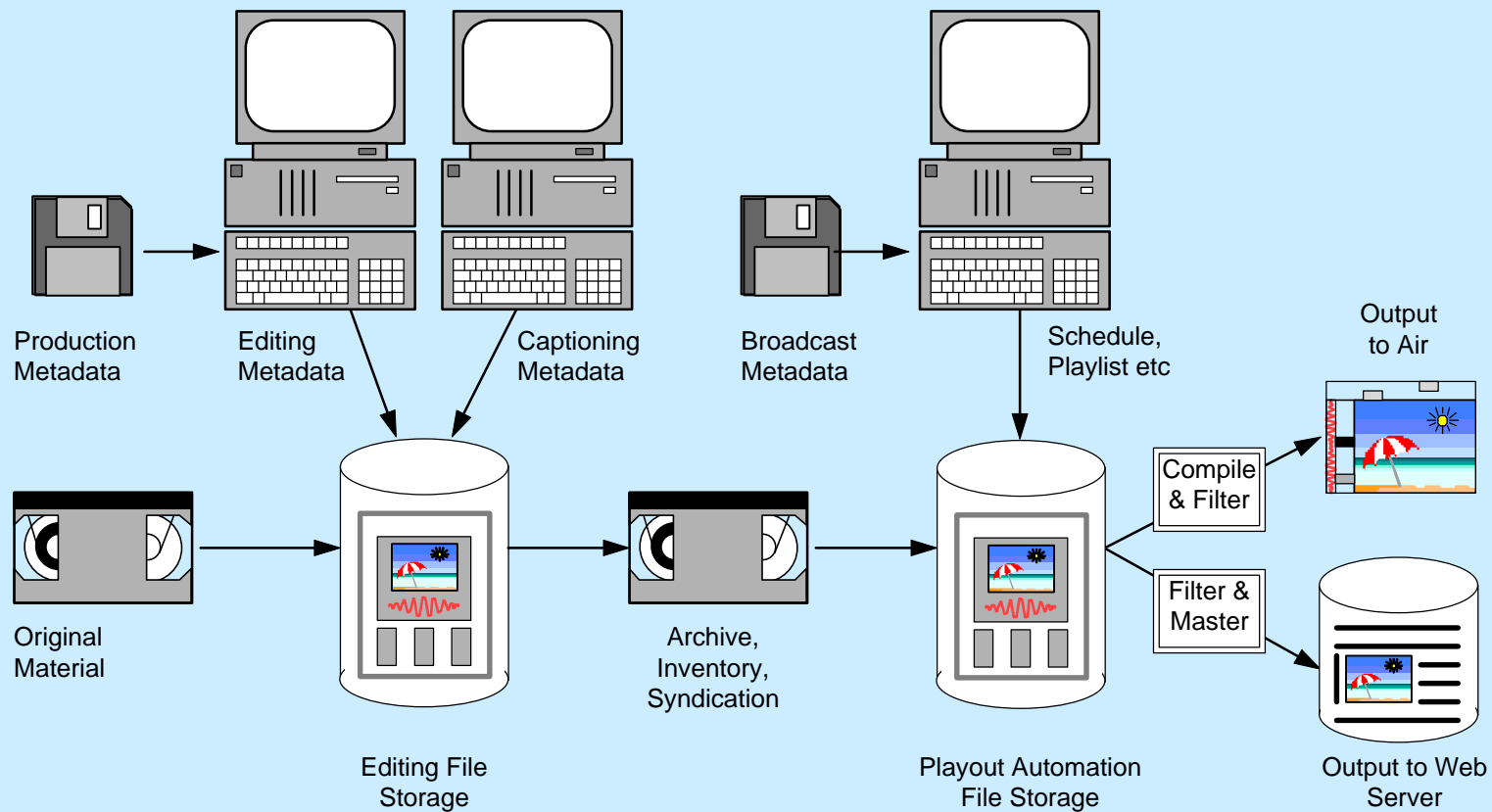
Association Metadata (eg Timecode)

A Stream Wrapper



- ◆ Collection of Metadata inserted in the Stream
- ◆ Start of File, End of File, Block Markers
- ◆ Markers include “Program Stream Map”

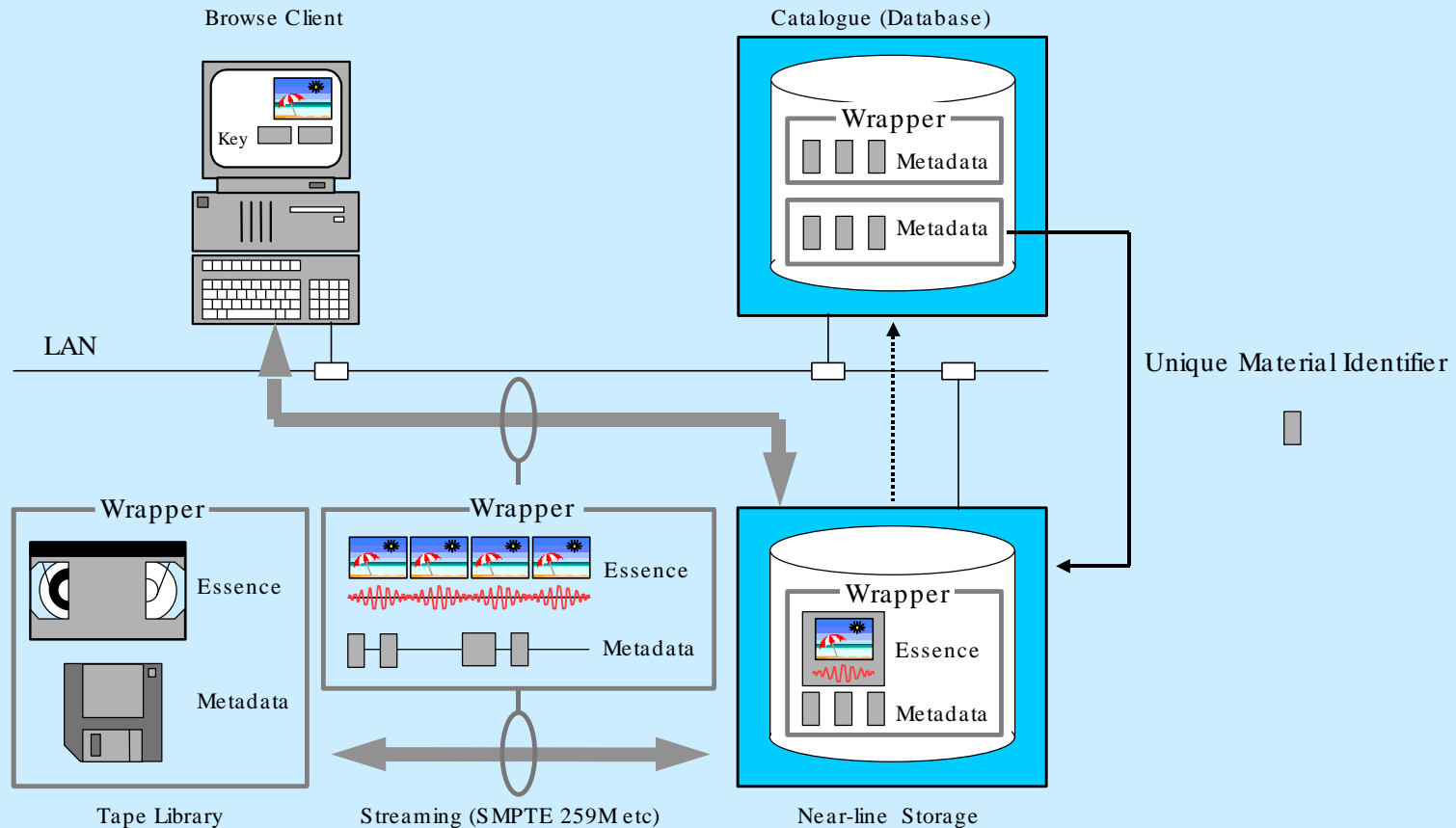
Wrappers in Systems



Templates

- ◆ Defined individually for specific applications
- ◆ Examples:
 - Field Acquisition, Backhaul Contribution
 - CM Distribution, News Package, Brand Identity
- ◆ A Template is a selection of Metadata Items from the Dictionary
- ◆ Plus Constraints
- ◆ This is Meta-Meta-Data
 - can be stored, managed and transmitted just like Metadata

Asset Management System View

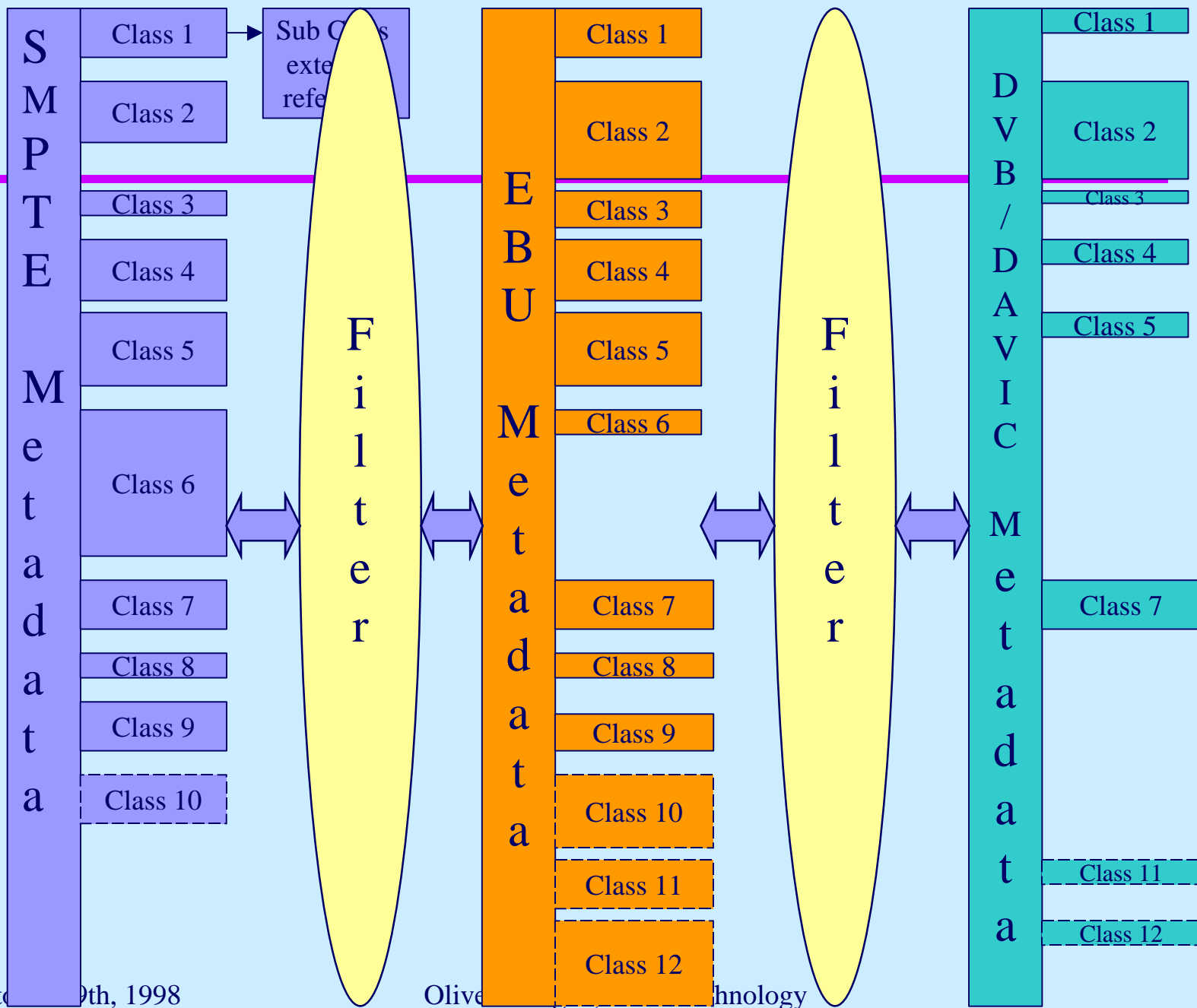


Mapping Current Practice

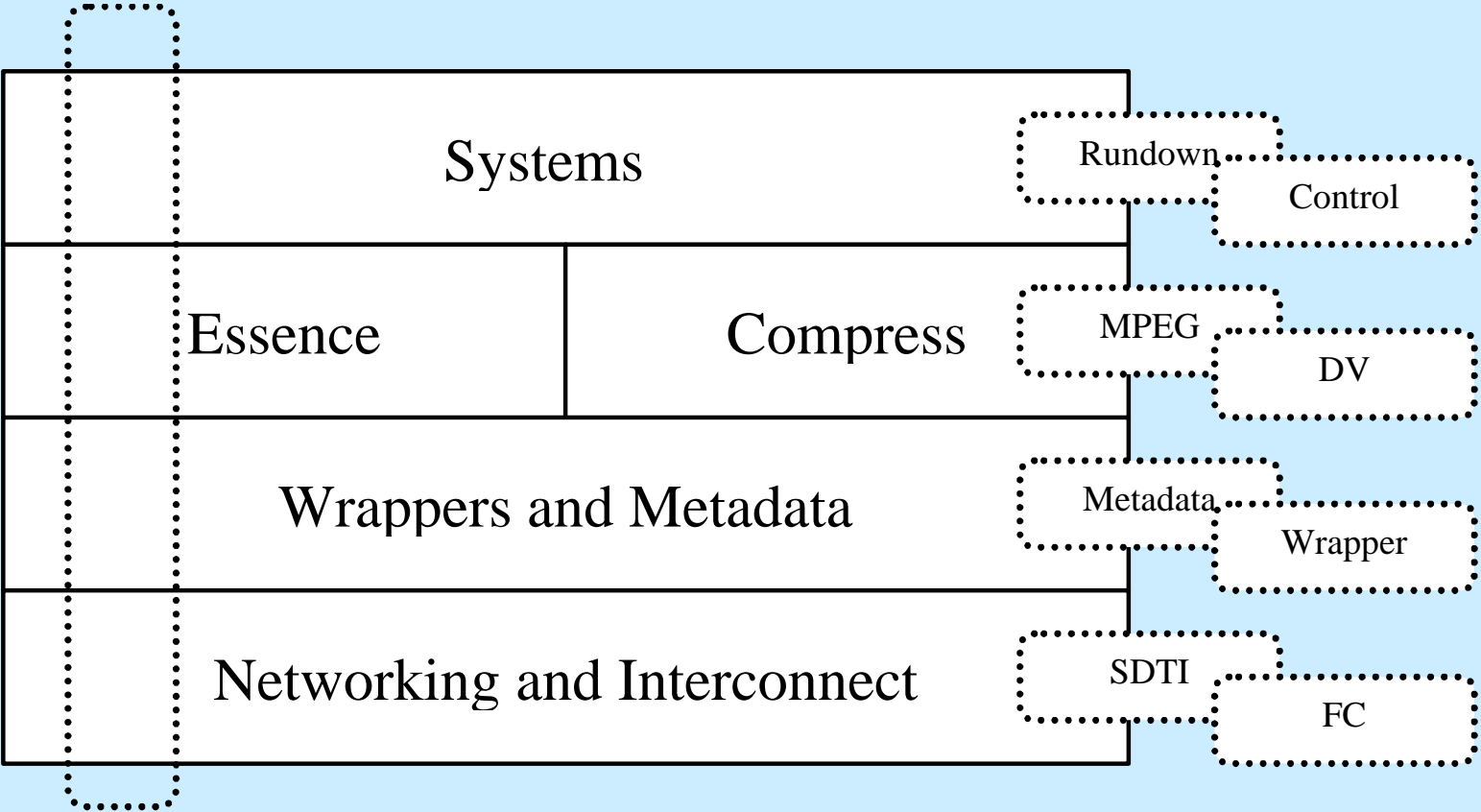
- ◆ To provide continuity in installations
- ◆ And allow migration in system architectures
- ◆ What Tasks?
 - Ensure that the new Data Model is truly complete
 - Capable of carrying a superset of all existing formats
 - Describe how each familiar item is converted to Metadata
 - Timecode, Edit Lists, Reel Numbers, Effects, Rundowns,...
 - Describe how today's signals are converted to Essence
 - Encoding, Packing, and Parametric Metadata specifications

Future-Proofing

- ◆ To allow innovation in technology and media
- ◆ And speedy integration into installations
- ◆ What tasks?
 - Describe new Essence and Metadata Formats using the new Data Model
 - Exploit the inherent extensibility of the Registry
 - Write “horizontal” standards, not “vertical”



Horizontal Standards



Old vertical style: eg 259M

New horizontal style

Conclusion

- ◆ Basic concepts are published
- ◆ SMPTE Technology Committees are reconfigured
- ◆ Standards writing to proceed quickly
- ◆ Many individual projects in place
 - Some quite close to completion
 - Others in early stages
- ◆ Waiting for implementations...soon?

Questions?

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