EBU Project Group P/META
Metadata Exchange Standards

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EBU project group, P/META, is defining and representing the information requirements for the exchange of programme content between the high-level business functions of EBU members: Production, Delivery / Broadcast and Archive. The product under development – the P/META Scheme – provides defined metadata to support the identification, description, discovery and use of essence in Business-to-Business (B2B) transactions. The metadata may either accompany the essence in streams or files, using a variety of standardized transports; or it may be transported independently of the essence, as metadata alone. The P/META Scheme itself is independent of the technology used and may be supported by any coding protocol / transport that assures its information integrity.

This article outlines the approach taken by the P/META project and identifies the deliverables.

1. Introduction

The EBU P/META project is a user group of EBU broadcasters, tasked with developing a data scheme for use between members to support the exchange of all media content types – images, sound, alphanumeric data.

The initial project proposal of November 1998 identified three workpackages with these outline tasks:

⇨ **WP1 – Metadata information standards for media exchange between business parties**
(Leaders: Laurent Boch, RAI; Marcel Mokveld, NAA)

  ✳ incorporate the requirements from members' data models;

  ✳ reference the SMPTE Metadata Dictionary;

  ✳ check against real transaction requirements.

⇨ **WP2 - Unique identifiers in broadcast use (as Attribute values in WP1)**
(Leader: Richard Hopper, BBC)

* build an understanding of issues and opportunities;

* collate members' experience of Unique Identifiers (UIDs) to date;

* define UIDs to support exchange across organizational domains.

⇨ **WP3 – Metadata and essence technical exchange formats and protocols between systems, including demonstrators**
(Leaders - Andreas Ebner, IRT; Richard Hopper, BBC)

* define embedded metadata Sets for radio and TV;

* identify/define coding and connectivity standards;

* define system reference model;

* create metadata demonstrators;

* formulate Internet metadata-exchange requirements.

The task in hand has developed considerably from this original plan. The original Terms of Reference are now due for revision to reflect the clarification of activities and the new issues which have emerged during the project's work.

Priority has been given to WP1 and WP2 as the input to WP3. Work on WP1 has revealed the need for other standard coded values as occurrences of certain Attributes; this is known variously as "reference data" or "enumerated values". The Busines-to Business (B2B) exchange requirement has put focus on the needs of the professional user community: Creator, Distributor, Archive. The needs of the fourth party in the value chain – the community of Consumer / Audience users – have not been dealt with, as others have been active in that domain: TV-Anytime in particular [1]. However, it is now hoped to develop a harmonized approach between TV-Anytime and P/META. This will be reflected in the revised Terms of Reference for the P/META project, and a revision of its target completion date.

The P/META Scheme will support the exchange of metadata – with or without content – initially B2B, based on agreed definitions of Attributes, Attribute Type values, Sets of Attributes, Sets of Sets, unique identifiers and protocols for practical exchange. The requirements of system-to-system exchange (S2S) will also be supported.

Once implemented, it is expected that the P/META Scheme will be managed in a structured way by the EBU.

The EBU's Production Technology Management Committee (PMC) endorsed the original proposal in November 1998.

The work draws on that already done by the EBU in the ESCORT 2.4 project [2] and is complementary to – and builds on – outputs from the SMPTE [3], prior work by EBU

members, and the data modelling insights provided by the BBC's Standard Media Exchange Framework, SMEF ™ [4].

This article outlines the approach taken by the project and identifies the deliverables. It sets the P/META Scheme in the architectural context of members' business; and it indicates progress to date. The P/META Scheme is expected to be available for B2B trial implementation by the end of October 2000 but the project group will not complete all its work until the end of December 2000. This work will then be presented to the EBU PMC for approval in January 2001.

Following its anticipated approval, the project's deliverables will be published openly.

2. History

The work of the P/META project has dual provenance: the EBU/SMPTE Task Force and the BBC's Media Data Project. The "Task Force" needs little explanation: it set a world-wide strategy for the media industry and placed metadata firmly on our agenda. The SMPTE's work on standardization to support metadata in systems is well under way, with the Metadata Dictionary and its associated KLV (Key Length Value) encoding standards now at the ratification stage.

Meanwhile the BBC had been mapping its media processes and supporting information flows in a parallel strand of development, culminating in the "Media Data Project" initiative, led by Carol Owens. This project is defining the information needed to give life-cycle support to programme production and delivery, from commission through to home consumption. In September 1998, at IBC, the Task Force delivered its final report [5], and the Media Data Project went public in a workshop, launching "SMEF ™" – the BBC's Standard Media Exchange Framework.

In November 1998, the EBU PMC approved the BBC proposal to establish a user group to define its information requirements, to support the exchange of programme material between EBU members, and to express that information in a way that would enable it to become an accessible standard.

These three initiatives – the work in the SMPTE, the BBC's SMEF ™ and the EBU's P/META Scheme – are complementary:

⇨ the SMPTE MDD provides, *inter alia*, a managed data dictionary – a coding protocol which supports system-to-system exchange, and engineering guidelines to support consistent implementation and use;

⇨ the BBC's SMEF™ data model will define a "corporate data model" which supports the organization's requirements for information to support its production and delivery business, with linkage to the content throughout the process;

⇨ the P/META Scheme provides a structured data scheme for business-to-business exchange of media, with complete information to support its use, including the ability to support rights. It also provides support for system-to-system metadata and for practical exchange standards.

This initiative to systematize the information requirements of broadcasters has its precedent. ESCORT 2.4 – the EBU System of Classification Of Radio and Television programmes – is an established EBU standard, approved in 1995. It identified and categorized common "reference data" to enable broadcasters and others to hold in common, the Attributes and their definitions by which to represent their business to the wider world. This initiative was in response to the perceived need for public service broadcasters to have more reliable, easily accessible and internationally-comparable data regarding all facets of their activities. ESCORT 2.4 remains in use today – and is an important source of derivation for the P/META Scheme (although it is recognized also that ESCORT 2.4 needs updating, and provision of forward support). Other sources of derivation for the P/META Scheme are:

⇨ the BBC "Open SMEF";

⇨ the IFTA minimum list;

⇨ the EBU P/FTA Content Management list

⇨ Dublin Core;

⇨ the information schemes for media asset management used in organizations participating in the P/META project.

This robust methodology of derivation and validation with the EBU business community gives substantial authority to the P/META Scheme.


3. Scope of the P/META project

The P/META project's planned architectural elements include a *business process model*, a *data dictionary*, the *systems and data architecture* determining the environment for exchange (including use of unique identifiers), the *transaction process model* with scenarios and examples of exchange use, and the *technical exchange standards* for the transfer of information – both embedded within essence and separate from essence.

We will now address these architectural elements in turn.

3.1. Business process model

The high-level business process model supported by the P/META project is shown in *Fig. 1*.
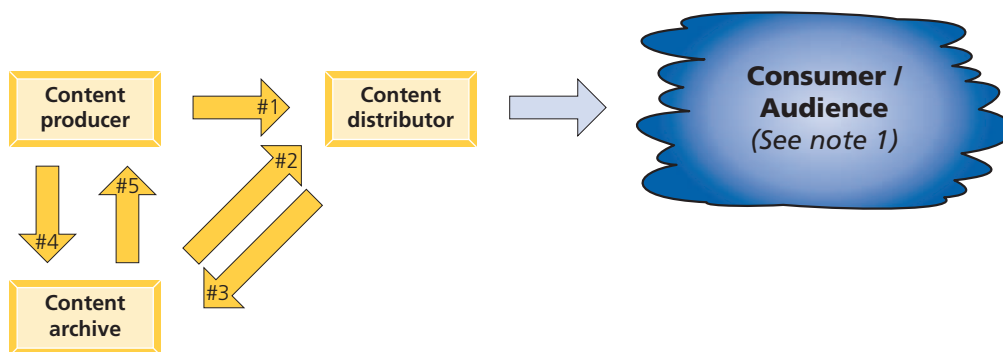
Note 1: The fourth entity – "Consumer" or "Audience" – is shown in the model for two reasons. Firstly, it completes the picture of metadata *value flow*. Secondly it shows that, without awareness of the metadata flow to the customer/audience, the P/META Scheme lacks the dynamic by which it will be refreshed and kept validated in its ability to service the Consumer / Audience community.

The P/META Scheme concentrates on the three entities of the professional community. The metadata required by the consumer user community is being defined elsewhere, notably in the TV-Anytime Forum [1].

In this context the relationship between the P/META Scheme and the metadata requirements to satisfy the TV-Anytime concept is particularly important. Harmonization of the information requirements between the two user communities will be particularly valuable for this reason alone. A closer liaison between these two representative groups is being developed.

Figure 1
P/META Scheme: business process model.

These three trading entities were identified as those which currently trade professionally in content; they are defined as follows:

⇨ The **Content Producer** is the business function responsible for the creation of a complete programme. The function includes both acquisition of essence, and the subsequent editing processes. The point of handover is delivery to the Content Distributor.

The Producer may either be a separate company or part of a larger organization, typically a vertically-integrated national broadcaster. A programme may be either commissioned within a legal or pseudo-legal contract, or may be created on a speculative basis and sold to any interested party. (The transaction to support commissioning of content is within the scope of the P/META project, although the Attribute Set to support this transaction is not being separately tested in a scenario.)

⇨ The **Content Distributor** is the business function responsible for the aggregation and delivery of programmes to the domestic consumer. The point of handover is: delivery of programmes compiled into a linear schedule for broadcast emission; delivery by other means such as on-demand publication from a catalogue, or delivery by web publication.

The Distributor may either be a separate company or part of a larger organization, typically a vertically-integrated national broadcaster. The Distributor may either commission content within a legal or pseudo-legal contract, or may procure content from speculative offers by any party.

⇨ The **Content Archive** is the business function responsible for storage, retrieval, access management, and preservation of content. The points of handover are the receipt of content into storage and the delivery of content from storage.

The Archive may either be a separate company (such as INA – the National Archive Institute of France, and NAA – Netherlands Audiovisual Archive) or part of a larger organization such as a vertically-integrated national broadcaster. Content may range from single visual images to complete programme collections of all media types.

The transactions marked on the model indicate the trading paths for which metadata Sets are being developed in the P/META Scheme. The following definitions of the content of these transactions have been used:

⇨ **#1 Producer to Distributor**

Complete programme content, comprising, for example: audio, video, subtitles, audio description, script, cast list, billing, promotional stills, etc.

⇨ **#2 Archive to Distributor**

Complete programmes – typically, repeated programmes; extracts for promotional purposes.

⇨ **#3 Distributor to Archive**

All output – for legal storage; transmitted programmes, for example, pre-recorded, or live at transmission.

⇨ **#4 Producer to Archive**

Un-transmitted clips; "stock shots"; un-transmitted programmes.

⇨ **#5 Archive to Producer**

In response to "discovery" transactions, any selected content will be transacted: from stills to complete programmes, as content for re-versioning and re-purposing.

The P/META project set out to identify particularly the information required to support the B2B transactions. In the interests of satisfying intra-organizational transactions also, the B2B Attribute Set is being extended to support specific S2S transactions also.

3.1.1.   B2B and S2S transactions

The P/META Scheme supports the above content transactions at a business-to-business level.

B2B transactions require information which:

⇨   identifies the material;

⇨   provides editorial and descriptive information about the material;

⇨   identifies the right to use the material;

⇨   identifies the format of the material, ensuring that the receiver will be able to use it properly.

A further level of detail in transactions will be developed to support two distinct areas of system-to-system exchange:

⇨   within the Content Producer entity, the interface between the Acquisition and Editing processes has particular significance at the process stage at which the "the Acquisition Set" comes together: (i) metadata which is inherited into Acquisition by the Commission process; (ii) metadata which is created automatically by the capture device; and (iii) metadata which is manually created during the acquisition process, for example by shot annotation;

⇨   extension of the Sets for B2B transactions to support a range of Attributes for *intra-process* exchange between organizations that have reached a system-to-system level of integration.

3.2.   Data scheme

The P/META Scheme describes a collection of Attributes. It suggests Sets of Attributes for exchange. Their grouping is for convenience to the sending and receiving parties, and the rules for grouping applied in processing them.

Appendices A and *B* list Attribute and Set Naming, Syntax and Notation and Set Names.

The P/META Scheme comprises the document Set listed here:

⇨   **Attribute Definition Table** – the dictionary of agreed Attributes and their definitions required to support the exchange of content.

⇨   **Attribute Value Table** – the specific values that may allowably be held by certain Attributes and the definition of those specific values. Where an Attribute is subject to controlled values, those values are listed and defined in the Attribute Value Table. These controlled values are often known also as "reference data" or "enumerated values".

⇨ **Set Definitions** – the collection of definitions of commonly-required Sets of Attributes. Sets may include Attributes and other Sets in order to give human intelligibility to the complex collections of Attributes required to support business transactions; i.e. some Sets are logical groupings of information; others are structured to encapsulate business requirements.

⇨ **Scenarios and Examples** – by which the quality of support provided by the P/META Scheme for business transactions is being tested and thereby validated.

Each of the constituent documents is considered in the following sections, with representative extracts from the source documents in their current "work in progress" state of development.

3.2.1. Attribute Definition Table

This is the list of agreed Attributes required to support the exchange of content and their definitions; currently it includes 213 discrete Attributes. In the *Table* below, the field names are shown in the first column; two example Attributes are also shown:

Attribute Definition Table field name	Examples of Attributes	
P/META Attribute ID	A30.1	A12.3
P/META Attribute Name	CONTRACT_DATE	LANGUAGE_CODE
P/META Attribute Definition	The date upon which a contract is made.	Internationally-agreed code for a specific language
External (non-P/Meta) Definition Reference	Format defined by SMPTE	ISO 639 (version 1 – two letter codes)
Known aliases		
Value Type	Formatted code	Controlled code
Example Attribute controlled values	2000:09:01	EN; HA; GD; FR
	(Each controlled value is supported by a Definition which is not shown here)	

3.2.2. Attribute Value Table

The table of values for Attributes whose Value Type is "controlled code".

For example, the P/META Attribute "MATERIAL_CONTENT_CODE" – more recognizable by its alias "Genre" – includes the list from Section 3 of EBU ESCORT 2.4.

While this may have some known shortcomings, it represents a defined starting point. The structure of the P/META Scheme allows easy addition of further agreed Attribute Value definitions.

3.2.3. Attribute Set Definitions

The logical grouping of Attributes required to create Sets.

Appendix A defines:

1) for EBU P/META Attributes – the naming convention used and the ID notation.

2) for EBU P/META Sets – the syntax used to define their composition and the ID notation.

The Set Names (at the current state of development) are listed in *Appendix B*.

Here is an example Attribute Set Definition for "Contract Details":

3.2.4. Set: "Contract Details"

The syntax and notation used to express Sets are represented in this example for Contract Details "S28":

> [S28:|LANGUAGE_NAME|LANGUAGE_CODE|:CONTRACT_NUMBER:CONTRACT_DATE:|S14|S12|:S29:|S14|S12|:S29:CONTRACT_TERMS_OF_BUSINESS_DESCRIPION:{CONTRACT_CLAUSE_DESCRIPTION}:{S27}:EVENT_END_DATE:S24:S12:S12:S25]

(Please refer to *Appendix A* for the explanation of the syntax and notation used.)

This particular Set communicates all the details of a contract/agreement between two parties for the use/exploitation of one or more media assets.

The first occurrence of |S14|S12| identifies the organization/person issuing the contract (and supplying the material): the second, the licensee and, in the case of licensee organizations, the primary contact.

The first occurrence of S29 identifies the material being licensed, the fees payable (for the sum of material being licensed or for individual components where applicable), and any agreed fee instalments (where applicable). The second use of S29, where used, communicates the licensee's programme, series, item, etc. for which the material exchanged is being licensed. The use of the repeating CONTRACT_ CLAUSE_DESCRIPTION Attribute is, for example: to allow the communication of

clauses in addition to the standard terms and conditions; to state additional information about the fees payable (for example, that the fee payable is per minute used).

The repeating S27 describes the rights granted in the material being exchanged and any conditions pertaining to the rights.

EVENT_END_DATE, where communicated, specifies the date by which the licensee must report usage (including amount where necessary) of the material back to the licensor.

The pair of S12 Sets is to communicate the signatories to the contract – the first Set identifies the signatory for the party issuing the contract (supplying the material), the second Set identifies the signatory for the licensee.

Set definitions are being validated by the "use case" scenarios and examples derived from current and planned discovery and exchange of content between trading entities.

3.2.5. "Use case" scenarios and examples

In order to test the Transaction Set Definitions, a number of scenarios have been presented by project team members: to date these include exchange of content (essence plus metadata):

⇨ complete items via links, within the Producer trading entity;

⇨ complete items via tapes, within a Producer trading entity;

⇨ complete programme from Producer to Distributor;

⇨ music details report from Producer to Distributor;

⇨ untransmitted clips from Producer to Archive;

⇨ transmitted programme from Distributor to Archive (for various types of programme genre);

⇨ search and select content from Archive to Producer;

⇨ sale of clips and complete programme from Archive to Distributor.

This methodology is time-consuming, but is essential to provide a robust, business-based platform for the P/META Scheme.

3.3. Systems and Data Architecture

The P/META Scheme is independent of technology, but can be applied within a systems and data environment which contains defined domains of trading entities and defined

unique identifiers. Unique Identifiers enable unambiguous exchange of content and metadata within the domain of uniqueness of the specific unique identifiers employed in the defined exchange Set.

3.3.1.   Exchange between domains

The systems context assumed by the P/META project may be represented in its simplest form in this way: the P/META Scheme supports exchange transactions between the domains of two organizations, A and B. See *Fig. 2*.
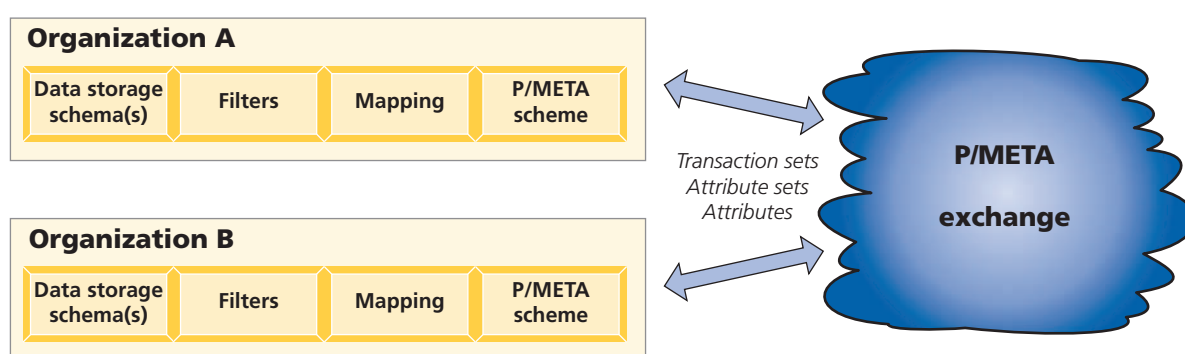

Figure 2
P/META Scheme: Systems & Data context.

In each of the trading organizations, one or more organizationally-specific data storage schemas are interfaced to the P/META Scheme by filters and mapping. The filters are invoked by the particular transaction dialogue in place; the mapping(s) are required to translate the organization-specific data storage schema(s) to the P/META Scheme.

For the exchange, pure P/META Scheme definitions apply: transaction Sets are used to exchange content (metadata and essence) between organizations A and B. Each defined transaction Set is comprised of defined Attribute Sets, each of which in turn is comprised of defined P/META Scheme Attributes.

Each transaction type in a session invokes the appropriate transaction Sets, supporting the required transaction of content.

This approach brings substantial benefits of scalability: because we have defined the *lingua franca* for metadata in support of the exchange of content, no matter how many systems come on-line, there will be assured transfer of defined meaning in support of that exchange.

3.3.2. Unique Identifiers

a) for Editorial entities

A survey of members' usage of unique identifiers, together with a workshop meeting, showed the requirement for a unique identifier for Editorial entities (the intellectual concepts independent of the material on which they are recorded) that meets the following requirements:

⇨ globally unique values;

⇨ member organizations can manage registration of the instances of these identifiers;

⇨ support for version and language.

In practice, it is expected that three identifiers for Editorial entities may be required. These identifiers are: (i) the ISO ISAN; (ii) the SMPTE UPID; (iii) an EBU-specific design (not yet developed).

No decision has yet been taken within P/META on which of these types of unique identifier for Editorial entities might be recommended as being preferred for use in exchange between members. Current developments in the harmonization of the ISAN and UPID are of particular interest.

b) for Material

The SMPTE UMID (SMPTE Standard 330M-2000) is preferred for the unique identifier for material in the P/META Scheme.

3.4. *Technical Exchange Standards*

Although the P/META Scheme is "technology agnostic", the P/META project includes a workpackage covering technical exchange of metadata. Technical exchange standards are being identified from international contenders and configured (where necessary) to support the physical transport of metadata within the P/META Scheme.

Transport of metadata in support of exchange of content will happen in a number of ways: "on the wire"; embedded in media streams, and encapsulated in files. We will now consider each of these in turn:

3.4.1. "on the wire"

"On the wire" exchange covers data transfer across data networks. Protocols include KLV, XML and other standard data exchange protocols.

3.4.2. Embedded in streams

Metadata will be embedded in an existing range of media transport streams including SDI (ITU-R BT. Rec. 656 [6]), AES and MPEG-2 – for all of which the embedding standards will be available.

3.4.3. Encapsulated within files

Metadata will be exchanged within file headers, typically within:

⇨ the EBU Broadcast Wave File (BWF) – ratified and in use;

⇨ the Media Exchange Format (MXF) – standardization work in progress;

⇨ the Advanced Authoring Format (AAF) – standardization work in progress.

4. Relationship to other standards initiatives

Fig. 3 summarizes the place of the P/META Scheme among related standards and standards-making activities:

The purpose of the P/META Scheme is to support the exchange of content between professional trading entities as defined earlier. It should not be confused with schemes designed to model storage requirements – such as SMEF and MPEG-7, although its Attributes must map to theirs.

The P/META Scheme is also distinct from both coding and transport, although any application of the P/META Scheme must use a coding protocol that best suits the particular system interface requirements.

The P/META Scheme is agnostic about data coding, provided the chosen coding supports the Set syntax (which is virtually identical to that developed by the SMPTE). The P/META Scheme supports KLV, XML and other data coding schemes.

Similarly, the P/META Scheme is agnostic about transport. It supports direct transport over data networks using KLV, XML or other established coding protocols. It supports file-based protocols such as AAF and MXF; and it supports embedding in media transport, for example using KLV with the various industry standards in development such as
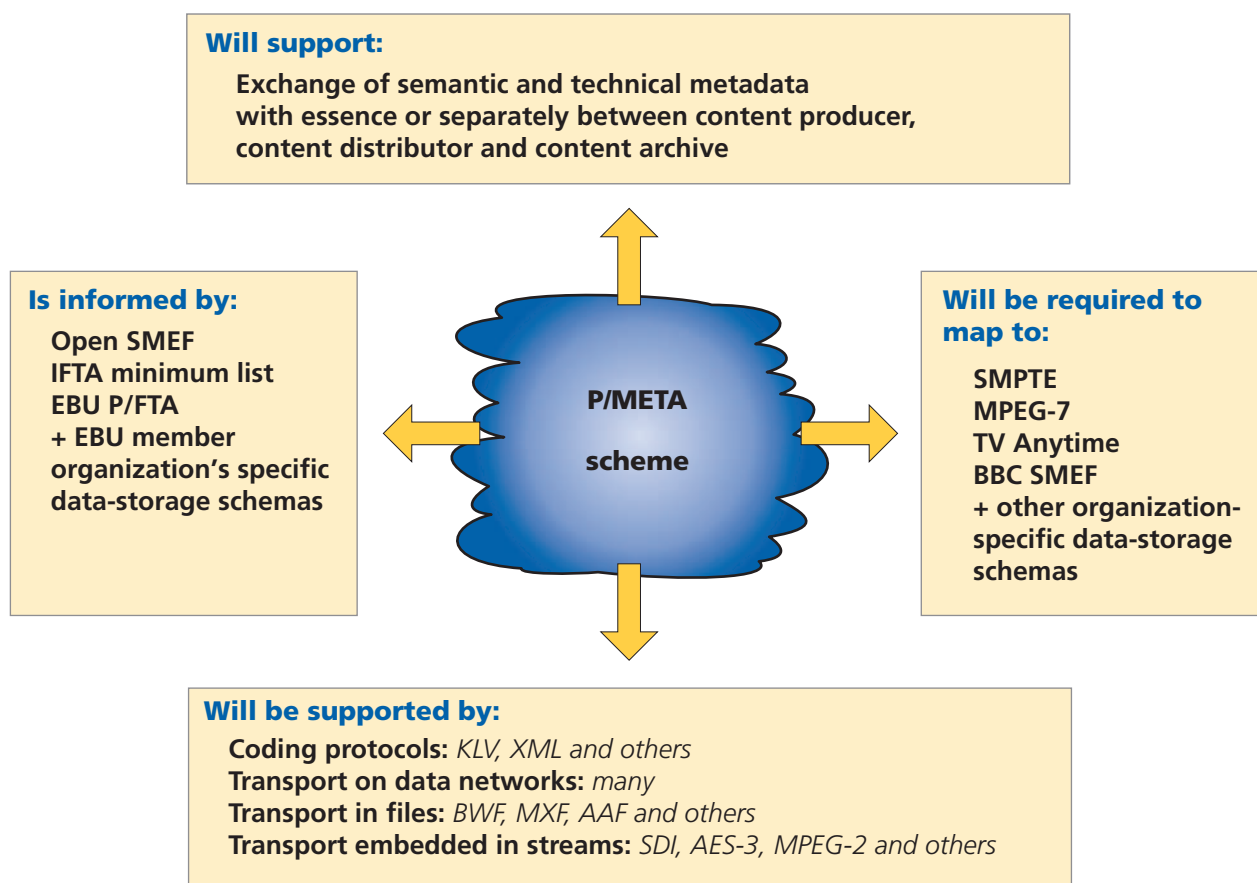
Will support:

Exchange of semantic and technical metadata
with essence or separately between content producer,
content distributor and content archive

Is informed by:

Open SMEF
IFTA minimum list
EBU P/FTA
+ EBU member
organization's specific
data-storage schemas

P/META

scheme

Will be required to map to:

SMPTE
MPEG-7
TV Anytime
BBC SMEF
+ other organization-
specific data-storage
schemas

Will be supported by:

Coding protocols: *KLV, XML and others*
Transport on data networks: *many*
Transport in files: *BWF, MXF, AAF and others*
Transport embedded in streams: *SDI, AES-3, MPEG-2 and others*

Figure 3
Relationship between P/META Scheme and other standards & schemes.

AAF and MXF, and SMPTE standards for embedding in SDI, AES and MPEG-2, and others.

There would be clear merit in a defined mapping relationship between the P/META Scheme and TV-Anytime, in order to better satisfy exchange transactions with the fourth trading entity in *Fig. 1*. In similar vein, there would be merit also in the choice of a specific coding protocol for the interface between the professional domain and the consumer domain – between the P/META Scheme and TV-Anytime metadata.

The focus of international harmonization between international standards for metadata is in the MPEG-7 Integration AHG.

5. Progress

The P/META Scheme for metadata to support the exchange of media between the domains of Production, Delivery and Archives is at an advanced draft stage. Consultation documents are now being made available for review comment by parties external to the project group.

The work remaining to be done includes:

⇨ Completion of the definitions of Sets. These Sets also include Sets, assembled to support the scenarios and examples of usage.

⇨ Validation of Sets for business-to-business exchange by members in scenarios and examples of usage. (This process also validates the contents of the source Attribute Definition Table).

⇨ Definition of "System-to-System" Sets based on the same Attribute Definition Table, Sets of metadata are being designed to satisfy the requirements of exchange between technical processes. These Sets will be validated in an identical validation process by first defining scenarios and examples of usage and then testing the Sets in real examples of use.

⇨ Agreement on preferred type of Unique ID for Editorial entities, and the associated registration arrangements.

⇨ Mapping of the final P/META Scheme into the SMPTE metadata dictionary, and submitting any P/META Attributes with their definitions not covered by the SMPTE metadata dictionary.

⇨ Development of practical connectivity between organizations, based on agreed coding protocols and transports.

⇨ Establishing on-going management and support for the P/META Scheme.

Abbreviations

AAF	Advanced authoring format	**MXF**	Media exchange format
AES	Audio Engineering Society	**NAA**	Netherlands Audiovisual Archive
AHG	Ad hoc group	**PMC**	(EBU) Production Technology Management Committee
B2B	Business-to-business		
BWF	(EBU) Broadcast Wave Format	**RAI**	*Radiotelevisione Italiana*
IFTA	International Federation of Television Archives (FIAT in French)	**S2S**	System-to-system
		SDI	Serial digital interface
INA	*Institut National de l'Audiovisuel* (France)	**SMEF**	(BBC) Standard Media Exchange Format
ISAN	(ISO) International Standard Audiovisual Number	**SMPTE**	Society of Motion Picture and Television Engineers (USA)
ISO	International Organization for Standardization	**UID**	Unique identifier
		UMID	(SMPTE) Unique Material Identifier
KLV	(SMPTE) Key Length Value	**UPID**	(SMPTE) Unique Programme Identifier
MDD	(SMPTE) Managed Data Dictionary		
MPEG	Moving Picture Experts Group	**XML**	Extensible markup language

5.1. Work identified as out of scope

The following work has been identified during the project, but is out of scope:

⇨ Development of representation of Rights and their systematized management through metadata beyond the minimum level of Attributes required to support encapsulation of rights in a contract.

⇨ Translation of the P/META Scheme into XML. Although not included in the scope of the P/META project, this work will clearly facilitate the uptake and roll-out of the P/META Scheme and individual members are active in this area.

⇨ The P/META Scheme does not cover aspects of metadata processing and synchronization in media streams, or the processing required to support the transfer of metadata between streams and files.

5.2. Target completion

It is hoped to complete the work of the P/META project by the end of December 2000.

Given approval and ratification by the EBU PMC in January 2001, the P/META Scheme will be published openly.

Acknowledgements

Richard Hopper is Principal Technical Strategist with the BBC Media Data Group. He is responsible for technical integration strategy for metadata, engagement with relevant standards activities, and for the procurement specification conformance of systems with metadata requirements.

Richard Hopper graduated from Imperial College of Science & Technology, London, in 1966 and joined the BBC as a graduate trainee. He moved early into television systems engineering for production and delivery. He led the Technology Group in BBC Resources Consulting & Projects for several years before moving into the Media Data Group at its inception in 1997. The Group's mission is to provide coherent information support throughout the business life-cycle of programme production and delivery – from commission through to home consumption.

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[4] BBC Standard Media Exchange Framework data model **http://www.bbc.co.uk/guidelines/smef**

[5] EBU / SMPTE Task Force: **Final Report: Analyses and Results** *(2554 KB)* "Special Supplement 1998" to EBU Technical Review.

[6] ITU-R Recommendation BT.656-4: **Interfaces for digital component video signals in 525-line and 625-line television systems operating at the 4:2:2 level of Recommendation ITU-R BT.601 (Part A)** **http://www.itu.int/itudoc/itu-r/rec/bt/656-4.html**

Appendix A:
Attribute and Set Naming, Syntax and Notation

Attribute: Naming Convention; ID Notation
Set: ID Notation; Construction Syntax and Notation

A.1. Scope

This document defines:

⇨   For EBU P/META Attributes – the naming convention used and the ID notation.

⇨   For EBU P/META Sets – the syntax used to define their composition and the ID notation.

A.2. Attributes

A.2.1.   Attribute Naming Convention

A naming convention is used to help clarify the meaning of the Attribute. The naming convention in use is:

1)   All Attributes are named using capitals.

3)   Individual words within the name are joined by an underscore.

4)   The Attribute Name is built from three parts – a prefix, a qualifier, and a class name. The prefix and the class name are mandatory, the qualifier is optional.

   ✳   The Attribute Name prefix gives context to the Attribute – making the Attribute definition richer and clearer. The prefix may be a recognizable word (that is, one to be found in a standard dictionary) or it may be an acronym representing a concept (for example, the concept of a group of programmes).
   Examples include: ADDRESS; PERSON; PRG (PRogramme Group); COUNTRY.

   ✳   The qualifier phrase indicates the meaning of the Attribute within the context given by the prefix. For example: SHO_COLOUR_INDICATOR represents an indicator that notes whether a shot is in colour; ROLE_TYPE_NAME represents a text string describing a role's type. The qualifier is optional and is only used where necessary to help prevent ambiguity.   Examples of Attributes without a qualifier phrase include: FORMAT_NAME (an uncontrolled textual name for the format of a piece of

material); INTENTION_CODE (a controlled code, from a reference list of defined values, for the intention of a piece of material).

✳ The class name describes an Attribute's Type. For example: DATE; NAME; DESCRIPTION; AMOUNT.

This naming convention and the Attribute descriptions also help the user to compare, and decide between the use of, different Attributes conveying similar information. An example might be FORMAT_NAME (uncontrolled text) compared with FORMAT_CODE (controlled values taken from a pre-defined reference list).

A.2.2. Attribute ID Notation

The Attribute ID is a unique identifier for an Attribute Name and definition; it carries no other information. The grouping of related Attributes (in order to give them context or to associate different ways of representing the same information) is enabled by the naming convention.

Attribute IDs are in the form Ax where x is an unsigned integer greater than 0. Examples include: A1, A10, A20.

A.3. Sets

A.3.1. Set definition

The meaning of a Set is explicitly defined and is not necessarily merely an aggregation of the meaning of the individual Attributes.

For example, the Set "Contract Details" contains a collection of Attributes which could equally well be contained within a commercial *offer*, say in a Tender or Quotation. The fact that the Set is named "*Contract* Details" gives that specific collection of metadata Attributes a particular status – a status in law, as it happens. Each Set is supported by a definition for this very reason.

A.3.2. Set ID Notation

Sets IDs are in the form Sx where x is an unsigned integer greater than zero. Examples include: S1; S2; S37; S11.

A.3.3.   Set Construction Syntax and Notation

a)   Set Declaration

The Set is declared in the following manner:

   EBU PMETA SET **SetID SetName SetConstruction**

b)   Delimitation of Sets

Square brackets – **[ ]** – are used to delimit Sets both in the Set Construction and in the communication of the corresponding values.

c)   Delimitation of repeating groups

Brace brackets – **{ }** – are used to delimit groups of Attributes and/or Sets which could be repeated indefinitely in the communication of the corresponding values. In other words list of values for the same group of Attributes and/or Set can be produced.

d)   Attributes/Sets: delimitation of alternatives

When Attributes and/or Sets are both enclosed and separated by vertical bars – **|** –, then the Set may only contain one of the offered elements.

e)   Set Construction

The notation for **SetConstruction** is: [**SetId**:**SetConstituents**]

Where **SetConstituents** is a list of Attribute and/or Set IDs divided by the colon character – **:** – with optional use of brace brackets and vertical bars. Sets are always enclosed by square brackets.

Examples:

   [S16:A1:{A94:A92:A93:A90:A91}]

   [S31:{A27:{[S16]|A18}}]

f) Attribute value validity

1) An Attribute value in a communicated Set is valid for the whole Set where the Attribute is declared.

2) An Attribute value in a communicated Set is valid for all constituent sub-Sets unless the sub-Set also declares the Attribute – in which case the value declared in the constituent sub-Set is valid within the limits of the specifying constituent sub-Set.

One example is the use of LANGUAGE_CODE to say which is the language used for text values of that Set. It is possible to have a different language used in a component sub-Set.

The same concept applies also to information provided by sub-Sets.

Attributes and/or Sets used in Repeating Groups are defined so that different values can be given to form a list of characters, keywords, etc., without introducing incoherence into the information content.

In the following examples Attribute and Set IDs and Names are for illustration purposes only.

Example 1:

EBU PMETA SET S12 TIMELINE_INFO [S12:A14:A15] provides time interval information.

When S12 is used in EBU PMETA SET S99 SOMEOTHERINFO [S99:[S12]:Ax:Ay:[Sz]]

The information communicated by S99 is valid in the time interval communicated by S12

Example 2:

EBU PMETA SET S999 SOMENICEINFO [S999:{[S12]:Ax:Ay:[Sz]}]

Here, because S12 (timeline information) is within the repeating group, the information conveyed by the other elements of the repeating group will be specific only to the time period specified by the related S12 sub-Set.

Appendix B:
Set Names

The names of the 28 Sets identified to date for use in the P/META scheme are listed below.

These Sets are constructed from more than 200 Attributes in the Attribute Definition Table (draft V0.7).

ADDRESS	MATERIAL_IDENTITY
BANK_ACCOUNT_DETAILS	MATERIAL_MUSIC_REPORT
CONTRACT_DETAILS	MATERIAL_OTHER_TITLE
CONTRACT_FEES_DETAILS	MATERIAL_RECORDING_DATE
CONTRACT_TOTAL_COST	MATERIAL_RELEASE_DATE
CONTRIBUTION	MUSIC_REPORTING_DETAILS
EQUIPMENT_DETAILS	ORGANIZATION_DETAILS
EXCHANGE_TECHNICAL_DETAILS	PERSON_DETAILS
FIRST_PUBLICATION_EVENT_START	PEV_TRANSMISSION_CHANNEL
GRANT_OF_RIGHTS_CONDITIONS	PUBLICATION_EVENT_END
GRANT_OF_RIGHTS_DETAILS	PUBLICATION_EVENT_START
KEYWORD	SHOTLIST
LANGUAGE_HISTORY	STORAGE_INSTANCE
LOCATION	TEXT_OBJECT_LANGUAGE

Appendix C:
Leadership and Participants

The people listed below have recently been involved in the leadership and work of P/META:

Carol Owens - Project Manager	BBC	UK
Laurent Boch (Joint leader WP1)	RAI	IT
Marcel Mokveld (Joint leader WP1)	NOS	NL
Richard Hopper (Leader WP2; Joint leader WP3)	BBC	UK
Andreas Ebner (Joint leader WP3)	ARD/ZDF, IRT	DE
Koray Akkaya	TRT	TR
Djamel Eddine Belhadj	ENTV	DZ
Wes Curtis	BBC	UK
Annemieke de Jong	NOS/NAA	NL
Giorgio Dimino	RAI	IT
Robert Fischer	SWR	DE
Karin Granström	SR	SE
Eva-Lis Green	SVT	SE
Arthur Haynes	BBC	UK
Johannes Kraus	ORF	AT
Robert Lawrence	Channel4/UBIK	UK
Olivier Lescurieux	INA	FR
John McDonough	RTE	IR
Peter Mulder	NOS/NOB	NL
Heijo Ruijsenaars	EBU	CH
Christian Thorsen	DR	DK
Vesa Vaarala	YLE	FI
Chris Winter	ABC Radio	AU
Ali Nihat Yazici	TRT	TR

Glossary of Terms

Term	Definition
Essence	Essence is the audio, graphic or text itself – the physical output which can be heard or seen by the consumer.
Metadata	Metadata is the information or data which identifies and describes associated essence. For a track from a CD this could be the artist's name, track duration etc.
Content	Essence plus metadata
Media Object	A media object is an editorial element consisting of one type of essence and its associated metadata.
Media Asset	A media asset is one or a collection of media objects with its/their associated rights that can be exploited by a broadcaster or service provider. A media asset could therefore be a publishable or transmittable complete programme or part of a programme, individual sound, etc. Content plus Rights
Storage	Is the physical medium on which the electronic instance of the media object is stored. This could be a CD or a computer hard drive, storing a signal or a file.
Media Asset Management	Is the collective term for a Set of processes which support: ⇨ the management of outputs from and inputs to the creative media production process, in terms of intellectual property, information and material; ⇨ their distribution to customers and audience; ⇨ their effective re-use in subsequent production/distribution cycles and for commercial exploitation.
Reference data	Standard coded values – the occurrences of certain Attributes; for example, PAL is the coded value of the occurrence of the Attribute "ICS_NAME" (Image Coding Scheme Name)
Attribute	An Attribute represents an atomic characteristic or property of some thing of interest to the business. Sets that are to be used for exchanging metadata occurrences will be defined in terms of constituent Attributes. In use, the constituent Attributes within a Set will hold actual values.
Set	A Set represents a structure of Attributes, noting sequence, logical groupings, allowed selections that may be used to enable an exchange of metadata or in turn to be used as part of the definition of a Set to enable the exchange of metadata.
Data scheme	*(As used in this document)* A comprehensive statement of a data exchange model including definitions of Attributes, Attribute values and Sets of Attributes.
Semantic	As in "semantic data scheme" – a scheme of defined terms which have significance to the business by virtue of the *meaning* they convey.