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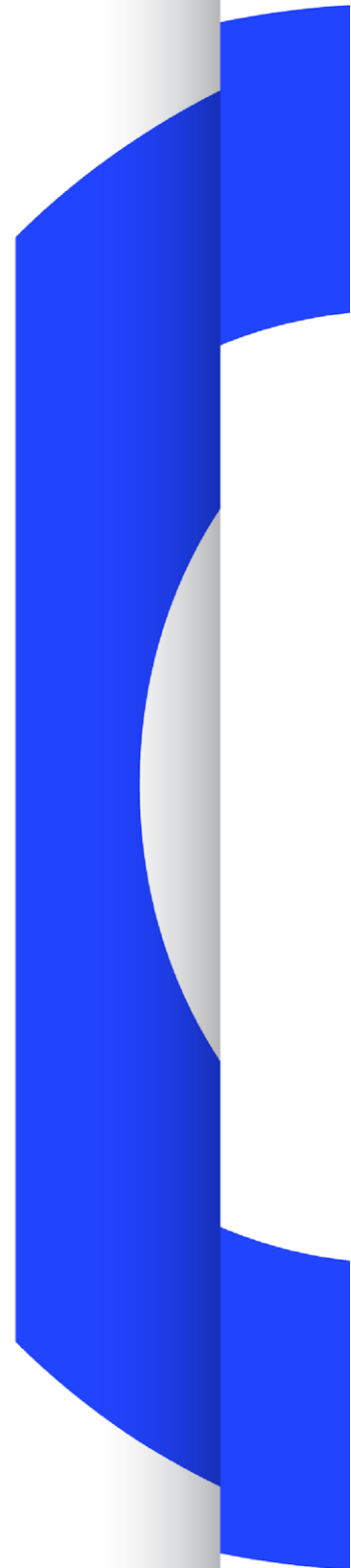
TR 041

THE DIGITAL MEDIA VALUE CHAIN

MODELLING CORE BUSINESS OBJECTS AND PROCESSES IN DIGITAL MEDIA ENTERPRISES

Version 2.0

Geneva
February 2024

Document History

EBU Committee	TC	
Drafting Group	Integrated Enterprise Architecture (IEA)	
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Revised	Feb. 2024	Version 2.0: Title modified by adding "The Digital Media Value Chain" as a main title. Further changes detailed in "Changes in Version 2" section.

Acknowledgement

Contents

Conformance Notation

This document contains both normative text and informative text.

All text is normative except for that in the Introduction, any § explicitly labelled as 'Informative' or individual paragraphs which start with 'Note:'.

Normative text describes indispensable or mandatory elements. It contains the conformance keywords 'shall', 'should' or 'may', defined as follows:

'Shall' and 'shall not':	Indicate requirements to be followed strictly and from which no deviation is permitted in order to conform to the document.
'Should' and 'should not':	Indicate that, among several possibilities, one is recommended as particularly suitable, without mentioning or excluding others. OR indicate that a certain course of action is preferred but not necessarily required. OR indicate that (in the negative form) a certain possibility or course of action is deprecated but not prohibited.
'May' and 'need not':	Indicate a course of action permissible within the limits of the document.

Default identifies mandatory (in phrases containing "shall") or recommended (in phrases containing "should") presets that can, optionally, be overwritten by user action or supplemented with other options in advanced applications. Mandatory defaults must be supported. The support of recommended defaults is preferred, but not necessarily required.

Informative text is potentially helpful to the user, but it is not indispensable, and it does not affect the normative text. Informative text does not contain any conformance keywords.

A conformant implementation is one which includes all mandatory provisions ('shall') and, if implemented, all recommended provisions ('should') as described. A conformant implementation need not implement optional provisions ('may') and need not implement them as described.

Changes in Version 2.0

The "Core Business Objects and Processes Model" was first published in October 2017. It has been applied to a variety of use-cases since, and it has proven to be a valuable tool. With the model, we analysed, described and designed the operating models of media enterprises.

In version 2.0, two major improvements were introduced: the business process "User Access" was refined into three separate processes (see Annex A5), and further application examples (see Annex C) were integrated. Some existing application examples were also updated.

A new main title has been added to the report. It is now called "The Digital Media Value Chain". The original title is now the subtitle: "Modelling Core Business Objects and Processes in Digital Media Enterprises". The new title is intended to clarify and simplify communication. Because the original title was so long, it was referred to as "TR 041". But the number is of course much harder to associate with the meaning than the new title.

One use-case was especially helpful in developing this new version: Needing to describe all the different ways a consumer can access a media service and create a single model for this, it was soon realised that the process "User Access" needed further refinement. Finally, it was split up into 3 consecutive value adding processes (ensuring that the new version is fully compatible with the old

one). This separation unfolded a symmetry in the business objects "Product" and "Media Service" sitting on both sides of the object "Bundle": Product –> Service –> Bundle -> Service –> Product. The resulting symmetry was then emphasised with a colour code.

Figure 1: Colour code emphasizing symmetry

The result was so much easier to explain, that it was decided to add colours to all other Business Objects. The colour coding supports better visual orientation in the chain.

Blue stands for objects and value adding processes on the Product level.

Red stands for the Media Service level.

Yellow for the Bundle level.

The colours are not normative, of course, but adhering to at least blue, red and yellow aids in visualizing the references to other models. Another beneficial effect: Communication with colours ("the blue object") is much easier than harmonizing different terms from different business domains. You can find more details on this use-case and the "Media Service Access Model" in the Annex C, § C12.

More use-cases can be found in the Annex C:

C1	Travel Magazine "Malta"
C5	Radio Play on Radio, as a Podcast and on Facebook
C7	Process Categorization for Adaptable Production Lines
C10	Modelling Information Assets and Intellectual Property for Records Management
C11	UGC-guided Content Production and Promotion at a Broadcaster
C12	Linking to the Media Service Access Model with Colour Codes
C13	Activity-Guiding Framework for EBU Technical Committee
C14	Charting an Organisation with Teams and Responsibilities
C15	Building an Integrated Architecture

Geneva, November 2023

Executive Summary

This report presents a model of the core business objects and the cycle of business processes in digital media enterprises.

The model is a value chain model. The scope of the model is end to end, representing all value adding activities by media enterprises and their consumers. The model is generic and simple. It is applicable to any type of media, any type of content, any method of production, any platform of distribution, any way of consumption, etc.

The model has been designed to tie the processes to the objects that carry business value. In fact, the idea of adding value has been the main criteria for structuring the core processes presented in this model. This focus on business value makes it a core model for all business domains in the media industry, not only for the technical domain.

Consequently, the model can be used in a wide variety of 'problem' domains. It provides a common understanding and a common wording, which is essential to support better communication for people from different areas of expertise and different business units.

The model supports the analysis, description and comparison of many aspects of business development: it serves in strategic, financial, organizational, legal and technical planning as, for example:

- in radio, television and multimedia use-cases
- for linear and on-demand consumption
- on news, fiction, sports, documentaries, commercials, teasers, previews, user generated content
- for studio and outside production
- for the purchase of films, retrieval from archives, signal acquisition via networks
- for distribution via broadcast and broadband platforms
- for regulatory issues between producers, broadcasters and distributors
- for classical and targeted advertising and promotion
- for programme guides and recommendation systems
- for personalization in respect of privacy regulation and best practices
- for consumption on fixed and mobile devices
- for user consumption analysis such as zapping, commenting, liking, voting, posting, churning, etc.

§ 1 introduces the need, the intention and the benefits of the model. §§ 2-5 present the notation and the model itself. Finally, the Annexes give more detail on the development of the model and several use-cases for its utilization.

The Digital Media Value Chain

Modelling Core Business Objects and Processes in Digital Media Enterprises

1.   Introduction

The media industry is experiencing a profound transformation. Digitization has a strong impact on traditional ways of doing business and, at the same time, enables new opportunities: new services are provided through new ways of consumption; new technologies are used in production as well as new platforms for distribution; new types of content are being delivered; new feedback loops are being proposed for consumers; new revenue streams are possible as well as new roles and new players in the market. But still, the traditional ways of doing media business are alive and will maintain a substantial share of the market. The duality of tradition and innovation will prevail.

In this dual context, media enterprises must re-evaluate their strategies. As a prerequisite for discussing new strategies, the domain of operations and associated potential problems must be understood with impeccable clarity. But how can we achieve this goal? The first step is to focus on core businesses and eliminate secondary, less critical issues. Second, the terms in which a problem is described must be commonly understood.

These two features, clarity and terminology, are what a good model can deliver. Such models cover the problem and associated domain seamlessly, i.e., traditional and new aspects alike. In that way, they provide the necessary orientation for defining a successful strategy.

The "Digital Media Value Chain" is designed for this purpose. As a value chain[1] model for digital media enterprises, it defines the input and output objects of the transformation processes in a generic way, so it can cover both the traditional and future ways of doing media business. The process model is an end-to-end model that spans over all activities by the provider as well as by the consumer to form a full cycle.

Besides the strategy definition, there are many other situations where the model could be applied: organizing process management, designing information architecture, evaluating business architecture, etc.

Of course, these tasks were always there in the media industry. And obviously, they were solved in all the enterprises that survived until today. So why do we need a new model? What was lacking in the current models? The answer is that the model presented in this report spans over enterprise _and_ consumer activities and at the same time covers _all types_ of related business objects. It is a truly generic model of the media industry's value chain.

The model has evolved from discussions about the Class Conceptual Data Model and EBUCorePlus: CCDM[2] (a predecessor of EBUCorePlus[3]) needed more classes to represent business objects also from the planning, consumption or analysis domain. An end-to-end model of business processes and

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[1] see https://en.wikipedia.org/wiki/Value_chain

[2] see EBU Tech 3351: Class Conceptual Data Model, https://tech.ebu.ch/publications/tech3351

[3] see EBUCorePlus at https://tech.ebu.ch/metadata/ebucoreplus

business objects was considered helpful to identify those classes. The evolving model provided common wording and structure. It allowed comparing use-cases and thus sped up discussions. The model itself was also hardened in those discussions. It ended up in a separate discussion thread, which finally lead to this report.

The structure of this document is as follows: § 2 describes the graphical elements used in value chain modelling. § 3 introduces a top-level model, which is refined in § 4. From there the core model is derived in § 5. In Annex A the refinement and extension steps are explained. Annex B gives an easy to read, continuous description of the end-to-end process. Finally, the core model is applied to use-case examples in Annex C.

2. Modelling a Value Chain

In a value chain model, the term 'value' is used in the sense of 'value for the consumer' or 'value for the provider' of media services. The value is associated with **Business Objects**. **Processes** transform **Input Business Objects** into **Output Business Objects** with added value. This will be represented as in Figure 1.

Figure 1: Value adding Process

Processes consist of a sequence of activities, optionally interconnected through conditions[4]. However, these details are not represented in the model. In the context of this document processes are regarded as "black boxes".

Enablers are optional (Figure 2) and represent tools to execute the activities in a **Process**. Although they usually have an intrinsic economic value, they are not **Business Objects**, because **Processes** do not increase their value. Depicting an **Enabler** is recommended, when there is a need to clarify the role of a (technical) system.
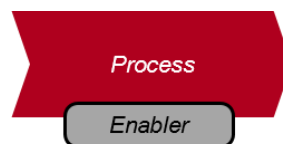
Figure 2: Optional Enabler supports Process

As the value chain aligns **Processes**, these are interconnected by **Business Objects**. **Business Objects** are the output of a preceding **Process** and the input of a following **Process**. At any one interconnection point, **Business Objects** can be single or a multitude of the same type or even of different types. Processes may occur in parallel if they can be synchronized with the whole value chain through their Input and **Output Business Objects** (Figure 3).

Figure 3: Business Objects interconnect Processes in a value chain

2.1   Refinement Strategy

For an end-to-end value chain model one may start with a one-link chain model. The link may then be cut, and the two ends can be interconnected by a **Business Object**. From the top level the desired

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[4] see https://en.wikipedia.org/wiki/Business_Process_Model_and_Notation

level of granularity can be reached by repeating to cut **Processes** (Figure 4). Cutting is needed until the pending questions can be addressed with appropriate terms.

Figure 4: Refinement levels of a value chain

The difficult part is to identify the appropriate places where to split a **Process**. Two conditions must be met for this: the interconnecting **Business Object** must have a generically defined value (in the sense defined earlier) and both the preceding and the following **Process** must add value.
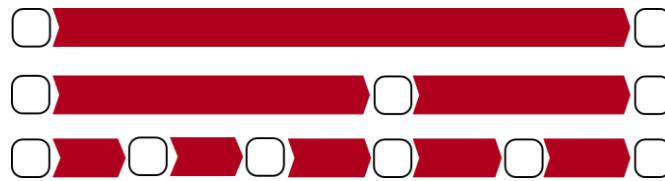
2.2   Cyclic Processes

A Process can be of cyclic nature if its input object and output object are of the same type. However, the objects are not identical. Therefore, the circle can always be represented by a linear graph as shown in Figure 5.
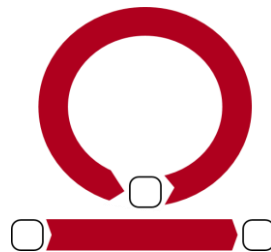
Figure 5: A value chain of cyclic nature

3.   Modelling the Top Level

The process model claims to be an end-to-end model. The entire value chain is shown in two steps. The first input object and the last output object are of the same type, which emphasizes the process' cyclic nature: First, **Demands** are transformed into **Consumption Events**, second, those events are transformed into new **Demands** from which a new cycle may start. This is referred to as the Top Level (Figure 6).

Figure 6: Top Level Model

Demand represents all external requirements: consumer needs, business requirements, legal requirements etc. Examples of real **Demands** may be the following: an unexpected high (or low) clicking rate on a newly launched web series expressing the users' desires (or their indifference) for more episodes, a law that defines the mandate for a public service broadcaster (that, of course, is stable and does not change with single Consumption Events) or a financial target revenue for a specific media service.

The **Consumption Event** is the result of the **Digital Media Service Provisioning** process. It represents the consumption of any service provided by the media enterprise for a consumer. Examples of **Consumption Events** are the following: reading a news article from a website in your browser, watching a movie in (U)HD on your TV set from a linear service, doing the same on a tablet from an on-demand service or watching a second screen offer accompanying a live sports programme.

User Experience & Analysis sums all activities of the user associated with the consumption of media services (e.g., viewing times, clicks, likes, shares, churns, interviews, comments) and the processing and interpretation of the data resulting from these activities. This process leads to new **Demands**.

4.   Refining the Model

Figure 7 represents the refined business process model for digital media. For version 2.0 we introduced a colour code[5] for better visual orientation in the chain. Every process, business object and enabler is defined and explained with examples.

The refinement steps are explained in annex A. Any level of refinement is allowed, as long as it serves the intended modelling use-case and follows the refinement strategy of chapter 2.1. For this document, refinement was conducted only so far, that the resulting model is still valid for every possible **Business Process**, **Object** or **Enabler** in digital media. First time readers might prefer to read the more detailed description given in Annex B before continuing.

Figure 7: Refined Model with colour code

4.1   Notation used in Description

[Elementtype]   *Definition*

- [Examples]

4.2   Description

The total of all external requirements.

- an event with relevance to consumers like the Olympic Games or an earthquake
- an unexpected high (or low) clicking rate on a newly launched Web Series expressing the desire (or the indifference) for more episodes
- a law that defines the mandate for a public service broadcaster (that, of course, is stable and does not change with single consumptions of a media service)
- a financial target revenue for a specific media service.

*All activities to create a **Publication Plan** on what to publish, how, when, where and for whom based on **Demand**.*

- creating a strategic plan on structured slots for different genres and audiences
- inserting programmes or commercials in a traffic management system
- planning an advertising/promotional campaign.

*A plan in space and time for publishing **Products**.*

- a plan of the slots and programmes in the upcoming year
- a precise and detailed plan on programmes, ads, trailers, etc. for the next day
- a plan for the pages/columns/frames/etc. and the web articles to be published on a website.

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[5] see § 6

Commis-sioning

*All activities to create an **Order** for producing, purchasing, retrieving a **Product** and clarifying its **Rights** or for selling advertisement space, time, views, visits, clicks, etc.*

- dealing on the purchase of a series from a movie producer
- deciding on conceptual responsibility and financial support to produce a new TV show concept and clarifying the required rights
- discussing the pros and cons of accompanying a live sports event with X (Twitter) activities
- creating a list of available slots and spaces (e.g., banners) for advertising for the target audience of a TV channel
- dealing on new sales rates with a consumer electronics store
- offering advertising space in a music app for young people.

Order

A directive for purchase, reuse, or production activities; A directive to take in advertisements resulting from a contract on advertising.

- purchase order for a series; production order for a documentary
- production order for a live ticker on a live sports event
- intake order due to sales agreement for advertisements of a car vendor.

Right

A permission to use a work with respect to intellectual property laws, a contract or a licence with applicable obligations and prohibitions.

- the set of rights to publish audio and video from the host broadcaster on a sports event over the web
- the right to publish a movie 3 times in a country
- the right to reuse material with children for editing new items
- the right to use music for a TV drama production, but only in non-violent scenes.

Production

*All activities that generate, transform, edit, aggregate, etc. audio, video, text, or data to create a **Product**.*

- downloading a movie package from a media house, checking it, transcoding it
- producing an outside video for a news magazine
- executing post-production on a self-produced episode of a series
- creating a post in a social network
- creating a movie trailer through AI technology.

Product

An editorially, technically and legally approved piece of media content, ready to be published or consumed.

- the signal of a live sports event programme as finalized by its producer
- a completed and publishable episode of a series
- a journalist's post on a social network
- a commercial spot before airing.

Publication

*All activities to aggregate **Products** and to adapt the result to a **Distribution Platform**.*

- putting broadcast-ready TV programmes in a schedule, stream them to the play-out centre and adapt them to a satellite distributor's format
- hitting the "post now" key on picture with text from a social network account

- posting a new article on the web portal.

Media Service

*A compilation of **Products** technically adapted to the **Distribution Platform**, forming the offer of a media enterprise*

- the signal of a linear TV service (e.g., TF1, SRF2, TV2) prepared for satellite distribution; the same for cable distribution; the same for web distribution;
- a list of messages for a live ticker on a broadcaster's website
- an API providing data for an EPG app

Distribution

All activities to provide service access points to the consumer.

- sending a satellite signal to earth and receive the signal with a dish and a satellite receiver (the access point is the receivers video output)
- sending a requested VoD stream through a CDN to consumers' internet access points
- sending requested data for a second screen app to the consumer

Platform

*A technical facility for the transport of **Products** from the provider to the consumer or for the exchange of **Products** and **Resonance Events** between all platform participants.*

- Eutelsat (e.g., for programmes in a linear TV service)
- DVB-T (e.g., for programmes in a linear TV service)
- Internet, supported by CDN (e.g., for programmes in a VoD service)
- WWW (e.g., for web articles in a broadcaster web portal service)
- social networks (e.g., for text, pictures or video posts and for comments, likes, dislikes, shares in an account or under a hashtag).

Bundle

*A set of **Media Services** accessible by the consumer in a common technical mode.*

- the output signal of the LNB in a satellite dish
- the DVB-T signal at the output of the receiving antenna
- the output of a home internet router

Assembly

*All activities to access a **Bundle**, select a set of **Media Services** from it and assemble them into the full featured **Media Service** that a user can experience.*

- switching on a FM receiver and tuning to a station
- connecting your device with your modem and
- opening the app of your preferred social network and logging in, or
- visiting a news website with your browser, or
- starting your favourite broadcaster's app.

Media Service   *see above, or*
*A compilation of **Media Services** ready for consumption by a user*

- an API providing data for an EPG app
- a linear TV service (e.g., TF1, SRF2, TV2) ready to be consumed
  - possibly integrated with additional services like subtitling, EPG, etc
  - possibly extended with a catch-up functionality
- all selectable functions and content
  - on a social media platform, or
  - a VoD platform, or
  - an audio streaming platform

Selection   *All activities to select a **Product** from a **Media Service***

- tuning into my favourite linear radio service (aka station) at the right time to listen to a programme
- choosing a friend's timeline and reading his posts on your preferred social network
- navigating through articles on a news website
- choosing a movie from the offering of a video streaming platform
- choosing a podcast from the offering of an audio streaming platform

Product   *see above*

- a subtitled movie from a video streaming platform
- a song together with the lyrics from an audio streaming platform
- the signal of a live sports event programme as available on a consumer's device
- a consumable episode of a series
- a published post on a social network
- a consumable commercial spot

Playing   *All activities to create a **ConsumptionEvent** from a **Product**.*

- rendering a video stream and displaying it with subtitles on the screen of a device
- playing music from an audio stream to your headphones and displaying its lyrics on your device's screen
- displaying a post in a social network app

Device   *A technical facility supporting access, licence checking and presentation activities.*

- (U)HDTV set
- (U)HDTV set with Smartcard module
- browser on a tablet
- app with DRM module on a desktop pc
- social network client on a smartphone
- FM radio

Con-sumption Event

*The event of using **Media Services** and the **Products** within.*

- watching a live sports event on an (U)HDTV; the same on an SDTV; the same on a tablet;
- reading a live ticker for that event on a mobile
- listening to a live radio programme for the event on FM; the same on DAB;
- checking out statistics for that event in an app; the same on a website;
- reading tweets under a hashtag associated to an event on an X (Twitter) client

User Experience

*All measurable activities by the consumer related to the consumption of the **Media Service**.*

- viewing a TV programme until the end
- switching to another TV channel
- liking a post
- starting a video on a social network
- liking this video
- commenting a news article on a web site

Reso-nance Event

*All perceivable reactions of consumers related to using a **Media Service**.*

- viewing time
- a comment/like/dislike
- a download
- a post
- a new follower.

Analysis

*All activities associated with aggregating, processing and interpreting the **Resonance Events** in order to express the **Demand**.*

- calculating the average viewing time
- calculating the overall churn rate of an app
- comparing rates to concurrent media service resonance
- interpreting the data to adapt strategic requirements, e.g., move sports programme from Wednesday to Thursday, continue series with another season.

New Demand

The updated total of all external requirements.

5.   Completing the Core Model

The refined model is not yet complete. It does not cover archive-related processes and consumer licensing. These processes are not in the refined model, because they cannot be derived from existing processes by simple refinement. Instead, they need to be defined by extending the model. This extension is appropriate for processes with input or output being connected to more than one business object or running in parallel to two or more other processes.
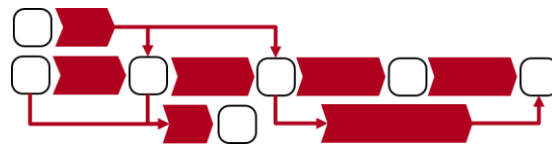
Figure 8: Extension Options in a Model

In Figure 8, the lines connect alternative input or output objects, respectively. Parallelism of processes is only limited by their interconnecting business objects. In graphical terms: parallel processes may be moved horizontally in the space between their input and output business objects.

To complete the model to the core model, the three processes **Preservation**, **Retrieval** and **Consumer Licensing** are added as extensions as shown in Figure 9.
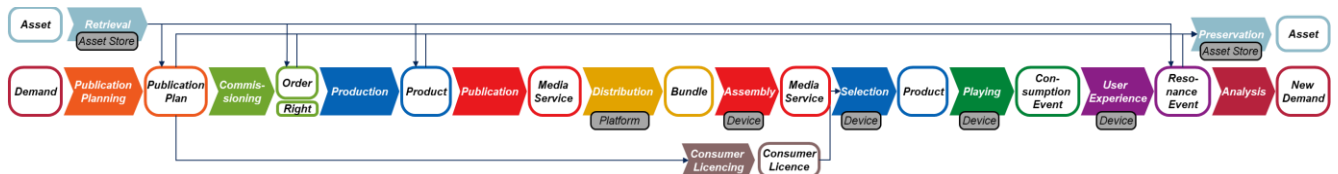

Figure 9: Core Model

For **Retrieval** and **Preservation,** the most frequent case is a **Product** being the output of **Retrieval** or the input of **Preservation**. The other lines represent alternative interconnections, like the **Retrieval** or **Preservation** of **Resonance Events**.

It is important to note that **Preservation** may take any available maturity stage of the **Business Objects** as input, for instance, raw film footage, and **Retrieval** will result in exactly the maturity stage at **Preservation**'s input. The goal is to preserve/retrieve the value. In that sense, there are many more interconnecting lines from objects within the processes that are not depicted here.

Additionally, **Retrieval** and **Publication Planning** may or may not be executed in parallel. The same applies for **Preservation** and **Analysis**.

Finally, the **Consumer Licensing** process and the **Licence** object are added. **Consumer Licensing** has the **Publication Plan** as input and the **Consumer Licence** as output. The **Consumer Licence** is then an additional input for the **User Access** process.

5.1   Description (continued)

Asset — *All business objects in arbitrary level of maturity, intended for continuing the process or reuse in other process instances.*

- raw footage material
- fully completed product
- archived product
- publication plan of any maturity
- last year's viewing rates on the Eurovision Song Contest

Retrieval — *All activities to provide a reusable business object from a stored **Asset**.*

- copying a set of files to a folder for cutting
- retrieving a documentary from the archive
- retrieving last month's download counts of an app.

`Asset Store`   Storage for value bearing business objects, long-term or short-term.

- a TV archive
- a radio archive
- a file exchange and storage system during production
- a database for user reactions

`Preservation` *All activities to preserve a business object in an **Asset Store** for later use.*

- saving an edited film from an editing system to the working folder
- archiving a Product to the archive in an archival information package including additional metadata (transmission data, texts, etc.)
- transcoding from obsolete data formats to new ones, transferring to new media (e.g., new LTO generation) and storing in archive
- storing the aggregation results of user clicks on a news site in a database for user reactions

    Please note: Preservation may also be applied to Publication Plans, Orders, Rights or Resonance Event data.

`Consumer Licencing` *All activities in marketing, selling, producing and distributing **Consumer Licences**.*

- marketing a pay-per-view ticket for a movie and selling it to a consumer
- charging the fee for public service media
- producing a Smartcard with a licence key and sending them to consumers

`Consumer Licence` *A permission to consume a **Media Service**, a **Product** or any part of it.*

- a permission to watch a pay TV service is physically granted by a Smartcard with a key for decryption of the received satellite signal to the consumer
- a permission to stream a movie from a VoD offer to consumers in country A, but not in country B, is physically granted by checking the geographic location of the consumer.

6.   Colour Coding the Core Model

With the fourth refinement (see § A5), the number of graphical elements in the value chain has grown to over twenty items and it has become harder to grasp or even to memorize them. A little more structure would do the model good.

As realised during the refinement, the business objects **Product** and **Media Service** appeared twice in the chain, symmetrically before and after the **Bundle**. So, emphasizing this fact with a common colour was somewhat obvious.

The colour **blue** stands for objects and value adding processes on the **Product** level. The colour **red** stands for the **Media Service** level and **yellow** for the **Bundle** level.

Figure 10: First Colour Coding

The colour coding supports better visual orientation in the chain. Therefore, more colours were added to all other Business Objects. The colours are not normative, of course, but sticking to at least the three mentioned above aids in visualizing the references to other models.
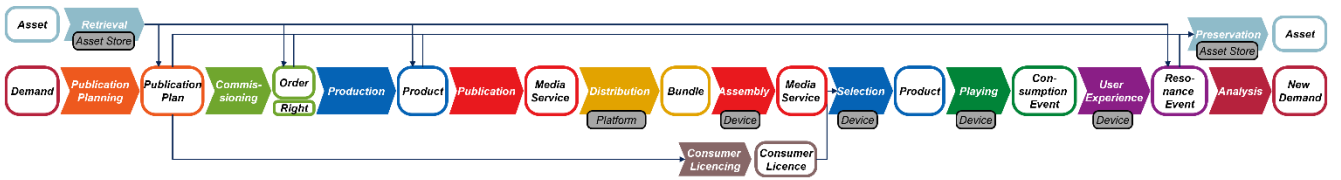
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Figure 11: Colour Coded Core Model

Annex A: Refining the Processes Along the Business Objects

All refinements are conducted by following the refinement strategy of chapter 2.1.

A1   Top Level

Figure A1 shows the top level from which the model is initiated.

Figure A1: Top level as starting point for refinement

A2   First Refinement

Figure A2 shows an initial refinement splitting the **Digital Media Service Provisioning** process.

Figure A2: First refinement

The **Digital Media Service Provisioning** process is divided by the **Product** into two sub-processes.

In **Digital Media Creation**, the **Product** is created. It is made available to consumers through the **Digital Media Access** process, so that the **Consumption Event** is enabled.

A3   Second Refinement

Figure A3 shows a second refinement splitting the **Digital Media Creation** and **Digital Media Access** processes.

Figure A3: Second refinement

Processes are further divided by the business objects **Order**, **Rights** and by **Media Service**.

Planning results in determining which **Rights** must be acquired or considered for a **Product** and which **Orders** for creating or acquiring **Products** are placed.

Production transforms the **Orders** into actual **Products**. By subsequent **Publication**, the **Product** is released, assigning it logically and physically to a **Media Service**.

With the physical **Distribution & User Access** the **Product** is now accessible for the consumer and results in a **Consumption Event**.

A4   Third Refinement

The third refinement shown in Figure A4 splits the **Planning**, **Distribution & User Access** and **User Experience & Analysis** processes.

Figure A4: Third refinement

Processes are divided along **Publication Plan**, **Audience**, **Bundle**, **Licence** and **Resonance Event**.

The planning phase is divided into two processes: a **Publication Planning** process resulting in a **Publication Plan**. This is the input for the second phase, the **Commissioning** to acquire the necessary **Rights** and the actual **Order** for the **Production / Acquisition** of content.

Distribution & User Access is split by **Bundle**. **Distribution** results in a **Bundle**, which in turn is the input for the **User Access** process.

Finally, **User Experience & Analysis** is split by **Resonance Event**. All user activities result in **Resonance Events**, which in turn is the basis for **Analysis**.

(The third refinement was the last step in Version 1.0 of this report.)

A5   Fourth Refinement

The fourth refinement shown in Figure A5 splits the User Access process.

Figure A5-1: Fourth refinement

The **User Access** is divided by **Media Service** and **Product** into 3 processes. The **Assembly** process selects a subset of the **Media Services** in the **Bundle** and recombines them to the full-featured service that Media users can consume. Consuming the service starts with the **Selection** of a specific **Product** and continues with the **Playing** of the **Product** to the user to allow **ConsumptionEvents** to happen.

In § 6 we introduced a colour coding scheme, intended to improve visual orientation in the chain.

Figure A5-2: Fourth refinement with colour coding scheme

(The fourth refinement and the colour coding was added in Version 2.0 of this report.)

A6   Further Refinement

Please note, for your own application any level of refinement is allowed. The useful granularity only depends on the intended application of the model. Coarse grained refinement may be sufficient for strategic discussions, while fine grained refinement may be required for detailed analysis of a domain. Even mixing granularities along the value chain is allowed if it serves the intended modelling cause. E.g., restructuring your production domain might require more detailed refinement of the Production process, while the Publication process is sufficiently represented in a single step[6].

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[6] see Annex C, § C4

Annex B: Continuous Description of Processes and Business Objects

B1   *The colour coded core model*

This Annex provides a continuous description of the core model by emphasizing the "flow" character of the colour coded core model shown in Figure B1.
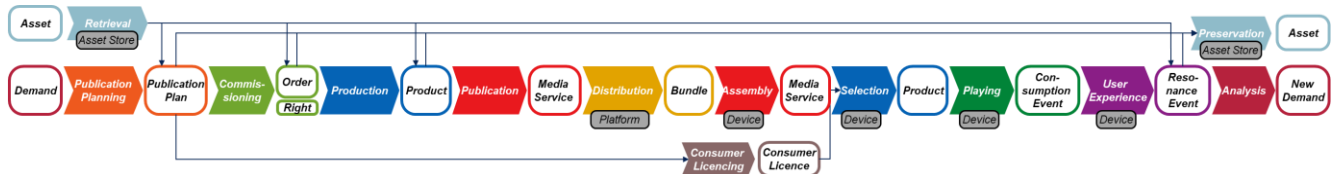

Figure B1: Colour coded core process model

The important idea in **Publication Planning** is that a **Demand** is transformed into a **Publication Plan** including the targeted **Audience** and that this is the input for **Commissioning**.

Commissioning is the transformation of a **Publication Plan** into an **Order** for **Production,** which is a common part of the business process in most industries. Acquiring or clarifying the **Rights** to use content is also a result of **Commissioning**.

Within **Production** there are activities such as acquiring raw material, by buying, pre-producing, retrieving, contributing or by **Retrieval** from an **Asset Store** (e.g., the archive). There are also the post-production, aggregation of parts such as audio tracks, photos, subtitles, billboards, credits, ad boards, scenes, items, etc. and the final approval of the product.

The **Production** results in a **Product**, which represents an editorially complete package (usually a file package) with approved quality (technically, legally and editorially OK). A **Product** may range from a multi-item programme to a single post on a social network. The inner structure of a **Product** can be very complex. However, the structure is outside the scope of this model.

In **Publication**, the **Product** is aggregated with other **Products** to become a compilation named **Media Service**. It represents a content/time/spatially controlled and recognizable compilation (e.g., by the logo of TV channel). The last activity in the **Publication** generates the appropriate physical format as the input for **Distribution**. From here on, the **Product** is not changed, regarding content, format or compilation.

The **Distribution** sums all activities that provide access points for the **Media Service** to the user. The **Distribution** represents both the linear (i.e., distributor triggered) broadcasting, as well as the non-linear distribution on-demand (i.e., user triggered). It employs a **Distribution Platform** such as DVB-S, DVB-T, the internet with a CDN, the World Wide Web and social networks. The result of the Distribution is a Bundle (a set of Media Services with common technical mode of access). A **Bundle** is physically present at the location (or within the reach) of the **Device**. This corresponds, for example, to the DVB-T signal at the output of the receiving antenna or to an HTTP/S access point in the output of a DSL router.

The user can now access the **Bundle** in the **Assembly** process with an appropriate **Device**. Employing a **Device** as the **Enabler** (e.g., cable TV set, internet router) he selects a subset of the **Media Services** in the **Bundle** and recombines them to the full-featured service that media users can consume (e.g., HbbTV makes heavy use of this).

If the consumer is authorized by a DRM agent module in the **Device**, he is finally allowed to consume the **Media Service** (possibly only selected **Products)**

Consuming the service starts with the **Selection** of a specific **Product** (e.g., navigating through a news website, zapping through a set of linear channels and selecting a show from their EPG).

The user then continues with the **Playing** of the **Product** (e.g., displaying it to a UI) to allow **ConsumptionEvents** to happen.

Whilst consuming, the user executes activities that are described in the process **User Experience**. User activities are considered as **User Experience** if they are executed *because* of the consumed **Product/Media Service**: this can be in the simplest case that the user consumes the **Product** up to the end, or that he switches to consume another **Product**. In other cases, he can comment, like, share, etc., and give feedback.

Each one of the user's activities leads to **Resonance Events**, e.g., clicks, likes, shares, tweets, comments or satisfaction ratings (possibly about form and/or content) over the **Device** that is used to consume, about the circumstances of consumption (at home, on the road, alone, with family, with friends, high resolution pictures, well or poorly heard, complicated content, understandable or incomprehensible content, emotional or neutral narrative form). This is described consistently from the perspective of the user in many parameters that a **Product** has.

The **Resonance Events** can be very diverse and numerous. Therefore, appropriate technologies (e.g., Big Data) are required to support the **Analysis** process. The **Analysis** may result in new **Demand** objects.

Retrieval is the inverse process of **Preservation** resulting in e.g., a **Product**, a less mature precursor of a **Product**, a PublicationPlan or even historical **ResonanceEvent** data.

B2   *General Remarks on Model Application*

Process steps can be optional if the activities contained are empty under certain conditions. For example, depending on **Product** type, the **Publication Planning**, **Commissioning** or **Production** can be dispensable, or the processes are comparatively very small and uncomplicated.

All refinement stages between the basic model and the core model are valid and applicable in their own right. It only depends on the use-case, as to which refinement level is helpful.

Annex C: Application Examples of the Core Model

C1   Travel Magazine

The use-case "Travel Magazine" is a simple example to understand how modelling can be applied. It is depicted in Figure C1-1. Starting from the simplified model after refinement, each **Business Object**, **Process** and **Enabler** is instantiated as a concrete object.

For example, the business object **Demand** is instantiated as the insight "Post-pandemic Travelling of Under-30's increases" (which then sparks the idea to produce content about travel destinations in the **Planning** process). Or the process **Publication** is instantiated as "Aggregation" and "HD Broadcast Signal Creation" to form a compatible signal for the process "SAT Distribution". The **Platform** is represented by "Eutelsat" and "Dish", which outputs a **Bundle** as "Channels on Eutelsat". The **Bundle** is then processed in a **Device** of type "SAT TV-Set" to select the "Linear HDTV channel", which can be processed in the Device "HDTV-Set" (usually the same TV-set with HDTV capabilities) for **Selection** and **Playing** on a **Device** with a "Display".
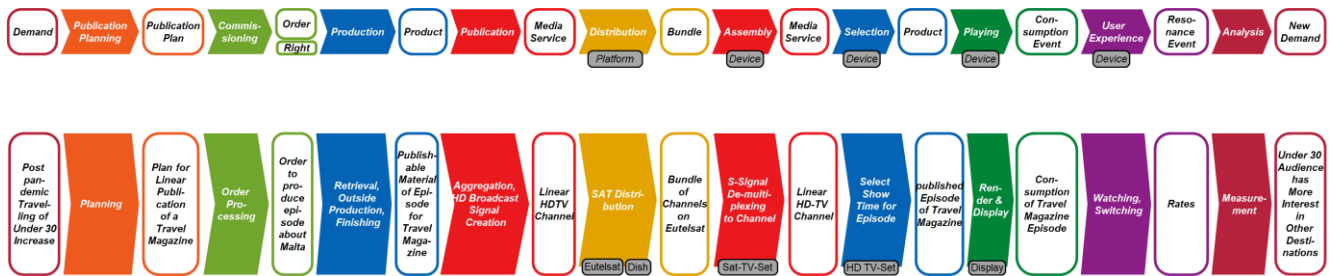

Figure C1-1: Modelling a use-case of Travel Magazine

This simple model can be extended to represent the publication of the same **Product** on a non-linear platform such as "YouTube" as depicted in Figure C1-2. This also provides representations of different processes for **Distribution**, **Assembly**, **Selection**, **Playing** and **User Experience** as well as for different business objects for **Bundle**, **Media Service**, **Product**, **ConsumptionEvent** and **ResonanceEvent**.
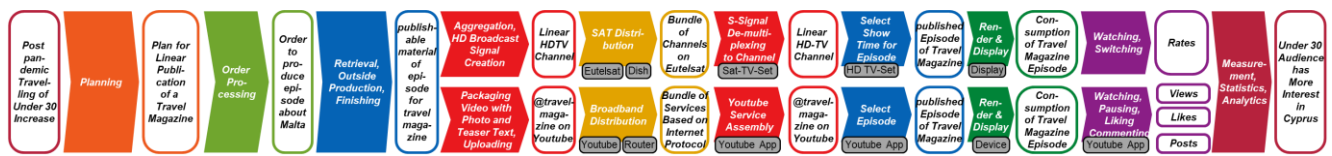

Figure C1-2: Travel Magazine with linear and non-linear Publication

C2   Live UEFA Champions League Game

The use-case "Live UEFA Champions League Game via TV, live stream, ticker, app and X (Twitter)" is modelled in Figure C2. Starting from the simplified model after refinement, each **Business Object**, **Process** and **Enabler** is instantiated as a concrete object. E.g., the business object **Demand** in this case is instantiated as the strategic goal "More Live Sports" and the event "CL 1/8-Final". Or, the process **Publication** is instantiated in several different forms, from a simple "Posting" on Facebook to a complicated "Aggregation", "(U)HD live Signal Creation" and "Conversion" to a compatible signal for "SAT Distribution".
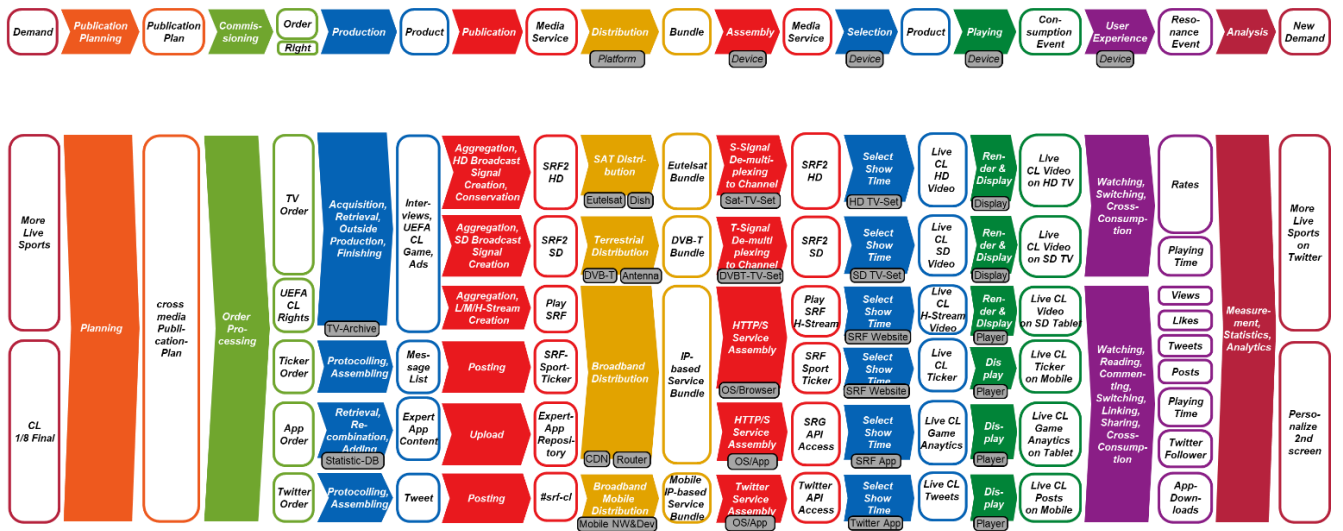
Figure C2: Modelling a use-case of multimedia coverage of an event

This use-case provides valuable insights into the possibilities of reusing business objects for an increased offer of **Media Services**. It shows dependencies and therefore gives a structured view for planning resources. Finally, the model itself proves to be applicable for such a use-case.

C3   *James Bond Movie with Targeted Advertising*

The use-case "James Bond Movie with targeted advertising" is modelled in Figure C3. **User Access** is modelled via an "OTT" **Device**. Therefore, the identity of the consumer is known to the service provider and the service provider can insert an advertisement targeted at the individual consumer.
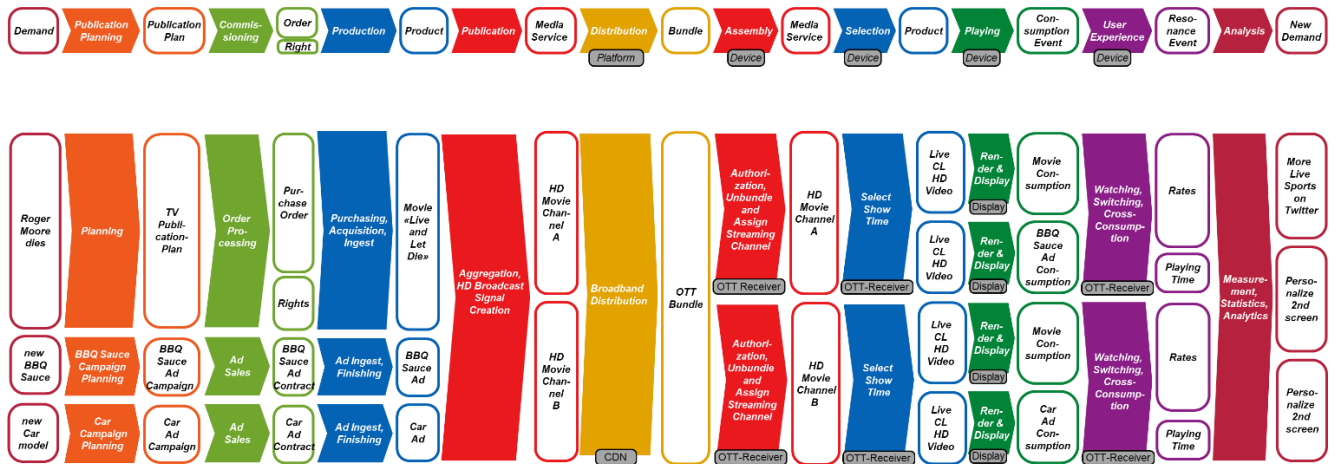

Figure C3: Modelling a use-case of targeted advertising

This is supported by data from the OTT receiver. The data is used within the **Publication Process** to control the aggregation of the **Media Service**.

C4   *User Generated Content in Talk Show*

The use-case "User Generated Content in Talk Show" is modelled as shown in Figure C4. A political talk show ahead of upcoming elections offers live discussions and pre-produced items. It is accompanied by interacting with an audience through a Facebook account for "Votes and Voices" and X (Twitter) tags "#election2017" and "#firstvoters2017". Users generate content by Posting comments, images, clips, etc. This content is being reused as near live content in the talk show.
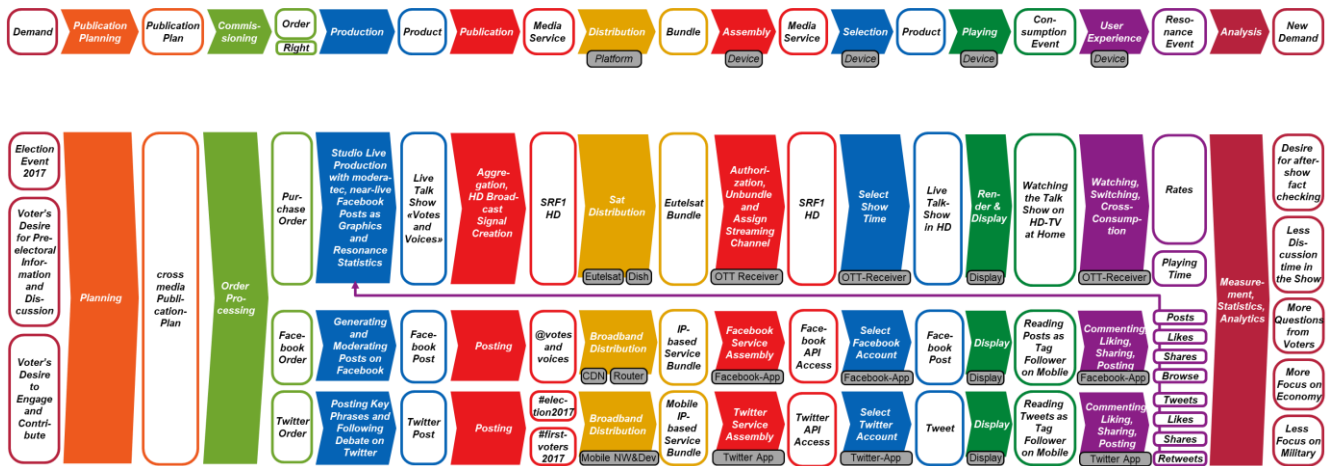
Figure C4: Modelling a use-case of user generated content

C5   *Radio Play on Radio, as a Podcast and on Facebook*

The use-case "Radio Play on Radio, as a Podcast and on Facebook" is modelled as shown in Figure C5. Swiss public service media SRF produces a crime story as a radio play. The play is promoted with a web article and a post on Facebook. It is published linearly in the SRF2 radio channel and distributed both by terrestrial broadcast and by live streaming. It is also published non-linear as a podcast on SRF's own website srf.ch and on their own platform SRFPlay. The play can be consumed on various devices depending on the accessed platform and/or media service. A variety of resonances are generated by the consumer, depending on the device, the media service and the platform. Conducting an overarching analysis on the resonance events yields more knowledge about the consumers' demands.
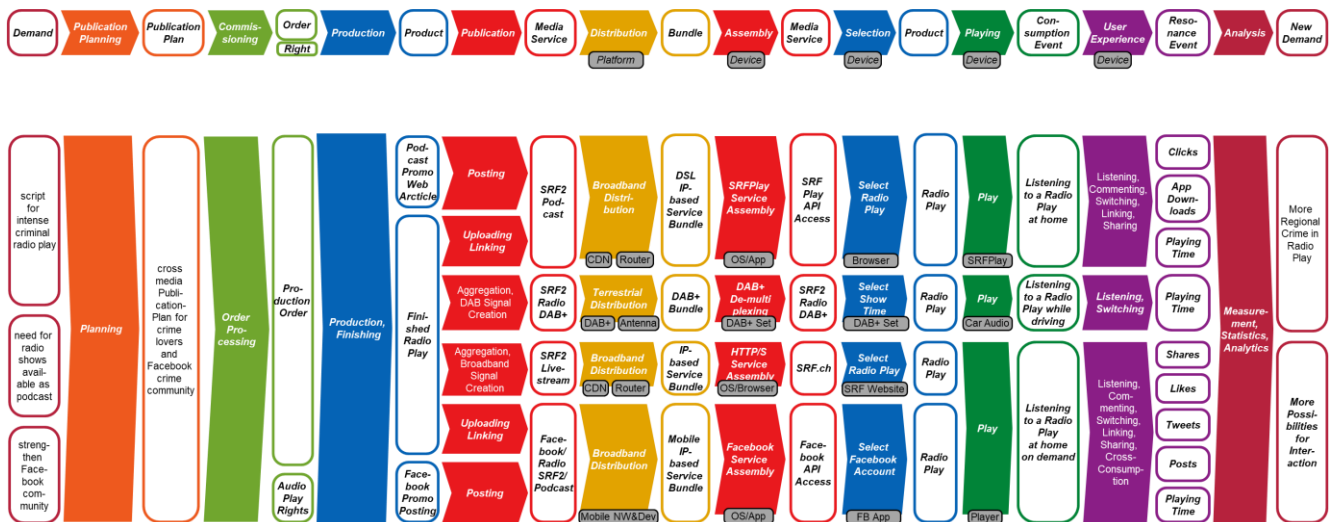

Figure C5: Modelling a use-case of a radio play on radio, as a podcast and on Facebook

C6   *Linking to Detailed Processes*

Process documentation is a widespread reality in the broadcast industry. In this use-case from "TPC" (production subsidiary company of Swiss public service media SRG) the process documentation is already accomplished (and is by far more detailed than in Figure C6). The task here was to find out how TPC's processes compare to each other (same input requirements, same output complexity?) and how they fit in with all the other business processes.
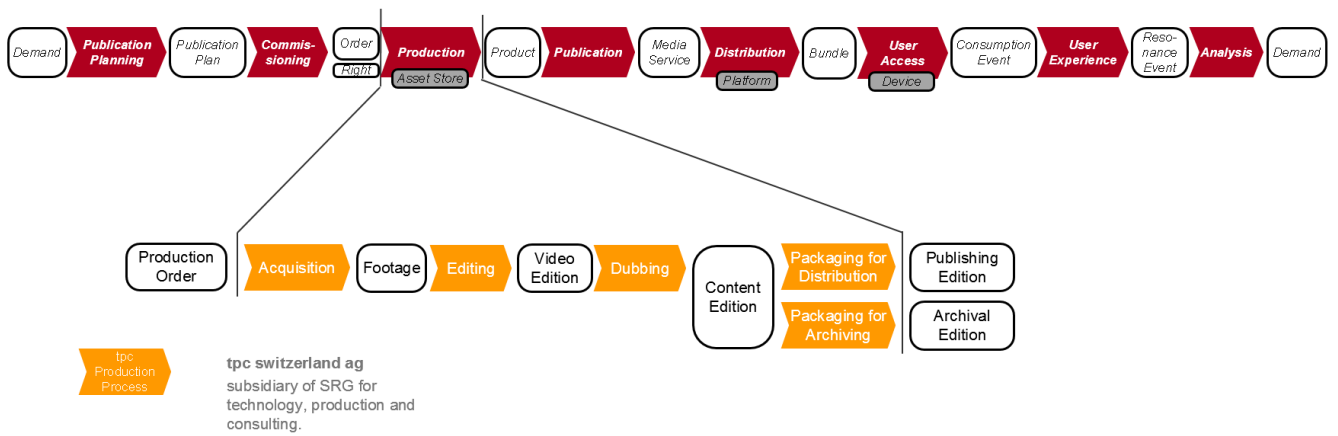
Figure C6: Example for linking to detailed processes

The simplified view shown in Figure C6 allowed an identification of the scope of TPC's processes. The linked vertical lines delimit the referring scope. Additionally, the model makes it easier to find out which business objects were equivalent in two different TPC processes and which were not.

C7   *Process Categorization for Adaptable Production Lines*

Germany's Südwestrundfunk (SWR) intended to reduce the variety of production processes for their manyfold products. One reason being to save costs, but another equally important one: to reuse existing processes with new products. This required to categorize existing production workflows by their technical requirements as well as the needed human skills and resources.

SWR designed a map of reusable processes that are assigned to their most common purpose: producing in a "DIY" fashion, for "fast" results, for "bulk" quantities of content, for "innovative" features or for "high end" standards. Each process can now be assigned a set of equipment, personnel and skill set (not depicted below), allowing to pre-calculate and control costs or to plan staffing.

For any product to be produced, a path through this map can represent the full production process, making use of different process categories as appropriate for the desired result. The path can also visualize alternatives, a valuable feature in the planning phase for new products, enabling fruitful discussions between technology, editorial and business departments.
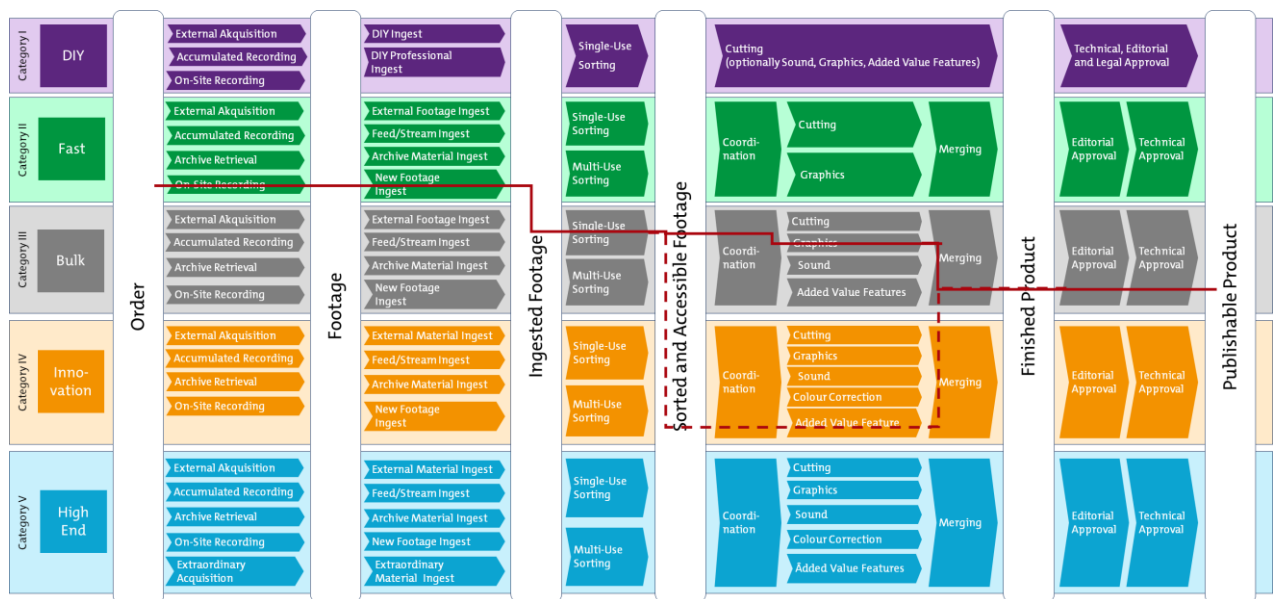

Figure C7: Example for process categorization

25

C8   *Metadata Growing During the Process*

Business Objects are associated to referencing and describing data for better management over their life span (Figure C8-2). These data objects are instantiated and/or filled up during the life of a business object. This use-case is looking for a way to visualize the instantiation and filling of data objects over time in the course of a **Business Process**. Firstly, this requires a data model representing the **Business Objects.** EBU has developed the ontology EBUCorePlus[7] to cover the complete value chain.
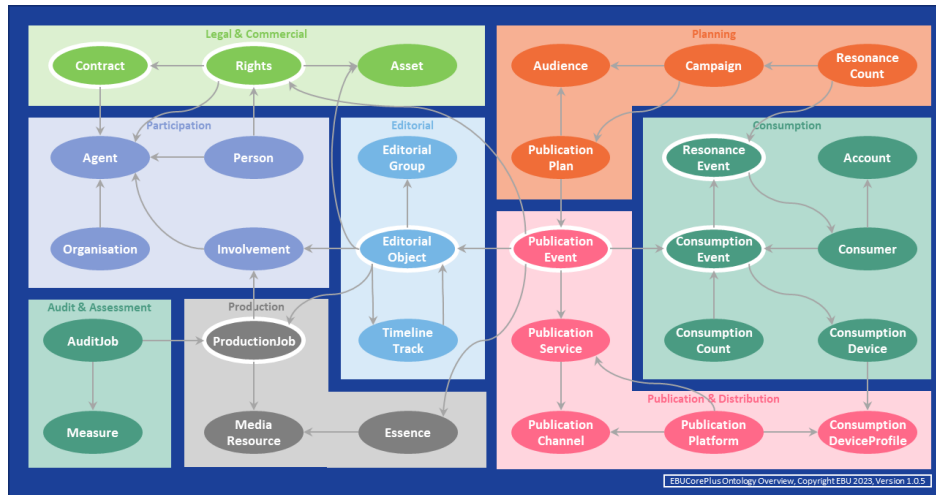
Figure C8-1: Overview of EBUCorePlus ontology

Secondly, a timeline-based graphic along the core value chain, showing the completion status (expressed as "empty", "partly", "mostly", "fully") of each data object during the course of the full process.
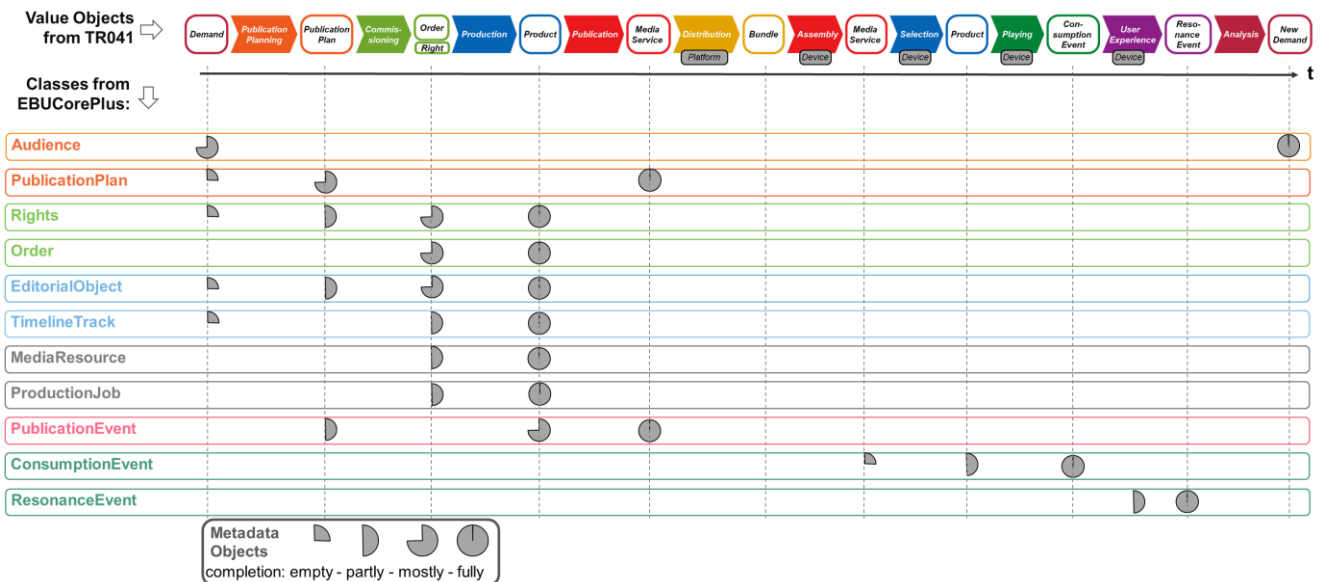
Here's the full process over a (idealistic) timeline:

Figure C8-2: Metadata growing during complete Business Process

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[7] see EBUCorePlus at https://tech.ebu.ch/metadata/ebucoreplus

Below the process model, every class from the data model has a lane. Instantiation of a data object is represented by a quarter circle segment. As the process continues, the data objects get filled up and the circle segment is set to half, ¾ and full at the appropriate time within the process.

This is, of course, only a symbolic representation and does not implicate a continuous timeline. In fact, timelines are only steady for single activities ("activities" in the BPMN[8] sense). Nevertheless, the question as to which time during a specific process a data object is valid and to what extent it is filled, is of frequent interest for development and integration staff. This justifies the simplification above.

C9   *Linking to a Data Model*

The process model has a strong focus on the **Business Objects** that carry the business value. Value management is obviously crucial for an enterprise's success. It is conducted on the data representing or describing the **Business Objects**. Therefore, the data model must be a comprehensive representation of the **Business Objects** (and, in some cases, **Enablers**).

In this use-case, we developed the ontology EBUCorePlus with the goal to cover the whole value chain with one consistent information model. The existing value chain model allowed to discuss the design and the definition of every single class. Based on the fact, that the core model is an end to end model, we can also claim that EBUCorePlus covers the relevant **Business Objects** end to end. The following graphs show some examples of business objects or enablers being described by a subset of EBUCorePlus classes.
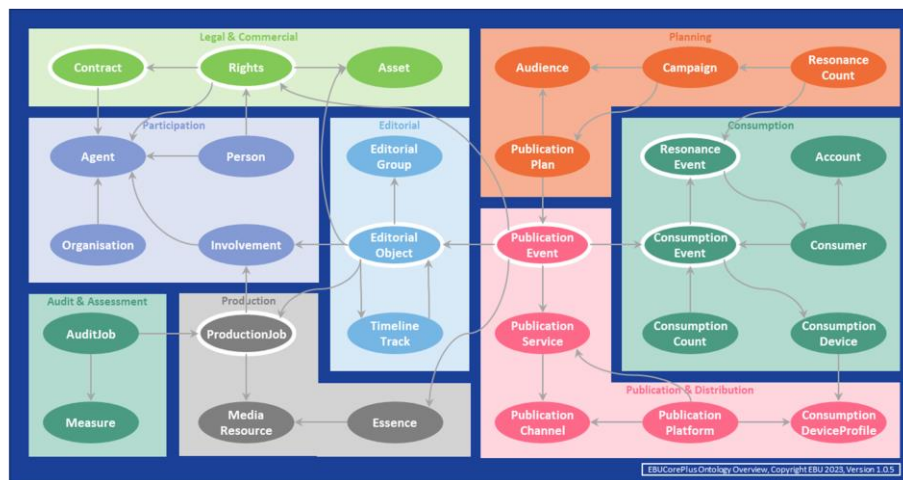

Figure C9-1: Overview of Core Value Chain and EBUCorePlus ontology

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[8] see https://en.wikipedia.org/wiki/Business_Process_Model_and_Notation

Figure C9-2: Indication of required EBUCorePlus classes to describe Business Objects

For example, the business object **Right**, can be described by a combination of the class *Rights* (all attributes, describing what right is granted for the Product), *EditorialObject* (a subset of attributes, e.g., to name and identify the **Product**) and *TimelineTrack* (optional: if the right relates to only a part of the **Product**, a subset of attributes may be needed to identify that part).

Another example: the enabler **Device** can be described by a combination of the class *ConsumptionDevice* (all attributes, describing individual properties of the **Device**), the class *ConsumptionDeviceProfile* (a subset of properties, e.g., to classify screen size, operating system or device model) and the class *Consumer* (a subset of properties, e.g., a username or ID)

Please Note: The choice of classes and of properties to describe or represent business objects can vary largely amongst use-cases. Use the above examples to create your use-case specific mapping. First, assess the pieces of information you need to represent the business objects, then check EBUCorePlus for the best fitting classes and properties.

C10   *Modelling Information Assets and Intellectual Property for Records Management[9]*

In 2017 the EBU published a technical report titled "Modelling Core Business Objects and Processes in Digital Media Enterprises". It outlined a Media Value Chain [MVC], a business model designed to link media processes to media outputs. It also provided common terminology, so that the inputs and outputs of media processes could be defined in a way that could be understood by people from different backgrounds and with very different levels of expertise.

This short paper covers the Australian Broadcasting Corporation's (ABC's) implementation of the EBU MVC for modelling information assets and intellectual property for the purposes of records management[10].

Since 1953, ABC intellectual property and other information assets have been retained or disposed of according to Records Authorities or retention schedules[11] issued by the National Archives of Australia (NAA) under the auspices of Australian Archives Act[12].

Records of common administrative processes are managed according to legislated retention periods[13] but there is no specific legislation to guide the ABC in managing its broadcast records[14]. The ABC and NAA therefore jointly develop a Records Authority to document agreed retention schedules for media records of long-term significance to the public (these are transferred to National Archives for safekeeping) as well as records retained for accountability (these are retained at the ABC and disposed of when obsolete or superseded).

Several ABC Records Authorities have been developed since 1953, using the methodology of information analysis current at the time.

In 2003 the National Archives of Australia commissioned the ABC to develop a new Records Authority using DIRKS, a methodology that treated records as evidence of a business activity[15]. At the time, the ABC had no business model to guide the work of identifying ABC business activities and no industry model like the EBU MVC was known to, or used by, the ABC. In the absence of a model, the ABC based its Records Authority on its Divisional structure with Divisional outputs as its records. The resulting Authority[16] took three years to develop. It was unwieldy with over 435 separate classes of records, many of them duplicated as the same function and the same type of output was produced across a range of Divisions. The duplicate functions and outputs were expressed in Division specific terminology; classes referred to publicity in one process and marketing in another; edits and versions were produced in one Division and content in another. The ABC struggled to differentiate its technical architecture from its information architecture; contracts with transmission infrastructure providers were considered the 'output' of the ABC Distribution process, not Media Bundles as identified in the EBU MVC. Records coverage in the Authority was uneven; 25 classes described ABC films and sound recordings; 20 classes covered music, literary, dramatic and artistic copyright works. There were no classes to cover the principal offerings of the ABC - its Media Services and Publication Channels.

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[9] Contribution by Trish Hoyne, Michael Easthope, Lizbeth Moore of ABC Australia

[10] https://en.wikipedia.org/wiki/Records_management

[11] https://en.wikipedia.org/wiki/Retention_schedule

[12] https://www.legislation.gov.au/Details/C2019C00005

[13] https://www.naa.gov.au/information-management/records-authorities/types-records-authorities

[14] The one exception is requirements for short term recordkeeping in relation to the showing of political advertisements https://www.acma.gov.au/election-and-political-ads#record-keeping

[15] https://www.naa.gov.au/sites/default/files/2019-10/classifcation-tools.pdf

[16] https://www.naa.gov.au/sites/default/files/2019-12/agency-ra-2005-00450552.pdf

In 2018, the ABC undertook an internal review of its ABC Records Authority.

The synergies between the goals of the National Archive methodology (records as outputs of common business processes) and the rationale for the publication of the EBU MVC (to define the inputs and outputs of media processes in a generic way), meant that it was an obvious choice as the mapping model for the ABC review in 2018. The mapping project was successful in demonstrating that the 435 ABC classes of records could be mapped to common business processes. Nine EBU processes plus new general administrative processes meant that just 35 specifically ABC classes would be required to account for both significant and low value records generated as outputs of all of the ABC activities previously covered by the 2006 Authority.

In January 2020, the ABC implemented its new streamlined Records Classification scheme based on its mapping to EBU MVC for internal use. This implementation had the aims of simplifying the sentencing and appraisal of output by reducing the number of classes in the ABC Records Disposal Authority while ensuring the agreed minimum retention periods for records that were established in 2006 were respected.

The new scheme has reduced the Records Management training load, reduced the complexity of appraising and sentencing records, identified places where technical and information architecture have become confused, identified gaps in the Authority for further work, and paved the way for simplified automating of the records sentencing process.

Table C10: MVC outputs appeared across most of the 2006 ABC records management functions

	Audience and Stakeholder Relations	Commercial Activities	Content Management and Production	Historical Information Management	Orchestras	Transmission and Distribution
Audience Experience	X	X				
Audience Analysis	X	X			X	
Publication Planning	X	X	X	X	X	
Commissioning	X	X	X	X	X	
Production	X	X	X	X	X	X
Publication		X	X	X		X
Consumer Licensing		X				

C11   UGC[17]-guided Content Production and Promotion at a Broadcaster[18]

The use-case "UGC-guided content production and promotion at a broadcaster" makes use of the workflow as shown in Figure A4 which is implemented for media organisations in the form of a Trans-Vector Platform (TVP). The platform is continually collecting online data from social networks, websites and media platforms around the organisations brand (channel name, TV shows etc.) and annotating the data according to keywords and entities (a cluster of which would represent a "topic").

The aggregated, annotated data is fed into a prediction model so that a web-based dashboard provides to the organisation predictions of which topics will be of more relevance to their audience at a future time. This guides them in both planning of content production and promotion (digital marketing for their media assets). Once some content is selected, the 'Enhance' step allows for media re-purposing according to the target channel (e.g., summarization for a social media story) and 'Schedule' recommends the optimal date-time for publication on that channel. After publication, the analytics for that publication (reach, engagement, views) may be measured and the audience metrics also feed into the prediction model for further optimisation.

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[17] Abbreviation for "User Generated Content"

[18] Contribution by Lyndon Nixon of MODUL Technology and Miggi Zwicklbauer of Radio Berlin Brandenburg, Germany

**Figure C11: Refinement and Mapping of the Digital Media Value Chain
to visualize the detailed value streams of content re-use and re-purposing**

C12   *Linking to the Media Service Access Model with Colour Codes*

Swiss public service media enterprise SRG SSR has developed the "Media Service Access Model" (MSAM) to describe all the possible ways a consumer can access their service offering. No matter whether the service is linear tv, on demand podcast or a news push-service, and regardless of the device, be it a fixed tv set, a mobile smartphone or an AR headset. All signal and data flows between the publisher and the consumer can be represented in a single and consistent graphic.
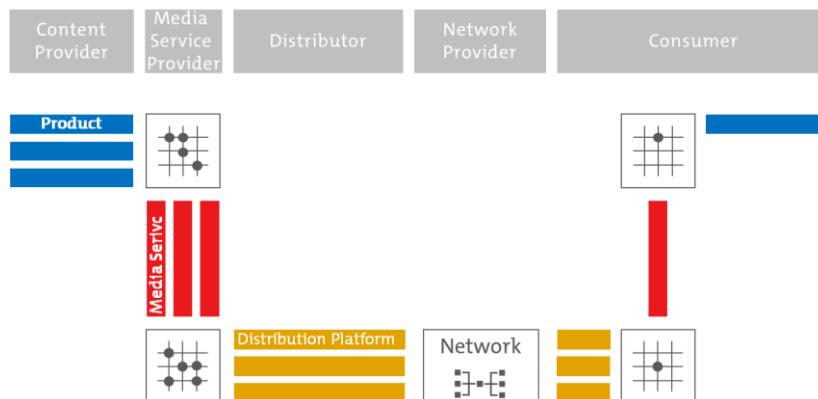

Figure C11-1: Media Service Access Model – switching matrix

The MSAM makes use of TR 041 by reusing the notions of Product, Media Service, Distribution Platform and User Access. It adds the concept of logical switching matrices for assigning Products to MediaServices and Media Services to Distribution Platforms. The matrix assignment is then reverted in the User Access, when a Consumer accesses the content in 3 steps: the Platform, then the Service and then the Product.

The switching matrices isolate the description of the coupling mechanism from the description of the building blocks (such as: Product, Media Service, Playout Stream, Distribution Platform). So, the blocks can be described separately minimizing the dependencies from each other.
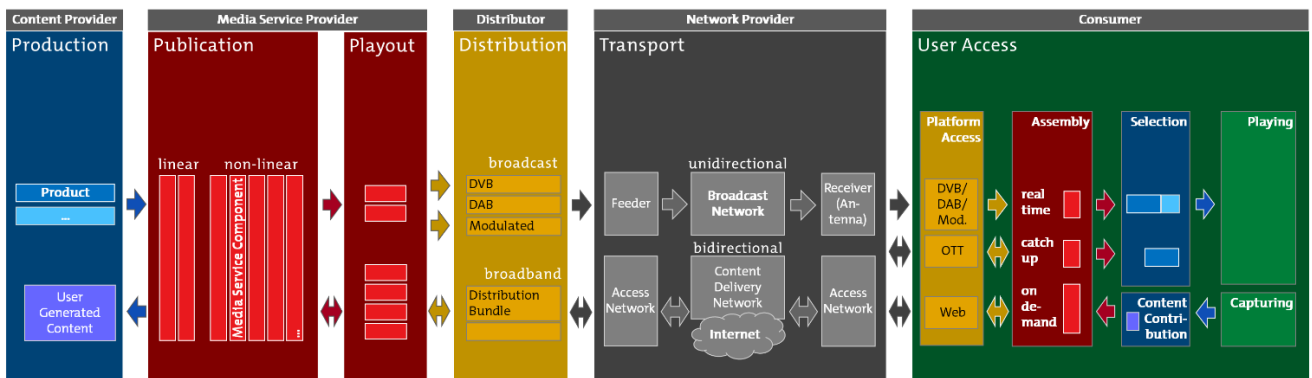
Figure C12-2: Media Service Access Model – main classifiers

Let's look at the description of Distribution Platforms and Media Services: Distribution Platforms can be classified as either broadcast (i.e., unidirectional) or broadband (i.e., bidirectional). Looking separately at Media Services, they can either be linear (i.e., publisher-defined sequence of Products) or non-linear (i.e., consumer-defined sequence of Product). Now the dependency can be expressed with very simple conditions: while linear services can be distributed through both broadcast and broadband platforms, non-linear services rely on broadband platforms only. For example, a linear radio service can be distributed through a FM-based broadcast platform but also as a live stream through an internet-based broadband platform. Another example is HbbTV, a hybrid service, that requires a broadcast and a broadband Distribution Platform.

A media enterprise can now fill the model to create a map of all paths that its consumers can use to access the service offering. The map is a handy tool to analyse and to visualize operational as well as strategic questions: Which Distribution Platforms do we rely on? At which cost? For which Services and Products? Which are the gatekeepers in terms of technology, legal framework or content? Where are they located? Even competitors and their specific service access paths can be represented in the same model, e.g., for comparison purposes.

The development of the MSAM was guided by TR 041, but it also re-impacted the Value Chain Model. It has helped to better understand the inner structure of the business process "User Access". In fact, the building blocks and the colour coding of the MSAM provided a nice template for the process's refinement. User Access was refined to "Assembly", "Selection" and "Playing" and the colour coding was introduced as a helpful visualization to the Digital Media Value Chain.

Figure C12-3: Refinement and colour coding of the Digital Media Value Chain

C13   *Activity-Guiding Framework for EBU Technical Committee*[19]

The European Broadcasting Union (EBU) is the world's foremost alliance of public service media (PSM) with 68 members representing 112 media organizations in 56 countries in Europe, the Middle East and Africa; and an additional 30 Associates in 19 countries in Asia, Africa, Australia, and the Americas.

The EBU and its Technology & Innovation (T&I) department are dedicated to addressing Members' strategic and business needs. T&I provides a powerful platform to resolve gaps and common issues collectively, by overseeing the creation of impactful guidance and solutions, by facilitating the exchange of knowledge, and through advocacy within international forums that drives and influences policies – helping Members to achieve outcomes that individually they could not hope to achieve.

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[19] EBU, Technology & Innovation: Strategy Roadmap, TC-23038, May 2023

This work is guided by the EBU Technical Committee (TC), comprised of elected representatives from EBU Members, that identifies issues of importance to the membership. The TC prioritizes and delegates this work to five Strategic Programmes (SPs), the engine rooms generating value for Members.

This EBU Technology & Innovation Strategy Roadmap[20] outlines the work foreseen by the EBU's Technical Committee (TC) and EBU Technology & Innovation (T&I) for the period of June 2023 to June 2025. It uses an 'activity-guiding framework' (Figure C12-1a) to map the work that is overseen by T&I onto domains along a media organization's value chain.
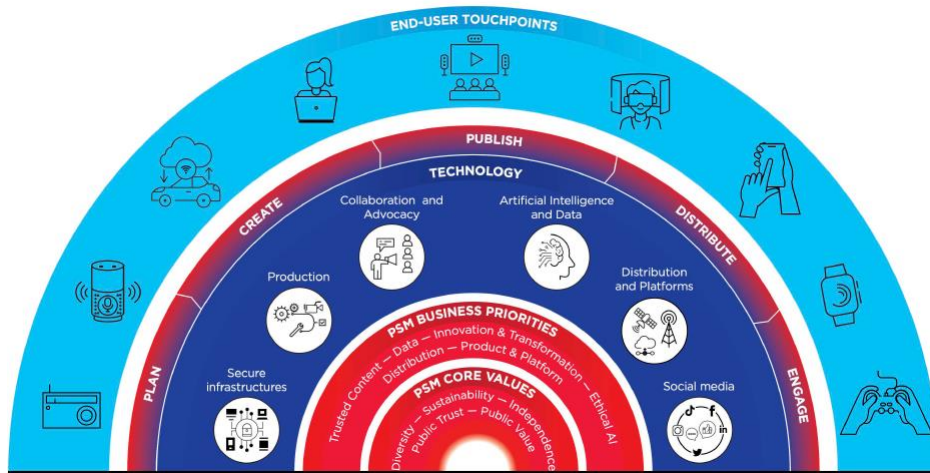

Figure C13-1: The activity-guiding framework

Figure C13-2: Mapping activities of Strategic Programmes to the value chain

The value chain of the activity-guiding framework is directly mappable from the Digital Media Value Chain:

**Figure C12-3: Mapping the activity-guiding framework's
value chain from the Digital Media Value Chain**

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[20] https://tech.ebu.ch/docs/strategy_roadmap/EBU_TC_Strategy_Roadmap_2023.pdf

C14   *Charting an Organisation with Teams and Responsibilities*

What are an organisation's value chains and how to prioritize the work packages inside? Which teams contribute to which value chain? These questions are frequently asked in any endeavour on strategical, tactical, or operational level. Swiss public service media SRG SSR has created an example for displaying organisational structures and staffing along a value chain.
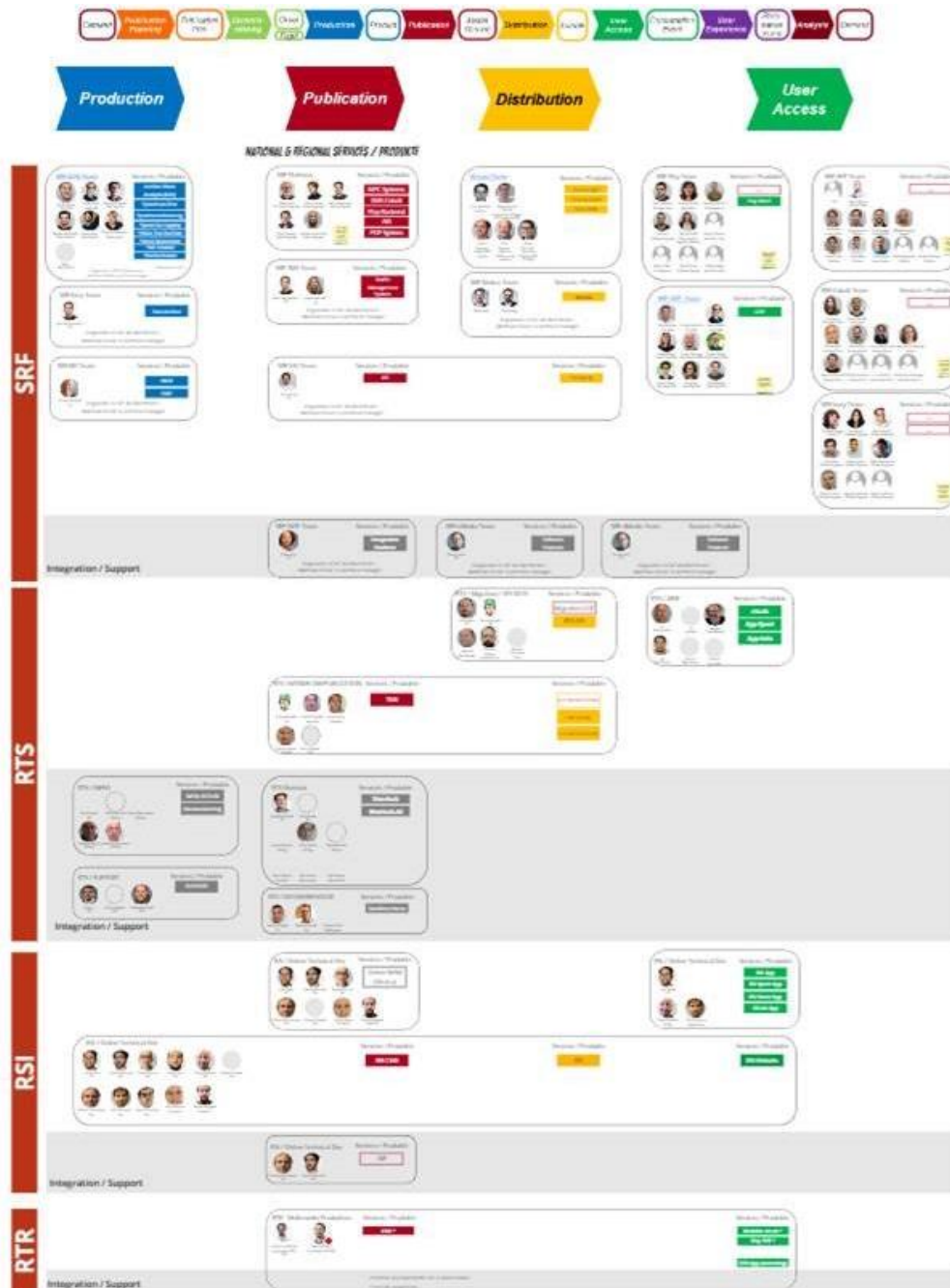

Figure C14: Charting an organisation along the Digital Media Value Chain
(low resolution to protect privacy)

The horizontal axis follows a section of the media value chain, while the vertical axis displays regional and organisational sub-units. Inside this quadrant, every team is displayed as a box. The team members and the team's responsibility for services (regarding development and operation) are shown. Contact details and photos are given for each team member.

Please note: the graphic's resolution is set very low to protect the privacy of the data contained.

C15   *Building an Integrated Architecture*[21]

An integrated architecture can provide a coherent set of perspectives on business, strategy, operations and technology aspects. Enterprise architecture practitioners from EBU members have expressed their desire for integrated enterprise architecture models that are specific to the media industry. This Annex describes the link between the media value chain, the business capability map, and the media ontology. Together, they start to form an integrated architecture.

The business capability map group developed the "Business Capability Map". The "Media Value Chain" model and the "EBUCorePlus[22]" ontology are authored in the Metadata modelling group.

The business capability map group has created a simple layered integrated architecture below to demonstrate the principle of how existing EBU architectural artifacts provide media industry specific models within the integrated architecture. We decided to create a simple view since many integrated architecture models already exist[23] and it is not practical to map for them all.
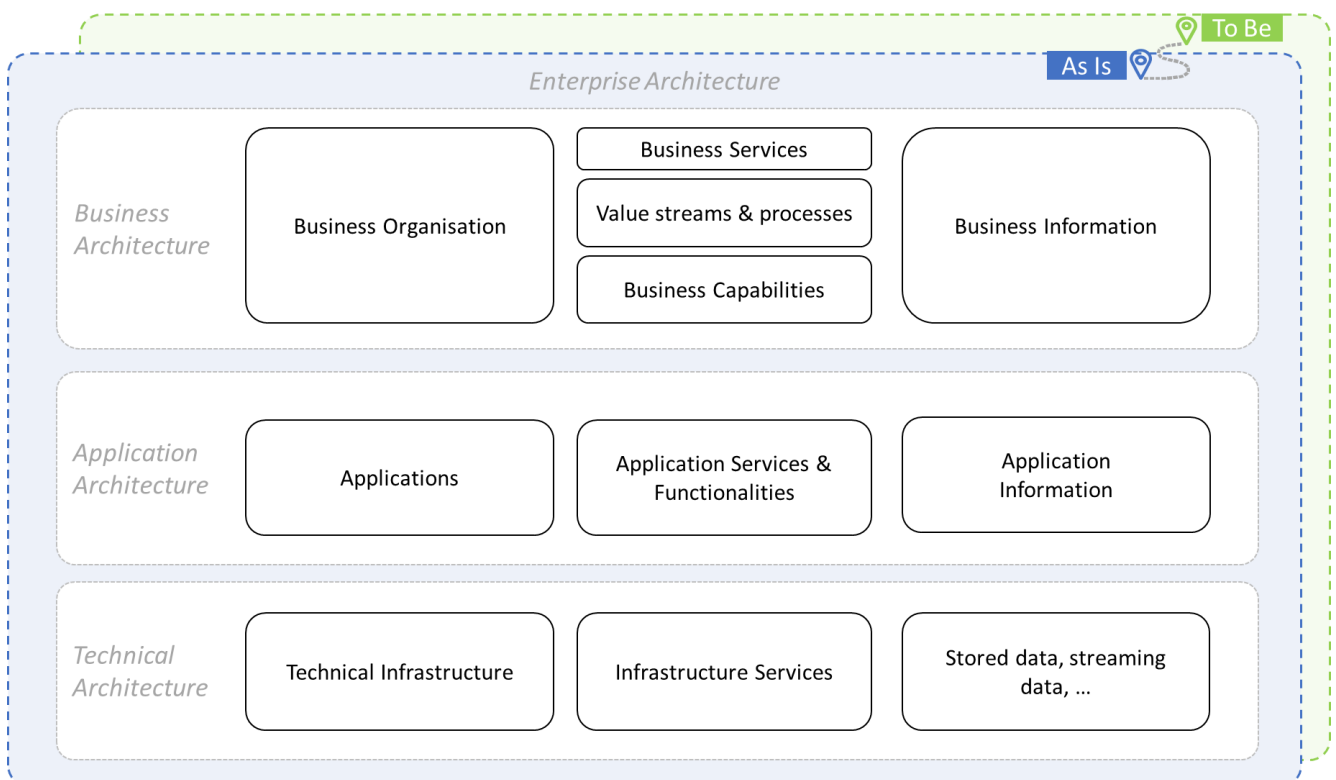

Figure C15-1: Simple Layered Integrated Architecture

The integrated architecture supports the development of a business architecture and supporting technology and data architecture ensuring they are aligned and support the organisation's goals and objectives. These models can be used to demonstrate the current state of the architecture the 'As Is' and the intended target state or 'To Be' and identifying the gap between the two states and the need for any change. They assist in building a strategic narrative for the enterprise.

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[21] Contribution by the EBU's "Capability Map Group", now the "Integrated Enterprise Architecture Group"

[22] see EBUCorePlus at https://tech.ebu.ch/metadata/ebucoreplus

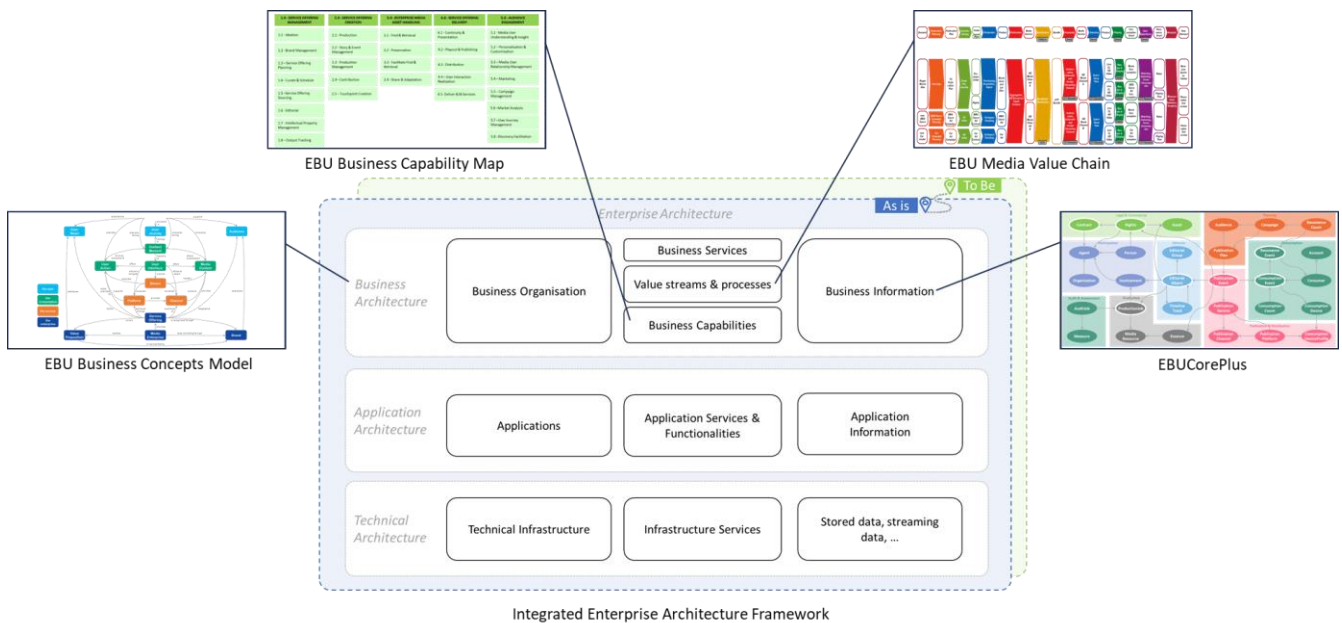[23] such as: ArchiMate, Zachman, TEAF, …

Figure C15-2: Mapping of Key EBU Architectural Artifacts onto an Integrated Architecture

Figure C15-2 illustrates how the key EBU architectural artifacts can be mapped onto the integrated architecture and provide media industry specific representations. In a similar way, EBU members' architecture practitioners can adopt or adapt the artifacts into their own integrated architecture practices.

Business Capabilities - The Business Capability Map (BPN 126 – a Member-only document) provides a media industry specific model for describing business capabilities.

Processes - The EBU value chain model provides a media industry specific model for describing a media organisations high level processes and business objects.

Information - The EBUCorePlus specification provides a media industry ontology which can be used to describe a media organisation's media data objects.

This broader overarching view can create an understanding of how capabilities are used by processes and the related business objects to achieve outcomes. A process perspective supports the identification of technology requirements and drives technology and architecture decisions. In the original business capability map deliverable BPN 126 capabilities were mapped to processes in Annex B.

The power of these perspectives - capabilities, processes, and information/data - can then provide the architectural foundations for building a more complete transformation perspective. A more complete and compelling narrative arises that describes both the business and technology change (assisting resource prioritisation) needed to fulfil our organisations' needs and that are captured as part of their overarching strategy.

Companies may already have adopted or be familiar with one of the leading enterprise architecture methodologies like TOGAF[24] or modelling language like ArchiMate[25] so we thought it would be helpful to provide a mapping of the EBU industry specific artifacts to these standards.

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[24] see: https://pubs.opengroup.org/togaf-standard/architecture-content/Figures/34_contentfwk5.png and
　　　　https://pubs.opengroup.org/architecture/togaf9-doc/arch/Figures/34_contentfwk8.png

[25] see: https://pubs.opengroup.org/architecture/archimate3-doc/

EBU Artifact	TOGAF® meta model	ArchiMate® modelling language
EBU Business Capability Map	Business Capability	Capability
EBU Media Value Chain	Process Value Stream	Value Stream Business Process Business Object
EBUCorePlus	Data Entity	Data Object