

Developing flexibility and choice in broadcast and production systems

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Introduction

Modern broadcast systems will have to cope with ever more flexibility as well as handle metadata throughout the structure. This short talk describes the issues and technologies most likely to be employed in modern system design to deliver an integrated approach. This will briefly include:

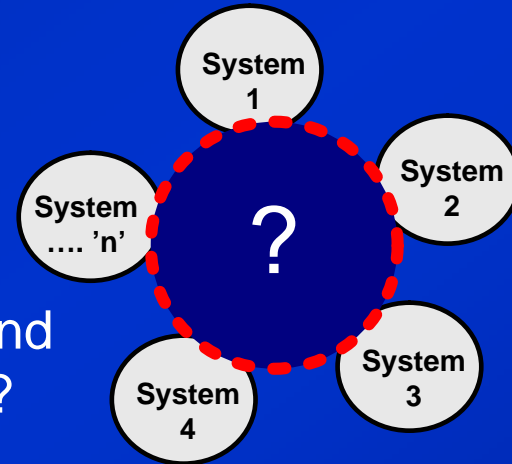
- Planning and specifying system requirements
- A description of “Middleware” and how it can be used
- Standards and technologies that support system integration.

What is the problem?

Broadcast and production system requirements are dramatically changing!

Away from linear, media only systems towards live and IT file based complex structures heavily linked to business processes.

How to integrate this kind of production structure?



System integration is the process of delivering a working complex structure by the use of a series of systems and sub-systems which achieve that delivery by the most cost effective and flexible method while also delivering the all the business requirements. In doing this the designer has to consider interoperability, robustness, usability, maintainability and the long-term cost of ownership amongst other things. All this has to cope with rapidly changing technology over the likely life of overall structure.

Understanding the business requirements: Key points

- Production processes
 - Work flows
 - Performance of security measures
- Business demands
 - Integration with business and resource management
 - Security
- Points of interoperability
 - Product or sub-system access
- Standards
 - What is needed and where should they be applied

Communicating the specification in today's IT environment.

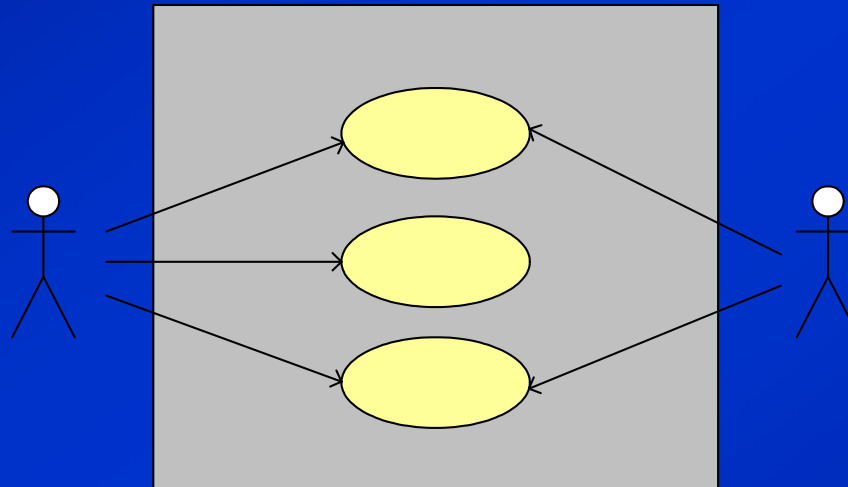
Key issues when setting down the technical performance requirements

- Video and audio quality specifications are still vital.
- It is even more important than before to specify system latency and availability requirements, as IT structures can produce major variations.
- Joining up business, workflow and technical “metadata” requires careful attention to interface specifications.
- There is a need to decide how “modular” the production structure has to be. Work on industry wide common processes being considered in the EBU.

All this requires setting down in a way well understood by IT and software designers. Process modelling is an key method of doing this.

Understanding the processes and work flow.

Here is a simple traditional process



This is depicted as a “use case” model

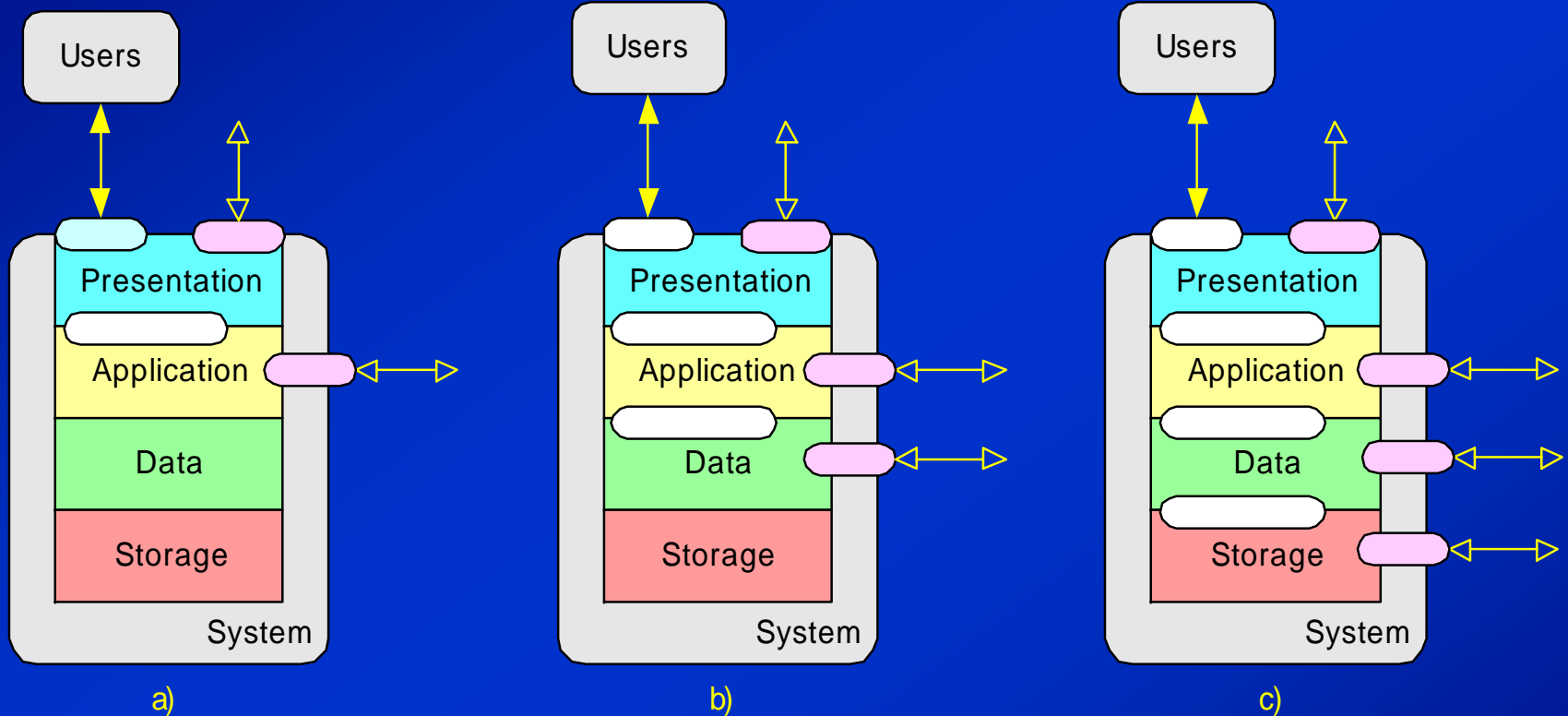
Now imaging setting down all your programme making and business processes in a series of such models, making sure they all fit together!

Joining processes together.

With all the business process integration required, either direct product integration is required or some method to interconnect products, sub-systems and user interfaces together.

“Middleware” can provide a key method to interface processes together into a cohesive overall business structure. Following work in the EBU group P/MDP, a pair of technical reports have been produced to provide guidance on specifying and using middleware concepts. These are referred to as Tech 3300 and Tech 3300s which are both freely available from the EBU technical publications area of their web site.

System or sub-system “gluing”



Open interface
(Set of protocols and Data
structure for external access)

Interactions with other
systems

Interactions with system users

A Middleware definition

Middleware can be defined as:

Processes with two or more tightly defined interfaces that are used to provide product or sub-system interoperability so that this delivers all the business and technical requirements needed to support the overall structural requirements between applications.

What are the key issues in supporting flexible integration?

- Open media file standards such as MXF, AAF, BWF for example as well as data file standards as used by IT.
- Common and well understood audio and video structural formats such as those developed by SMPTE, MPEG and the AES.
- Open and well understood media and data connectivity such as physical audio and video interfaces as well as network based standards.
- Open and well understood metadata definitions, particularly those used for exchange between products, separated processes and originations.
- Open and well understood standards for managing our business processes throughout our production structures.

Managing Production and Broadcast structures.

Manage what in particular?

- Production processes used to make recorded programmes.
- Production processes supporting Live broadcasting.
- Integrated business and resource management.

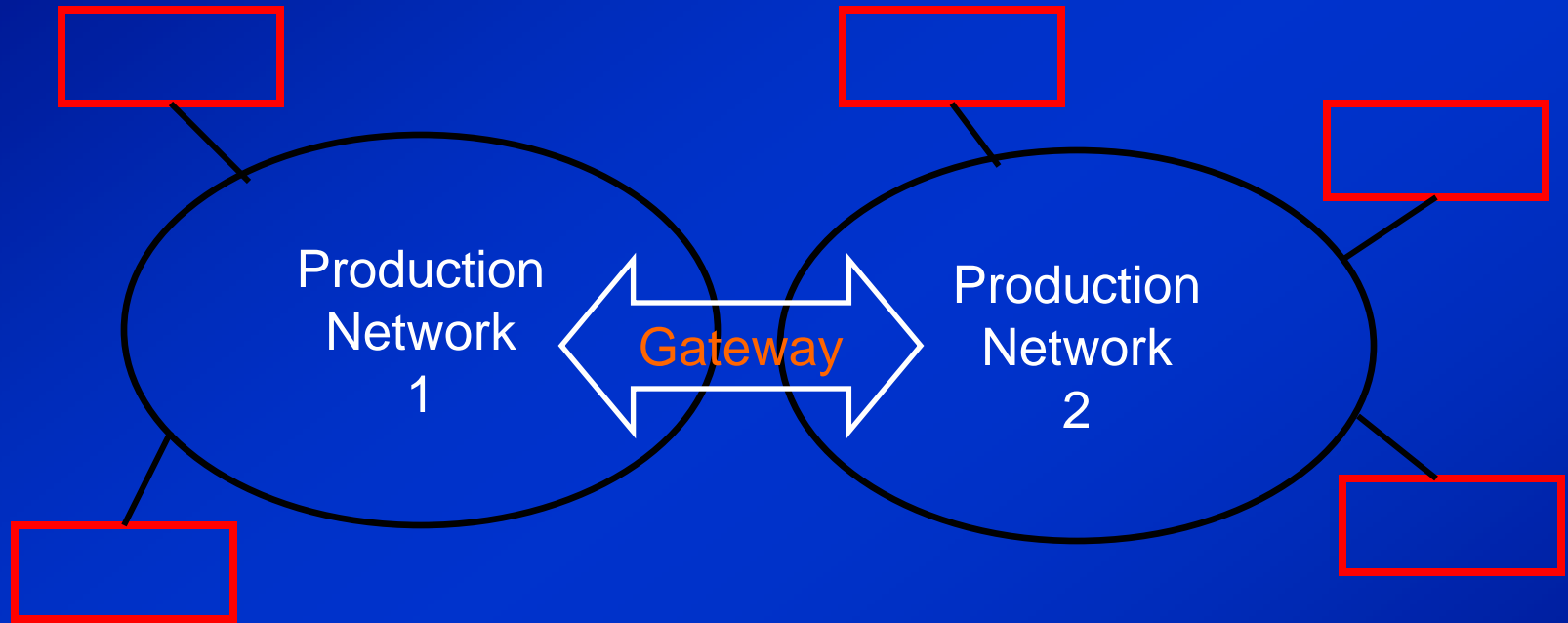
There has been some work towards the first and last points above within the EBU P/META group as well as SMPTE. However, the management of live production on IT network based systems has not until recently attracted much successful standardisation work.

New work on Common Control

A key element to the successful integration of live broadcast production structure is the ability to monitor and control the systems and resources used in the live production path in a robust way.

If live production is to be able to take advantage of varying IT and telecom network technologies while having the flexibility and cost advantage of using IT structured cabling, a set of standards will have to be produced.

Live production using networked equipment



The two networks shown are an example and may not necessarily use the same network technology

 Network attached equipment

Live production media

Audio and Video within a production environment may well be in a linear format and require:

- Low and stable latency
- High bandwidth with media “multi-standard” support
- Reserve path management

This puts particular Quality of Service demands on the network and requires a monitoring and control protocol which must be supported by most of the network technologies that may be used to achieve this.

Standards work for common control

The EBU are working with the IEC to try and achieve a common control standard for network attached production equipment.

The EBU group is called N/CNCS (Common Network Control Strategy)

The IEC project group working in the proposed standard is known as PT62379. Others are also working with this group to try and achieve a usable standard.

This work currently centres around the SNMP protocol. I believe this work to be key in the delivery of a truly integrated live production structure.

Thank you

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