

# BXF

## How It's Working In The Real World



### Abstract

Broadcast eXchange Format (SMPTE 2021) has enjoyed much fanfare since its release in April 2008. The standard is quite broad and can mean many things to many people in terms of workflow efficiencies. The past year has witnessed much press and demo activity surrounding BXF. In this paper, we'll look at how BXF is being deployed, giving broadcasters who have not yet implemented this protocol a glimpse into ways in which others in the industry are employing it.

### Some Fundamentals

For those not aware of what exactly BXF is, an introduction is in order. The Broadcast eXchange Format is the result of the efforts of more than 80 companies and more than 150 individuals to create a standardized means of exchanging data among broadcast systems. It specifically relates to three distinct areas:

1. Schedule/As Run Data
2. Content Metadata
3. Content Transfer Instructions

There is more to it than that, but keeping these three fundamental areas in mind tends to help in keeping the scope of BXF clear for those new to the subject.

At the heart of BXF is a collection of XML schema, which can be implemented to develop integrated workflows among broadcast systems. Both traditional file exchange methods, as well as more modern message-based data exchange, are supported. This allows a wide array and vintage of systems access to BXF and its benefits.

### The Chief Motivators

It's important to note that BXF is not technology for technology's sake. There are real business level motivators at work behind BXF's rapid adoption by the industry. It has been clearly demonstrated how BXF can not only reduce costs, but also, at the same time, increase revenues for broadcasters. Underlying all of this are the increasingly efficient workflows that become possible when BXF is employed.

If there was one perfect word that could be used to describe BXF, that word might be "dynamic." Interfaces (and the workflows they impose) that BXF replaces are typically rather static in nature. A snapshot of data at a single point in time is taken, and then that data is sent from Point A to Point B. Classic examples include once-a-day playlist downloads, as run uploads and dub lists.

Why is dynamic better? Simply put, it means the difference between interfacing multiple systems and actually integrating them into a single, seamless workflow. You still have separate systems, but they act in concert, as one.

One of the principal benefits here is a smooth flow of data without the need for its re-entry. Multiple entry points for the same data has two distinct problems. First, it's inefficient. Time, and as a result, money, are wasted when the same data is entered multiple times. Second, it introduces the possibility of inaccuracies popping up. Particularly when humans are involved in re-entry of data, error is inevitable. These errors, in turn, lead to additional losses in terms of revenue and efficiency.

## How To Develop BXF Implementations?

There is no step-by-step “How To Manual” that will tell you how to implement BXF in your systems or your facility. The BXF schema that are included in the SMPTE 2021 package are akin to a toolkit. Some of those tools you may find quite useful and will return to again and again, while others will elicit a “what would I ever use that for?” reaction. However, another implementer may find the same tool that was useless to you indispensable.

As an implementer, there is more than just a “toolbox” available to you. The 2021 standard itself provides you with two useful items, aside from the schema collection.

The first item provided is a 600+ page document. The first 80 pages or so of this document provide a useful narrative surrounding the standard that is indispensable to implementers. The remainder of the document is detailed schema documentation, which is also of value.

The second item is an html version of the entire set of schemas. This means that XML experts and neophytes alike can navigate the schemas in a hyperlinked, graphical way. This can be invaluable in sorting out the capabilities resident in various areas of the schemas.

## Interoperability Concerns

Immediately after publication of SMPTE 2021 in April of 2008, the SMPTE Working Group responsible for all BXF work embarked upon an ambitious project to develop a Recommended Practice (RP) for BXF. It was felt that this was of critical importance to the industry, as presenting a large and complex standard such as BXF to the industry and “hoping for the best” seemed to be an approach doomed to failure. In cases of standards that are created with a great deal of flexibility (and thus complexity), the likelihood increases that different implementers will interpret things in different ways, often leading to a lack of interoperability among systems.

Interoperability is the whole point of having a standard, so the lack thereof must be avoided at all costs.

The BXF RP (known as SMPTE 2021-10) is roughly an 80-page document itself. A team of 40+ worked for six months on its development. They pored over the BXF standard and looked for any areas that may have been open to interpretation (and thus potentially lead to a lack of interoperability), and added clarification into the RP. They also looked at actual implementations that were underway, and any interoperability issues identified there were addressed in the RP.

The result is a document that, when coupled with the BXF standard, provides implementers with the best chance of creating fully interoperable deployments of the standard.

## How Is BXF Actually Being Deployed?

With the size and scope of BXF, it would be impossible to characterize the implementation of BXF in a nice, tidy box. As was pointed out earlier, different consumers of BXF are using it for different purposes.

Some see great benefit in the dynamic linking of traffic and master control, so they are focused on the schedule portion of BXF. Others have great needs in the area of content metadata, so they care little about what BXF has to say about schedules. Still others are focused on the movement of content, and the content transfer area of BXF.

## Some “Real-World” Use Cases

### Hearst-Argyle

This large broadcast group is using BXF to shift control of what airs into the hands of those with the information needed, and those closer to the revenue, their traffic staff.

Joe Addalia reports that “Hearst-Argyle Television plans on using BXF to create a unified workflow between master control and traffic. The intent is to give traffic the ability to control the inventory up to a ‘reasonable time’ before air. This, we feel, will allow a station to maximize their inventory and give our advertisers the flexibility to substitute copy quickly all under the controls of the traffic department.

Further, the interconnection of our automation database and the traffic system will allow for program timing data to be imported to the traffic system. This will allow for much tighter logs and minimal playlist editing within master control.

In general our intent is to move the decision-making of what should air upstream from master control to traffic.”

### Telemundo

NBC’s Telemundo network was moving master control operations from Hialeah, Fla., to the Network Operations Center (NOC) at Englewood Cliffs, N.J. NBC approached Harris Corporation’s OSi team to build a modern interface between traffic located in Hialeah and the Network Operations Center. The interface was completely overhauled to use a modern XML-based interface that is extensible to changes as business needs evolve.

NBC took this opportunity to completely rethink their current workflow to reduce redundant data entry. The entire workflow — from receiving content from an agency to the airing of the content — was analyzed. They discovered that information about a commercial was entered in two systems. First, information is entered into a media management system that catalogs the media, and then entered again into the traffic system. In addition, discrepancies between the two systems could not be tracked until the last minute. With a new workflow process, data entry was done in the media management system. The information was synchronized with the traffic system, and discrepancies are flagged very early in the process.

Also, this information is shared very early with the automation system. This allows the master control engineer to perform quality checks and prepare the content so that it is suitable for broadcast.

## An In-Depth Look — Red Bee Media

### Why BXF is Important to Red Bee Media

Red Bee, as a large, international multichannel service provider, feels the pain of legacy interfaces and stands to benefit from BXF's many advantages perhaps more than most.

Ian Wimsett, Senior Technologist at Red Bee, reports that Red Bee Media provides playout and channel management services to a diverse range of clients from the Broadcast Centre in West London, UK. They originate more than 120 streams of TV, ranging from simple, 'nonreactive' channels, frequently planned many weeks in advance, to highly 'reactive' channels, which can have many programme or interstitial schedule changes each day.

Red Bee Media receives in excess of 100 schedules — or 'data-driven requests for work' — every day, a large percentage of which originate from diverse systems, are supplied in proprietary formats, and use different delivery methods. Every one of these schedules requires some kind of checking or modification before it can be used by the common systems within Red Bee Media.

A simple illustration of the non-BXF system is shown below. Only four clients and five channel groups are shown, but in reality the numbers are considerably higher. Each of the broadcast management systems has a proprietary interface and therefore requires an adaptor to interface via the workflow system to playout automation and digital asset management. The adaptors perform a range of (often complex) business logic operations to meet the requirements of downstream systems. These include, for example, the modification of material IDs to suit SD and HD services, the merging of schedule components to provide secondary event information, the insertion of 'blanking data' for streamed services with specific rights restrictions, and the manipulation of schedules into different versions to suit multiple commercial regions. The complexity of the adaptor is dependent on upstream system functionality and the quality of the data that is exposed via the system interface.

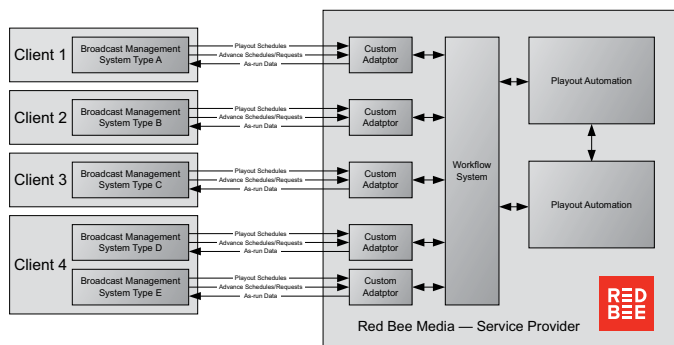


Figure 1 — Non BXF interfaces to multiple client business systems

There are clear disadvantages to this approach and a consequent impact on the cost of provision to Red Bee Media's clients:

- A new adaptor is required for each new broadcast management system added to Red Bee Media systems — often a costly, complex undertaking. Experience shows that interfaces cannot simply be re-used if they have already been provided for an existing client — apparently using the same product. Design effort is required to manage customized functionality and issues with deployed versions.
- The functionality provided by the proprietary interfaces does not permit common, cost-effective workflows within Red Bee Media.
- Changes in functionality provided by the broadcast management system require custom changes to the adaptors.
- Improvements in downstream systems may not be realized without modification to adaptors and interfaces (for example, itemized as-run information will become available in playout automation systems and be required by traffic or programme scheduling systems).
- The adaptors must be maintained, hosted and supported by skilled staff.

Although use of proprietary interfaces between Red Bee Media and its clients is one area that could be improved by BXF, there are also some internal interfaces that could benefit from a BXF implementation. Using the example in figure 1, the interface shown between the DAM system and playout automation is proprietary and could be BXF, allowing re-use for other automation systems sharing the same DAM.

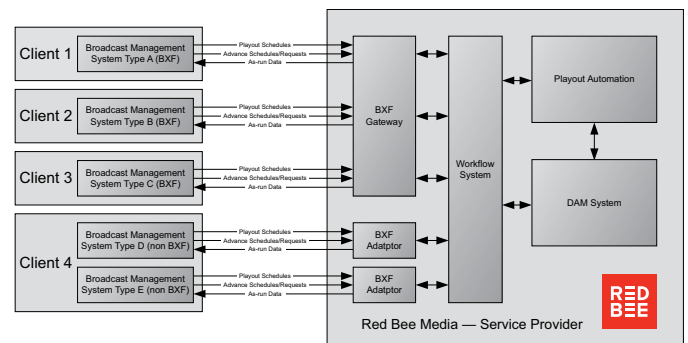


Figure 2 — BXF gateway interface to multiple client business systems

## Using BFX — The Architectural Approach

For Red Bee Media BFX offers the potential to provide:

- A unified interface between Red Bee and its clients and our company
- Standard interfaces between internal systems

## Using BFX — A Practical Implementation

Red Bee Media are currently implementing some new systems to provide broadcast and production services for a major broadcaster in the UK. The dual-site solution will support tape and file ingest, compliance and promotions creation, archiving, transcoding and distribution for a video on demand (VOD) service, and playout of 20 streams of HD and SD TV — a complete end-to-end service.

The high volumes of content and the requirement for dual site operation have necessitated new 'instances' of our 'standard' Digital Asset Management system (DAM) and a new playout automation system. This has allowed the use of BFX interfaces between internal systems and as a gateway to the client's business systems.

A simplified system block diagram is shown below:

## Future Implementation

The systems described previously are due to be fully deployed by Q3 2009.

## Conclusion

By reading this paper, and reviewing just the few use cases it illustrates, it is evident that BFX implementations come in many varieties. The standard is wide-ranging enough that the actual deployments of the standard can be quite unique, according to the requirements of the end user.

How you deploy BFX is dependent on how you can best use it to achieve your goals. Remember the analogy of BFX being like a toolbox. Not everyone will use every tool. Pick and choose the tools you need, and you will be able to build a clean, efficient set of workflows for your facility.

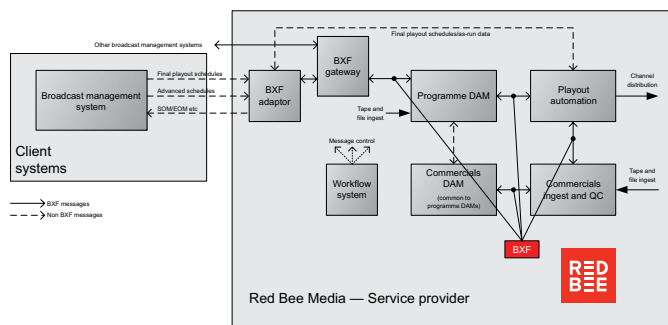


Figure 3 — New systems deployment using BFX messaging — simplified

For more information, please visit [www.broadcast.harris.com](http://www.broadcast.harris.com).

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