

# BXF Is Published—Now What?

By Chris Lennon



SMPTE's 32NF BXF Working Group (formerly S22-10) has been somewhat of a departure from the normal SMPTE standards development process.

Not only did it perform 99% of its work outside of the “normal” SMPTE quarterly technology committee meetings, but also the work was somewhat different—broadcast software.

You may ask what's so different about software standards? In a nutshell, it's the rate of change. Unlike hardware, software can and is routinely changed at a furious pace. As a result, software standards must be flexible and extensible. The new SMPTE standards process has proven itself very valuable in helping to move the organization toward a leaner (but not necessarily meaner) model, better suited to these new, more dynamic software-based standards.

For those not familiar with this effort, the Broadcast eXchange Format (BXF), is an XML-based (eXtensible Markup Language) standard for the exchange of data primarily among program management, traffic, automation, and content distribution systems (Fig. 1). As one of the veterans of SMPTE standards development will say, “What problem are we trying to solve here?” That's probably a good place to start.

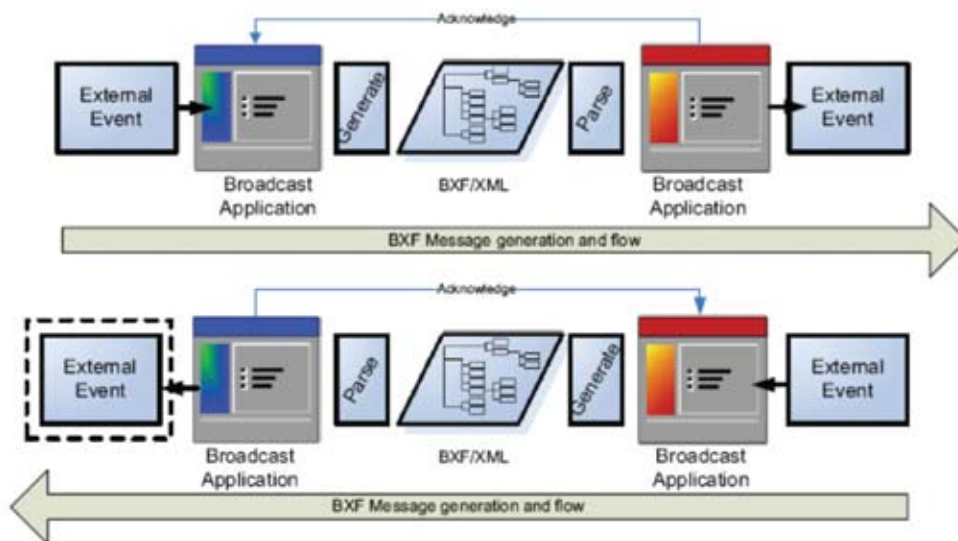


Figure 1. BXF data flow.

## What Problem Does BXF Solve?

BXF set out initially to solve the problem that had evolved in terms of interfaces between Traffic and Automation systems. Interfaces were proprietary, arcane, batch in nature, and certainly not extensible. In short, they did not address the needs of today's broadcasters, who require dynamic, adaptable, and open standards to move from mere interfacing to true integration and interoperability.

## The Bits and Pieces

BXF has many components, so a good place to start is to outline the functions of these components.

BXF delves into three basic areas, which will be explored.

### Event-Related Data

Most people consider BXF to be Traffic schedule information being sent to Automation, and AsRun information being sent back to the Traffic/Billing system. Systems have done that for years, but BXF offers several improvements over existing interfaces. Most dramatically, it enables dynamic near realtime communication between these systems. This means that it is now possible to shift responsibility for the on-air product to those with the knowledge of what should air when...the Traffic staff.

Last-minute sales become not only possible but also quite simple. Costly make-goods are dramatically reduced. Reconciliation of AsRun logs becomes a trivial exercise. The benefits are many, and if that were the only function of BXF, it would result in dramatic workflow gains for broadcasters.

### Content Metadata

Many systems that do not actually touch the essence are very concerned with content metadata. For this reason, it was necessary to standardize a means of sharing metadata that is de-coupled from the essence among broadcast systems. BXF has a very deep and rich content metadata structure that enables great detail concerning content to be shared without the need for access by these systems to the essence files. This allows unprecedented knowledge of the content among systems.

### Content Transfer

This is where the content distribution systems come into the mix. With today's file-based workflows, a standard was needed to allow systems to communicate requests for content movement. What does Automation do if it does not have the necessary material to play an hour from now? BXF provides an answer. Using BXF, systems such as Automation, Traffic, and Program Management can request movement of content from one place to another. Coupled with the content metadata strengths of BXF, this becomes a very powerful content-related tool that again enables highly-automated interoperability among broadcast systems.

## How Does This Relate to MXF (Material eXchange Format)?

A very common question that arises, particularly when the conversation turns to the content metadata area of BXF is how this relates to MXF. The answer is actually quite simple. BXF and MXF are complementary. BXF allows systems that

do not deal directly with MXF files to access the metadata embedded in those files. An activity to define a path from MXF metadata to BXF is on the "to do list" of 32NF-BXF.

## What Else Is Inside?

There is much more to BXF, but a few other major areas are worth exploring in some depth.

First, BXF offers a Configuration area, which enables systems to negotiate legal values for otherwise non-enumerated data elements. As the standard was being developed, it became clear that certain aspects (e.g., channel names) could not be standardized. Although this is a critical data element, it simply was not possible within a standard to enumerate every channel or service that existed in the world. Using Configuration, systems can provide their table of channels so that mappings can be easily achieved.

The second major area of interest is the Query area. This is an extremely powerful part of BXF, and one that is expected to gain increasing attention as systems mature in their implementation of BXF. Query allows one system to query another using an SQL-like structure. A good example would be a Traffic system inquiring what an Automation system knows about a particular piece of content. In return for a Query with a specific Content ID, the Automation system replies with information such as title, SOM (Start Of Message), duration, and similar metadata. The Query area is incredibly flexible, so there really is no limit to its use between systems.

## What Is on the BXF Horizon?

After SMPTE-2021 (BXF) was published, the 32NF-BXF working group immediately met to discuss what was next. This speaks to the dedication of this working group's members. Many would be burned out after over three years of hard work on a document and schema of this size, but this group was eager to do more. Thus a new activity for writing a BXF Recommended Practice (RP) is now under way, with a great deal of enthusiastic participation. Led by Adam Gotlieb of Harris, the RP promises to provide the industry with additional guidance on BXF implementation, which should go a long way toward ensuring interoperability among systems incorporating SMPTE-2021 functionality.

## How Can You Get Involved?

This working group continues to have plenty on its plate and is eager to add new members to its roster. The work is quite exciting and is evolving quickly. Once the RP work is complete, the group has already decided to move on to the definition of "BXF 2.0," which will incorporate new features to enhance BXF. Input is always welcome from broadcasters, manufacturers, or implementers of BXF-related technology.

To join, simply log in to [www.smpte.org](http://www.smpte.org), in the Members' Area, and access the My Groups area, where, you will find TC-32NF-WG BXF.

## Conclusion

Hopefully, this article has helped you gain an appreciation for the power and potential application of BXF in the broadcast environment. The bottom line here is workflow efficiency. The use of BXF clearly results in cost savings as well as new and increased revenues, which has meant that broadcasters have been highly motivated to press their vendors for implementation of this new SMPTE standard. BXF is already being implemented in the field, and it is expected that these implementations will expand not only across broadcast operations but also in their scope. Early implementations seem to focus on the basics, such as Event-Related data. As broadcasters and vendors become comfortable with incorporating BXF functionality into their operations and products, you can expect to see many of the additional components outlined in this article emerge in the field.

## The Author

**Chris Lennon** has worked in the broadcasting industry for over 25 years. He has managed a wide array of products and led several large-scale projects at broadcast facilities around the world. He has also led the development of more than 100 interfacing and integration projects between broadcast systems.

Lennon is Harris Corporation's Director of Integration and Standards, part of the CTO Group. He is Chair of SMPTE's 32NF BXF Working Group, which created SMPTE-2021, and continues in its work in the area of data exchange among broadcast systems.

Lennon is an active participant in the Advanced Television Systems Committee (ATSC), where he was one of the early instigators of the effort that became Programming Metadata Communications Protocol (PMCP), enabling PSIP-related data to flow between broadcast systems. He also represents Harris in a wide array of standards development organizations in broadcast, cable, digital signage, and Internet Protocol Television (IPTV) and chairs ATSC's new PC-7 working group, focused on PMCP interoperability.