

Application Note

Automated Caption & Subtitle Delivery in Next Generation Playout Workflows

ScheduleSmart™

Synopsis

This application note explores caption and subtitling playout challenges in modern workflows and explains how they can be met using Softel's ScheduleSmart™ technology and Swift playout systems to deliver optimum efficiency and reliability.

Introduction

The broadcast ecosystem is evolving at breakneck speed, with a proliferation of platforms generating an entirely new workflow, including a move towards tapeless environments.

While video and audio are well taken care of, catering for ancillary data can prove more challenging.

The importance of captioning & subtitling in the broadcast environment should not be overlooked and accordingly it is essential to make the workflow for ancillary data dovetail with that for audio and video, whether binding is "early", "late" or "live".

Challenge

- Reduce unreliable, inefficient and costly manual intervention during the binding of caption and subtitle data in complex, next generation workflows.

Solution

- Softel ScheduleSmart, combined with Swift vTX and Swift TX, coordinates, controls and automates the ingest and playout of ancillary data, including captioning and subtitling.

Benefits

- Reduced operational costs
- Enhanced productivity
- Simplified workflow complexity
- Increased QoS

Why caption & subtitle content?

Caption & subtitle content is becoming increasingly important for a number of reasons, with the most cited being accessibility mandates aimed at allowing hearing impaired viewers to enjoy television. However, beyond the mandates many broadcasters output captions & subtitles for compelling commercial reasons, including enhancing a programme's reach.

Captions & subtitles can:

- Maximize the demographic available to an advertiser
- Make programming accessible in public places (for example at airports and gyms)
- Open the program to a multi-lingual audience through language translation – a far less costly and speedier alternative to dubbing (and of course dubbing does not offer accessibility benefits)
- Enable metadata-based searches of content

However, this involved an expensive manual process, which began to be phased out in the 1990s thanks to time-of-air playout systems which pull the right file from a server at the point of playout, then encode it on the fly. More recently, a proliferation of platforms (e.g. cable, IPTV, mobile, satellite, terrestrial, VOD, and the Web) has added enormous complexity to the playout environment.

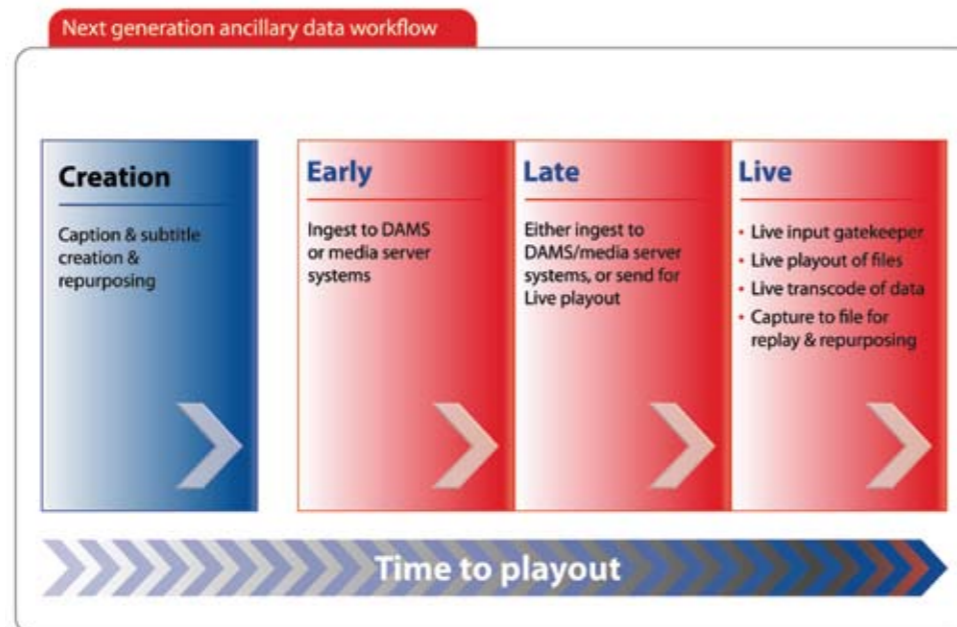
This has led to an adoption of file-based tapeless environments where facilities rely on Digital Asset Management Systems (DAMS) and media servers to manage and organize their assets and target platforms. In file based workflows, a caption & subtitle ingester can be used to enable the binding of ancillary data as digital assets to content in various formats. This "early" binding takes place ahead of airing meaning playout is seamless to multiple platforms.

How to get captions & subtitles to the viewer

There are two major stages to getting captions or subtitles to the viewer. Firstly the caption or subtitle file must be created, or repurposed from a previous incarnation.

Once the file is QCed and ready for "air" it must be bound to the content.

Traditionally, this involved creating a new physical master tape which contained the relevant data for later playout.



Caption and subtitle challenges in complex workflows

Although elegant and favored, early binding does not cater to late arriving caption & subtitle files, live programming, or where real-time captioning/subtitling is to be used. In this case, a time-of-air system must be directed to control the playout.

This workflow forces broadcasters to adopt one default method and imposes a reliance on costly manual interventions by busy engineering and production teams, which must deal with the many exceptions and special cases that arise in complex workflows. Manual interventions generate a loss of reliability and workflow efficiency and can lead to lost captions/subtitles. This loss is despite the broadcaster having already gone to the expense of paying for the program to be captioned and/or subtitled. Viewers are left frustrated and the broadcaster is faced with reduced quality of service and expensive penalties from governing bodies.

Solution

There is a clear need for a system to automatically determine the optimum bind-point for caption &

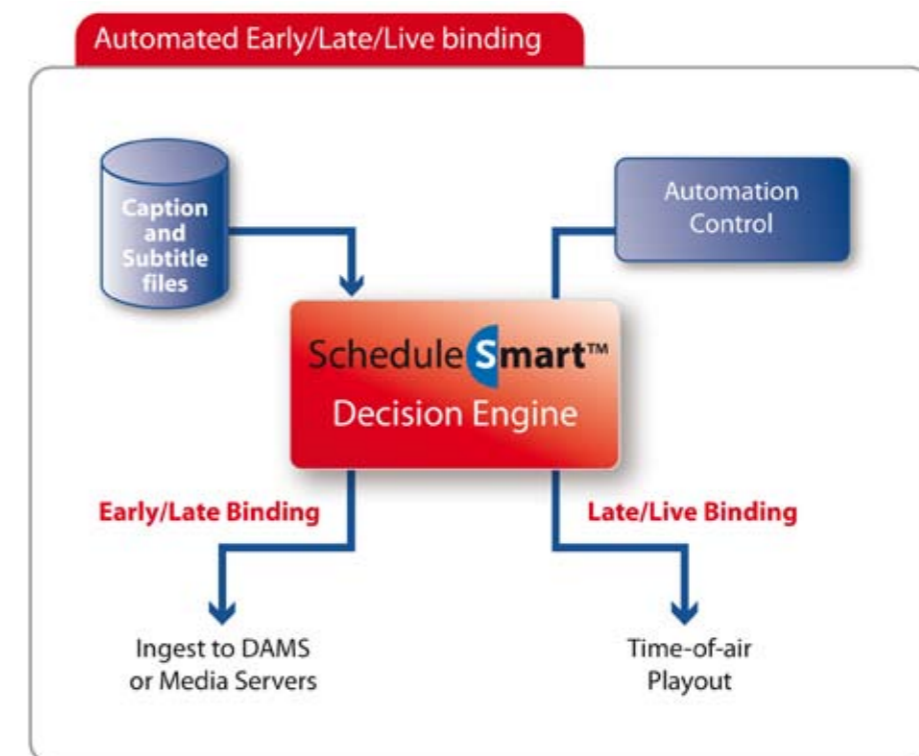
subtitle and other ancillary data. This solution needs to be sufficiently intelligent to evaluate a number of parameters that will determine the optimum binding point in advance of playout time. Additionally it needs to have the flexibility to deal with the many variations that occur from event to event and for each broadcast platform.

Ideally, this system would take advantage of incumbent systems and integrate seamlessly into already complex workflows, contributing to their simplification, thus allowing significant reductions in operational costs and increasing productivity.

The Softel solution

Softel's ScheduleSmart™ is a new technology that combines with existing captioning & subtitling solutions to identify the optimum binding point and automate the playout of ancillary data (including captioning & subtitling) across a variety of platforms within a modern "early, late, live" binding environment.

ScheduleSmart combines with Swift vTX caption and subtitle encoding software, and Swift TX time-of-air caption and subtitle playout platforms.



ScheduleSmart™

ScheduleSmart is a decision control center that determines how and when the caption & subtitle data will be bound for playout, based on information from the broadcast event schedule. Swift vTX is used to ingest this data in early and late binding, while Swift TX is used in late and live situations for time-of-air playout.

The system automatically monitors relevant servers and once it detects a QCed caption or subtitle file ready for air, it considers the following information to determine the appropriate bind point:

- Duration until air-time
- Swift vTX work queue status
- Number of available Swift vTX nodes
- Swift vTX server hardware power

- Typical speed of ingest to the target server
- File size and complexity (including file format)
- Availability of Swift TX live playout systems

ScheduleSmart typically does all of this in around 1/10th of a second.

If there is sufficient time, ScheduleSmart will initiate the ingest of the caption and/or subtitle file via Swift vTX on to the DAMS or media server.

If there is not enough time, if the event is live, or if the captioning/subtitling will take place in real-time then the Swift TX time-of-air system is directed to playout accordingly.

Critically all of this takes place with little or no user direction in a totally automated manner.

However, in order to allow corrective action to be taken as necessary, ScheduleSmart can be configured to warn operators ahead of air-time if it does not detect a matching file within set boundaries. The default values can be changed per the broadcasters preference. ScheduleSmart will not create an alert if the event is

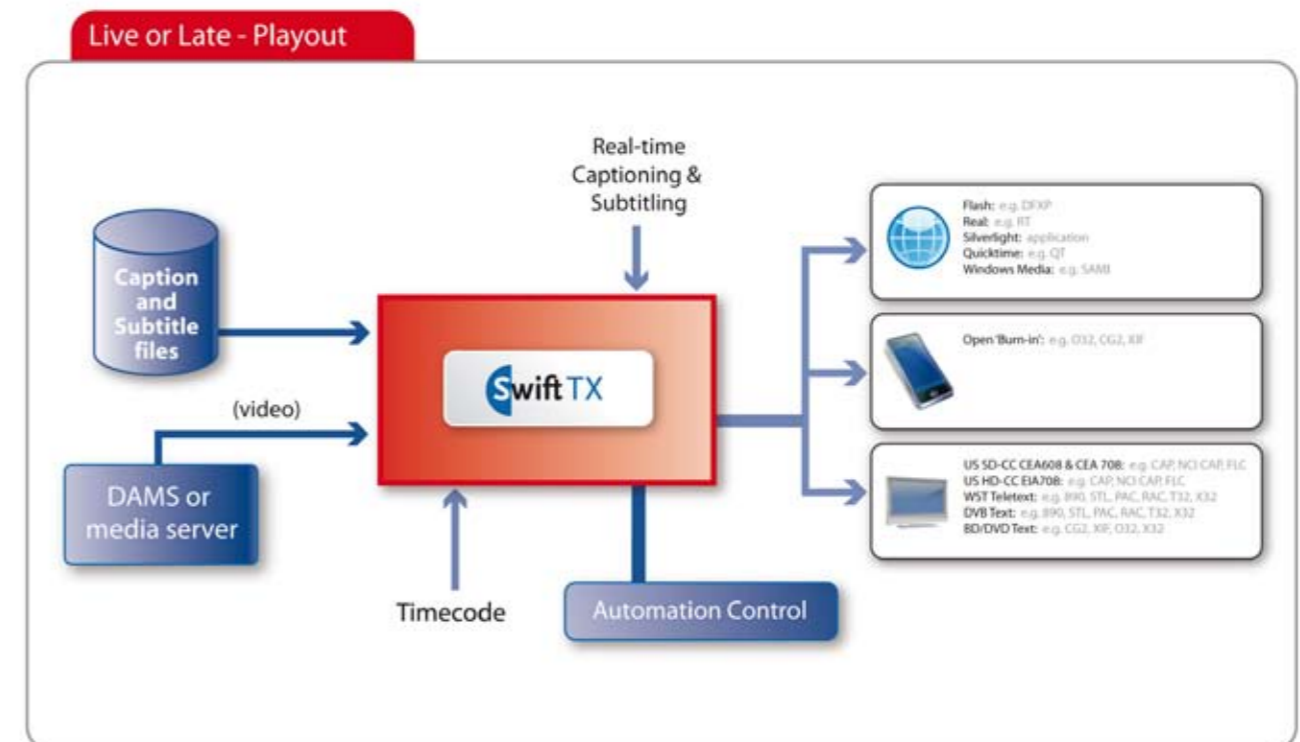
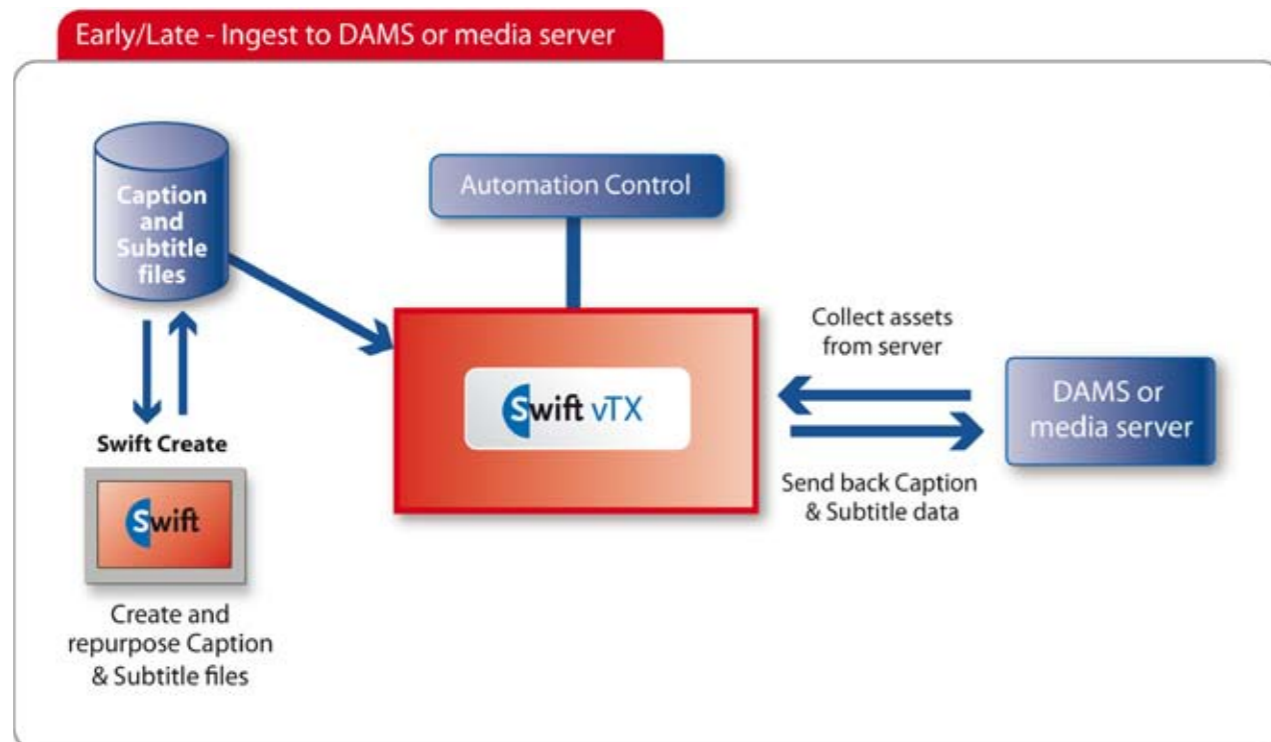
flagged as real-time captioned, or as a live event. This coordinated and highly automated approach dramatically reduces the cost of user involvement, and helps ensure that the correct caption/subtitle reaches the correct viewer regardless of the viewing platform.

Fault Tolerance

ScheduleSmart is typically installed with high availability achieved through n+n configuration. The system takes full advantage of similar fault tolerance built into Swift TX and Swift vTX systems. So as well as reducing the impact of last minute job assignments and the potential for human error in the heat of air-time, the system itself is highly resilient.

Smart File Handling

The entire Softel ancillary data playout family shares the highly respected Swift smart file engine as found in Swift Create which is the most deployed caption & subtitle creation and repurposing system in the world. The Swift smart file engine handles the import and export of a vast array of both open-standard and proprietary file formats and is used by almost every major caption/subtitle house worldwide. The same engine is also built in to a host of leading OEM transcoding solutions.



Conclusion

Softel's ScheduleSmart, combined with Swift TX and Swift vTX, delivers the right caption & subtitle, at the right time, in the right format, regardless of how close to air-time the source caption/subtitle data is available. The Softel solution allows broadcasters to enhance their QoS, delivering increased viewer satisfaction and contributes to a reduction in operational costs while simplifying modern multi-format, multi-platform workflows.

By deploying ScheduleSmart, with new or incumbent Swift TX and Swift vTX systems, broadcasters ensure their requirements for captioning and subtitling are met today and in the future as they expand their workflow to deliver a multitude of content types to a variety of audiences over multiple playout platforms.



About Softel and the Swift family

Softel has over 25 years experience providing end-to-end captioning and subtitling solutions for the broadcast industry.

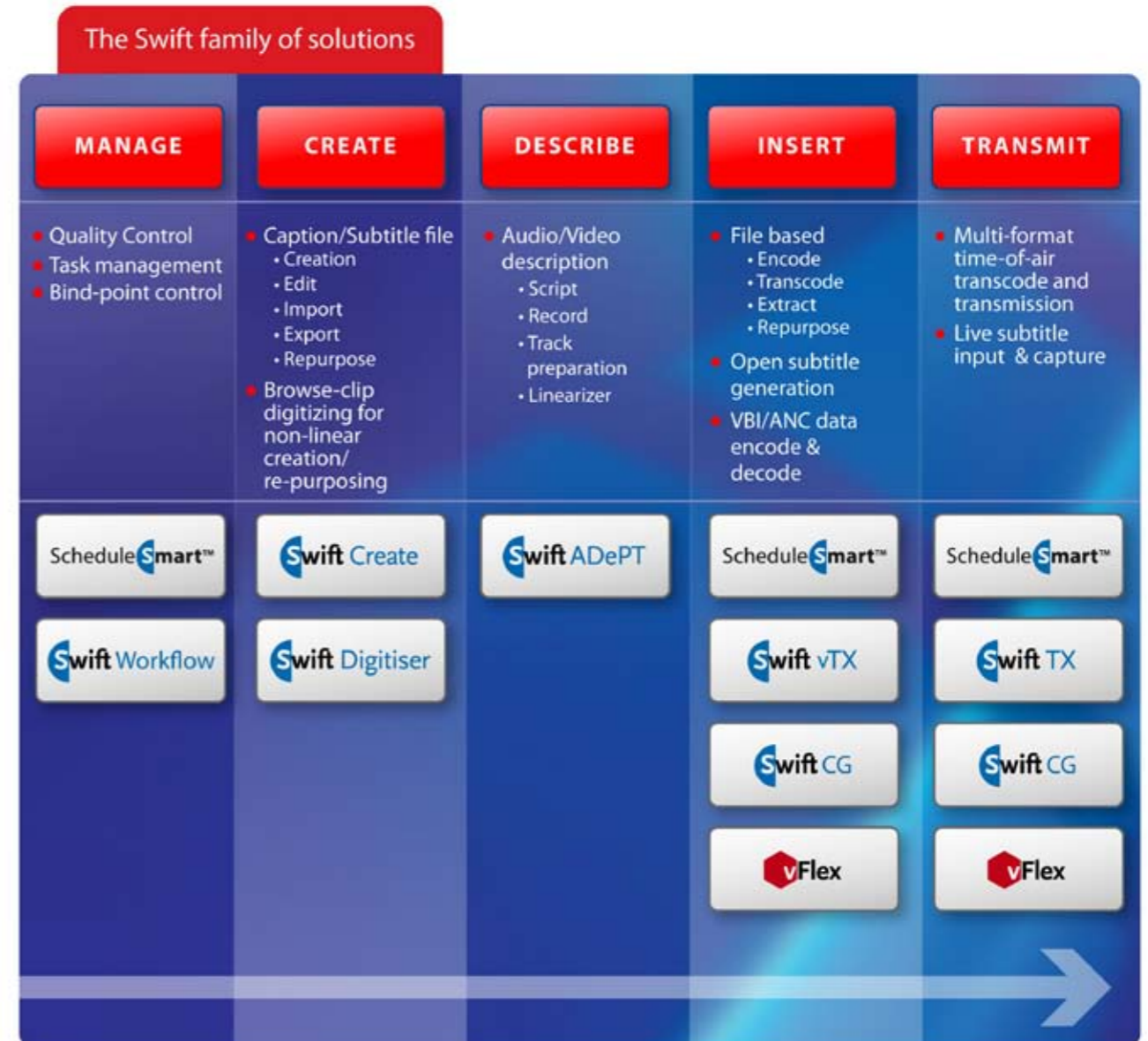
The Softel Swift family of caption and subtitle solutions allows broadcasters to create, re-purpose, insert and transmit all captions and subtitles in a large variety of formats.

Softel's Swift Create workstation is the most deployed in the world and creates and repurposes more caption & subtitle data than all rival systems combined.

Traditionally, these captions and subtitles were encoded on to sub-master tapes, which relied on time-intensive tasks being performed by engineers. In the 1990s Softel launched the first generation of Swift TX, which revolutionized the workflow by automating playout under broadcast automation control.

Increasingly however, tapeless systems based on DAMS and media server technologies are an integral part of the broadcast playout process. Therefore, Softel launched Swift vTX to bind ancillary data on to the DAMS or media server ahead of air-time and in so doing provided a completely new capability. Swift vTX has not only deployed rapidly in its own right, but has quickly become the OEM system of choice for a host of transcode partners who require complete control, reliability and the benefit of Softel's in-depth expertise in the space built-up over more than 25 years.

Softel also provides the broadcast industry with solutions for interactive TV, MPEG stream processing & multiplexing, opt & ad-insertion cuing, as well as for Teletext.



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