

ICE

Flexible, scalable, reliable Channel-in-a-Box



- Dramatically lower your cost per channel
- Packs multiple functions into a small footprint
- Start small and grow with ease
- Enjoy IT efficiency without losing broadcast resilience

ICE is engineered to deliver ultra-reliable 24/7 playout with:

- Dual redundant power supplies
- RAID media storage
- Content pre-validation



A uniquely powerful set of redundancy capabilities ensures fail-safe operation:

- Mirrored playback
- Guard sources
- Panoplay multi-site synchronized redundancy
- N+1 redundancy



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We focused on what a channel needs. Not on the box.

We created ICE.

In today's cost driven environment, many broadcasters are increasingly looking for affordable playout solutions that will easily integrate into their existing workflows. They need to reduce the cost and complexity of their playout systems and maintain performance and reliability in these critical operations.

Snell understands that automated playout is a complex operation. So when we designed a channel-in-a-box, we focused on what it takes to make a great channel, not just a box.

The result is ICE, an integrated, IT-based system that meets the demands of sophisticated broadcast playout operations, while dramatically increasing efficiency and lowering cost.

ICE combines more of the 'channel' into the 'box', maximizing the commercial and operational benefits and providing Snell trademark quality and service to a range of applications including:

- National broadcasters
- Network origination
- Centralcasting
- Business continuity
- Station master control
- Regional broadcasters
- Corporate/government broadcasts
- Religious/educational channels
- Community television

ICE is the only channel-in-a-box system that can truly scale from a single channel to 100+ channels while maintaining the same user interface. Thanks to its unique Flexicore™ architecture it can adapt easily to changing requirements and enables you to bring new revenue-generating channels and services on-line quickly, without disrupting operations.

Whether you operate a single channel, or work in a complex multi-channel playout environment, ICE is designed to accommodate your current requirements, and provide scalability for the future.

Powered by Morpheus Automation

ICE incorporates Snell's award-winning Morpheus automation technology. Morpheus delivers the most flexible and powerful broadcast automation on the market today.

The essence of Morpheus builds on the principles of utmost versatility and flexibility, combined with the ability to support a myriad of different workflows, production environments and content distribution platforms. Furthermore, Morpheus has the ability to future-proof

your business – over time it can grow and accommodate new distribution platforms in response to changing market demand. Many of the world's leading broadcasters, facilities and playout centres have placed Morpheus at the heart of their operations.

As we progress further into the digital multi-screen world, these same broadcasters are relying on Morpheus' ability to anchor their production operations and support a growing diversity of distribution channels that feed their core media consuming audience. ICE provides the building blocks to facilitate the delivery of the core media under Morpheus. It consolidates agnostic video playout, true master control switching, graphics, channel branding, and insertion and rendering of captions and subtitling all within a single unit.



Every playout application is different, so we designed ICE to let you work the way you want to work.

Unrivalled Feature Set

When developing ICE, Snell combined the best of IT technology with our broadcast know-how to deliver a uniquely flexible multi-function building block capable of managing a wide range of programming and event types.

Each ultra compact ICE can have up to four inputs and outputs supporting a mixture of HD and SD channel operations including simulcast, delay channels, clean feeds and preview channels. Punching well above its weight, the ICE content engine integrates a video server, 3D or 2D graphics, master control switching, channel branding, captioning and subtitling as well as a whole host of other ancillary data insertion and handling, all in a 3U frame.

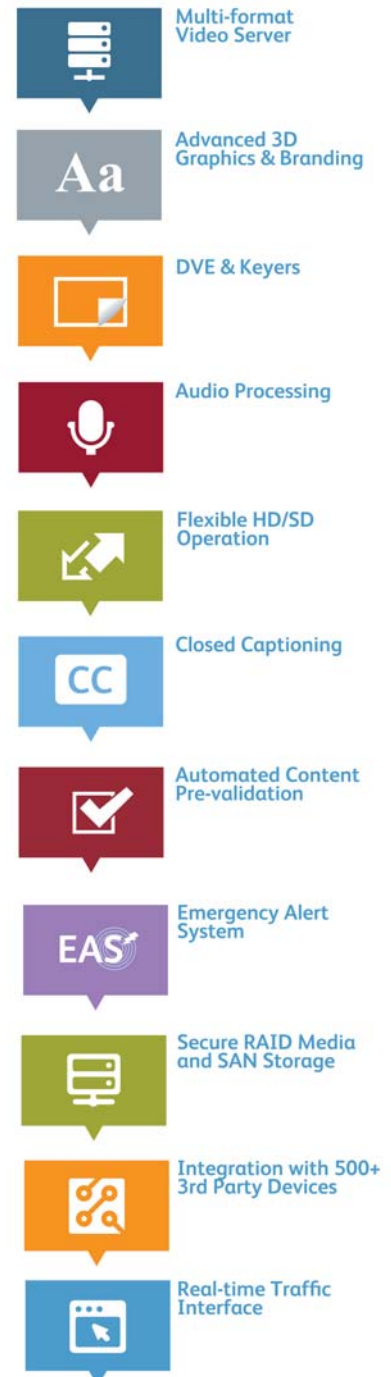
Simple to set up and configure, ICE can be implemented as a complete self-contained channel within your broadcast operation.

It provides an affordable stepping in point for start-ups, and importantly it possesses the flexibility and scalability to grow and develop in line with your business plan.

Guaranteed frame accurate operation coupled with constant signal timing ensures ICE can seamlessly integrate into a live broadcast video system whilst also managing file-based workflows. Its resilient architecture, including RAID 10 media storage, meets the demanding requirements of mission critical broadcast applications, this level of robustness is further enhanced by Morpheus automation - a core building block of ICE, providing an extensive range of redundancy options for playout.

Throughout ICE's operational life, its users will enjoy further benefits from this straightforward approach, not least that a reduced component count means that there are fewer points of system failure.

Aligned with this simplicity in design is a significantly reduced training requirement. Users need only learn ICE and not all of the discrete systems that you would find in larger, more costly playout automation systems.





Unrivalled Feature Set

ICE's ultra compact form factor belies advanced system functionality:

Multi-Format Video Servers

ICE is format agnostic and can process SD and HD source material. It manages all of the processes required to prepare the pictures, sound and ancillary data for frame accurate, secure, high quality SD/HD playout.

Format Conversion (Up/Down/ARC)

ICE provides integral real-time up-scaling of SD source material on-the-fly. Regardless of the SD source format ICE can also combine SD and HD material on the same timeline leaving you to concentrate on running the station. ICE also provides integral down-scaling of HD content to SD with mixed SD and HD content within the same playlist.

Router and Multiple Mixers

Each ICE may contain multiple HD and SD mixers each with a number of assigned full layers. Typically two layers are used for a mixer to support preset and program sources when mixing in real-time between sources, one layer for full frame DVE background and one layer for graphics content including logos and text. Transitions including cross-fades with any combination of fade-in duration, fade-out duration and overall transition duration may be implemented.

Advanced 3D Graphics, DVE, Keyers

Each mixer has up to four keying layers. Any video source may be switched to a keyers input, including video players, text, static bugs, timecode, and live feeds captured with fill and key.

ICE includes integrated 3D graphics and Character Generation from within. This feature includes timeline editor control to simplify the graphics creation process. ICE can populate graphics data fields from a number of external sources such as web sites, RSS feeds, text files and so on.

Audio Processing

Each mixer provides four audio voiceover inputs, any embedded audio source can also be switched to an audio voiceover input and mixed into the output of the mixer, whilst the mixer executes a dip of the PGM audio level.

Content Validation

Our wealth of experience in being a broadcast equipment manufacturer have shown us that with content being delivered from numerous sources in file based workflows many problems can be introduced. Snell's unique Content Validation eliminates these problems by checking source material as soon as it is available using ICE software decoder technology to ensure that bad files are quarantined before they can go to air and operators are alerted to any problems found so that they can fix them way before material is required for transmission.

Captions (Subtitling and Closed Caption)

ICE manages ancillary data such as subtitling and closed captions and provides support for CEA-608-B in SD and CEA-608-B in the CEA-708-C space for HD. When up-scaling ICE also provides conversion of closed captions. This reduces the amount of ancillary equipment required to deal with legacy content and ensures HD captions are correctly inserted every time.

SAN Storage

The ICE SAN platform provides high performance shared storage, optimizing media distribution workflows and overall playout system performance. This is achieved by utilising standard IT hardware, reducing transfers with a centralised architecture, removing bottlenecks and allowing simultaneous playback and recording of files by multiple ICE devices.

System Resilience

To ensure high levels of system resilience required by the most demanding of broadcast operations ICE includes options which include main and guard outputs, N+1 redundancy or full system level redundancy either locally or remotely for business continuity purposes.

ICE delivers integrated master control and playout functionality in one cool package.

Small Size Conceals Powerful Operation

ICE is easy to implement and very cost-effective, and of course, meets all of Snell's benchmarks for high quality, advanced operation and reliability.

Opting for this highly convenient approach does not mean that you need to compromise the look and feel of your program output in any way. This approach represents a fully featured digital era automated playout system with a set of standard functions and image manipulation characteristics that will enhance your channel brand.

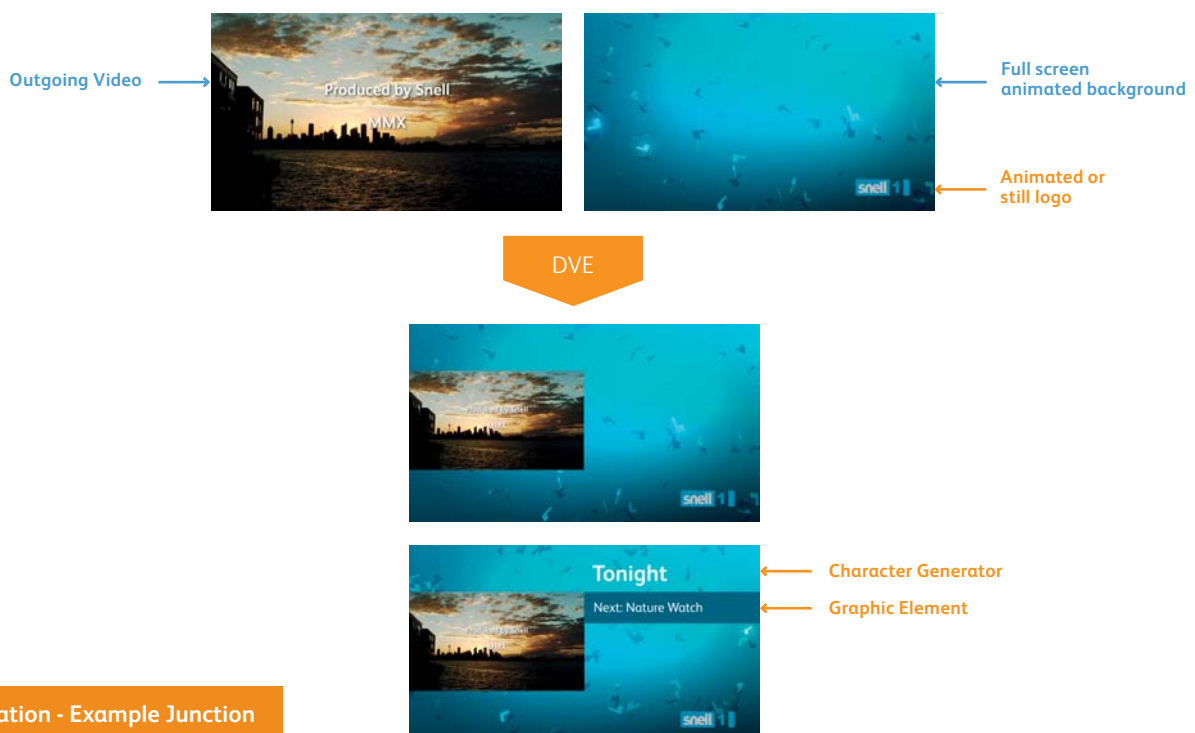
End Credit Squeezes

Advanced and dynamic end credit squeezes can be executed within ICE without losing any final "effect." These can incorporate a complex sequence of six elements (background, logo, DVE, two character generators, and a graphic overlay).

Additionally, this complex sequence is treated within a MediaBall™ as a single event, making scheduling and manipulation of the "effect" by operators and traffic departments much easier.

MediaBall is a powerful Snell-developed technology that allows multiple hierarchically linked events to be grouped together and managed as a single entity. Complex sequences of primary material and secondary events that need to be frequently re-used are easily supported. Channel differentiation is catered for, even where third party scheduling systems are unable to support a richer primary and secondary event relationship structure.

Also, MediaBall facilitates schedule changes at run-time, including primary material content, DVE move number, graphics template number and graphics field content.



Sophistication - Example Junction

Unique FlexiCore™ Technology

ICE more accurately emulates a master control environment than any other Channel-in-a-Box solution; this is achieved through its unique FlexiCore technology.

FlexiCore allows the resources in ICE to be dynamically allocated to channels based on requirements. Other products with fixed signal paths will inherently limit flexibility and may not be suitable for some applications.

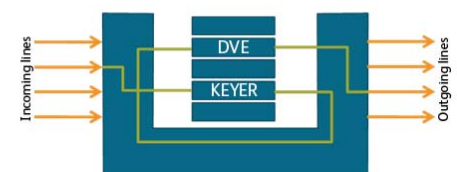
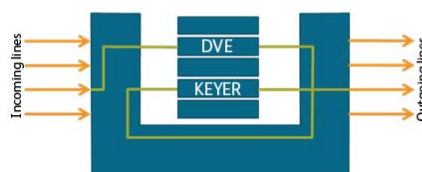
FlexiCore virtualizes multiple “router” inputs and outputs with a constant and definable latency, essential when mixing live content with pre-recorded content.



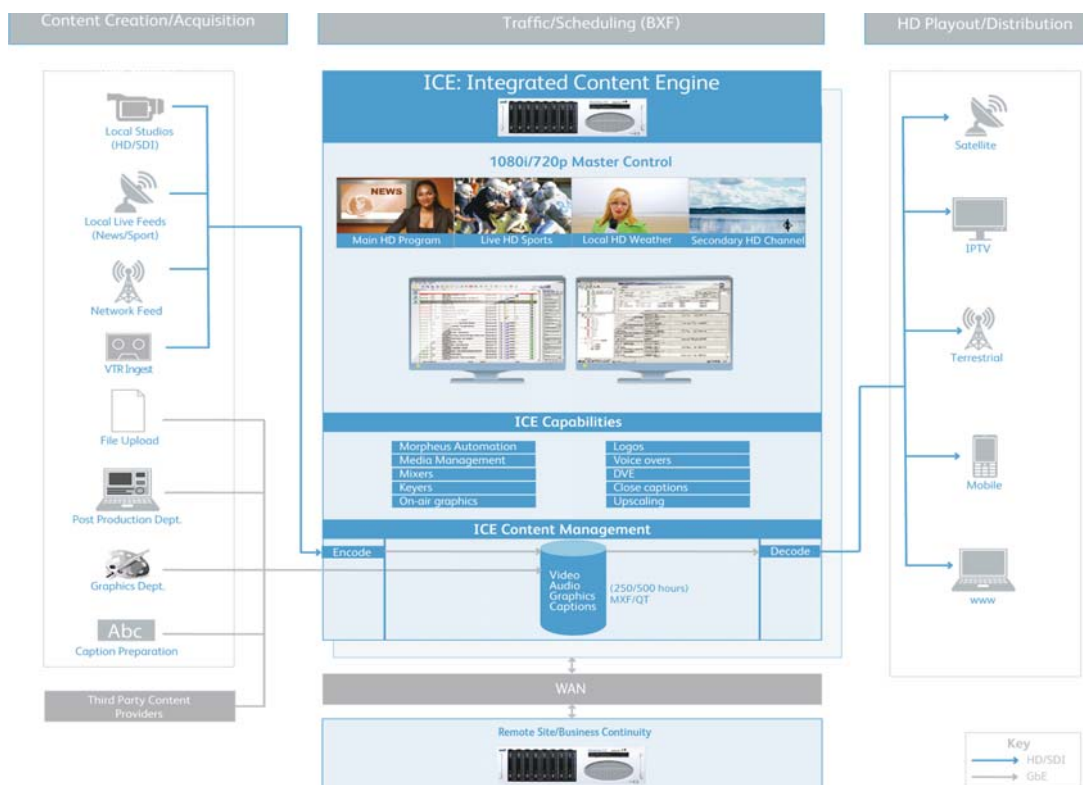
DVE → Keyer = Logo not squeezed



Keyer → DVE = Logo squeezed



Flexicore in Action



Typical ICE System

The newsroom environment is highly dynamic so the broadcast infrastructure needs to be both reactive and resilient.

ICE Applications News

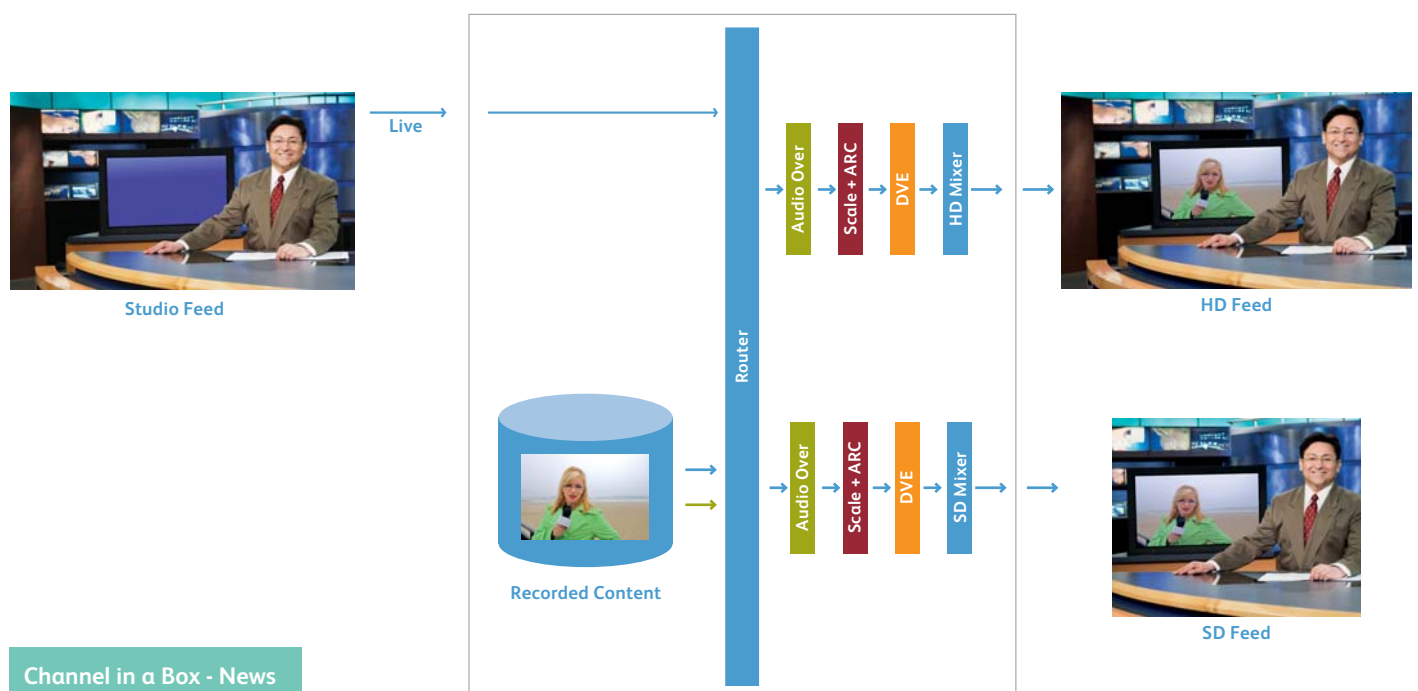
Newsgathering operations are the flagship business area for many broadcasters. The newsroom environment is highly dynamic so the broadcast infrastructure needs to be both reactive and resilient.

ICE provides clean and accurate transitions between live feeds and the content played back from ICE's internal server. In news, speed of reaction is paramount, especially the ability to react to late breaking news stories. Snell ensured that this reactive speed was designed as a central feature from day one – providing production staff with the opportunity to focus on the creative aspects of making compelling news programs.

A core principle of Snell's ICE is its support of industry-standard video, audio and graphics file formats, helping you to maximize your media assets. Using a software-based architecture, the system is file agnostic and can support almost any compression standard. Native support of video, audio and graphics files in the same playlist avoids unnecessary file transfers, transcoding, format conversion and file rewrapping saving time and simplifying operations – valuable features in a live news environment.

ICE will plug and play into a standard HD/SD infrastructure and will interface directly with your storage and IT systems. This implementation guarantees channel performance on-screen and management of your content and metadata off-screen.

As ICE is self contained there is no need to worry about additional delays when combining effects to make the final picture. Building on Snell's industry leading knowledge and experience, we provide your broadcast business with reliability and security – not to mention unbeatable value for money.

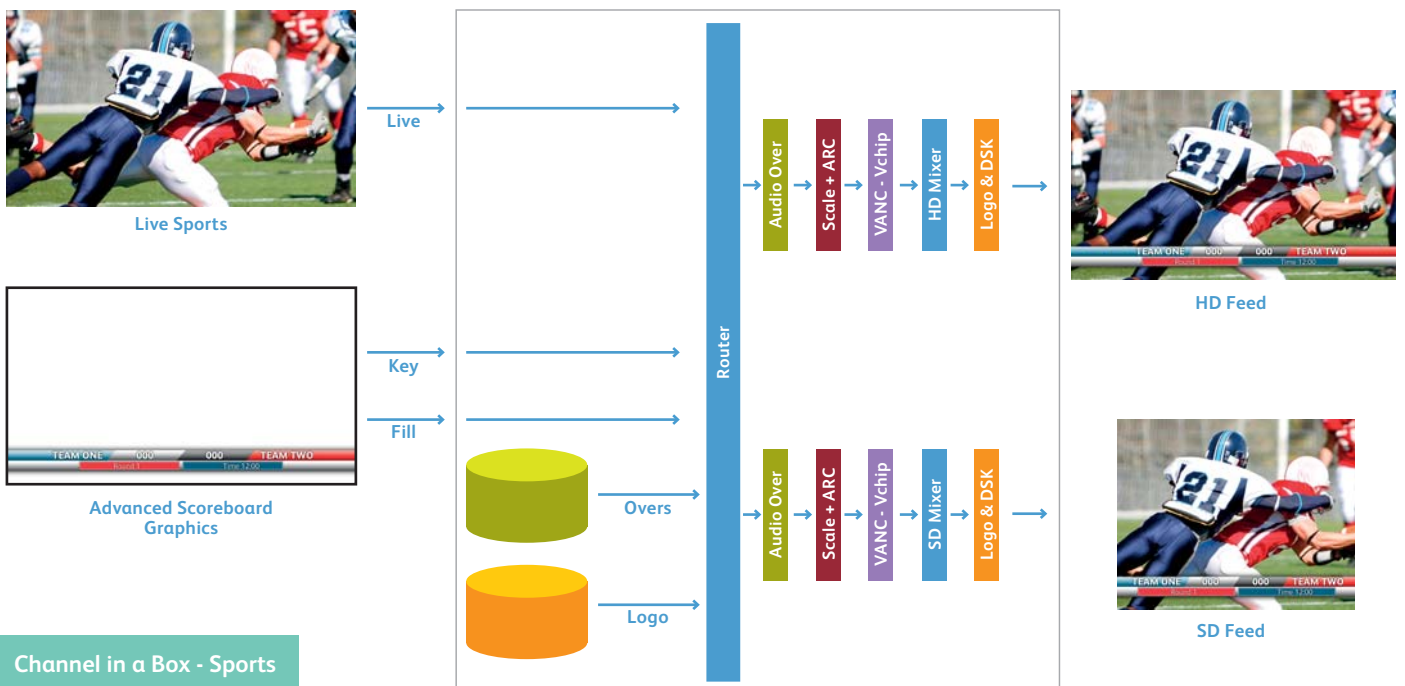


Sports

Sports television is another high profile application where shrewd investment strategies can differentiate a broadcaster from the rest of the field. Advertising revenues from sports TV can be high – the challenge is to develop control over your broadcast playout to the degree where you can insert the optimum number of commercial breaks whilst viewers catch all the action and don't miss anything.

ICE facilitates HD/SD simulcasts, enabling broadcasters to satisfy all demand for their programs during the challenging transition period whilst the world migrates from SD to HD.

By virtue of ICE's 3D graphics engine live signals from remote sites can have content enriching specialized graphics superimposed such as a scoreboard, player information or tickers, all of these can have their data populated from external sources such as RSS feeds, web sites or text files.



Channel in a Box - Sports

ICE integrates a number of advanced audio features which enable sophisticated broadcast operations.

Multi-Language Payout

ICE integrates a number of advanced audio features which enable sophisticated broadcast operations, typically associated with higher cost automated solutions.

ICE supports audio track-tagging strategies from various manufacturers to facilitate the broadcast of different languages on each HD/SDI audio pair. These pairs can be re-arranged for playing out to different audiences without the need to re-wrap the file.

Rules-based language delivery is a service that enables users to determine the hierarchy of audio preferences. For example, if the first choice of English is unavailable, the second choice of Spanish is inserted.

If the second choice of Spanish is unavailable, the third choice of Portuguese is inserted.

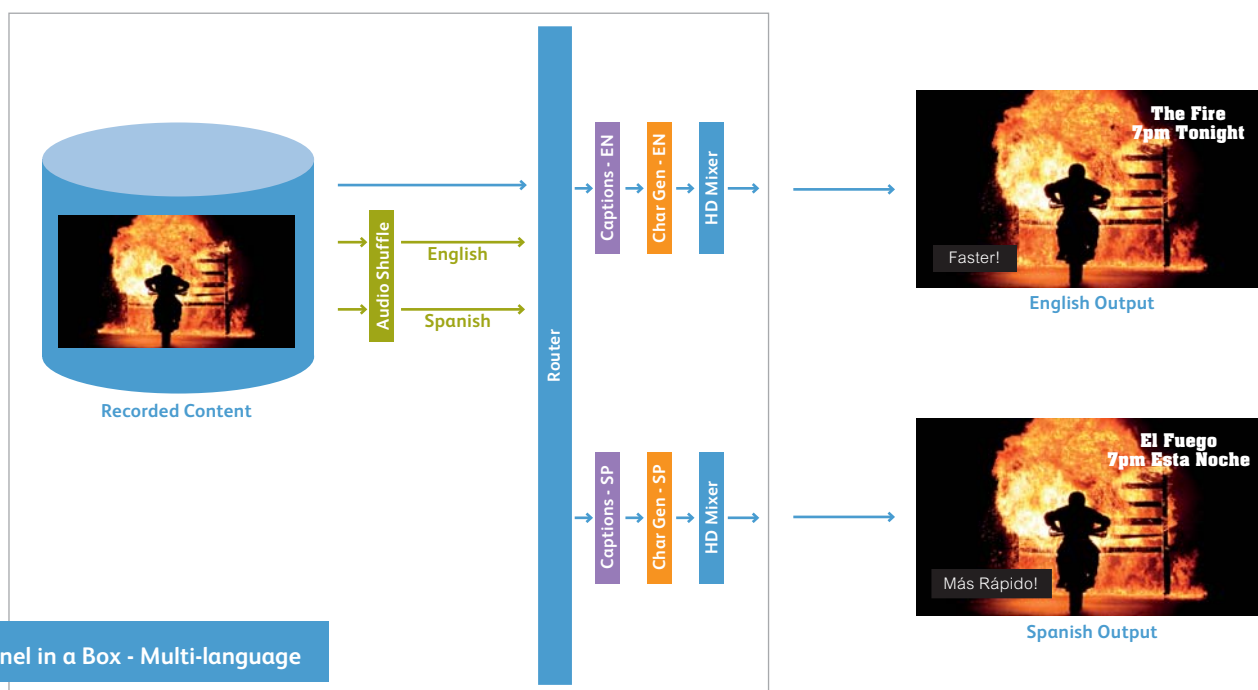
Audio-overs can also be utilized to achieve multi-language payout. Audio-overs offer the flexibility for users to associate up to four different languages per channel of video payout.

Discrete audio inputs allow for discrete audio to be brought into ICE, mixed, and embedded. Closed captioning and subtitles are two more standard facilities within these feature-rich packages.

Unique branding for different language regions is another strong reason for broadcasters to consider implementing ICE.

All these facilities are achieved with no additional hardware and as a consequence there is less equipment in the transmission path – a factor which significantly reduces the burden and cost of maintenance and support.

In addition, ICE facilitates independent captioning and subtitling on each output.





Partnering with Snell

In today's competitive broadcast environment enterprises need close support from organizations that have track records characterized by success and the ability to deliver technology that is fit for purpose.

Over four decades in the international broadcast media industry Snell has proved this over and over. Snell solutions are relied on by the world's broadcasters for \$ billions revenue each year.

Snell is a company that has learned the value of quality, reliability, service and support. Year after year, the company has invested strategically to develop these qualities in its products, its staff and ultimately in the Snell brand.

Snell offers these qualities to the global broadcast market. Its support team works with customers on every continent 24/7. Its support is available online, over the phone and face-to-face.

From a provincial production facility to a multi-national, multi-billion dollar broadcast network, Snell solutions can support any size and scale of media distribution enterprise.

As we progress further into the digital multi-screen world, these same broadcasters are relying on Snell to support their growing diversity of distribution channels for an increasingly media-hungry audience.



Innovation in the Multi-Screen World

Company policy is one of continuous product improvement. Specifications are therefore provisional and subject to change without notice.