

# Channel in a Box





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# Channel in a Box

## Integrated Playout Solutions from Snell

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

Building on over 40 years experience in real-time broadcast technology and multi-channel delivery, Snell has developed a new concept in highly cost-effective master control and multi-channel playout solutions.

Snell's Channel in a Box solutions are turnkey broadcast playout systems that allow channels to be brought to air more quickly and at lower cost than ever before.

Built on the industry leading Morpheus automation software and the Integrated Content Engine, ICE, these playout solutions provide Snell trademark quality and service to a range of applications including:

- **Station Master Control**
- **Regional Broadcasters**
- **Corporate / Government Broadcasts**
- **Religious / Education Channels**
- **Community Television**

### **Morpheus Playout Automation and the Integrated Content Engine**

Morpheus delivers the most flexible and powerful broadcast automation on the market today. From simple server playout to more complex channels, Morpheus Automation is supported by an extensive suite of media workflow solutions for the intuitive management of content.

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. The Integrated Content Engine (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.

Snell Channel in a Box packages are tailor-made for smaller scale operations where versatility, flexibility, and overall cost are critical business factors. These packages combine the best of IT technology with Snell's broadcast know-how to deliver a unique software-based multi-function system to manage the delivery of a wide range of programming and channel types.

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.

## Channel in a Box Applications: News

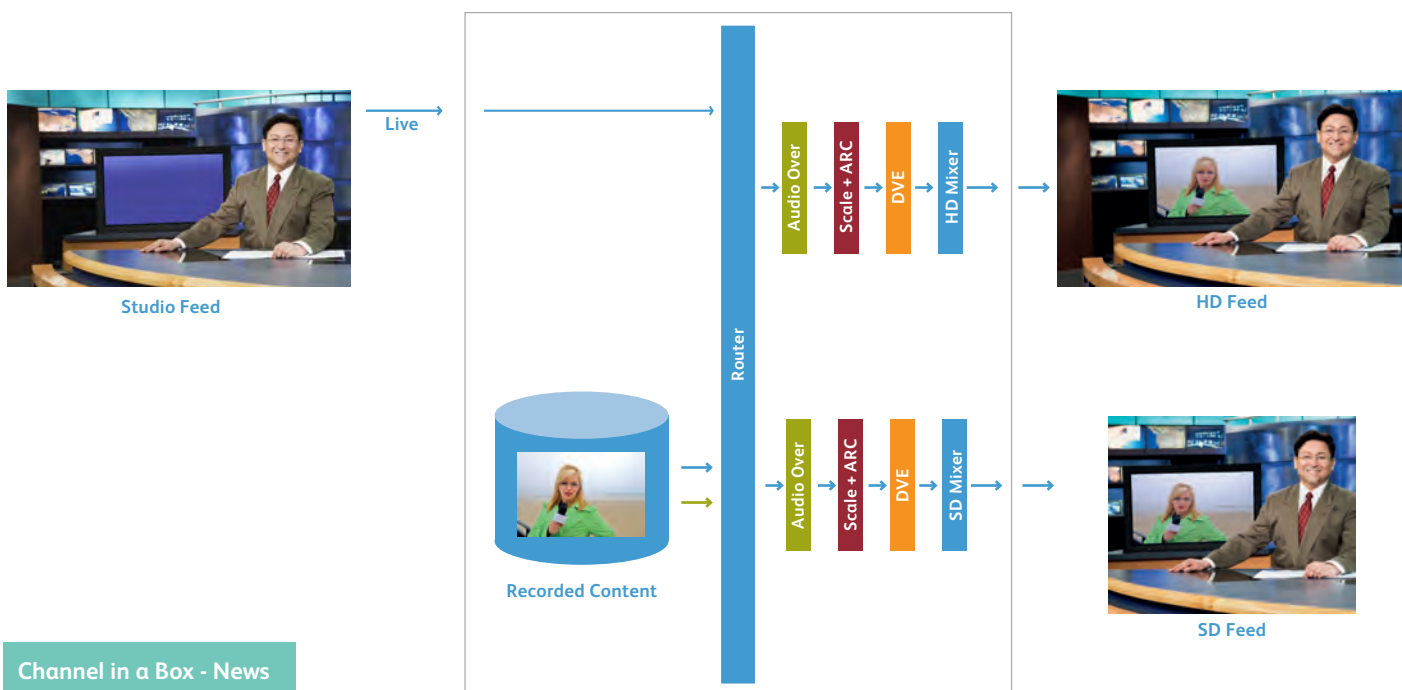
**Newsgathering operations are the flagship business area for many broadcasters. The newsroom environment is highly dynamic so the broadcast infrastructure needs to be both reactive and resilient.**

With minimal latency (only two frames), Snell's Channel in a Box systems provide clean and accurate transitions between live feeds and the content played back from ICE. 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 principal 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.

All Snell Channel in a Box packages 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.

These Channel in a Box solutions are self contained entities: 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, they 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.

Snell's Channel in a Box packages facilitate 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.

Multiple inputs into ICE enable external advanced graphics to be "mixed" with live signals from remote sites while inserting specialized graphics, such as scoreboard tickers and RSS feeds, and finally routing to the desired destination.



Live Sports

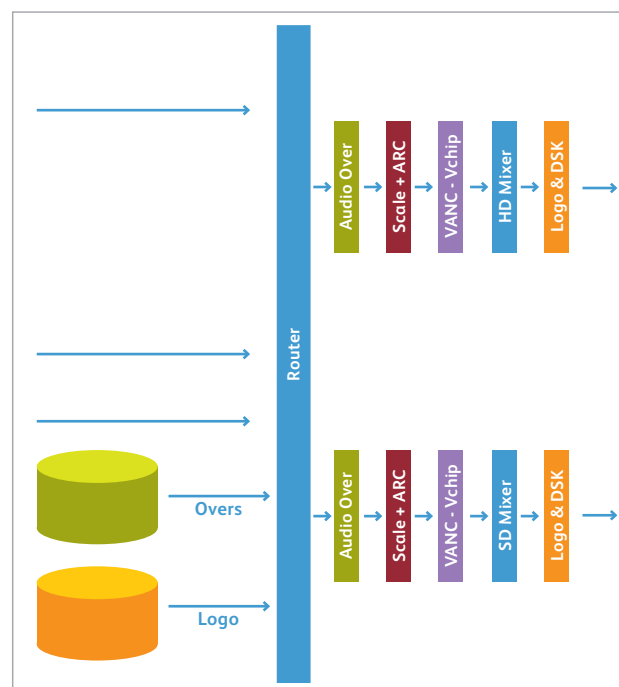


Advanced Scoreboard Graphics

Live

Key

Fill



HD Feed



SD Feed

ICE has the ability to broadcast multiple language versions, a facility normally associated with higher cost solutions.

## Multi-Language Playout

Snell's Channel in a Box solutions integrate a number of advanced audio features which enable sophisticated broadcast operations. For example, the ability to broadcast multiple language versions of a program is a facility normally associated with significantly higher cost automation 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.

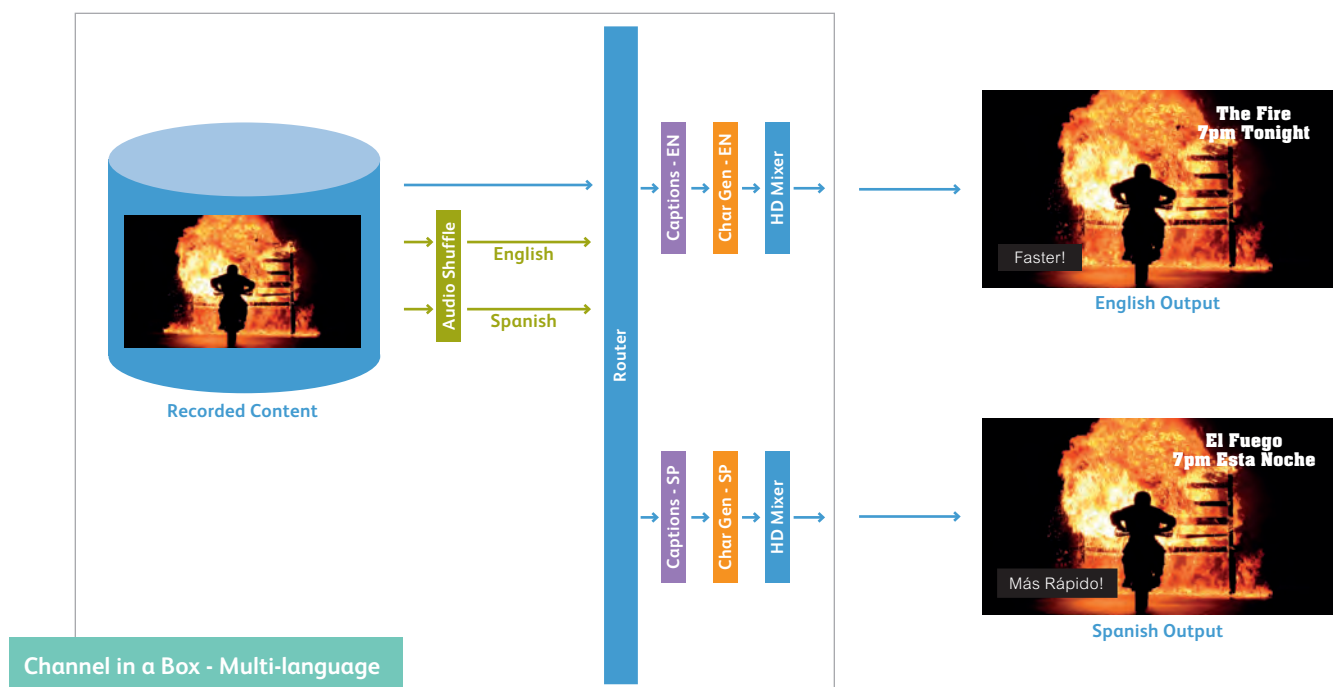
Audio-overs can also be utilized to achieve multi-language playout. Audio-overs offer the flexibility for users to associate up to four different languages per channel of video playout.

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.

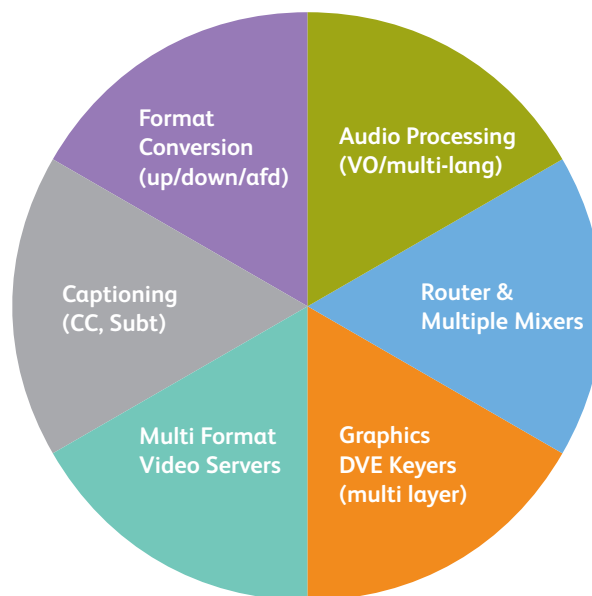
Unique branding for different language regions is another strong reason for broadcasters to consider implementing Snell's Channel in a Box.

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.



# Benefits of Integration



## Architecture

**When developing ICE, Snell has 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 unit supports four SD, two HD, or a combination of HD and SD channel operations. Punching well above its weight, an ICE unit integrates a video server, graphics, switchers, channel branding, captioning and subtitling 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 can also be

further enhanced by Morpheus' 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.

ICE manages all of the processes required to prepare the pictures, sound and ancillary data for frame accurate, secure, high quality SD/HD playout.

## Benefits of Integration

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**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.

### Router and Multiple Mixers

Each ICE unit may be configured with up to two HD (four SD) video mixers with up to four HD (16 SD) full layers per frame. 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.

### 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.

### Audio Processing

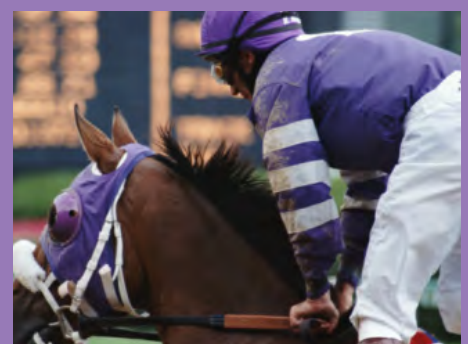
Each mixer provides four audio voiceover inputs, any embedded audio source can also be switched to an audio voiceover input and mixed into the output of the mixer, whilst the mixer executes a dip of the PGM audio level.

### Format Conversion (Up/Down/AFD)

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.

### 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.





# Small Size Conceals Powerful Operation

Snell's Channel in a Box is easy to implement and very cost-effective, in many ways it offers the best of all worlds since it still 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.

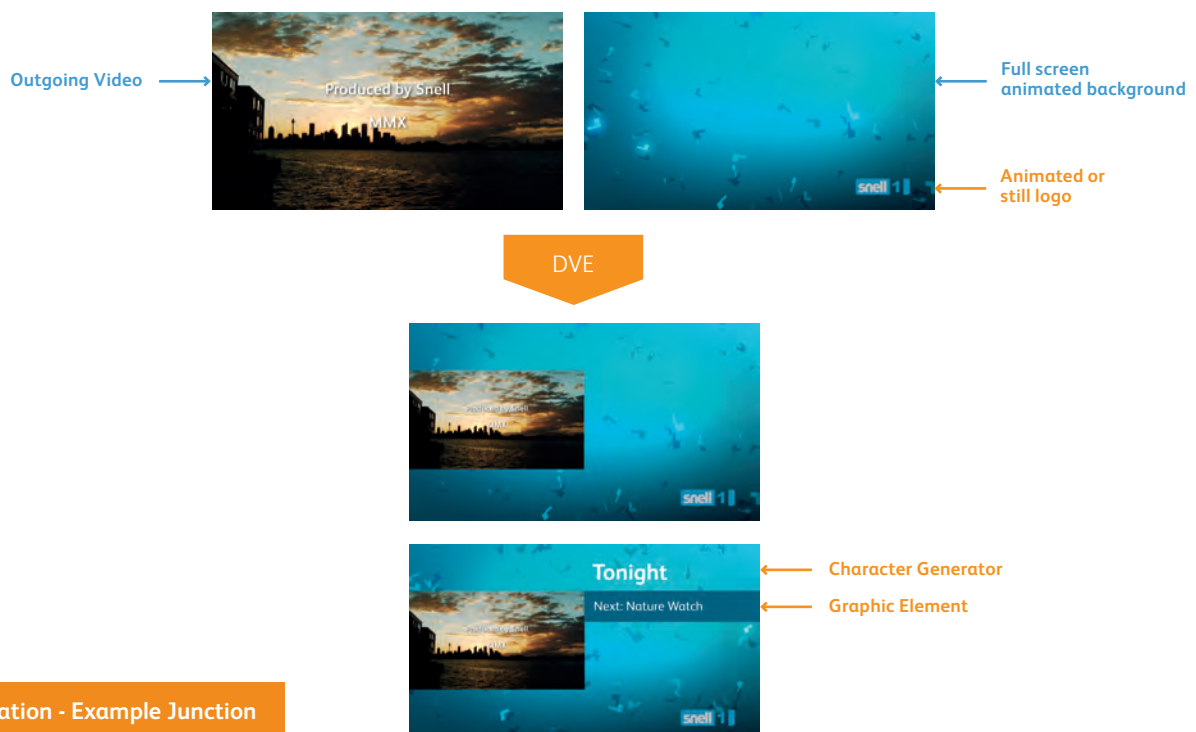
## End Credit Squeezes

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

Snell Channel in a Box solutions are available in a range of preconfigured packages comprising of two primary building blocks.

## Channel in a Box Systems

**In many ways Snell's Channel in a Box approach can be regarded as a broadcaster's building block – a versatile self-contained playout system that enables broadcasters to quickly and easily expand its technical infrastructure to support business growth.**

Snell Channel in a Box solutions are available in a range of preconfigured packages comprising of two primary building blocks.

### ICE

ICE is an IT-based system that integrates a number of broadcast functions, including:

- Internal Router - any destination can be an incoming source
- Audio Shuffling configurable per decoder
- Omneon Track tagging
- Discrete audio mapping and mixing
- Up to four audio overs for effects
- Any source can be switched to be an audio input with automated or manual control of PGM levels for effects
- Multilingual audio files
- Transition - fully featured mixer is capable of a wide range of master control transitions including cross-fades
- Up to eight keys available (four moving and four static)
- Assignable mixers can be independently configured to be HD or SD
- Automatic AFD-enabled up or down scaling based on source or channel output
- Allows for mixed file-based or live HD and SD media on same timeline
- Full captioning support to include 608 to 708 and 708 to 608
- To include file-based captioning playback

- Multilingual Closed Captions
- Up to three (two “closed” and one “open”)
- MediaBall - takes complex relationships among unlimited numbers of secondary events and wraps the relationship into one single item
- Ease of scheduling and operator manipulation within a dynamic environment
- Up to 16 channels of audio
- DVE- two box DVE to provide for advance end credit abilities

By implementing all the core functionality in software, ICE is flexible, future proof, and supports a wide range of file formats. Off-the-shelf hardware acceleration is used to provide HD performance and capabilities unmatched by other software solutions.

Although ICE offers a very attractive step-in price point it also provides power and sophistication. It is an IT-based system that benefits from the unprecedented broadcast knowledge and experience of its design team – a team that really understands master control codecs and the benefits that they can bring.

From tape ingest and the management of file-based content, to the delivery of SD and HD content, commercial breaks and live news and sports, all seamlessly synchronized with network feeds, ICE has the ability to manage and support your entire broadcast station from root to branch.

### ICE Manager

Snell achieves this most unusual blend of high-performance and affordable cost by intelligently integrating fit for purpose hardware and bespoke software systems. A key enabler in this approach is ICE manager, a compact 1U server that runs all the management services for the system, including Morpheus automation and the media database.

All Snell Channel in a Box packages will easily integrate into a standard HD/SD infrastructure by providing a short and constant video delay, allowing seamless switching between live and pre-recorded content. Additionally it will interface directly with your storage and IT systems where required.

ICE Manager has been developed to meet today's broadcast needs and also it offers a completely future proof solution with the potential to integrate future developments and technical refinements from Snell.

As your broadcast business grows you can continue adding further Channel in a Box building blocks, ensuring that you meet your future playout needs across a range of distribution platforms.





## Partnering with Snell

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**There are a range of vendors offering IT-based playout automation systems, so why should you select Snell as your preferred technology partner?**

Snell offers a unique proposition: formed in 2009 from the merger of two thoroughbred broadcast equipment manufacturers, Snell is a new and radically different kind of broadcast technology company.

The company benefits from decades of pioneering experience in the broadcast, AV and electronic media industries, which the two companies that came together to form Snell jointly possess. At the same Snell has succeeded in blending its broadcast industry heritage with many of the more unrestricted and unconventional operating practices found in other technology sectors.

In developing its Channel in a Box concept, the company has thrown a sharp focus on the potential that IT-based architecture offers and harnessed the skills and knowledge of some of the most creative minds that the IT industry has to offer. By partnering with Snell, your organization immediately taps into this wealth of cross-industry intelligence.

In addition, Snell brings to the party one of the best resourced global service and support networks. So, when you integrate your first Channel in a Box, Snell will be with you every step of the way, right through the system's lifecycle helping to meet your playout requirements in ways that support your business growth and minimize strain on your financial resources.

Snell's Channel in a Box has been developed with today's broadcaster and today's broadcast challenges in mind. Also, it has been designed with an eye on future trends. It incorporates the latest developments in broadcast and IT technology, and it has the ability to harness future advances as they become available. Its totally scalable modular architecture means that your Channel in a Box system can grow and evolve in harmony with your broadcast operations.

The Channel in a Box approach offers your business unbeatable value for money: it is unique in terms of its cost per feature and per channel on air. It is supported and developed by the industry's leading team of broadcast experts. Choose Snell and you don't have to take the risk of a 'more affordable' option; already we offer the most affordable solution money can buy.



# Innovation in the Multi-Screen World

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