

Enterprise Content Delivery



Introduction

In today's media and broadcast industry one of the big challenges centers on enterprise content delivery in a landscape where consumer behaviour and service demands are changing rapidly.

With over four decades of leading edge development experience Snell delivers the most flexible and powerful broadcast automation solutions on the market today. From simple server playout to highly complex channels, the company's key enabling technologies provide an extensive suite of enterprise-wide media workflow solutions for the effortless management of content.

The essence of Snell's enterprise content delivery solutions build 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.

The company's flagship broadcast automation solution, Morpheus, is a fit for purpose, scalable, multi-channel and multi-screen playout automation solution that is appropriate for the widest range of applications including:

- **National Broadcasters**
- **Network Origination**
- **Central Casting**
- **Business Continuity**

Based on format and device independent platforms, Snell offers a range of robust and resilient content distribution mechanisms, which keep pace with new devices as they evolve to meet the demands of future services, delivery platforms and consumer appetite.

With Snell as your content distribution partner you can rest assured that you will benefit from flexible device management, ensuring that resources can be dynamically deployed where and when most needed.

From its core database engine through to every device, Snell broadcast automation is designed for resilience and, where required, redundancy, ensuring the right content and its metadata will be in the right place at the right time.

Snell has the knowledge and experience to develop an automation solution that is fit for your purpose, irrespective of the size and scale of your enterprise, the range of content distribution platforms integrated within your business model and your plans for future growth and expansion.

Taking an agnostic approach to formats and platforms means that Snell empowers its customers to extract every drop of value from their investments, while their customers consume content on their terms.

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Snell's central casting technology is proven and on-air in major facilities around the world.



Morpheus Applications Central Casting

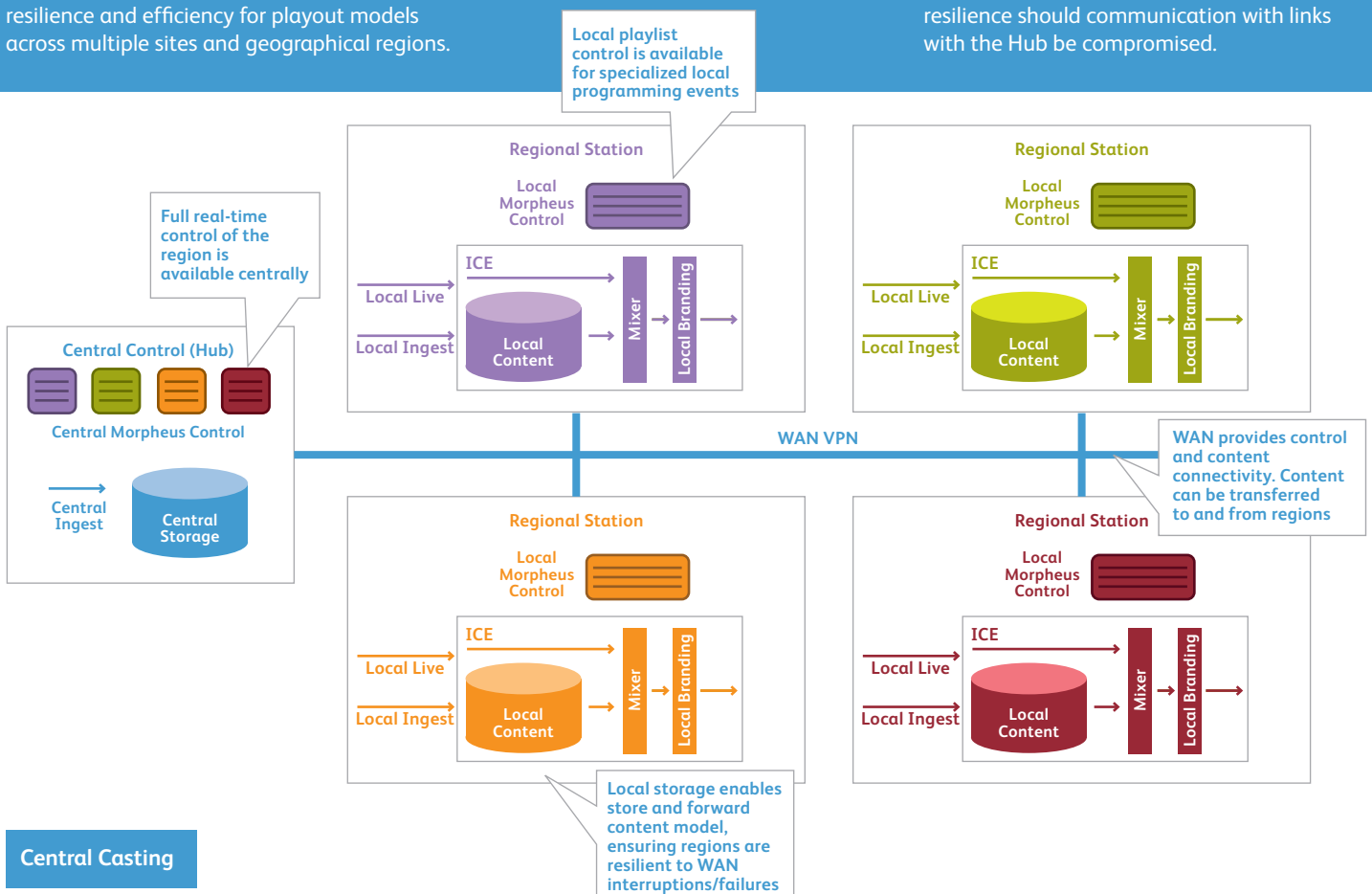
In today's cost conscious environment central casting provides broadcast stations with significant operational efficiencies. It offers a solid basis for cost reduction, increased system resilience (with fewer points for potential equipment failure) and a stable platform to launch new digital services.

Snell's content distribution solutions incorporate the ability to support multiple central casting models, thereby decreasing operational costs and duplication of equipment. They offer a high degree of resilience and efficiency for playout models across multiple sites and geographical regions.

The example below illustrates the efficient workflows capable between the Hub and multiple regional stations (Spokes). The Hub provides the bulk of the ingest and storage for the sites as well as on-air playlist management and remote monitoring of the broadcasted signals. When new events (or schedules) are added to the playlist, ingested content is transferred to the regional stations.

At the regional stations, Morpheus ICE (Integrated Content Engine) stores all received Hub content as well as providing all live, branding and mixing requirements for that market. The entire process at the station level is fully-automated, alleviating the need for local level intervention by staff.

Snell's content distribution easily accommodates for local personnel intervention when required. Each region has the ability to "come alive" with local ingest and on-air playlist management for news or other live events. Also for system-wide resilience should communication with links with the Hub be compromised.



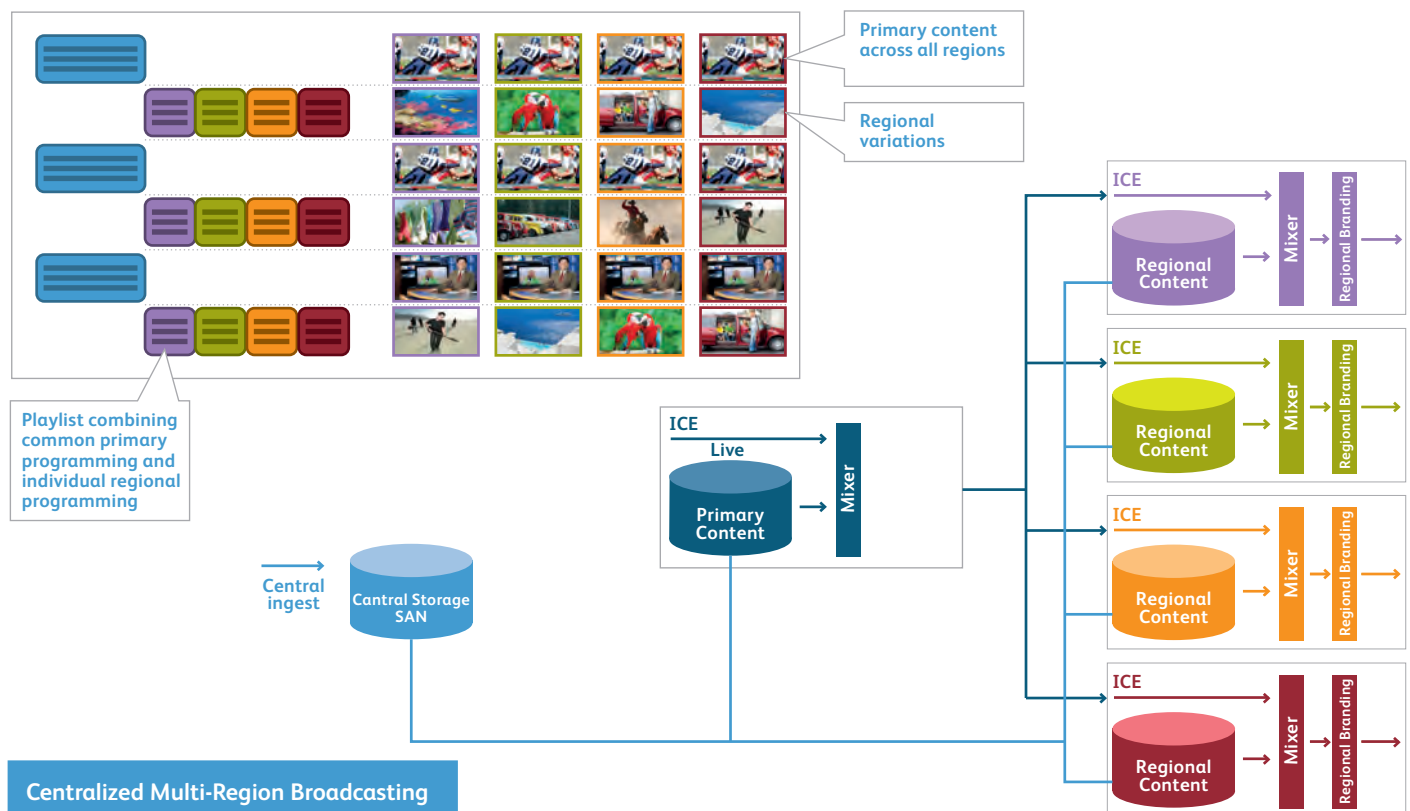
Centralized multi-region broadcasting enables highly efficient production and distribution resource utilization.

Centralized Multi-Region Broadcasts

Centralized multi-region broadcasting is another solution that enables efficient utilization of a facility's transmission resources for regional distribution, enabling the distribution of common programming with variations in commercial, promotional, and graphical insertions from one main location. The preservation of the regional character not only appeals to the viewers, but also increases advertising revenues with specific regional commercial programming for a market.

Additionally, related regional channels need not be restricted to commercial and graphical insertion – they can be used to playout alternate programming on different broadcast platforms where rights issues prevent transmission of certain material (such as sporting events "black-outs").

The example below illustrates a primary channel originating for four regions. Each region has local branding available for its output. During the commercial breaks, there is region by region flexibility to insert local advertising or remain on the primary signal.



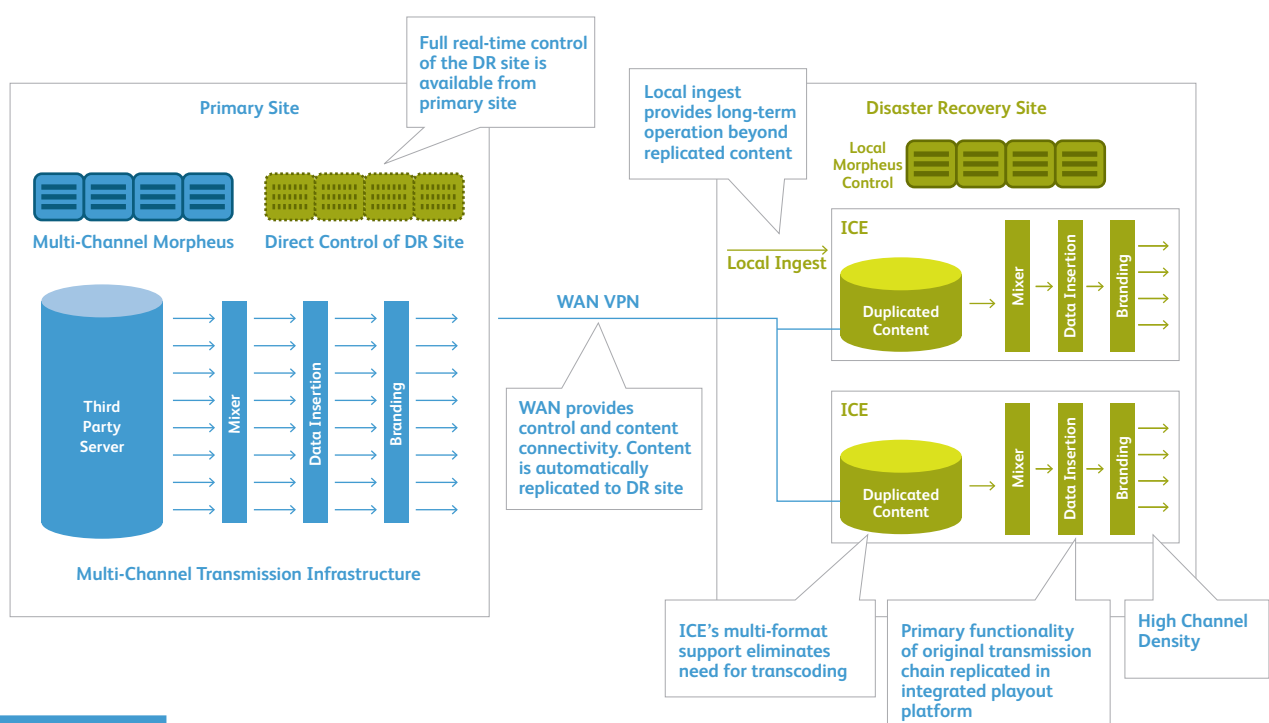
Centralized Multi-Region Broadcasting

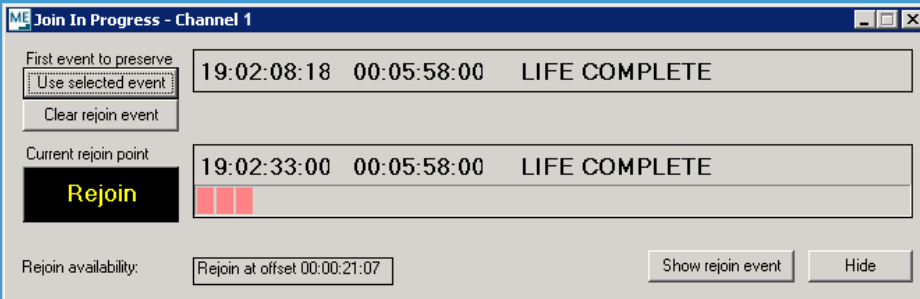
Business Continuity

The biggest commercial risks facing broadcasters are any operational, technical or environmental issues affecting on-air operations. A mission critical requirement for any media enterprise is cost-effective back-up operations to ensure business continuity in the event of a major disaster.

Snell's enterprise-scale automation solution provides full functionality between both the primary and the remote site. Content is not "ever-green" material but instead a mirrored output of the main broadcast signal. If a system failure occurs, a seamless transition can be made to ensure continued operation and complete transparency to the home viewer.

The illustrated example reflects a business continuity architecture where the primary site is managing multiple channels with direct control available for the disaster recovery (DR) site. If a system failure occurs at the primary site, the DR site takes over the primary role providing local storage and playout using Morpheus ICE (Integrated Content Engine). Content can continue to be ingested, branded and transmitted until the main site status is restored.

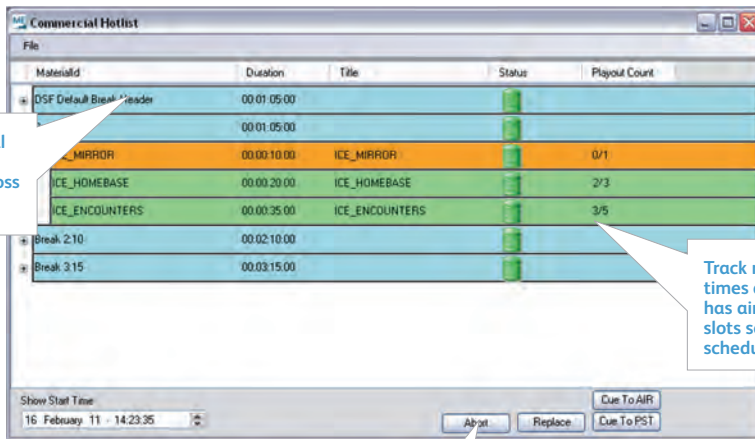




Join-in-Progress

When live sporting events run late, Morpheus provides the tools to join a schedule in progress. This system can dynamically cue any event to any new in-point based on the event's original airtime. To make this normally complicated workflow easy, Morpheus can automatically air a JIP clip (or "bumper") prior to taking the program to air.

Sports



Sports Television is an area where the best broadcasters can differentiate their channels and the station's brand value. It is a highly reactive production environment where events are often unpredictable.

In this environment, Snell employs the latest Morpheus multi-channel automation technology to create a master control environment that reduces pressure on staff and enables them to focus on the most important creative issues in program production.

Closed loop

Morpheus reacts to operator intervention, updating the on-air playlist "on the fly." Most importantly, all manual changes are captured in as-run logs for reconciliation and billing services.

Macro Scripts

When you integrate Morpheus, complex procedures can be stored and accessed by pressing a single button. This ability saves time, reduces operator errors and removes requirements for custom code generation.

Crucially, Morpheus significantly reduces the possibility for on-air errors when operating within a high-pressure live environment.

Commercial 'Hot Lists'

Once again, with one button press a Commercial Hot-List enables operators to manipulate commercial inventory at a moment's notice. Its multi-faceted design provides ultimate flexibility for accurate playlist editing, as well as enabling broadcast sales' groups to maximize on-air avails right down to the last minute.

This approach enables rapid changes to commercials or an entire ad break on a single- or multi-region basis. When ICE is integrated into this solution, customers benefit from extremely fast cue times to accommodate these last second changes.

Snell's approach facilitates the tracking of commercial inventory against what has been aired: this removes the guess work and potential conflicts relating to unwanted 'make-goods.'

Morpheus - The Intelligent Distribution Solution

Snell is a global leader in broadcast automation with an international customer list that reflects its ability to service mission critical enterprise operations in any market. With over 40 year's front line experience to call on, the company has engaged in a major development initiative that has seen the essence of this activity distilled into one highly flexible technology solution – Morpheus.

Morpheus is recognized as one of the broadcast industry's most advanced multi-channel payout automation systems, capable of adapting its configuration and operating characteristics to a broad range of applications and distribution platforms.

Snell's entire approach to enterprise content distribution is format and device independent. It provides a robust and resilient content distribution mechanism which can integrate new devices as they evolve, and meet the demands of future services and delivery platforms. Flexible device management ensures that resources can be dynamically deployed to where and when most needed.

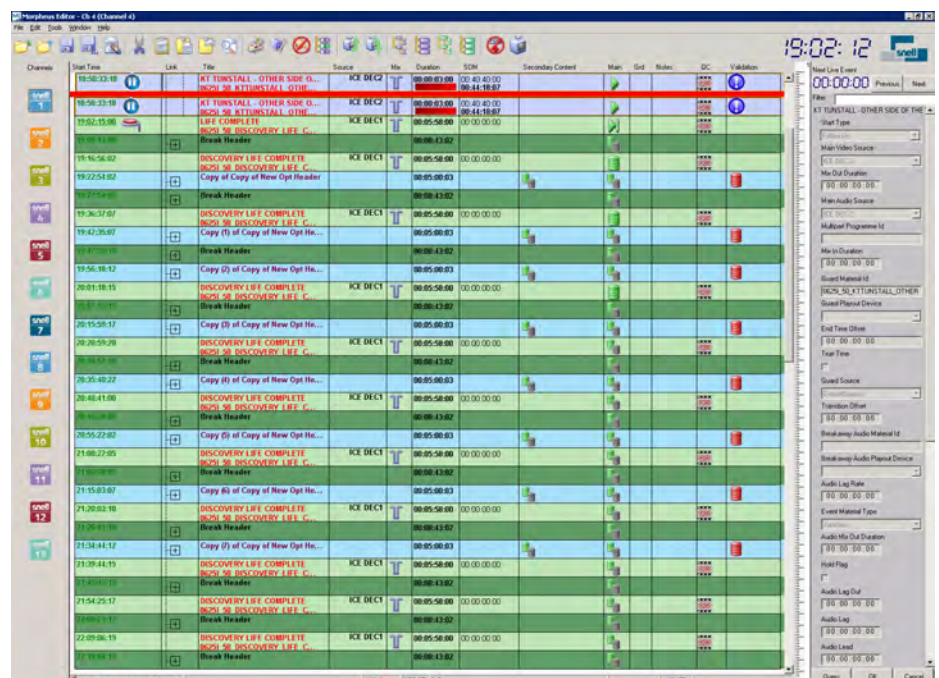
From its core database engine through to every automated device, Morpheus is designed for resilience and, where required redundancy. This ensures that the right content and its metadata are in the right place at the right time.

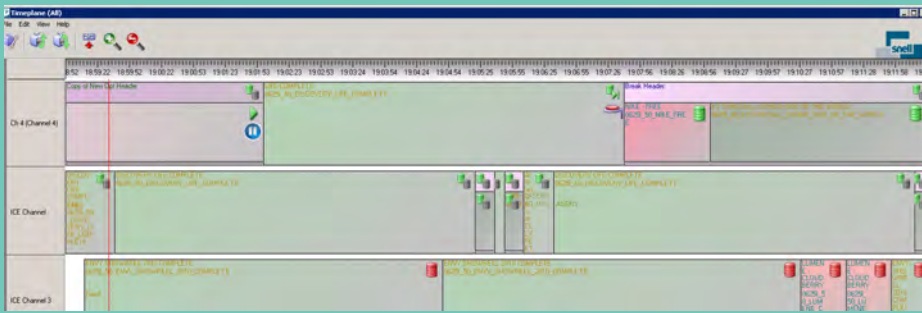
What Snell has succeeded in evolving is exceptional – a suite of automation solutions for today's broadcasters: robust in operation and yet highly flexible in configuration including the variety of content distribution platforms and the size and capacity of the system. Using this operating concept, Snell reduces the cost of ownership and lessens the risk factor faced by any size and scale of media enterprise compared with any other automation solution available today.

Edit Workstation

The Edit Workstation employed by Morpheus is a key operating tool where staff can quickly and easily interact with the system, modifying and appending schedules.

Recognizing that the workstation might be integrated within a broad range of enterprises, the Workstation is configurable to view as many or as few channels in the system as dictated by a customer's operational workflow.





Timeplane

The Timeplane is a powerful monitoring tool that enables operators to make accurate assessments fast. It's intuitive graphical presentation provides a comprehensive view of all schedules across all channels simultaneously. With a scroll of the mouse, users can achieve the required amount of event detail to ensure complete on-air integrity.

Morpheus - The Intelligent Distribution Solution

Core Servers

Morpheus' core servers act as multi-channel event stores within your media architecture. They offer real-time replication with uninterrupted failover and the ability to achieve 99.999% performance rate.

Device Control

As you would expect from an industry leader, Morpheus is advanced in every aspect of device control. It utilizes solid state technology and runs real-time operating systems. The software has been architected to minimize the amount of unique code required to support a specific device, this reduces cost and risk when new devices are added to the system.

The system's device controllers are based on a modular card form factor, therefore multiple cards can be housed within the system's 3RU enclosure presenting a minimal footprint within your operations center. If required, the controllers can be run in a dual redundant mode for additional resilience.

The controller cards cache schedule events and will keep running even in the event of an entire network failure. Further protection is afforded when the system recovers with Morpheus always re-synchronizing with on-air devices.

As a company Snell is synonymous with multi-vendor interoperability. It has developed an expansive library of supported devices from a range of technology solution vendors and these are all available in Morpheus.

Resource Management

Most of all – and irrespective of the size and scale of your content distribution challenge – Morpheus provides sophisticated resource management throughout your enterprise. Within its intelligent device management hierarchy, there are shared devices across channels and services, helping to ensure optimum resource utilization at all times.

Such is Morpheus' inherent intelligence that the system is self-healing. In addition to supporting conventional playout resilience, such as guard and air protect, the system can automatically assign an available backup device if a primary component fails.

Elegant preview capabilities

Morpheus possesses multiple previewing options to accommodate a plethora of review requirements for on-air "look" continuity.

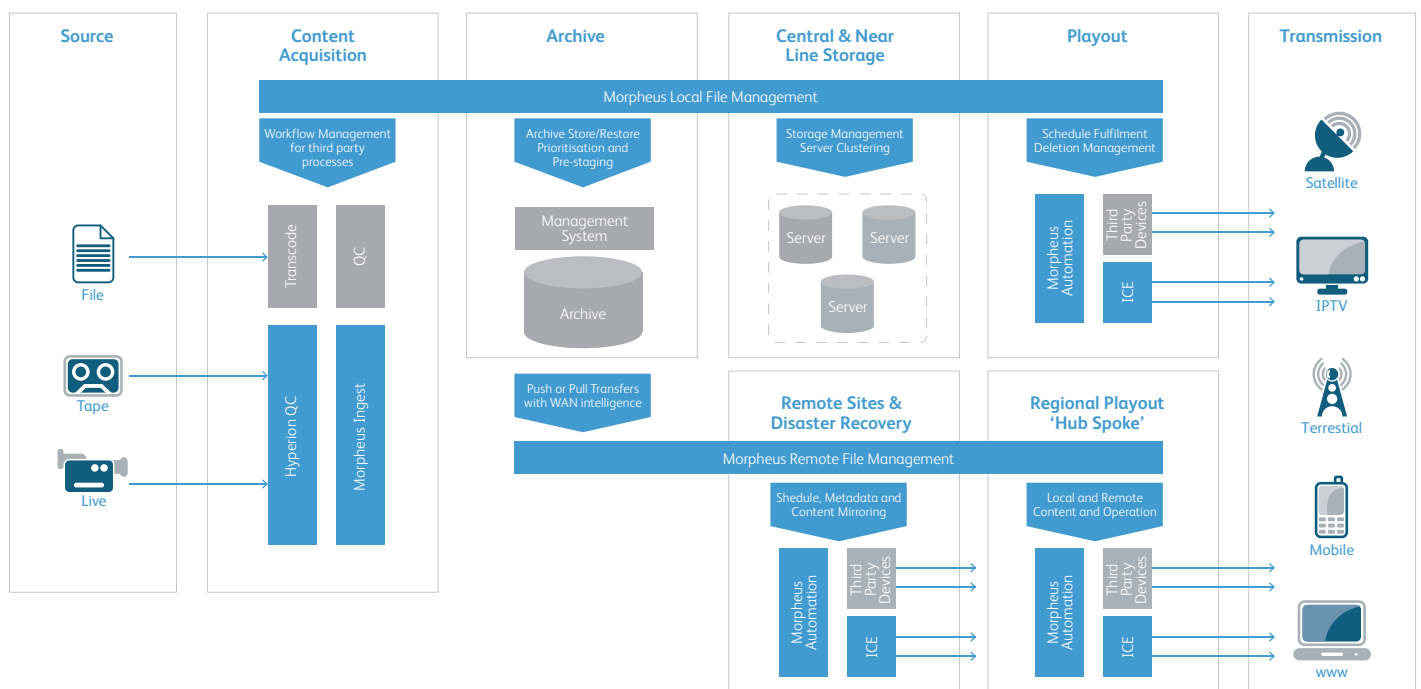
In addition to supporting review of single event content in a browse proxy or full HD server output, Morpheus provides the ability to preview schedule sequences. This preview capability is increasingly important with the trend of more complex branding sequences being applied at air time. Sequences can be previewed in full, or in a more efficient "top and tail" mode where only the first and last few seconds of an event are shown with the associated transition sequence.

N+1 channels

Business continuity is critical in any broadcast enterprise. Recognizing this, Morpheus can copy an entire playlist into a spare channel in the event of a main channel's transmission failure. Playout resumes on the backup channel at the precise timing of the original schedule.



Content Management Made Easy



Managing content ingest, storage, archiving and local and remote delivery logistics is a challenge for any operation. This is particularly true when content arrives on tape, as files or as live feeds from a variety of different sources.

Snell manages the acquisition and movement of content throughout the enterprise regardless of how that content arrives.

With its sophisticated media logistics capabilities Morpheus ensures that content is delivered wherever it is demanded, with minimal manual overhead providing the most efficient, cost effective operation.

Based on its experience of real life automation needs, Snell uses a number of key technologies to optimize the content workflows and maximize the efficiency of the process by capturing more content with less effort and fewer errors. With all content acquisition being underpinned by a high performance database engine the Morpheus solution can scale to meet any throughput requirement.

When content is required, Morpheus determines its optimum source, and selects accordingly from an existing on-line copy or a file in an archive. In practice if an on-line option is not available then a dedicated archive application will restore the content to the required storage location in line with the delivery requirement.

MediaBall™ is a unique technology that reduces operational complexity.

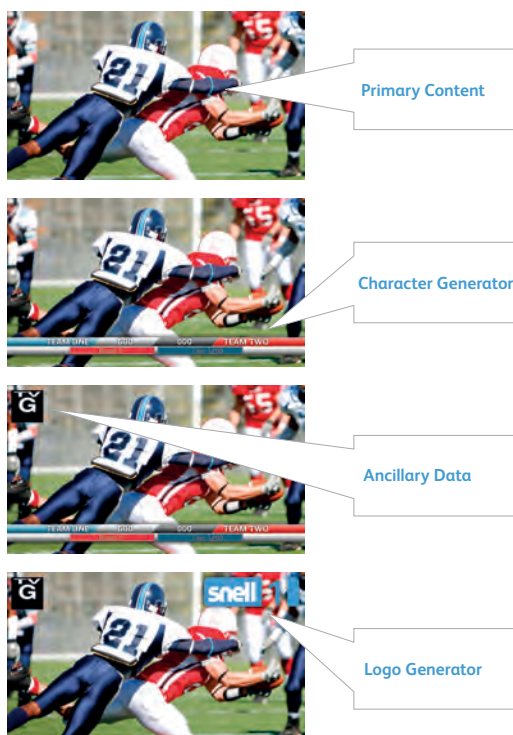
Content Management Made Easy

Simplifying Complex Broadcast
Developed by Snell, MediaBall is a unique technology that reduces operational complexity, enabling more channels to be controlled by each operator. It reduces risk in an operating environment resulting in fewer operational errors.

Unique and powerful, MediaBall allows multiple hierarchically linked events to be grouped together and managed as a single entity. In this way, complex sequences of primary material and secondary events that need to be frequently re-used are easily supported.

Using MediaBall, broadcasters can more easily differentiate their channel brands, even when third party scheduling systems are unable to support a richer primary and secondary event relationship structure.

All secondary actions can be grouped into a MediaBall, allowing the entire sequence to be represented as a single event in the playlist.



MediaBall Example 1: Secondary Content

Using MediaBall, all the secondary actions in the example are grouped together allowing the sequence to be represented on a single event line in the playlist. In any broadcast environment, this kind of intelligent playout automation will increase efficiency, productivity and ultimately profitability.

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.

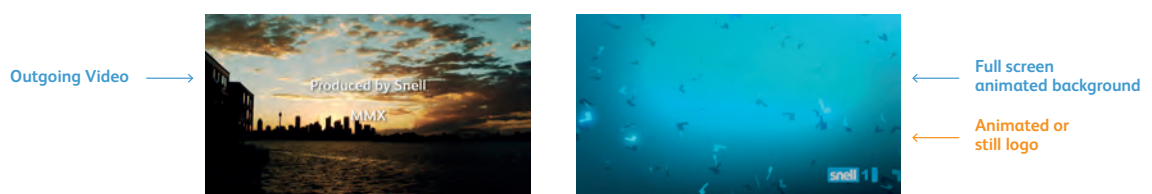
Over four decades in the international broadcast media industry Snell has proved this over and over. Snell solutions are relied on by the world's broadcasters for \$ billions revenue each year.

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.

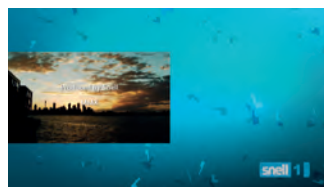
Snell offers these qualities to the global broadcast market. Its support team works with customers on every continent 24/7. Its support is available online, over the phone and face-to-face.

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.



DVE



Complex sequences that are regularly repeated can be created as a MediaBall, and only the parameters that change exposed to the operator. In this example the primary programme content and CG text.

MediaBall Example 2: End Credit Squeeze

Once MediaBall has created these related sequences and media bundles it is still simple to adapt and modify them. Complex sequences, such as the end credit squeeze illustrated, that are regularly repeated can be created as a MediaBall, and only the parameters that change are exposed to the operator.



Innovation in the Multi-Screen World

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