Selenio™ Media Convergence Platform

Mobile Production Environments/Outside Broadcast Units

Application

AThe fast-paced world of mobile production has always presented unique infrastructure challenges. Any shift in technique or technology taking place in the general production and broadcast sector is complicated ten-fold when applied within the space-constrained interior of a truck.

In a typical mobile production environment, staff is frequently tasked with creating multiple program outputs, which can include the primary program, a secondary program for highlights, a clean output for distribution to different networks, a record/archive program, and a composite feed to provide a coach with a DVD for training.

Creating multiple programs in a mobile production environment was challenging enough when our only concern was dealing with an SD signal. Today, as high definition takes hold in production environments around the world, alternative delivery platforms such as Web streaming and stereoscopic 3D are already on its heels as a source of additional revenues — further complicating an already messy workflow.

Management of all these signal types in a mobile production environment requires a lot of processing.

Utility Processing

Depending on the specific production needs of a particular event, utility processing functions could include audio embedding, up- and down-conversion, frame synchronization and composite decoding.

Because it's often impossible to predict which processing functions will be required at any given production event, a typical truck design today builds-in a number of dedicated banks of cards to perform key processing for peripheral services — just in case it's required. Generally, a router feeds each signal to the respective card, and once a signal is processed, it is returned to the router.

Transmission Chain Processing

Signal processing of the main outgoing truck feeds (the transmission chain) is also required, using some or all of the following functionality: audio embedding, up- or down-conversion (depending on whether it's an SD or HD truck), frame synchronization, composite decoding, and aspect ratio conversion (ARC).

In a traditional truck design today, processing in the transmission chain is performed using multiple cards, with multiple input and output paths to the router built in before and after each process for redundancy.

Business Challenge

With all the processing required in today's multiformat, multiplatform workflows, how do you design a truck flexible enough to meet changing requirements – and keep costs in check? In addition to the unique technical challenges mobile production vendors face, there are a range of unique business challenges that must also be addressed.

Simplify deployment

If production trucks could be designed to support a fixed set of functions and processes that would remain the same for every event and venue, infrastructure deployment would be a surmountable task.

But in today's complex production environments, truck design can quickly spiral into a deployment nightmare involving multiple racks of gear; banks of dedicated "just-in-case" cards, which often go unused; piecing together of equipment from various vendors to deliver the required video processing elements; and complex cabling, connectivity and configuration.

Improve operational efficiency

When considering the design of a mobile production truck, the pros know that the challenges don't end with the final stage of deployment. The ability to operate efficiently in unpredictable environments is vital to the success of the new rig.

Today's best mobile facilities are highly versatile production platforms capable of running multiple channels in a very small space. But configuration, monitoring and management of advanced, new equipment can be complex and time consuming. And sophisticated technologies and workflows can be intimidating to less experienced operators that might be found at various event sites.

Reduce Total Cost of Ownership

Whether building a new production truck from the ground up or retrofitting an existing unit, designing infrastructure in anticipation of "what's next?" has become a critical factor in mobile production unit design. Is it ready to handle surround sound audio, full 1080p or even 3D should the production need arise?

With today's strapped broadcast budgets, the costs of commissioning, maintenance and power consumption are always critical factors in mobile production truck design. But in an increasingly competitive market, it's become equally important to build flexible, future-proof mobile production trucks that enable the rapid and cost-effective deployment of new services to meet constantly changing requirements.

Technology Solution

Selenio combines baseband video and audio processing, compression and IP networking features — all in a single 3RU frame. Its game-changing architecture delivers all the baseband processing functionality typical in today's mobile production units — within two basic card types.

Frame synchronization, audio embedding, up/down-conversion, composite decoding, aspect ratio conversion, color correction, advanced audio processing — countless baseband processing functions that traditionally require individual, dedicated cards can now be performed using a single Selenio module set.

With Selenio, your baseband processing infrastructure is transformed from racks of discrete, fixed-function boxes, to a single, compact frame housing two infinitely flexible cards that can be configured on-the-fly to match the production requirements of any event.

The Selenio platform also supports compression and contribution technology via flexible encoding, decoding and multiplexing cards, enabling easy linkup with other sites or studio facilities for remote segments. In addition, a unique 10-bit, low-latency contribution encoder provides best-in-class picture quality, while dramatically reducing delay.

To manage the platform's advanced capabilities, a built-in, highly intuitive, graphically rich Web-based interface ensures maximum ease of use, enabling even less-experienced operators to easily configure, monitor and manage the system's vast functionality.

Business Value

By integrating all key, baseband processing functions into a single, streamlined platform, Selenio provides a highly flexible, space-saving, simple-to-deploy solution that enables broadcasters to easily and cost-effectively meet any production requirements.

Simplify deployment

The unique Selenio "all-in-one" processing architecture makes complex mobile production infrastructure deployment a thing of the past. Its ability to route baseband signaling within the frame means no external wiring is required. More commonality between processing paths reduces interoperability issues. And uniquely flexible cards enable rapid, on-the-fly reconfiguration for varying usage.

Improve operational efficiency

With Selenio, all processing functionality is integrated into a single bank of cards, which allows operators to simply select the functions they need in any particular production environment. The built-in Web-based interface enables operators of any experience level to easily monitor and manage the system's advanced functionality. And uniquely intelligent cards reduce the burden on local engineering teams to troubleshoot should a failure occur or operational requirements change.

Reduce Total Cost of Ownership

Replacing racks of discrete processing equipment in a mobile production truck with a single Selenio frame reduces the cost of initial outlay, commissioning, power consumption and spares inventory. Integrated, seamless signal redundancy and intelligent cards minimize costly downtime. And flexible configuration options provide a future-proof solution that protects your investment no matter how your operational or business requirements change.

Selenio changes traditional infrastructure design by offering all these typical baseband processing functions — plus more — in two basic card types:

- Single- and dual-channel versions
- Video frame and audio sync with genlock support
- Full 3 Gb/s and 3D support
- Analog composite inputs
- Audio embedder and de-embedder
- Seamless sound functionality
  - Audio embedding on Loss of Video
- Clean/quiet output on hot switch at the input
- Dolby® header adjustment
- Fiber TX and/or RX SFP options
- 8 AES unbalanced ports (inputs or outputs)
  - Balanced AES and analog audio expansion modules
- Up to 12 frames of HD and 50 frames of SD video delay

The Selenio Difference

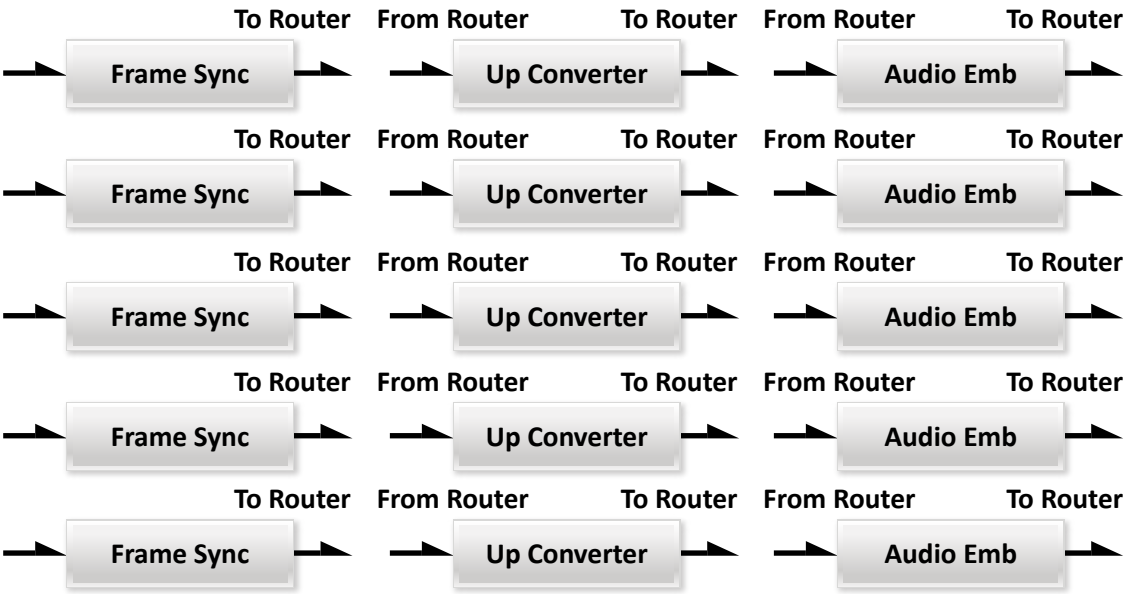
Moving from a traditional mobile production unit design to a "Selenio Model" brings numerous technical, cost and operational benefits. Let's take a closer look.

Simplified Infrastructure

In a traditional mobile production truck design, many of the key processing functions for peripheral services are broken down into a number of utility processing banks, which are generally fed from a router. Once a signal is processed, these are returned to the router.

Using the traditional model, dedicated banks of processing cards are required, regardless of specific production needs — just in case a particular function is required. (See Figure 1)

Figure 1



In the Selenio Model, individual processing cards are replaced with a single Selenio module set, which allows specific functions to be selected according to specific production needs.

This means that a single bank of Selenio cards can be used to perform all utility processing — including audio embedding, up/down-conversion, frame synchronization and composite decoding — and operators can select which function or functions they need it to carry out. (See Figure 2)

In the transmission chain, a traditional design also involves using multiple cards to perform processing functions such as frame sync, audio embedding, up/down-conversion, composite decoding and ARC. Multiple input and output paths exist before and after each process to the router for redundancy. (See Figure 3)

Figure 2

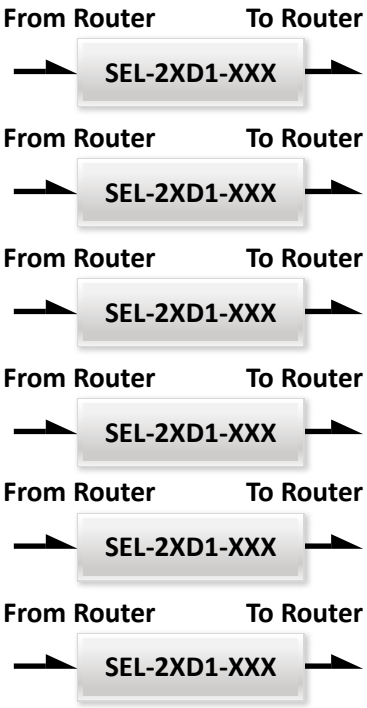
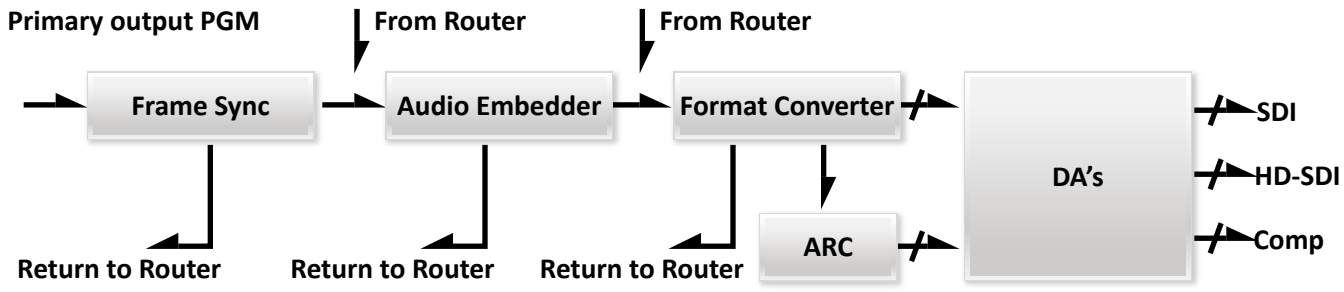
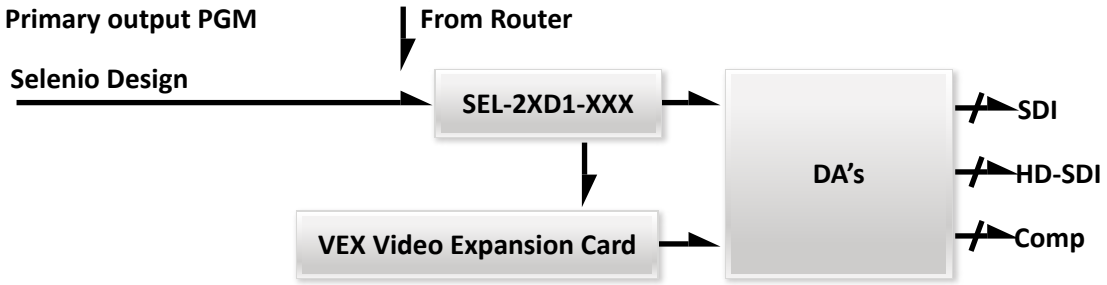


Figure 3



In the Selenio Model, individual cards are again replaced with a single Selenio module set that encompasses all of the required functions. (See Figure 4)

Figure 4



Using Selenio for utility and transmission chain processing streamlines a previously complex architecture and workflow. Card count is reduced by a factor of up to five or six, wiring is simplified and router I/O counts are reduced. The result is significantly reduced rack space, improved flexibility and faster setup.

Cost-, Power- and Space-Savings By the Numbers

Consider the following example, which illustrates the cost-, power- and space-saving advantages of the Selenio platform versus a traditional solution.

In an analysis of the Selenio platform's performance in a 16-camera mobile production truck against that of a traditional truck infrastructure design, it was estimated that users can achieve the following savings:

- 450 fewer watts consumed — 9% reduction
- 24RU less space required — 43% reduction
- 300 fewer cables to connect — 23% reduction

	Traditional	Selenio
Power	4868 W	4418 W
Rack Units	80 RU	56 RU
Cabling	1284	984

Ultimately, reducing the total cost of ownership (TCO) is top on the list of priorities for every mobile production truck owner/operator. When factoring in purchase, installation, power and eventual upgrade costs, Selenio delivers an impressive 21% lower overall TCO.

Maximum Ease of Use

More difficult to quantify, but equally critical in mobile production unit design is overall ease of operation, and here again, Selenio distinguishes itself. A built-in, intuitive Web-based interface — the first on the market to feature functional block diagrams — simplifies how operators set up connections by graphically mapping out each link and highlighting how video is routed through the frame. Based on Microsoft® Silverlight® technology, the Selenio GUI enables operators to easily configure, monitor and manage the platform's advanced capabilities and simplifies the overall mobile production workflow.

Summary

The Selenio media convergence platform brings an all-new blueprint to mobile production truck design.

Unmatched integration of functionality makes Selenio an easy fit within the space-constrained interior of a truck. Ultra low latency delivers industry-best picture quality. Flexible configuration capability and an intuitive, Web-based user interface enable simple, fast configuration to match the processing needs of any event. And exceptional redundancy makes Selenio a supremely reliable choice for critical live broadcasts.

The Complete Imagine Communications Mobile Production Truck Solution

In conjunction with the Selenio platform, Imagine Communcaitions offers a fully integrated product portfolio with a feature list that matches the must-have list of the mobile production truck operator — space efficiency, high reliability, easy-to-use control and lower total cost of ownership.

Solution Snapshot

- Platinum™ Router
  - Robust design for ultra-reliable, mixed-signal routing
  - Fully integrated mux/demux and frame sync; MADI support
- HView™ SX Pro Multi-Display Management System
  - Industry's most scalable, highest-density multiviewer (option for Platinum router)
  - Smaller footprint, sharper picture quality, smarter built-in control
- Videotek® Test and Measurement
  - Handheld test monitors, signal/loudness analyzers, file-based QC and more
  - Compact form factor, ultra-reliable
- Inscriber® Graphics
  - Top-of-the-line and feature-rich, budget-conscious options
  - Powerful management system for streamlined workflows
- X85™/X50™ 1RU Processors
  - Ideal for single-channel processing, disaster recovery
  - Highest levels of flexibility with respect to I/O
- 6800+™ Core Processing
  - Ideal for single-function, utility processing
  - Cost-effective option for simpler, medium-density applications
- Comprehensive Control and Monitoring
  - CCS Navigator™ real-time control/monitoring via intuitive GUI
  - Other: hardware panels, on-screen mouse control, web browser, etc.