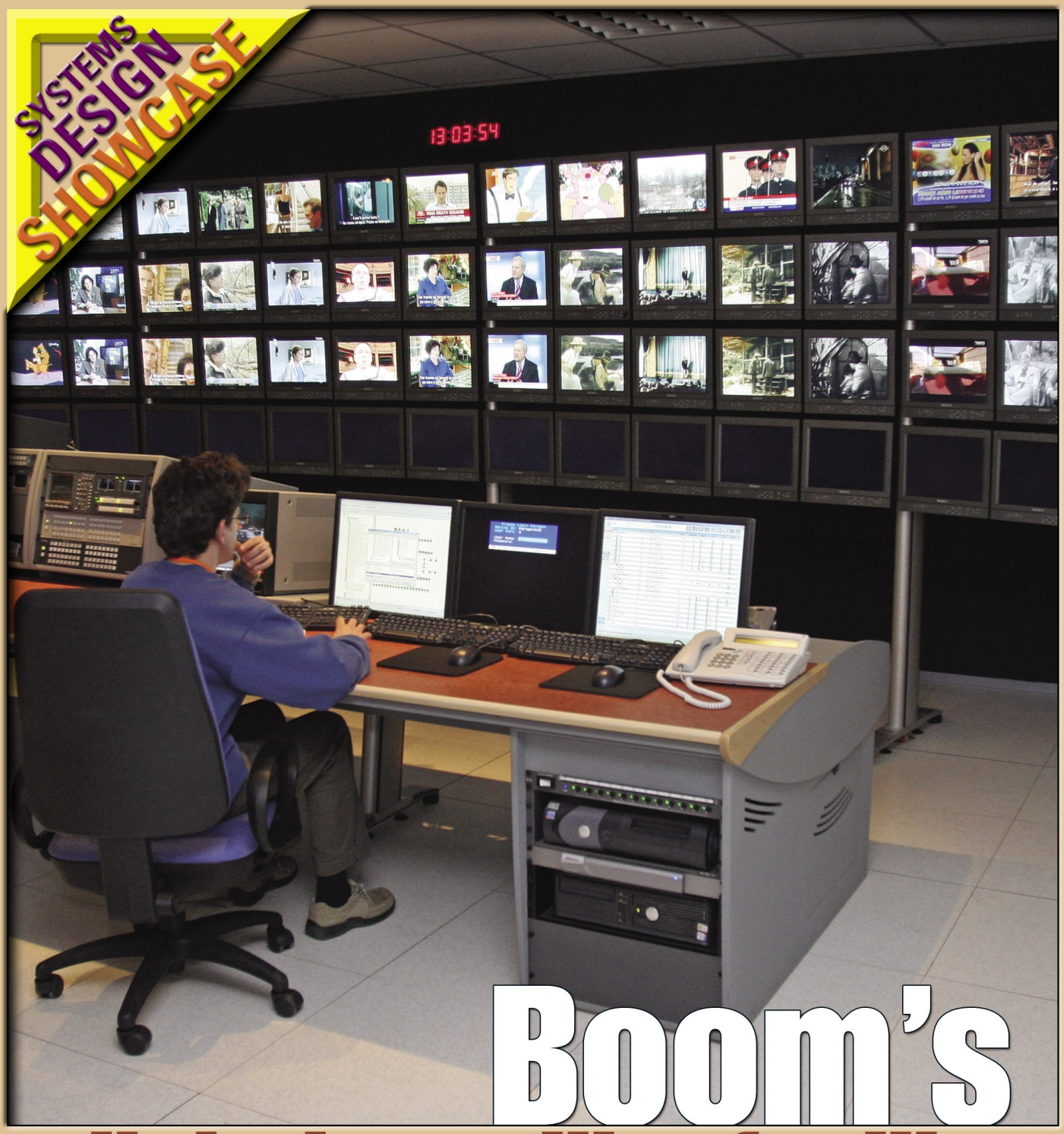
SYSTEMS DESIGN SHOWCASE



Boom's digital satellite facility in Romania

BY RUSSELL GRUTE

During NAB2005, start-up Romanian direct-to-home (DTH) service provider Boom approached UK-based independent systems integrator TSL to discuss the core issues behind building a new digital satellite facility. This facility would need to be able to play host to nine originated channels with commercials and 31 pass-through channels. It would also need the capability to expand channel capacity with the anticipated increase in demand over time. In addition, Boom required an infrastructure that would enable it to provide a

In the master control room, an operator configures the Harmonic encoders and multiplexers.

package of 24/7 channels with pay-per-view and interactive services broadcast in the native Romanian language and reach the country's 7.1 million households.

Romania is the largest country in southern Central Europe and the 13th largest nation in Europe, providing an important gateway between Eastern and Western cultures. Although the country has an existing analog cable infrastructure, Romania's often remote terrain makes satellite a more favorable option; two thirds of the country is dominated by mountains, hills and tablelands. As such, the current cable network is able to reach only half of the country's 22.3 million population.

In Playout 2, an operator uses a dual-head playback client for the Pebble Beach Neptune automation system to run five channels.

Boom's vice president, Adrian Velicescu, had specific business requirements that were based around a straightforward end-to-end workflow:

- The facility had to be scalable; it must be able to launch additional channels quickly.
- An acceptable level of operational resilience was required, not only for content but also for operations and business continuity.
- Playout channels had to be able to carry Romanian subtitles.
- Editing facilities, which allowed in-house editors to take care of post-production for promotional campaigns and graphics, were required.
- The pass-through channels required a simple yet sophisticated monitoring and control system that could detect if there were incoming or outgoing faults on the satellite.
- The operational manning level had to be appropriate for the business at any size.

At the ingest position, analog Betacam tapes are encoded and checked for quality.

The solution

With a budget of less than

€2 million, TSL devised a solution based on Pebble Beach's Neptune automation system. The automation system offers a straightforward and flexible desktop control and management layout with the facility to have additional ingest clients, media managers and flexibility in the playout operator interfaces for quiet and busy periods of the day. The system controls Boom's playout and is integrated with the latest generation of SeaChange's Broadcast MediaLibrary server. For other parts of the workflow, Neptune also acts a mini media asset management system and data mover.

The server was chosen because it offered the highest capacity for the price at that time, which left options open for content and traffic management. The video quality was also the best at low bit rates, and the playout channels run quality pictures at 8Mb/s. This enabled the systems integrator to offer the correct approach for media life cycle management.

This edit suite uses Apple Final Cut Studio for preparation of promos.

The automation system handles ingest and playout, while the archive handles the transfer of media from the server to a Sony PetaSite tape archive. The ingest operator ingests tapes frame accurately into the SeaChange server. The media is then quality checked, and if it's needed for playout, it remains on the server. If not, then it's archived directly to tape. The Pebble Beach Archive controls the robot and tape drives in the PetaSite directly to recover media back to the server without using an intermediate disk cache.

The transmission assist library capability allows straightforward yet sophisticated functionality at an affordable price. When a clip has been ingested and the asset registered by the server, Neptune tracks the location of the media whether in the server, the archive or even on a tape removed from the archive. Operators have access to a wide range of queries, which can be run to highlight issues such as missing material or material ready for archiving.

For the subtitling system, the facility selected the TransCast/Isis system from Starfish. Following ingest of material to the main server, the subtitling system generates a browse media version for use by the subtitle operators. Each of the subtitle authoring workstations has access to the browse video and subtitle databases and can work independently or collaboratively, depending on the projects requirements. Boom operators can open the video clips and can create a set of subtitles to accompany the media or can import subtitles prepared externally and perform final finishing prior to transmission. All subtitles are stored on a central server, and once the project is completed, a transmission file is prepared and made available to the TransCast playout units.

At the time of transmission, the automation system instructs the subtitling system to load the required subtitle file. From there, the subtitle playout is controlled by the VITC embedded in the video being played out. The Boom system passes the subtitles to the compression systems as IP data rather than ASI. The subtitling system units need to compensate for the encoding delay, so each receives a feed of the compression system ASI output in order to extract the necessary PCR clock data.

The technical infrastructure is based around Harris Leitch Integrator Gold wideband digital routing switchers, with the Harris Videotek SQM system providing the eyes and ears

Design team

Boom
Adrian Velicescu, vp broadcast operation and engineering

TSL
Lionel Matthews, proposal manager
Julian Sharp, project manager

Pebble Beach
Phil Moore, project manager

of the facility. Boom requested a single monitor per channel display system as opposed to multiviewers, providing better resilience and a substantial playout gallery. The system includes a flat aluminum monitor wall with Videotek video inserters displaying the audio metering and the UMD for each channel. The fully scalable Videotek system allows the facility to expand channel capacity as it grows. The inserters also act as part of the alarm probing structure if there are a successive number of black frames or the audio drops out.

The central apparatus room houses Harmonic encoders and multiplexers, as well as the playout channels.

The result

Boom offers its subscribers a full range of channels, as well as pay-per-view and interactive services. Channels include:

- the Discovery package;
- the MTV Networks package;
- several Romanian channels;
- international news channels, including CNN, Sky News and BBC World;
- Turner Classic Movies (TCM);
- a varied children's package, including Jetix, Boomerang, Cartoon Network and a local cartoon channel called Mini Max;
- sports; and
- movie channels with pay-per-view options.

Subscribers can order pay-per-view movies via their remote controls. (The set-top boxes have a built-in application with the telephone line providing the return path). Subscribers also can place orders via text message or by calling the 24/7 call center. In addition, Boom distributes its own premium channels, where content is bought directly from the distributors. In the coming months, it plans to deploy a PVR service enabling video-on-demand capability.

Although the whole Boom package will be broadcast in Romanian, the facility also will offer several Hungarian channels for the Hungarian community that makes up approximately 7.1 percent of the population. This community will also receive some select international channels, including Discovery, which will be broadcast with Hungarian dubbing.

The main target for the service is the urban population with medium to high incomes. This group makes up 55 percent of Romanian households and is eager for new technology and high-quality services. These young professionals use the latest GSM and ADSL technology.

To cater to households with lower incomes, Boom will offer an alternative basic package, which carries an equipment-only fee as an addition to the premium packages. The operation, which launched at the beginning of April 2006, brings a sophisticated yet highly economical digital satellite propostion to the Romanian marketplace, providing the country with a high-quality service competitive with other larger European countries. BE

Russell Grute is head of sales at TSL.

Technology at work

Apple Final Cut Studio

Harmonic encoders/multiplexers

Harris
- Leitch Integrator Gold routers
- Videotek SQM monitoring

Pebble Beach Neptune
- Automation

SeaChange Broadcast
- MediaLibrary video server system

Sony PetaSite data tape archive

Starfish
- Immedia transcoding
- TransCast/Isis subtitling