IT-based systems,

what's the impact on a broadcast engineer?

By Laurie Kennedy

We've heard it before; the new systems to support broadcasting and content workflow are IT file-based. But what does that really mean to a broadcast engineer? New responsibilities and needed skill-sets to design, develop, implement and support are at the top of the list.

Has your organization considered these points?

- Is a broadcast engineer expected to know all aspects of the broadcast facility as a jack of all trades?
- Television, being a 24/7 operation, usually spreads engineer staffing in shifts around-the-clock.
- In the past, vendors played a significant role in implementing and supporting older turn-key hardware and systems.

- Today, the IT-based systems are customizable/configurable systems sitting on corporate infrastructures (layers of software and hardware); they are not turn-key and a single vendor or staff member cannot be expected to support all the layers.
- IT software vendors expect the client will maintain and support the hardware operating systems, databases and network connectivity. Vendors will support their software only.
- Are existing staff interested in learning the new technologies?
- Do they have the aptitude? Have they been given an option?
- Have they been provided with training and follow-up hands-on coaching?
- Is there an open and functional relationship with your IT department?
- Do you have multiple support levels and responsibilities?

No longer can we consider the broadcast engineer as a singular profession. Today's world now demands multiple disciplines and knowledge to support a broadcasting/content organization. And yes, it's not just about broadcasting, but content production, content management/workflow and multiple content delivery methods.

A very different world than not too long ago!

Broadcasting (Delivery)

The broadcast engineer's roots began with the advent of over-the-air television; back then and still relevant today, is the need to understand:

- Terrestrial broadcasting
- RF (radio frequency) spectrum
- Transmitters, amplifiers
- Antennae
- Video routers
- Video and audio quality assurance.

Many broadcast engineers came from an electrical engineering background. In the 1990s there was an explosion of specialty and digital channels which were delivered only via cable or satellite. This caused an increase in broadcast organizations and a demand for broadcast engineers, however, not for terrestrial broadcasting knowledge.

Now, in 2011, we are looking at even more methods of delivery. It's interesting because the old adage about what goes around, comes around, seems to be true:

Method	Delivery via	Viewer receive via
Digital/Analog Over-the-Air (OTA)	Transmitter RF Channel ASTC A/53	Antenna (OTA)
Digital/Analog Over cable	Cable	Cable provider
Digital/Analog Satellite Over satellite	Satellite provider	
Digital Over the Internet (IPTV/OTT)	Internet (IP)	Internet provider
Digital Mobile Apps	Wireless	Wireless provider
Digital/Analog Over Mobile DTV	Transmitter RF Sub-Channel A/153; IP	Mobile antenna (OTA)

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Content (Production/Management)

A broadcast engineer's role is not just about broadcasting (delivery). It is also supporting Master Control, distribution/VTR operations and in-house production facilities (studios, control rooms, media/archive libraries).

Tools and practices have evolved over the past 30 years …

Video is now managed within a data processing (IT) framework. It is important to have broadcast engineers involved to tap into their knowledge in video and audio formats, encoders, transcoders, up convertors, down convertors, codecs, quality control, etc. However, many of the new systems are also data-based (metadata), with automated workflows which are not new to an IT professional.

	1980-1990	1990-2000	2000-2010
Method Source	Video reels/videotape satellite	Videotape/digital tape satellite, fibre	Digital card/disc satellite, fibre, Internet (FTP)
Editing	Linear tape editing; non-linear editing (stand-alone)	Non-linear editing with centralized storage (working/short term)	Non-linear editing integrated with MAM/DAM systems with central working + archive storage
Tool/System	Out of the box hardware turn-key stand-alone systems	Out of the box hardware turn-key systems proprietary networks	Customizable/configurable IT systems installed on corporate infrastructures (LAN/ WAN)
Support	First line – engineering; second line – vendor	First line – engineering; second line – vendor	First line – help desk; second line – engineering and IT; third line – hardware + software vendor(s)

Skill-sets and Collaboration

I believe there is value in broadcast engineering departments developing a closer working relationship and synergies with their IT departments. Today, it is critical for an organization to understand the symbiotic relationship that must exist between the two. One cannot live without the other. The problem in many organizations is that there are often different reporting lines and a reluctance to play nice in the same sandbox. This has resulted in conflicts around approaches and practices.

As within the information technology profession not too long ago, IT professionals would wear many hats within an organization. Practices were less structured. I speak here from experience, as back in the 1980s my title was programmer/analyst (systems developer) although I also managed the corporate computer's operating system and problem-solved workstation cabling issues. As well, I could be found onsite on alternating Saturday evenings doing the weekly full system backup.

Of course, as the complexity and flexibility of IT grew, as well as the organization's dependency on it for daily operations, IT roles and responsibilities evolved into distinct professional disciplines. This enabled the smooth and focused running of daily operations, separate from new and ongoing development projects. This includes:

- Project management
- Business application analyst
- Business systems developer
- Database analyst/administrator
- Computer operations (operating systems; back-ups)
- Network analyst/administrator (LAN/ WAN)
- Help desk support.

Of course, depending on the size of an organization, a single person can wear multiple hats. It's a stretch, and actually a risk, to assume a single person (or department) could wear all the hats to support broadcast/content delivery and the new integrated content production workflows.

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