



Member focus...

Ron Hranac HFSCTE

At the SCTE we feel great pride in our individual members, who have made such a contribution to the growth and development of our industry. This is a new section of Broadband Journal and we'll be shining an overdue light on our wonderful individual members in every issue going forward, as well as regularly online.

Ron Hranac, a 50-year veteran of the cable industry, has worked on the operator and vendor side during his career. He retired at the end of 2020, but remains active in standards committees and continues to write and serve as Technical Editor for Broadband Library. Ron was the first American to be elected an SCTE® Honorary Fellow. He was recipient of the 2016 Tom Hall Award for Outstanding Services to Broadband Engineering, and was named winner of the 2017 David Hall Award for Best Presentation.

A Fellow Member of the U.S. SCTE, Ron was inducted into that organisation's Hall of Fame in 2010, is a co-recipient of the Chairman's Award, Member of the Year, and is a member of the Cable TV Pioneers Class of 1997. He received the Excellence in Standards award at Cable-Tec Expo 2016. In the 1998 and 1999 Western Cable Show issues of CableFAX Magazine, Ron was named among the cable industry's 100 most influential people. In 2011 he was inducted into Communications Technology magazine's Hall of Fame. He has published hundreds of articles and papers, and has been a speaker at numerous international, national, regional, and local conferences and seminars.

You joined the SCTE® in 1988. What first got you interested in a career in the cable industry?

For as long as I can remember, I've had an interest in science, radio, and electronics. I grew up with the space race, and my heroes were astronauts. Some of that interest in tech was further inspired by my grandfather, with whom I enjoyed many childhood chats about subjects like the Theory of Relativity,

ancient Egypt, and more. My career in cable began in 1972, when my hometown cable company had a job opening in their local TV studio. After a couple years I moved from the studio to the outside plant, and the rest, as they say, is history. That cable system started operation in 1953, and some of my colleagues had been there since its beginning. They were willing to share what they knew, put up with a lot of my questions, and encouraged me to keep learning.

You are an engineer, a marketer, an editor and a writer. You've written standards and developed specifications and your expertise covers a wealth of areas. Which one do you enjoy most?

I enjoy them all. But two stand out as favourites: The first is engineering, which provides an opportunity to help others troubleshoot and solve problems. The second is writing, sharing what I've learned over the years and to communicate sometimes complicated technical concepts in a less complicated manner.

You've had a long, distinguished career in cable. What memories stand out for you?

The best memories are the people and the friends I've made, and a close second is working with such a wide range of technologies over the years. For me cable has been like a hobby with a paycheck.

The industry has changed a lot in 50 years; what for you is the biggest shift?

I know it's a cliché, but the only constant has been change. As I look back during the past half-century, three big technology shifts stand out. The first occurred in the mid-1970s when

the cable industry started using geostationary satellites to transport video programming to cable systems. The second happened in the 1980s, when multi-channel analogue intensity modulation technology in optical fibre links (also called AM fibre links) was introduced and made possible what we now call hybrid fibre/coax (HFC) architectures. The third was standardised DOCSIS®-based high-speed data transmission in cable networks, introduced in the 1990s.

What do you get out of being a member of the SCTE?

I first became involved with SCTE in the late 1980s during business trips to the U.K. to provide engineering support for the East London Telecommunications project. At the time I was also President of the U.S. SCTE. I got to know Tom Hall quite well, and we were able to build bridges and establish a good working relationship between the two organisations. That led to several long-time friendships, opportunities to attend SCTE events, and even be a speaker in some of them.

There must be a lot of great stories about the old days - tell us something that will make us smile.

This story falls into the “oops!” category. When the system where I started in cable was getting ready to launch its first premium pay channel, Showtime, in the 1970s, the Federal Communications Commission required the use of very expensive 10-metre diameter dishes just to receive the satellite signal! The cable company hired a local surveyor to prepare for installation of the dish's concrete foundation, which had to be orientated a certain direction. Well, the surveyor made a mistake, and the foundation was installed with the wrong orientation. A custom modification to the dish's steel support

structure was necessary to allow the antenna, which had a limited adjustment range, to be pointed at the satellite.

Did you have any mentors over the course of your career, and how did they help you?

I count many people among the mentors who had an influence on my career and am fortunate to have met some of the early pioneers such as Ken Simons and Len Ecker. I remember attending a technical seminar taught by Len in the 1970s, and he was a stickler about getting the details right. I think some of that rubbed off on me.

With the rapid movement to fibre optic systems, have you been able to apply the knowledge you have? Are you still constantly learning on the job?

My initial involvement with fibre technology was in the 1980s. Jones Intercable, the company I was working for at the time, built the first U.S. cable system to use multi-channel AM fibre technology. We had upwards of 4,000 homes passed per node in that system. Fibre technology has advanced substantially since then, and yes, I still take time to learn about new technologies.

With the push to fibre-to-the-home, what's the future for DOCSIS?

Most cable operators have deployed at least some FTTH technology in new-build or greenfield applications, but those deployments are for the most part still in single digit percentages of their total networks. Many operators have already deployed DOCSIS 3.1 technology in their HFC networks and have gigabit-class data service available now.



Ron delivering a DOCSIS lecture.



Ron pictured with Mike Thornton, receiving the Tom Hall Award in 2016.

My HFC-based home Internet service was recently upgraded to 1 gigabit per second in the downstream for no additional cost, and it works as advertised. Over time I expect FTTH to become more common, but DOCSIS technology has, in my opinion, a long life remaining. Keep in mind, DPoE™ and DPoG™, known respectively as DOCSIS Provisioning of EPON and DOCSIS Provisioning of GPON, can be part of fibre-only architectures, too.

What is the possible future for coaxial networks?

Coaxial-based cable networks, specifically some variation of HFC, will be with us for many years. FTTH has long been an end-goal and is an important part of the cable industry's toolbox, but it's still quite expensive to completely replace existing HFC networks with FTTH networks. Fibre will continue to get closer to the subscriber, and the RF bandwidth of the coax plant will continue to increase. DOCSIS 4.0 technology supports an upper frequency limit up to 1.8GHz, and I expect to see that increase to 3GHz and perhaps higher. The capacity of coaxial cable has yet to be fully utilised.

What limitations do you see for fibre networks?

This question can be answered a couple ways. If we think about completely replacing an existing HFC network with FTTH, cost might be a limitation. For now, anyway. But FTTH will no doubt be ubiquitous one day. Another limitation is capacity, but not in the way one might think. Being an RF person, I lean toward thinking of capacity in chunks of frequency rather than data speeds. Around 1990 an engineer called Larry Lockwood wrote an article for Communications Technology magazine discussing the theoretical capacity of then-available single-mode optical fibre. If I recall correctly, it worked out to about 20THz, or roughly the equivalent of 2.5

million analogue 8MHz-wide TV channels simultaneously in one fibre. Today's optical fibre has even greater capacity. The limitation isn't the glass itself, but the electronics connected to the ends of the fibres.



Ron and friends are conducting signal leakage and antenna tests, turning his garden into a test range of sorts, and the results were included in a published paper.



Ron's collection of ribbons is a reminder of the presence he's had at SCTE (US) events over the years. He reminds us he 'almost always won' the competition amongst his peers for the most ribbons!

What are the technical challenges ahead for fibre? For example, power into fibre, modulation types, standards to use?

I think opportunities might be a better way to describe what's ahead. I'm constantly amazed by the seemingly never-ending introductions of new standards, technologies and demonstrations of terabit-class data speeds. As some or all of these become available to the cable industry, we'll be able to use many of them. The challenge will be trying to decide which ones are most appropriate for our networks and services.

For coaxial networks there has been a historical difference in network topology between the US and Europe. With the introduction of fibre, do you feel that we are all use the same parameters for network design or do you feel that there still is a difference?

I think there will still be some network topology differences, in part because of the housing density differences in U.S. and European cities and other factors such as civils costs – especially where networks are

underground. As fibre technology becomes more widely deployed, those topology differences likely will diminish, but I don't know if they will completely go away.

Has the introduction of streaming services and 'IP-traffic only' changed the hardware industry, in terms of the typical US-equipment any longer?

The types of equipment cable operators have been installing in headends and hubs to support those new services have changed over the years. Think more routers, switches, cloud-type servers and similar data equipment, all of which are really country-agnostic. The customer premises equipment has changed, especially to support IP-based services. The technical backgrounds of people have changed, too, with much more emphasis on data, software and related skills.

Do you believe that DOCSIS 4.0 will survive (or becomes realistic)?

Some DOCSIS 4.0 technology is already here, and some is still in development. Two of the U.S.'s largest cable operators are planning DOCSIS 4.0 technology rollouts: One is going to use full duplex (FDX) DOCSIS, the other DOCSIS 4.0 frequency division duplexing (FDD) with the downstream's upper frequency limit as high as 1.8GHz. I've already seen prototypes and some production products that support DOCSIS 4.0 operation. The good news: it's very real.

Is it worth the network investment or is it easier to try to move the subscribers to fibre if you need more Internet speed, assuming fibre is (or becomes) available in the area?

There is some "it depends" in the answer to this question. DOCSIS 4.0 technology promises support of multi-gigabit data speeds, and is an important part of the 10G Platform. That platform brings 10 gigabits per second to the table (and the subscriber premises), using a variety of technologies over HFC and fibre. Some operators have made the decision to fully upgrade to FTTH – at least where it makes sense – and others plan to upgrade and use their existing HFC networks. It can be very expensive to install new FTTH in existing residential areas, depending on current overhead and underground infrastructure. I imagine the decisions on how to move forward will keep the accountants busy for a while.

Consequently, the million-dollar question: How long will operators keep their coaxial networks operational?

This is another "it depends." Some cable operators may have older HFC plants that require full rebuilds, and migrating to

FTTH is simply more cost-effective for them. Others will keep their HFC networks, with as-needed upgrades rather than full rebuilds or replacements. I've never been very good at predicting the future, but I think it's safe to say many HFC networks will be here for many more years.

Do IP networks - either coax or fibre - have a future as 5G backbone (the interconnection between the many 5G transmitter stations in future)?

Some cable operators are already working with 5G mobile service providers to provide backhaul, midhaul, and fronthaul services to interconnect towers and facilities. This is especially true where it might not be cost effective for the telcos to install new fibre to interconnect their 5G facilities. If the cable company already has fibre or coax nearby, why not use it?

How do you see the cable industry developing over the next five years?

HFC network upgrades, more fibre-to-the-home (FTTH) deployments, and ongoing technology evolution will almost certainly be part of the next five years. I expect to see more interest in 'smart' equipment in our headends and hubs, outside plant and subscriber drops too.

What would you tell a young engineer just about to get started in this industry?

My advice to anyone joining the cable industry is to never stop learning, never stop asking questions, and be sure to share what you've learned with others.

Thank you so much Ron!

You're very welcome, Melissa, and thanks for the opportunity to be part of this new feature in Broadband Journal.

Are you an individual member of the SCTE? Would you like to be featured in Broadband Journal? Drop us a line: office@theSCTE.eu

