As so aptly stated in French in this article’s subhead above, the more things change, the more they stay the same. Going back in time is always interesting — to reminisce, to encourage, to learn, and perhaps even to long for the good old days.

Public telecommunications in past decades was circuit-switched, organized hierarchically into groups and supergroups, analog in nature, and networked as either broadcast or point to point circuits.

The emergence of digital technology in the 1970s and 1980s was a seminal change for the telecommunications industry as it allowed for massive improvement in spectral efficiency and saw the emergence of techniques such as forward error correction (FEC), digital filtering and equalization that improved communications quality over poor lines.

The dominance of IP and then the emergence of the internet in the late 1990s was equally important, as packet switching had simplified multiplexing, improved accessibility, and expanded network architectures — the connectivity of the internet has provided the broadband applications that have massively driven the growth of global telecommunications carriers.

Then came the social media revolution in the 2010s; are we really better for that development?

However, the physics of satellite communications has always kept it apart. Long hops and limited power budgets place much lower bounds on signal to noise ratio — satellite practitioners look enviously at recent advances in terrestrial cellular networks, where MIMO antenna systems, high order modulation schemes, and low-cost terminals are meeting the ever growing demands for high speed data — where service is available.

But ‘Plus ça change, plus c’est la même chose’ — satellite still remains the only communications technology that is available any place, any time.

Recognizing early on that Ka-band solutions would be required to meet the growing data needs of the satellite-connected community, EM Solutions started to migrate many of the firm’s products to Ka-band in the mid-2000s and build them into more advanced systems.

Since 1998, the company had been developing bespoke and customized solutions for the firm’s customers, particularly local telcos. From EM Solution’s roots as a developer of solid-state power amplifiers, filters, and oscillators, the company has progressed up the value chain to develop high speed receivers and transmitters for radios,
and now on-the-move terminals, to become the partner of choice for several European systems integrators and increasingly, customers around the world.

For example, the company’s 80W Ka-band linearized transmitter (BUC) still remains the only airborne-qualified solid-state BUC at this power rating on the market and was first developed specifically for a customer in Europe. The product is increasingly being used in IFE (in-flight entertainment) solutions.

EM Solutions has a long heritage of providing communications solutions to those customers who require radio connectivity. In 2008, the company was sponsored to develop a land-mobile Ka-band terminal and was able to test multiple prototypes over the Optus C1 satellite and to perfect its “monopulse” pointing technology before progressing to full commercialization.

The development of this unique pointing technology has taken the company on other fruitful journeys; for instance, EM Solutions designed and manufacture the E-band (80 GHz) radios operating at 10 Gbps that now link the New York financial markets. These also have application for high data rate UAV communications, offering ten times the speed of existing products, and possibly even future specialist satellites.

Readers may well ask how can a small Australian company be unique and relevant? By being willing to customize SATCOM radio products, by providing multi-band solutions, and by developing superior technology, such as terminal stabilization for high availability communications on-the-move.

In 2017, EM Solutions completed the installation of its dual Ka-band Cobra terminals onto the Australian Border Force Cape Class fleet. The firm’s partnerships with Inmarsat and Intellian proved productive, enabling terminal certifications on the Inmarsat GX network as a fall back to operation on the WGS system.

EM Solutions then completed installation of the leading-edge tri-band Cobra terminal — which simultaneously operates in both X- and Ka-bands — for the Royal Australian Navy, and followed this with repeat orders for other ships.

Meanwhile, the company’s land-mobile terminal, the Taipan, has continued to roll out for a major European customer (in X-band) as it will also manage shortly for an army in Asia (in Ku-band). By aspiring to the level of “assured” communications, EM Solutions continues to cement its position as a company known for products unmatched in reliability and robustness.

The company’s research with the University of Queensland also continued, with Fellow Dr. Yifan Wang leading an innovative research project on a novel reconfigurable Flat Panel Antenna — which aligns with the company’s strategy to offer broadband and monopulse steered on-the-move terminals. EM Solutions hopes to report on success with the first prototype early next year.

EM Solutions made a number of internal changes to accommodate the advancements that were occurring externally. The company grew its talent base by 20 percent, adding diversity to the firm’s pool of human capital and, thereby, strengthening existing innovative capacities.

What else did EM Solutions do with its human capital? Well, they say there is nothing more Australian than spending time in somebody else’s country — so, this year, EM Solutions did that, as well. The company sent staff to the U.S., Canada, the UK, UAE, China, Korea and Japan, securing more than $6 million in orders from four continents. The company sent people to source suppliers, support terminal installations, participate in learning opportunities, attend conferences, and to meet the people with an appetite for change — customers.

Those who remained in Australia kept the innovation engine humming. EM Solutions were named as a Finalist in the 2017 Premier of Queensland’s Export Awards as well as the 2017 Brisbane Lord Mayor’s Business Awards for categories in Innovation, Manufacturing, and Doing Business in Asia.

EM Solutions especially appreciate these local acknowledgements because such confirms the company is respected at home as well as by customers abroad.

Two of the company’s biggest advantages have been flexibility and innovation and these haven’t waned. Innovation occurs by building on the shoulders of the giants that have gone before. The real giants in the innovation puzzle are those customers who embrace innovation and are prepared to fund its development. Such customers push the technology envelope and drive innovation by demanding specialized requirements, new features, and performance improvements.

As 2017 draws to a close, EM Solutions salutes its customers — they are the real heroes.

Dr. Rowan Gilmore is the Chief Executive Officer of EM Solutions. To learn more about the company and products, please access www.emsolutions.com.au.