

WHERE ARE WE?



Neil Pollock

is Sales Director for the North East Region at KOREC Group

Neil Pollock explores the rapid evolution of satellite positioning systems over the past 75 years and suggests how geospatial professionals can shape their future development

‘Necessity is the mother of invention.’ So said Plato. Sadly, many of the inventions we now use daily have their origins in conflict. Never is the rate of invention greater than during war.

Two centuries ago, when Napoleon and his army romped across Europe, the General sought a way of delivering enormous quantities of food to the front lines. And so, in 1809, the French government held a contest to solve the problem, with the cash prize of 12,000 francs going to Nicolas Appert who designed a sealed glass jar that could be factory-produced en masse. He dutifully used the cash to build such a factory, and while the British and their allies burned it to the ground as they swept through France in 1814, you get the idea.

Time flies

And so, to 1957. The story of all positioning systems started with the Cold War and the Soviet Union’s launch of the Sputnik communications satellite. What, at the time, seemed like a major defeat for the West – with the USA lagging behind in the space race - turned out to be the catalyst for one of the most important technologies of the 20th and 21st centuries.

It was October 4th, 1957 when scientists at MIT noticed that the frequency of the radio signals transmitted by Sputnik increased as it approached during its elliptical low earth orbit, and decreased as

it moved away. Today, that same principle allows the GPS receiver in your phone or satnav device to learn its location, rate of speed and elevation by measuring the time it takes to receive radio signals from four or more satellites floating overhead.

Fast forward to 1978 and it was Charlie Trimble who began to extend GPS from its exclusively military use to commercial markets such as surveying and navigation. The process revitalised and redefined these markets and, by marrying GPS with other technologies such as wireless communications, spawned new products that have transformed how we work today.

Mind-blowing

1992 saw the emergence of real-time kinematic (RTK) technology, allowing moment-by-moment GPS updates on the move. For surveyors, this was revolutionary, allowing them to do topographic mapping, stakeout, GIS data acquisition, and as-built surveys in real-time. All of this mind-blowing evolution in just 35 years from the initial idea.

So what really kicked it up a notch? We did. The geospatial professionals of the world. We demand the best; we demand precision, and we demand reliability. And we now have a raft of Global Satellite Navigation Systems from China, Europe, Russia and the USA providing. Even so, such systems are not perfect – needing, until

recently, a clear and uninterrupted view of the sky to realise their full potential. That’s great if you’re working in the middle of a field, but not so great if you’re trying to survey city streets. At best, you may get reduced accuracy and, at worst, no measurements at all.

Listening and delivering

As always, geospatial professionals demand more and they demand it fast. Luckily, we have a host of manufacturers that listen and deliver. Take the new Trimble R12 as a case in point. Customers wanted better performance in challenging environments, and they got it. Trimble says that advanced signal management not only confers better performance but also greater precision in such situations. For example, we can now obtain accurate position fixes under tree canopies. This was previously unheard of and gives geospatial professionals a huge efficiency boost.

So what’s the message here? In short, keep demanding. The manufacturers are listening and, more often than not, will deliver beyond our expectations. Our industries are evolving at pace and we need technology to do likewise. We have a huge impact on the world in which we live, as we build, maintain and transform it every day so let’s make sure we have the best tools possible!