RTT TECHNOLOGY TOPIC
November 2008

Seventy Five Years in Telecoms
The Politicisation of Radio

Two months ago in our September Technology Topic 'Twenty Five Years in Telecom' we went back over 25 years of cellular history and highlighted the dangers of 'light touch regulation' and the additional industrial costs that can be introduced by adopting a 'let the market decide' regulatory approach, particularly when applied to technology (standards) and/or engineering (spectrum).

In last month's Technology Topic, 'Fifty years in Telecoms' we looked back over fifty years of radio communications tracing the origins of the space race and the satellite industry, the birth of the content driven consumer electronics industry (the pocket transistor radio) and the contribution that wireless technology has made to public safety and emergency communication.

One of the future challenges of the regulatory community will be arbitrating the conflicting interests of the satellite industry, two way radio industry and cellular industry both in terms of access to spectrum and the negotiation of future spectrum usage rights.

This month we go back seventy five years to **1933.**

As you might have gathered we are choosing to take a set length of time (a year) at a set period (1933) to see if there are technology precedents that are useful to us today.

More specifically we want to consider the interaction of radio technology with politics, social change and the economy and identify the impact of these changes on the regulatory environment.

Fifty years ago the transistor ushered in a new 'era of smallness and power efficiency' that took us to the moon, gave us transistor radios and more efficient policemen.

Fifty years on, nanotechnology is ushering in a new 'era of smallness and power efficiency'. The intersection of nanotechnology and radio technology should help to create new energy, environmental and life science applications - all positive outcomes.

In earlier Technology Topics we have addressed the transition that is occurring in mobile phone functionality.

The first generation of mobile phones helped us communicate.

Smart phones were then introduced. These phones aspired to improve our efficiency and were the product of computer and communications convergence.

The next generation of smart phones and smart wireless devices will exploit nanotechnology based sensing techniques which when combined with increasingly accurate location and positioning capabilities will help us to relate to the physical world around us. In the process these devices should make the world a safer and healthier place to live in.

This is part of an ongoing process of device convergence. The integration of sensing functionality is a logical next step from the integration of broadcast radio and TV receiver functionality into cellular handsets and mobile broadband devices and the integration of imaging and positioning functionality.

In practice, market convergence follows technology convergence rather than the other way round.

Market change (which may or not include convergence) is also usually the consequence of technology change.

This means that by studying technology trends we can get early advice of future market trends including convergence trends and the possible political and regulatory implications of those trends.

Convergence and market change may have unintended consequences not all of which may be congenial to the common good.

In conditions where markets can fall in value by 20% or 30% in a day it seems odd to be discussing long term forward product plans or long term regulatory policy.

However in the telecoms industry spectral assets have traditionally been leased on twenty or twenty five year tenure and semiconductor fabrication investments are planned 15 to 20 years ahead.

User devices and/ or devices that sit at the edge of a wireless network are the mechanism by which these investments are able to yield a return.

The return may be financial but as we shall show there may be an ambition to realise a political return from future radio systems particularly in the context of uncertain social, political and economic conditions.

On this basis it seems quite sensible to at least make an attempt to produce future product plans on the basis of all the information available and to qualify how regulatory policy may need to adapt to respond to changing political, social and economic ambitions some of which are potentially nationally or narrowly focussed.

What will cellular handset and mobile broadband devices look like in twenty five or fifty or seventy five years and what will convergence mean in terms of practical user functionality?

Is it plausible that these devices could be used for purposes other than those for which they were intended?

Cellular phones and mobile broadband devices provide a mechanism for communication but this communication can be powerfully personal and place specific.

We have said that the next generation of phones and mobile devices may help us to relate with the physical world around us.

It is also possible that cellular phones could become a mechanism by which governments and/or particular interest groups can exercise control and/or influence over individuals or groups of individuals.

This implies a need to consider how regulation may need to adapt to changes that are a composite of technology progress and social, political and economic change.

How does a seventy five year reference point help us to forecast future product plans and future regulatory requirements?
In retrospect many of the convergence trends that emerged in the late 1990's - the integration of cellular phones with computing functionality, the integration of cellular phones with radio and TV receiver functionality, the integration of cellular phones with imaging capabilities (camera phones) and the addition of location and positioning functionality had been clearly signposted by earlier events.

Or rather the sign posting should have been clear if we had studied those events more closely and completely, analysing technology and engineering in the context of contemporaneous political, social and economic change then translating that analysis into a forward forecast.

Some examples of why a seventy five year reference point has topical relevance.

What happened in 1933?
Franklin D Roosevelt was inaugurated with a mission to lead the US out of depression. Political historians have enjoyed making the obvious comparisons with more recent US electoral events.

One of Roosevelt's first acts was to submit the Emergency Banking Act to Congress to ease the run on small banks; other measures included a prohibition on the hoarding of gold coins and the Home Owners Refinancing Act as part of the 'New Deal' package to prevent people losing their homes through foreclosure.

1933 also marked the start of Roosevelt's 'Fireside chat' radio broadcasts.(A year earlier, George V had 'addressed the Empire' in his first 'Christmas Message').

Germany's parliament building, the Reichstag, is set on fire.

The Nazi party wins 44% of the vote in a parliamentary election

Germany withdraws from the League of Nations.

The first post victory Nuremberg rally is held in Germany. Goebbels announces a global propaganda campaign. Radio broadcasting was essential to this campaign.

A permanent radio link is established between the Vatican Palace and the summer residence of Pope Pius X1 in Castel Gandolfo to allow the Pope to broadcast to the Catholic world (Marconi had established a 10 kilowatt short wave radio station for the Pope in 1931).

Armstrong patents FM radio technology.

How does this help us to decide what will happen over the next fifty years?
The politicisation of cellular radio and the required regulatory response.
1933 was six years before the outbreak of the Second World War - the war that was never supposed to happen.

It can be argued that broadcasting technology directly contributed to the rise of the Nazi party in Germany. Whether you agree or not it is indisputable that this period marks the politicization of radio broadcasting. Ten years earlier Reith had established the independence of the BBC precisely to avoid this happening.

To move back to the present, traditional broadcasting played a significant role in the recent US election. However this does not mean that broadcasting in the US is politicized. 'Paid for' advertising at least has the merit of being transparent and regulated.

Interestingly the common opinion seems to be that it was the (largely unregulated) internet rather than TV that influenced the outcome of the election partly by energizing a new and younger electorate.

However we would say it is premature to write off traditional broadcasting, particularly free to air broadcasting, as a political, social and economic force.

The reason for this is that technology is re inventing traditional broadcasting in ways that have as yet not become generally apparent.

Significantly the **ATSC standard** now supports portable receivers (as does DVB T) including lap tops with built in ATSC and DVB T tuners.

Presently the coverage available from terrestrial networks is not sufficiently consistent to make this a compelling user proposition but more sensitive receivers and a relatively modest increase in network transmitter density would transform the user experience AND ITS FREE. This point seems to have been missed by the mobile broadcast and mobile broadband cellular community.

Incidentally the broadcasters are within their rights to increase the number of transmitters as broadcasting licenses are generally issued on the basis of transmitter EIRP not received signal levels. This point seems to have been missed by the White Space community.

But leaving broadcasting to one side for the moment, it is apposite to consider that we are moving in to an era where the majority of the world's population will own a mobile phone and/or have access to mobile broadband connectivity and moving into an era

where cellular phones out number TV's (though not transistor radios).

This implies an increasing politicization of the cellular radio industry or at least an increased risk of politicization.

Two positive/negative examples (depending which side you are on)

Earlier this year in Afghanistan **the Taliban** attacked a number of mobile phone towers and demanded that the networks be switched off from 5 pm to 7.00 AM each day.

Giving out free phones and free service to win the 'hearts and minds' of the local population has been discussed (but not implemented) in Iraq.

So a study of 1933 throws up some unsettling precedents which should at least make us think about how the cellular industry and cellular devices may be used to the common benefit rather than to service particular political or sector interests.

In radio and TV broadcasting, the role of the regulator is to provide a buffer between political interference and a perceived common good, the legacy of **Lord Reith's stated mission** that public service broadcasting should educate, inform and entertain.

An argument can be made that the internet, and by implication cellular operators providing access to the internet should be subject to similar 'good practice' constraints.

Pragmatically for the wireless industry this is not consistent with a continued ambition by governments round the world to extract maximum short term gains from spectral auctions; the result in some instances is that the only criterion asked of a bidder is available cash.

This is changing and it is now increasingly common for regulators to specify service and social obligations that can be substantially onerous. The D band requirements in the US 700 MHz auction are a recent example. The result of course was that the auction failed to achieve its minimum bid value.

So there is a point of compromise here that needs to be achieved.

The lesson of 1933 is that it is dangerous to allow public service broadcasting to be politicized.

Commercial broadcasting has achieved a compromise by ensuring that political propaganda is transparent, paid for electoral broadcasts being one example.

Cellular operators are something of a special case. Telecommunications has been based traditionally on the doctrine of universal service obligation. Cellular operators are commercial entities who generally take their social and economic obligations seriously.

However there are some grey areas. Social obligations include lawful interception, which in turn depends on the independence of the judiciary. Without an independent judiciary, lawful interception becomes a political obligation.

As cellular operators transition from a service proposition where voice and text is dominant to a service mix which include significant amounts of mobile broad band access connectivity it is reasonable to expect that a different more robust regulatory approach will be needed.

Regulation is however a spectral cost. This cost can be recovered from subscribers by increasing tariffs but this goes against the doctrine that it makes economic sense to provide low cost or lowest cost broadband connectivity to as many users as possible.

The answer to this is that governments have to realize that heavily regulated spectrum is worth less than lightly regulated spectrum and that this will be reflected in lower auction bid value.

Cellular operators are not public service broadcasters but they are beginning to take on certain public service obligations. These obligations will increase over time.

The role of the regulator is to ensure that these public service obligations do not become political obligations and that the cost of delivering these obligations is reflected in spectral price expectations.

In some ways much has changed over the past 75 years. In other ways much is the same.

Ends

A note about the 'Living Memory' Wireless Heritage Project

As part of a UK based Wireless Heritage Project which we are undertaking in association with the custodians of the Pye Telecom Historic wireless collection, we are putting together a series of articles written by engineers who have been actively involved in radio system design and implementation over the past fifty (or more) years.

The first of these articles has been written by John Davies. John joined the Lancashire Wireless Workshops in 1948 as a radio engineer. He retired in 1984 and lectured for a number of years on private mobile radio system design and implementation.

He remains exceedingly active and has maintained a very close interest in radio engineering including recent involvement in a local radio planning enquiry.

In this article he describes the pioneering work undertaken by Lancashire Constabulary on wide area coverage systems and the parallel evolution of mobile and portable transceivers.

The innovations introduced by Lancashire had very tangible benefits in terms of operational efficiency.

John's story, a mix of personal and professional observation, provides a fascinating insight into forty years of radio design experience.

This article (with some wonderful archive photographs) is available as a download.

If you are interested in contributing similar articles to this collection do please contact us

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About RTT Technology Topics

RTT Technology Topics generally reflect areas of research that we are presently working on.

We aim to introduce new terminology and new ideas to clarify present and future technology and business issues.

This is a hazardous process and we welcome comments from our readership who often have definite and better developed views on these subjects.

So do pass these Technology Topics on to your colleagues (using the many sharing algorithmic tools at your disposal), encourage them to join our Push List and encourage them to respond with comments.

Contact RTT

RTT, the Shosteck Group and The Mobile World are presently working on a number of research and forecasting projects in the cellular, two way radio, satellite and broadcasting industry.

If you would like more information on this work then please contact

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