

# 5G: innovating for success

Ian Corden, Sam Wood

Innovation is the lifeblood of companies, especially in the telecommunications and technology sectors, as a means to contribute directly to top line growth, healthy margins, and shareholder value, and will be crucial in bringing 5G to market. And yet in many cases, innovation is stifled or fails even to get off the ground. Why is this? In our experience, there are basically two factors that drive successful innovation: culture and process. Culture is associated with hiring the right kind of staff and keeping them motivated and enthused and able to produce. Process enables innovation to flow effectively through the organisation, harnessing team effort, and driving commercially valuable, viable, and feasible products and services to market. Without process, even promising ideas can remain 'locked in'. In this Insight, we focus on the process element, examining international good practices and how such can be implemented and embedded, enabling effective innovation at the organisational level.

## What is innovation?

On the face of it, innovation is about the production of new ideas and products or services that drive benefits for society and commercial and economic value for individuals and companies. However, innovation is about more than the sequential march of technology across various players as, to some extent, we have seen in parts of the telecommunications industry for some years, with 'linear' developments in coverage and capacity in radio access networks, and packet switched driven cost improvements in core networks, whilst service innovation has continued from 'over the top' (OTT) players.

Innovation will be crucial in bringing 5G to market, with the need for novel business cases and new ecosystem models.

Without distinctive innovation across firms, competitive advantage is reduced to arbitrage in labour rates and price competition, weakening value and wealth creation. 'True'

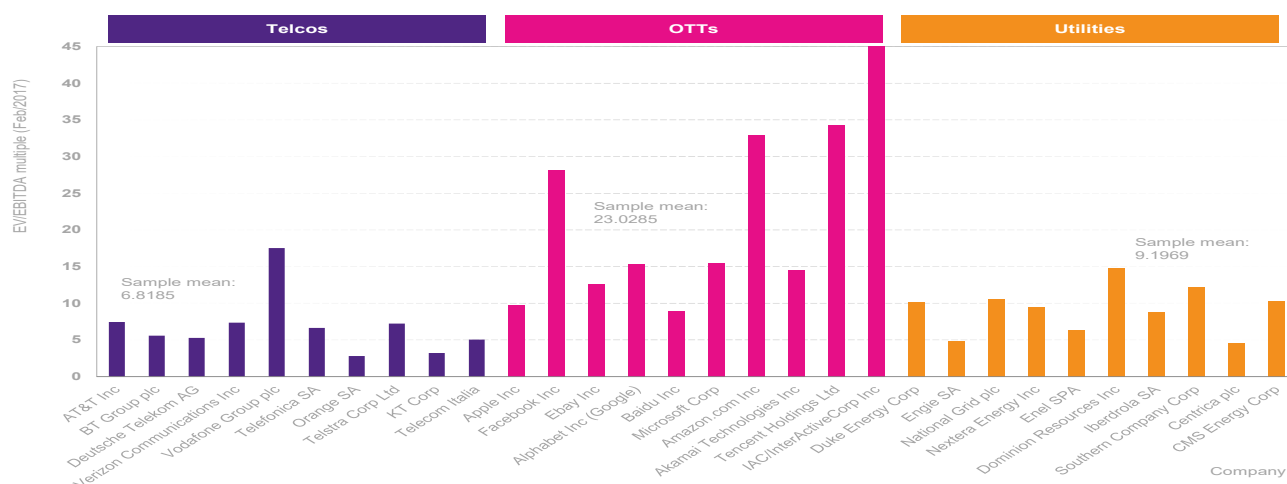
innovation enables firms to break ahead, offering unique products and services, and, where strong demand exists, create distinctive value for investors, as exemplified, for example, by Apple's development of the iPhone. Done well, innovation is about the derivation of novel concepts and inventions that correlate well with market demands, that can be brought to market both efficiently and cost effectively.

## Understanding the problem

Company valuations are directly related to expectations on growth and therefore the potential to harness innovation. One only has to look at EV/EBITDA multiples across various sectors to see significant variations, driven by varied expectations in margin growth (see Figure 1).

In the figure, it is apparent that, in the main, markets place similar valuations on telcos as they do on utility businesses;

Figure 1: EV/EBITDA multiples—sample set across major telcos, OTTs, and utility firms.



Source: Plum analysis, 2017.

over the top (OTT) players are generally afforded higher valuations and expectations of growth. One can be mindful of the 'bubble effect' - where expectations might, perhaps, run excessively, but the reality is that growth is seen as a challenge for the telcos, less so for the OTT players.

Infrastructure based telcos are, of course, seen as constrained in financial terms by the relatively high capital intensity of their businesses and associated operating costs. Today, many leading telcos are generating more margin from their service layers than their networks. Some would even see the networks as a 'necessary evil'.

However, *someone* has to provide networks, OTTs surely need telcos—to deliver their services over IP bit streams, and telcos need OTT players; many telcos have tried and failed with their own service delivery platforms (SDPs)—global scale and deep software development competencies are needed for success.

What is needed is partnership between the telcos and OTT players, so that the best elements of both sides of the industry, and synergies, can be realised. This may be particularly important to support 5G business cases.

However, effective partnerships will only result when both sides have something to give. OTT players will be reluctant to forge partnerships with businesses unable to cope with the pace of innovation that they are used to. Telcos must develop extreme agility in their networks, business and operational support systems (BSS/OSS), and enterprise resource planning (ERP) systems, and this may mean improving or re-architecting business processes and moving to new operational models making use of network function virtualisation (NFV) and software defined networks (SDN).

Critically, even the best software enabled business systems will fail if underlying business process architectures are poorly designed.

Weak planning in innovation and product development can result in severe business problems, such as:

- innovation cycle too slow, yielding weak competitive

positioning;

- poor business case and investment planning;
- internal competition and confusion across strategic and tactical initiatives;
- lack of 'pull-through' to delivery on high quality innovations;
- too many projects 'strangling' the organisation; and
- excessive project delivery failure rate.

## How not to innovate

Innovation is not easy. It requires carefully thought out processes taking account of good practices in road-mapping, portfolio management, resource management, and measurement and delivery to market.

Effective innovation processes must take account of realistic and feasible working methods, and offer solutions when 'real world' challenges (e.g. competition for a finite set of resources) arise. Overly complicated, poorly specified processes will tend to fail.

Figure 2 shows an example of a poorly designed innovation process. This example includes no identification on process ownership, or details on how the process actually works. In fact, it conveys very little information for someone trying to build and embed an effective set of business processes.

## Looking to good practice—demand management

Demand management<sup>1</sup> is the structured practice of effectively linking together the parts of a business that generate and collect ideas that can be used to develop new products and services, and the parts responsible for delivering them to market.

Typically, 'front-end' functions may include the strategy, marketing, customer care, research and development

Figure 2: Example of a poorly designed innovation process.

How will innovation work?  
Not this way!

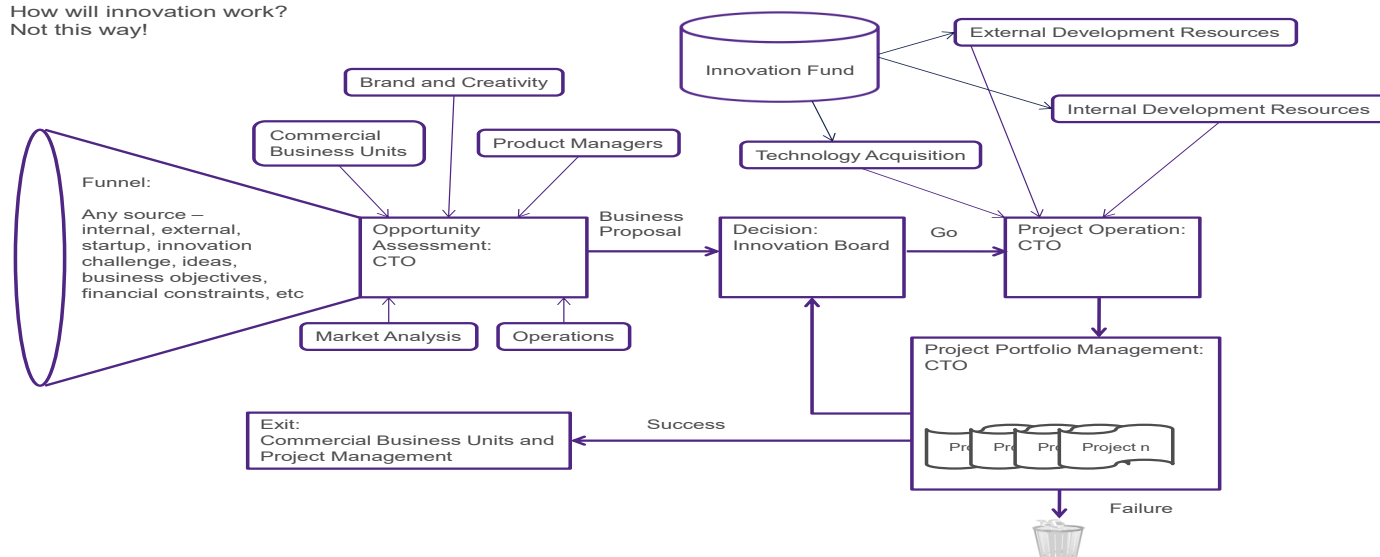
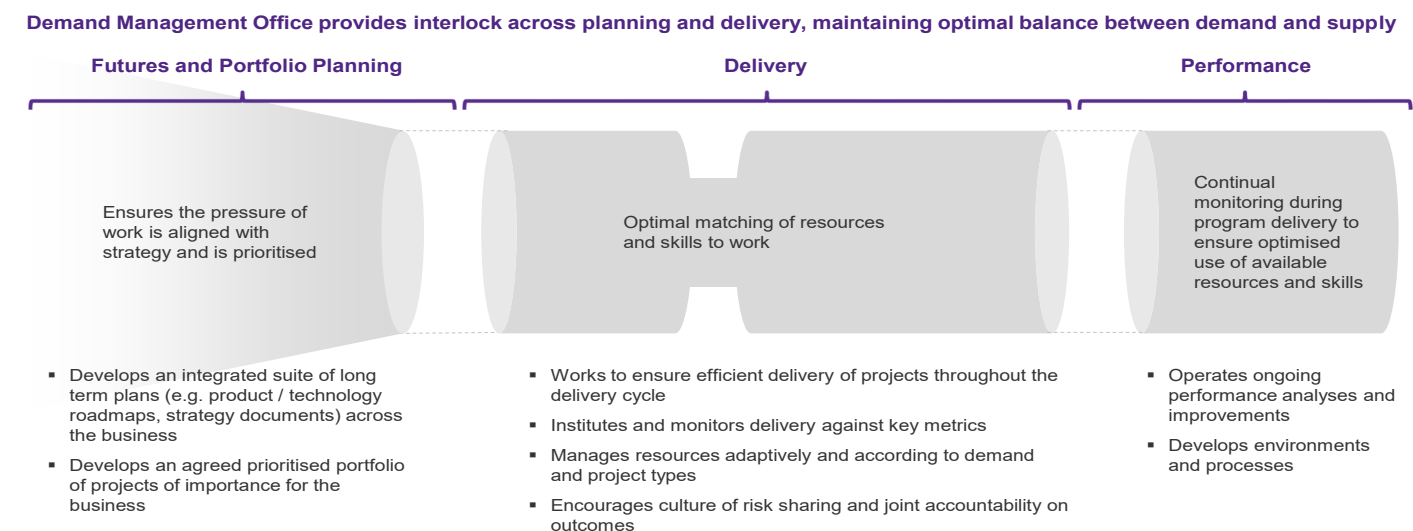


Figure 3: Demand management process overview.



(R&D), and product management divisions. 'Back-end' functions may include the CTO, CIO, procurement, finance, project management, and operational divisions.

Below, we explain the key elements of an effective demand management process, and summarise the operations required in each element.

#### Overview

There are principally four elements within an overall demand management process, supported by lifecycle management. Collectively, the processes, connected together, can form the 'demand management office' (DMO) - which may comprise both functional groups of people and business processes—whether automated or manual.

The key areas comprise of Roadmapping, Portfolio Management, Resource Management, Measurement and Delivery, and Lifecycle Management; we expand on these below.

Figure 3 shows an overview of the four principal areas and their interlinkage.

#### Product–Technology Roadmapping

Product and technology roadmapping is concerned with the charting and forecasting of innovations and ideas that may be exploited in the commercial domain. Good practice has been developed across various organisations including Sandia National Labs in the US<sup>2</sup>.

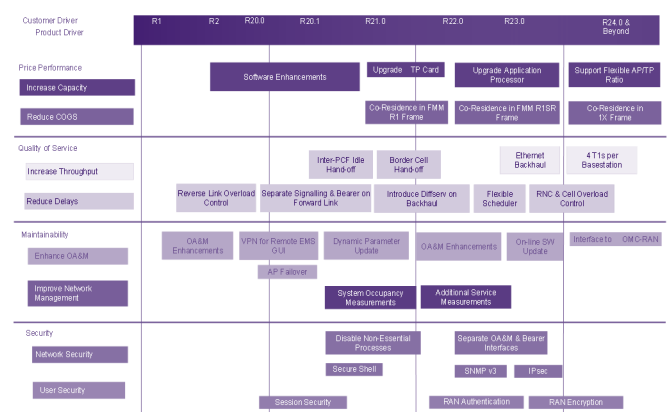
Roadmapping is often tightly bound up with product management, and may include considerations as to the levels of customisation or development that may be associated with efficiently serving particular market or customer segments.

Roadmapping may not be easy; in practice, technology innovations can be uncertain and can be spread across many products in large organisations. In doing roadmapping, it is important to manage levels of complexity, such that the process supports the objectives, not vice-versa. Roadmap development may be supported by six sigma quality principles, such as quality function deployment (QFD<sup>3</sup>).

An effective roadmap essentially documents planned technology or innovation releases, together with expected business benefits, quantified where possible. Success in roadmapping ensures that high value innovations are captured early and pushed quickly towards development.

An example of a product–technology roadmap for a cellular radio access network (RAN) system is shown in Figure 4.

Figure 4: Product-technology roadmap (example).



#### Portfolio Management

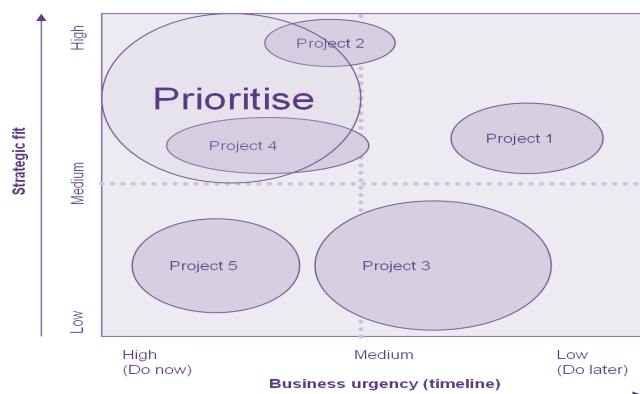
Portfolio management is concerned with filtering a potentially high volume of incoming ideas and innovations, according to required business value.

Effective approaches recognise the importance of various stakeholder viewpoints and are based on collaborative working.

Good practice is based on assessment of incoming innovations or proposed projects according to a set of metrics which may be both prioritised according to stakeholder needs and scored according to expected business value or performance offered.

Results may be documented in the form of portfolio matrices or 'radar charts' (see Figure 5) conveying, visually, the relative merits of various concepts. Amongst the various dimensions that can be considered, timing, or business

Figure 5: Portfolio matrix (example).



urgency is often an important factor.

Successful portfolio management promotes high value innovations, and may yield synergy benefits via grouping of projects.

#### *Resource Management*

Once projects are 'accepted', which may occur through various 'sign-off' or 'gate' processes, resource management becomes important to prevent conflict and competition across projects.

An effective resource management process works to ensure efficient delivery of projects (according to business value), institutes and monitors project 'health' against key metrics, and manages resources adaptively—according to demand and project types.

Large programmes can become stressed if loss of vision of fundamental business objectives occurs in a 'sea' of delivery complexity. In such cases, resource management can be critical in preventing project or programme failure through appropriate governance and risk management methods.

Resource management can be used to segment resources according to project value, much like automobile traffic can be placed on expressway or back roads; all can be kept moving, but some have higher priorities.

#### *Measurement*

As projects complete across various stages of the delivery cycle (e.g. R&D, product development, cut-over to business as usual), performance measurement can be useful, for example, in assessment of customer satisfaction levels, or in development of experience curves and data that can be used in other projects, with a view to improving future performance.

Effective measurement processes are non-disruptive to project work flow, enable ongoing assessment across all relevant functional areas and stakeholder needs, and provide adequate knowledge capture and organisational access.

#### *Lifecycle Management*

Effective lifecycle or programme management ties together governance and risk management functions and essentially

ensures that planned and actual results are monitored and managed throughout the delivery cycle, with appropriate levels of escalation, risk mitigation, change management, and stakeholder intervention—where required.

## Implementation considerations

DMO implementation can be complex, running to the heart of company operations (e.g. board level approvals on capex, business and product strategy, risk management), and requiring redesign or integration on stakeholders' involvement in core processes.

Notably, there is no 'one fits all' DMO solution. Specific implementations must address particular business needs (e.g. poor product innovation and delivery, too many competing projects, excess complexity in delivery cycle, 'silo' mentality and processes, weak competitive position on innovation, product development too expensive), and be tailored and developed accordingly.

## How Plum can help

Plum is widely familiar with the development of new technologies and systems to market, and closely involved with 5G issues. We also have hands-on experience of working with large technology sector organisations to foster good practice in innovation.

Our experience includes the design and implementation of a centralised demand management office and process for a major telco in Asia.

We are able to work with you in designing and implementing effective innovation processes, suited to your specific business needs.

## About the authors

Ian Corden is a Director with Plum, based in London.

Sam Wood is a Consultant with Plum, also based in London.

For more information on this article or to discuss how Plum can help, please contact Ian by phone at +44 (0)7399 581978 or by email at [ian.corden@plumconsulting.co.uk](mailto:ian.corden@plumconsulting.co.uk)

## References

1. 'Demand Management Best Practices', Colleen Crum with George E. Palmatier, ISBN-13 978-1932159011, July 2003.
2. 'Fundamentals of Technology Roadmapping', Marie L. Garcia, Olin H. Bray, Sandia Report, SAND97-0665, Sandia National Labs, April 1997.
3. 'Quality Function Deployment: Integrating Customer Requirements into Product Design', Yoji Akao (Ed.), ISBN-13 978-1563273131, November 2004.