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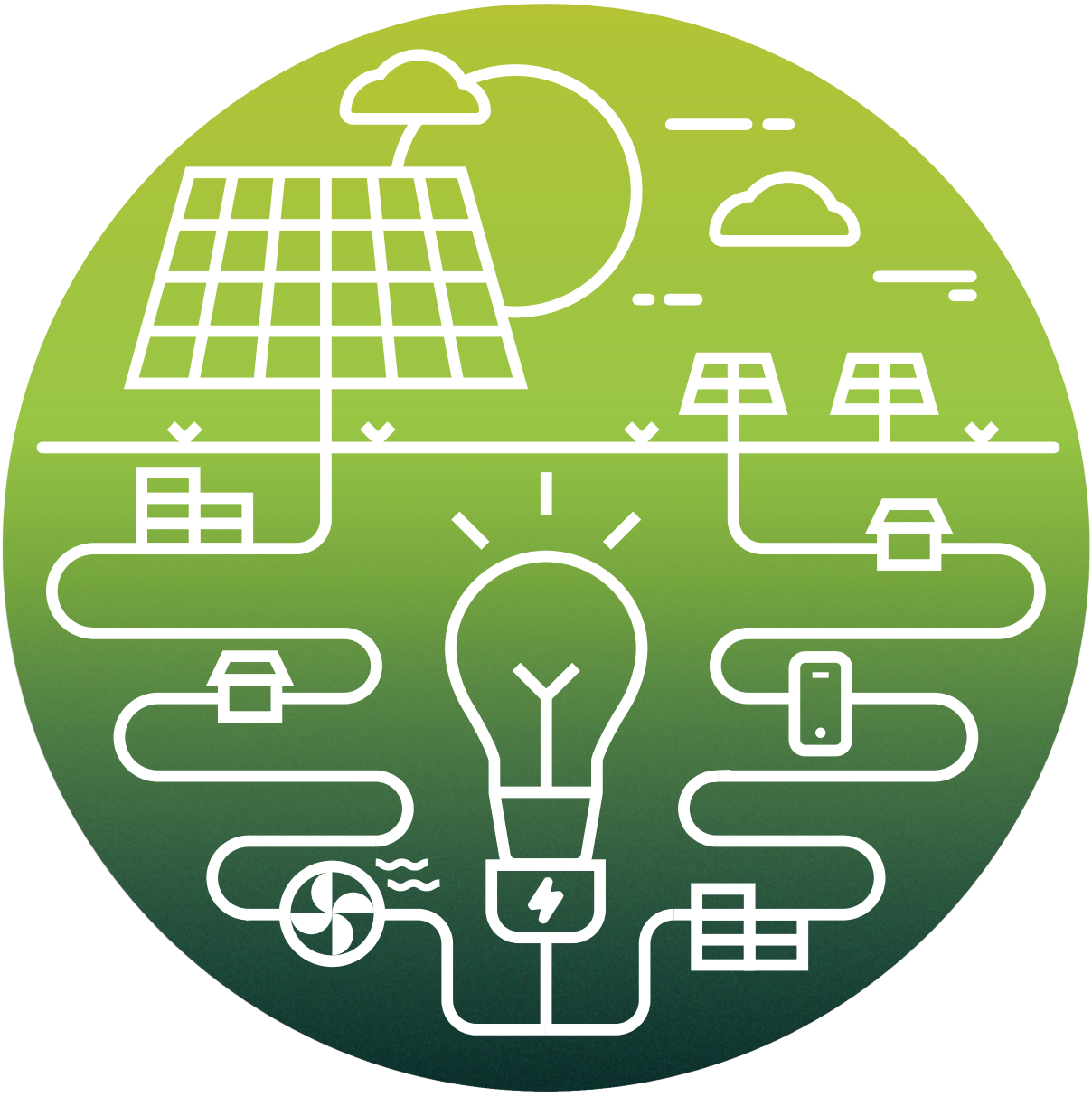

Innovation in Electricity Networks

Powered by Innovation

October 2017

Energy Networks Australia

DOBLIN

Foreword

Ready to be powered by innovation?

Innovation is the creation of a new, viable business offering[1]. It differs from invention in that it goes beyond products and extends to platforms, business processes and the overall enhancement of a consumer's experience. Most importantly, innovation brings added value across all these areas.

Australia's electricity network businesses find themselves in the middle of an energy transition brought about by rapidly changing technology, consumer preferences and the ongoing challenge to reduce emissions.

Network businesses recognise the need to innovate *right now* – in order to raise the bar on enterprise and consumer value.

Network businesses know they need to invest more in transformational innovation, new products and markets. Today, network businesses' focus is on improving core business processes and assets.

Innovating in channels to market, brand and consumer engagement are the three most important types of innovation to network businesses. But it appears few network businesses are currently putting in effort to innovate in these areas. Businesses feel limited by their ability to access innovation opportunities in these areas due to regulatory frameworks and organisational risk appetite.

The challenge for network businesses is to expand their innovation into areas they find less easy in order to overcome the difficult structural changes needed. Innovation through the process of energy transition represents the greatest opportunity for network businesses to invest and deliver value for the consumer.

The future, now is there for the taking.

About the study

Our objectives

Innovation is the heart of any truly successful company. Deloitte Australia, with support from Energy Networks Australia, has conducted a study to assess the state of innovation within Australian electricity network businesses. Electricity network businesses are the monopoly transmission and distribution businesses delivering electricity from generators to homes and businesses. Participants in this study include electricity distribution and transmission network businesses and their subsidiaries.

Deloitte believes this report can play a fundamental role in not only igniting the innovation agenda for network businesses, but also driving step change across an industry that is undergoing significant and rapidly evolving disruption.

We hope the report will help bring focus to the ambition of each organisation and their innovation capabilities. Ultimately, we anticipate this conversation will assist in increasing the pace of significant industry shifts to more innovative solutions that will enable energy transition and drive growth.

114

people from more than 17 participating network businesses in Australia.

Our approach

The term "innovation" is being used more and more, and it is hard to find a consistent definition for what it is, and what it is meant to achieve. At its simplest, it is finding ways to solve problems, but we believe it is far more than that.

Of critical importance is innovation extends beyond the scope of creating new and better products, leading to value creation for the organisation and its consumers.

As part of assessing the current state of innovation in the industry, we focused on what network businesses are striving to achieve, and what they can proactively be doing to improve their innovation effectiveness and capability.

The study was underpinned by Monitor Deloitte and Doblin's innovation methodology and framework, a globally recognised and proven approach to help companies innovate better. The study brings results from an innovation diagnostic survey of 114 people from more than 17 participating network businesses in Australia.

Insights gained through the survey were deepened through interviews with leaders of innovation in the businesses. Deloitte also brought its industry knowledge and experience to supplement the insights captured, focusing on the facts across the current state of innovation in the electricity network sector, and what businesses could be doing to be more innovative.

Monitor Deloitte and Doblin, global leaders[2] in innovation, define it as:

Which is different than invention

Innovation is the creation of a new, viable business offering.

To our market or the world

Creating value for our customers and for our enterprise

Ideally going beyond products to platforms, business models, and customer experiences

Source: Larry Keeley, Ryan Pikkel, Brian Quinn, Helen Walters, Ten Types of Innovation: The Discipline of Building Breakthroughs (Hoboken, New Jersey: John Wiley & Sons, 2013).

Our insights

Network businesses recognise the risks and opportunities presented by disruption, and in response, are becoming more innovative. However, the survey results suggest more can be done, and more quickly. The key takeaways from this study are:

- Electricity networks have big ambitions for innovation in their businesses. Network businesses are unequivocally seeing the need to direct a greater proportion of investment to transformational innovation in new products and markets – moving away from traditional innovation initiatives targeted at improving core processes and assets in existing markets. Today 17% of networks' innovation investment is directed toward game-changing, transformational innovations. In five years, networks want 24% of innovation investments to have a transformational ambition.

- Network businesses need to create the right environment for innovation to deliver on their ambitions. Some networks report a lack of confidence in their business' innovation effectiveness. Networks need to create the right environment for innovation, but 61% say they do not effectively measure innovation progress or outcomes to identify when they've done it successfully or poorly. Only 11% of businesses think they are effectively recognising and rewarding staff contribution to innovation.

- Networks' ability to innovate is constrained by their appetite for risk and the regulatory environment in which they operate. Australia's regulatory framework defines areas in which regulated network activity can occur, including the types of activities that can be undertaken by the regulated entity. In addition to regulatory requirements, businesses acknowledge a lack of appetite for risky investments in resources. But many of the more innovative network businesses are more motivated to pursue higher risk opportunities where and when needed.

- Network businesses are highly specialised and focus their innovation investment on core assets and business processes. Today, 63% of networks' innovation investment is in core business. The challenge for network businesses is to expand their innovation effort into the areas they find less comfortable in order to overcome the difficult structural changes needed and access opportunities to create investment for the business and value for consumers.

24%

Transformational innovation investment in five years.

While some network businesses have well defined and understood innovation strategies, many have also identified issues within their strategy or their ability to execute. Strategies may articulate the networks' ambition, but many are not clearly laying out the actions, roles and responsibilities needed to deliver on it. Our analysis found no correlation between businesses' innovation ambitions and their ability to execute. The barriers to innovate may be significant enough to prevent the delivery of new ideas and value creation.

Readers of this report from the energy sector, including its institutions, are encouraged to consider how the insights and findings provided can be used to challenge and push the boundaries of what great needs to look like for their business.

Some important questions:

- Are we explicit about our ambition for innovation or what we want to achieve through it – are we bold enough?
- Which capabilities do we need to improve and develop to achieve our innovation ambition?
- What sort of shareholder or enterprise value are we creating through each innovation?
- Does our business configuration enable us to look beyond product innovation and towards our offerings?
- What are the incentives for and constraints on innovation that exist in the current regulatory framework? What actions can we take to facilitate changes in the regulatory framework that support innovation?
- Are we considering how we can innovate in business and profit models, stakeholder and consumer experience in an integrated way that combines multiple types of innovation?

We believe considering these questions will help electricity network businesses explore the right path to improve innovation effectiveness.

‘Businesses are acutely aware that alternatives to grid electricity… are becoming more affordable.’

The innovation imperative

The way we produce and use electricity is changing. It is essential for electrical utilities, policy makers and consumers to navigate this change effectively if we are to enjoy reliable, affordable and low emissions energy in the future. Bringing consumers the benefits of innovation will mean network businesses need to change, too.

Changes in the way electricity is generated, transported and consumed are presenting a diverse range of serious challenges and opportunities for Australia's electricity grid. By 2050, the electricity system will transition from one in which electricity is largely sourced from large-scale transmission-connected generators, to a system in which up to 50% of electricity is provided by distributed energy resources (DERs) such as solar and energy storage[3]. The imperative for businesses to innovate is driven by:

- Stalling growth in electricity demand
- Renewables and batteries putting pressure on grid assets
- Bringing the value of the network to consumers
- Cyber-security threats.[4]

Network businesses' ability to lead through innovation will greatly influence Australia's ability to address what is known as the energy trilemma – clean, affordable, and reliable electricity.

Demand growth has stalled and faces external threats

Network businesses are acutely aware that alternatives to grid electricity which were an abstract concept a decade ago, are now becoming more affordable. The majority of network businesses see the threat of substitute technologies as one of the top three threats facing their organisation.

Growth in demand for electricity has stalled due to Australia's changing economy, including declining manufacturing and heavy industries, more energy-efficient appliances and the rapid take up of solar Photo Voltaic (PV). While connections to the network are growing rapidly with increasingly diverse uses, the actual energy flow on the networks of Australia's largest states (New South Wales and Victoria) is forecast to grow by just 0.2% annually over the next 20 years[5].

On the upside, demand for energy services will grow with population, household construction and new technologies like electric vehicles.

Network businesses need to identify innovative solutions to manage both declining growth in demand and increases in reverse flows from distributed energy within the constraints imposed by the current regulatory scheme. Network charges approved by the Australian Energy Regulator are designed to distribute the cost of the grid over its user base. However, the consumption cost per unit will grow as more consumers move to distributed energy resources to self-supply some, or all, of their own energy or export more energy out, potentially creating a self-perpetuating spiral.

Distributed and variable energy resources are posing a challenge to the traditional network assets

In 2017, 20% of consumers have solar panels and an additional 19% say they are likely to install solar panels in the next two years[6].

Balancing supply and demand pose a challenge as the penetration of the distributed and variable energy, like solar and wind increases. This variability can be managed with increased penetration of battery storage. In addition, with increased use of innovative communication and predictive technologies, visibility of generation and accuracy of forecasting will improve enabling network business to manage supply and demand challenge.

Grid-connected solar PV systems in Australia are currently limited in providing real-time generation information back to the grid operator or network businesses. This makes it difficult for a network operator to balance multiple flows of energy in and out of different parts of the network during the day[8]. In the future, the innovative use of communication technologies will improve this visibility and the ability to operate the network reliably with high shares of solar power and manage variability.

Enhancing value and remaining relevant to consumers

Consumers are deciding which energy products work for them, and those businesses that offer consumers value and reliability will maintain the confidence of consumers and social licence to operate in the long run. Consumers around Australia have been facing rising costs in electricity, outpacing inflation year-on-year.

Consumers are looking for options to take control of their energy costs. Surveys reveal that willingness to adopt solar panels is 8% higher than in previous years while adoption of batteries is 5% to 9% higher[9]. There is some evidence consumers are being offered more varied products and better price deals[10]. For example, Reposit and Evergen services offer to monitor solar and battery use and the cost of energy in real-time. Other research from Energy Consumers Australia suggests that customers perceive they do not receive value for money for electricity services and products provided, compared to other industries[11] and are looking for better choice and products.

If prices rise, consumption will decrease. In 2017, the top reason for switching energy providers was price[12]. As the cost of installing solar PV and battery storage falls, consumers will see the value in purchasing electricity products which offer them more affordable energy.

Yet technologies like smart meters, smart appliances, payments for system support services and demand response also provide network businesses with the opportunity to offer consumers value, enabled by grid connection. Bringing consumers the benefit of their grid connection will be essential. High reliability, security and options to take advantage of innovative products, particularly those which can reduce the cost of electricity to consumers, are all underpinned by our modern network infrastructure.

"It always seems to be impossible until it is done."

Nelson Mandela

Cyber-attacks on the radar

As our electricity system fills with more smart technologies connected to the internet, protecting the power system from cyber threats will become increasingly important for network businesses.

Results revealed that 15% of Executive survey respondents believe cyber-attacks are one of the top three threats to their organisation. Attempts to subvert and impact Australia's energy infrastructure are increasingly a concern for grid operators as attacks become more organised and sophisticated. Energy has been identified as the most targeted sector for malicious attacks which may compromise cyber security[13].

15%

of Executive survey respondents believe cyber-attacks are one of the top three threats to their organisation.

Potential for network businesses to lead innovative solutions

One key driver of economic growth in the long term is innovation. Nations and businesses that constrain innovation or fall behind in adoption do get left behind.

If network businesses can successfully embrace innovation, it can create new investment opportunities for them. Bringing innovation to consumers has the potential to reward them with the value and benefits of low cost and more convenient electricity solutions, backed with the reliability and security of the grid.

Businesses that develop their market sensing capabilities, establish discipline in their approaches to innovation and their speed of decision making will remain relevant and sustainable. While network businesses should seek ways of anticipating disruption or 'shocks', this can never be 100% effective. Businesses must establish rapid response mechanisms, including speed of decision-making and reallocation of resources, to ensure they can anticipate and respond promptly to maintain a competitive advantage.

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Defining innovation

What is innovation?
Everywhere we look, innovation is under the spotlight. Through overuse, misuse, hype and enthusiasm, the word innovation has essentially lost its meaning. For us to innovate effectively, we need to first understand what we are trying to achieve, or more to the point, establish what we mean by innovation.

Doblin, Deloitte's market-leading innovation and design practice, defines innovation in the context of value creation:

Innovation is the creation of a new, viable business offering.

Simple enough, but more to the point is that it must create value for consumers and the enterprise through commercialising new offerings that go beyond just product, and includes the broader business model and consumer experience components.

Figure 1:
The meaning of innovation
Source: Larry Keeley, Ryan Pikkel, Brian Quinn, Helen Walters, Ten Types of Innovation: The Discipline of Building Breakthroughs (Hoboken, New Jersey: John Wiley & Sons, 2013).

Thinking of innovation another way, if the goal of a corporate strategy is to make explicit strategic choices based on a set of trade-offs, innovation could be said to be about breaking the trade-offs[14] and establishing a new combination of offerings, experience and business configuration.

Not only do organisations have the conundrum of breaking trade-offs to drive greater differentiation, they also need to ensure they keep up with the rest of the expectations of business and consumers in a world filled with new and convenient options enabled by technology. So while network companies are starting to build innovation capability, most appear to be doing so in similar areas, working within the same constraints and trade-offs.

Deloitte calls this Red Queen innovation, a reference to the situation that Alice (in Wonderland) found herself in when she met the Red Queen. She agreed to play a game with the Queen, but no matter how fast she ran, the scenery around her moved at the same speed. In the same way, businesses can drive speed of innovation, but if other companies are moving just as fast they will not achieve meaningful differentiation.

Ultimately, network businesses will differentiate themselves by being explicit about their innovation ambition, and innovating in ways that break the trade-offs across multiple types of innovation.

The Innovation Ambition

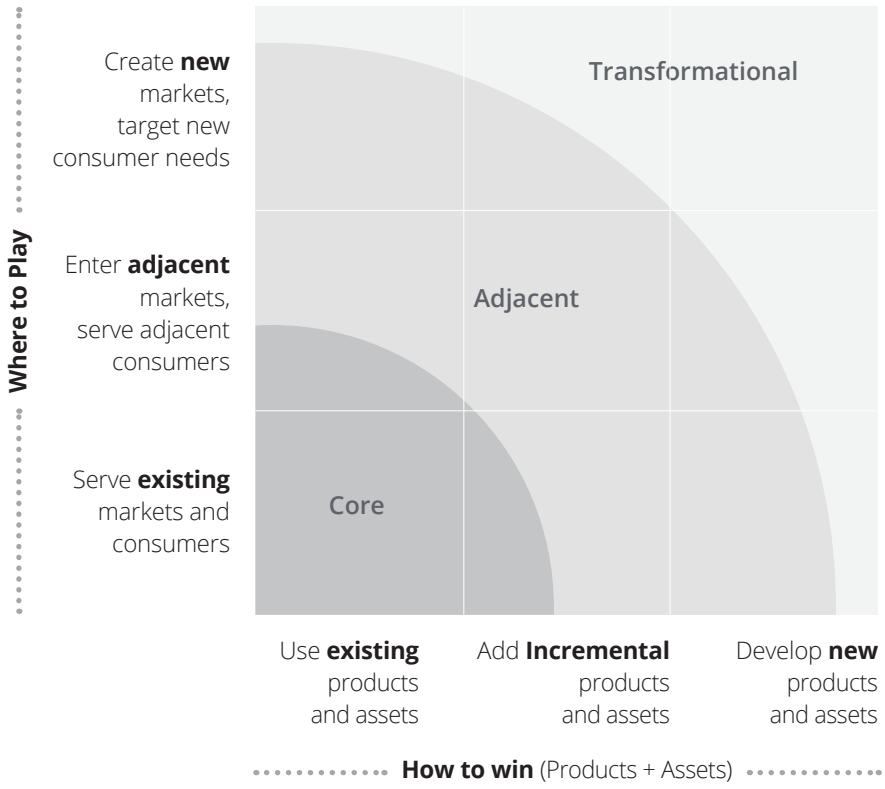
The way in which innovation is approached depends on the ambition or the purpose of pursuing the innovation, or the result to be achieved. Monitor Deloitte and Doblin describe an organisation's "Innovation Ambition"[15] across three levels:

- **Core innovation ambition** draws on assets that the company already has in place, and are directed mainly toward existing services and markets. They may include innovations that fundamentally are about reducing overall costs or maintaining revenues.
- **Adjacent innovation ambition** takes something that the company does well and pushes it into a new space. This is a more complex innovation designed to drive new growth – by serving new markets with existing capabilities and assets, or reinvigorating existing markets by using existing capabilities and assets in different and unique ways.
- **Transformational innovation ambition** involves pursuing new markets and/or new capabilities and assets, as well as delivering new business models, platforms, capabilities and consumer experiences (for service companies). Such innovation uses its power to transform markets, disrupt competitors, and radically evolve perceptions of who the company competes with.

"Innovation is the ability to see change as an opportunity – not a threat."

Steve Jobs

Figure 2: Innovation ambition levels[16]



Respondents to this survey stated that:

17%

of their company's innovation today is Transformational, 20% Adjacent and 63% Core.

24%

of innovation investments in five years need to have a Transformational ambition, with just 47% of innovation spend on Core innovation.

How ambitious are the network businesses?

Our research suggests the most successful innovators manage their innovation efforts and investments as a portfolio of activities balanced across the three ambition levels, according to their corporate innovation ambition (see Figure 2).

While every company's circumstances are unique and should be assessed on a case by case basis, the world's leading industrial innovators have, on average, 70% of their innovation investments allocated to Core innovation, 20% to Adjacent innovation and 10% to the Transformational innovation ambition.

When considering what drives the highest returns, we have seen that returns on innovation investment tend to work in the reverse order: 70% from Transformational innovation, 20% from Adjacent and only 10% from Core.

How can network businesses turn ambition into results?

Referring back to our analogy of Red Queen innovation, we can look at the way mobile phone manufacturers raced to introduce better features into their phones for lower cost, driving a 'race to the bottom'. It was not until Apple came out with the iPhone, which may not have been a comparable phone handset, but it was the combination of the offering with the experience given to consumers and the business model (consider the Apple store) that drove their compelling differentiation.

In order to innovate effectively and achieve true value creation, network businesses (in particular their unregulated arms) need to push beyond just innovating to achieve a better end result (such as reliability, affordability etc). They must innovate in a connected way across multiple types of innovation in the business, expanding their view of where and how they can innovate, *right now*.

Ten Types of Innovation®
Innovation makes good business sense in today's rapidly changing environment. As it happens, top innovators also outperform the S&P 500 in relation to how many different types of innovation they pursue (see Figure 3).

Doblin defines ten distinct types of innovation[17] (Figure 4) as they relate to the business' configuration or model, the offerings provided to the market and the experience delivered to stakeholders and consumers[18].

Three overarching categories are as follows:

- **Configuration** innovations apply to profit models, network businesses, structures and processes. This comprises the "back of house" activities needed to develop the offering.
- **Offering** innovations apply to product performance and product systems. This is what companies produce.
- **Experience** innovations apply to services, channels, brands, and stakeholders. This is how an offering is delivered to consumers and how stakeholders are engaged as a company performs its business activities.

In the words of network businesses

"Innovation is using new technologies and concepts to do something better than was done before."

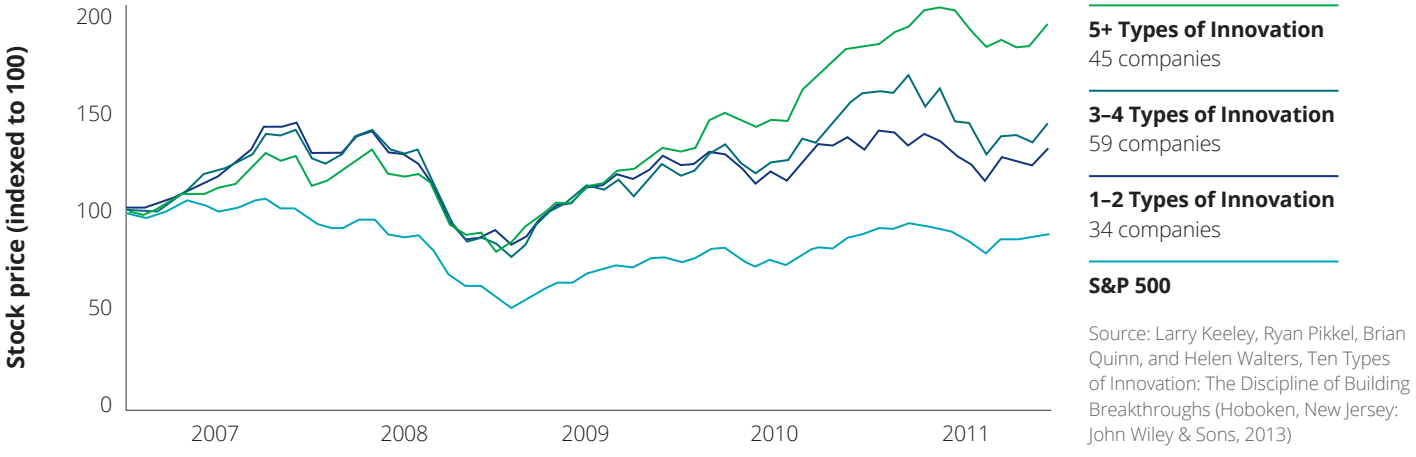
"Innovation is enhancing the value of the grid to ensure it remains relevant in the face of changing regulatory environment..."

"Innovation in the form of developing new business models or stretching... is still not well understood nor supported."

Innovation in action
Difficult environments can often be the genesis of innovative solutions.

In 2017, Horizon Power which operates network infrastructure in the tough conditions of regional Western Australia, won the Clean Energy Council's Award for Innovation for a pricing pilot. The pilot is designed to give customers more choice and control to manage their electricity bills. Over 400 participants, 346 residents and 61 businesses took part in the pilot, which demonstrates that when businesses provide the tools and incentives that provide customers with value, customers embrace it.

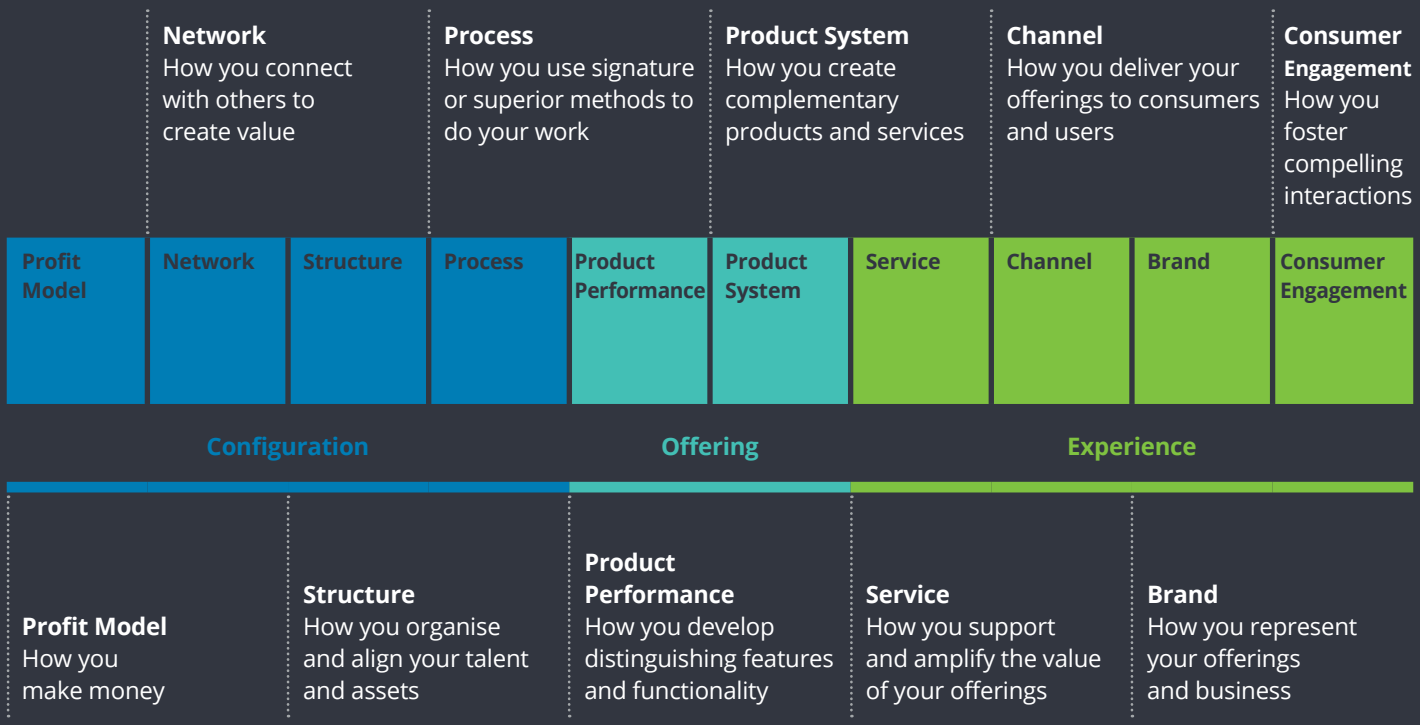
Figure 3: Five-year indexed stock price returns of the top innovators vs. S&P 500



Source: Larry Keeley, Ryan Pikkel, Brian Quinn, and Helen Walters, Ten Types of Innovation: The Discipline of Building Breakthroughs (Hoboken, New Jersey: John Wiley & Sons, 2013)

Figure 4:

Ten Types of Innovation®



Source: Larry Keeley, Ryan Pikkel, Brian Quinn, and Helen Walters, Ten Types of Innovation: The Discipline of Building Breakthroughs (Hoboken, New Jersey: John Wiley & Sons, 2013)

Out of their largest investments, survey respondents stated that:

32%

of innovation is to improve business processes and technology.

37%

of innovation is to improve product offerings to the market.

13%

of innovations are split across improving how they make money, work with others and structure their business.

10%

of innovations are to improve interactions with stakeholders, access to new markets, brand perception and consumer engagement.

On capabilities, respondents stated that:

44%

have an advanced innovation strategy.

28%

think their strategy is excellent.

11%

of companies think they are effectively recognising and rewarding staff contribution to innovation.

61%

do not effectively measure innovation progress or outcomes to identify when they have done it successfully or poorly.

Building innovation capability – one block at a time

Innovation is a discipline. In order to reliably deliver the kinds of innovations required to break away and outperform the competition, leading companies exhibit capabilities across four key innovation building blocks (see Figure 5):

- They employ a tailored Approach built around clear definitions and methodologies for the work to be done in generating innovations – phases, activities, deliverables, and decision rights.
- They have structured the Organisation to house the innovation competency – teams, divisions, and leadership and interfaces that connect it to the broader enterprise and the world.
- They acquire and nurture the appropriate Resources and Competencies: the people who perform the work of innovation; the skills, tools, and training they need to do it capably; as well as the funding and time to fuel it.
- They have developed the right Metrics and Incentives with targets to guide performance, measures to evaluate progress, and incentives (monetary and non-monetary) to drive the supporting behaviours.

Each of these building blocks is associated with specific capability levers any organisation can emphasise or adjust – to ensure they can consistently and continuously identify, develop, and deliver new value to consumers. With the right use of these levers, organisations can innovate at will and across multiple types of innovation that will drive differentiation.

Figure 5: Innovation capability building blocks

There is a mismatch between what is seen as important and actions taken.

Innovation within Australia's electricity network businesses

Innovation for network businesses is viewed as a developing capability. Most survey respondents saw it as a necessity to take advantage of changes in technology and to position themselves for advantage in what is recognised as a significant transition in electricity supply.

The findings:

- From an innovation perspective, most network businesses are focused much more on innovating in core assets and markets, than they are on innovating in creating new products, or consumer experience. Network businesses have a mature understanding of the types of innovations required to transform, but there is a mismatch between what is seen as important and the actions taken.

- Channel to market, brand and consumer engagement innovations were ranked as the three most important types of innovation, but account for some of the lowest levels of innovation taking place 8% in total.

- Networks are more commonly focused on implementing advanced engineering solutions and technologies that improve operational efficiency than innovations focused on consumer experience and engagement. This is despite businesses recognising the latter as most important.

- Network businesses see the need to innovate, and while they are creating leadership roles, applying for funding and starting to hire non-traditional skills, they are not yet establishing the right environment for innovation. Environmental settings include outlining explicit targets and giving permission to experiment – however these items can be constrained by network businesses risk appetite and focus on regulatory compliance.

- Innovative businesses need to have a bold, clear innovation strategy with tangible targets and expected outcomes, freeing people up to innovate in a disciplined way, embracing risk, and allowing teams to fail fast.

- Network businesses are talking more about innovation than ever before and are seeking to innovate effectively. Some businesses are more successful than others in walking the walk in terms of giving their people the space to innovate, or incentivising or measuring value created through innovation.

Network business' innovation ambitions

Australia's electricity network businesses report that they are allocating 17% of their investments to transformational innovation, however of this investment only 3% were considered truly transformational.

While the benchmark allocation of innovation investments may be suitable in static industries, a larger transformational focus is required in dynamic industries that are being massively disrupted by technology and consumer behaviour.

Australia's electricity network businesses recognise the need to increase investment by 15% in innovation focused on adjacent and new markets or products. Respondents indicated that 83% of innovation investments are directed towards Core and Adjacent innovations, which are focused on existing or adjacent products or markets.

Network businesses believe that five years from now, less than half (47%) of all innovation investments should be directed to winning in existing markets and assets – this is a reduction of almost a quarter compared to current levels (63%).

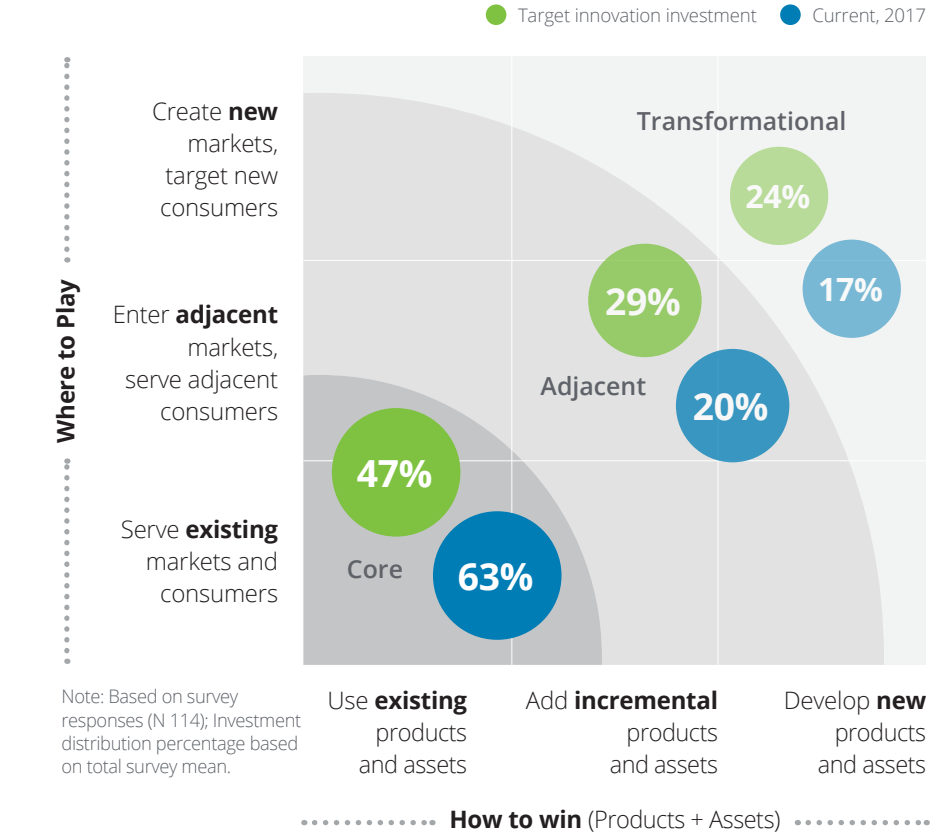
It is notable that there is no difference in innovation investment ambitions between privately and publicly-owned network businesses. Transmission businesses are much more focused on innovating in core markets and assets than the industry in general and these transmission businesses reported allocating almost three-quarters (74%) of investments to Core, 19% to Adjacent and just 7% to Transformational innovations.

Distribution businesses are at the other end of the scale, advising that a much greater proportion of investment is allocated to Transformational innovation (19%) today. They believe this does not need to change significantly over the next five years.

Transmission businesses recognise they are investing heavily in innovation in core markets and assets, and this needs to change in the future. They believe that 29% of the investment in Core innovation needs to be reallocated to Adjacent and Transformational initiatives. In contrast, distribution businesses believe only 14% needs to be reallocated in this way.

The recognition by all network businesses that more investment is required in Adjacent and Transformational innovation indicates that respondents believe network businesses should be thinking bigger, bolder and possibly taking on more risk.

Figure 6: Innovation ambition matrix – average network business



Note: Based on survey responses (N 114); Investment distribution percentage based on total survey mean.

Average transmission business
***Current* innovation investment allocation**
Core: 74%
Adjacent: 19%
Transformational: 7%

***Desired* future innovation investment allocation**
Core: 45%
Adjacent: 31%
Transformational: 24%

Average distribution business
***Current* innovation investment allocation**
Core: 61%
Adjacent: 20%
Transformational: 19%

***Desired* future innovation investment allocation**
Core: 47%
Adjacent: 29%
Transformational: 24%

Types of innovation in network businesses

We have seen five key themes emerge from the broad range of innovation initiatives that network businesses are pursuing:

1. Exploring both the impact and potential distributed energy resources – particularly battery storage, advanced inverters, and solar PV both behind and in front of the meter.

2. Improving asset management – particularly field service mobility, works management, and remote inspection technologies such as drones.

3. Exploring mini-grids and micro-grids – integrating distributed energy resources with advanced monitoring, communications and control systems.

4. Developing advanced analytical tools –improving forecasting and supporting real-time decision making.

5. Significant amounts of improvement and streamlining in core business processes and IT systems.

Most common innovations:
- Process
- Product performance
- Product system

Least common innovations:
- Brand
- Channel to market
- Business networks

Most important innovations:
- Stakeholder and consumer engagement
- Channel to market
- Brand

Least important innovations:
- Structure
- Process

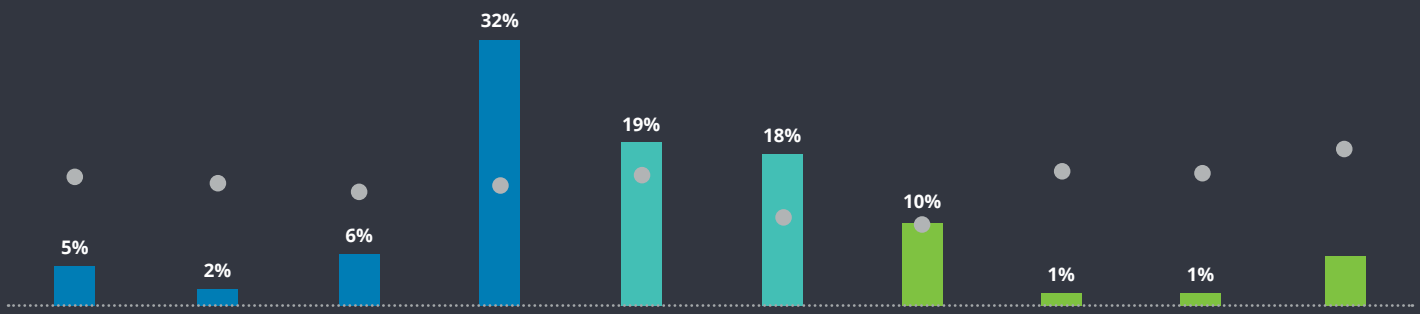
Almost 70% of innovation activities are happening within just three types of innovation (process, product performance and product system). This leaves just 30% of innovation initiatives spread across the remaining seven types of innovation that aim to change the configuration of the business and improve the experience for stakeholders and consumers.

A third of all innovation initiatives by network businesses are process innovations, i.e. developing or improving the methods of doing their work. Product performance and product system innovations are the next most prevalent, each accounting for almost 20% of all innovation initiatives.

It is typical for companies that have lower innovation maturity to innovate almost exclusively in their product offerings – these are technically challenging, but often easier to identify. They are easier to measure using traditional shorter-term business metrics (e.g. ROI), follow known decision-making processes and funding mechanisms, and rely on talent within the core business. They typically focus less on the business configuration and experience for stakeholders and consumers. While this is not detrimental to the ability to do business, we know that companies undertaking more types of innovation outperform their peers, particularly when they innovate in business configurations and experience provided to consumers.

Figure 7: Distribution of innovation initiatives across the Ten Types – with innovation examples

% Proportion of current innovations initiatives
● Relative importance rating



Doblin 10 types of innovation: Energy network businesses

Configuration				Offering		Experience			
Profit Model How you make money	**Network** How you connect with others to create value	**Structure** How you organise and align your talent and assets	**Process** How you use signature or superior methods to do your work	**Product Performance** How you develop distinguishing features and functionality	**Product System** How you create complementary products and services	**Service** How you support and amplify the value of your offerings	**Channel** How you deliver your offerings to consumers and users	**Brand** How you represent your offerings and business	**Consumer Engagement** How you foster compelling interactions

Notably, network businesses' are innovating in ways they do not necessarily believe are most important. Channel to market, brand and stakeholder and consumer engagement innovations were ranked as the three most important types, but account for some of the lowest levels of innovation taking place.

The three most common types of innovation currently undertaken by network businesses (process, product performance and product system) are rated as medium or low importance. Businesses clearly recognise that the focus of innovation needs to shift significantly toward new business configurations and the experience provided to consumers. This understanding is not yet converting into action.

Configuration innovations

Profit model: Reforming pricing models – *Horizon Power*

Business networks: Collaborating with software businesses and universities for the CONSORT Bruny Island Battery Trial – *TasNetworks*

Structure: Added an additional depot following big-data analysis of operating model – *SA Power Networks*

Process innovation: Automation of IT functions for business support – *Jemena*

The results suggest that businesses are sometimes shying away from innovations which require changes to how they operate their businesses and enhance brand or consumer experience, with preference given to network asset focused and technological innovations.

A lower representation of innovation in areas of brand and consumer experience compared to engineering and networks technologies possibly reflects a focus on low hanging fruit within businesses. This may be reflective of networks' traditional role as monopoly service providers, highly specialised and relied upon for essential service provision.

Making major configuration changes to the business also does not seem to be a focus for most networks at this stage, which may reflect regulatory constraints on business and the strong focus on core business. The combined profit model, business network and structure focused innovations only account for 13% of all innovation initiatives currently underway. This is despite the fact that network businesses recognise the need to innovate substantially more in these areas.

Offering innovations

Product performance: Pilot testing installation of stand-alone power systems in low-density regions – *Western Power*

Product system innovation: Supporting the network with high voltage battery technologies – *ElectraNet*

Experience innovations

Service: Employing advanced data analytics to enhance products and services – *AusNet Services*

Channel to market innovation: Communicating with consumers through smart-phone apps to provide real-time demand reductions – *United Energy*

Brand: Implementation of redesigned consumer strategy – *Jemena*

Stakeholder and consumer engagement: Increasing the availability of information for external parties – *Endeavour Energy*

Drivers of innovation

Companies were asked to identify which motivators of innovation are most important in driving innovation in their company, along with how effectively they are actually innovating into each driver. The ratings for *effectiveness* were lower than those for the *importance* across of all drivers of innovation.

Improving safety is the most important driver of innovation for network businesses, as well as the one in which companies innovate most effectively.

Innovating to reduce the cost to operate and improving consumer satisfaction and outcomes are also seen as critically important. But businesses may feel unsure how they can access these opportunities or may perceive constraints under the regulatory framework. Less than 20% of the innovations highlighted by respondents are related to improving consumer satisfaction.

Networks know that maintaining value for consumers in their network connection is highly important for the future of their business. Yet they are not allocating sufficient innovation efforts toward these drivers to meet the level of importance they place on it.

Network businesses are seeing more success from innovations that improve asset productivity than innovations focussed toward reducing the time to build new assets. This may reflect the strong focus on core innovations and less focus on transformational or adjacent innovations. The results also suggest network businesses are also not meeting their ambitions to create new revenue streams (Transformational innovation).

Distribution network businesses rated most drivers of innovation lower in importance when compared to the average for all other businesses surveyed. Distribution network businesses also reported lower recognition of the need for Transformational innovation compared to the average. Despite this finding, distribution businesses are allocating a significant amount of effort to Transformational innovation, with 19% of current investment in this category.

Transmission businesses rate their businesses as effective in engineering and network technology related areas. However, they believe creating new revenue streams and improving consumer satisfaction and outcomes are some of their most important drivers of innovation. This reflects their higher ambition for more Transformational innovations compared to the average of all other businesses we have studied.

Figure 8: Motivators of innovation – importance versus effectiveness

All network businesses identified that taking advantage of advances in technology is the strongest part of their innovation systems. This reflects the allocation of investments into existing markets and assets (core ambition activities). Overall, the survey results for innovation drivers show that the industry recognises the need to be doing more than it currently is in order to succeed.

Improving innovation capability

For innovation to be truly effective, it needs to be embedded across a business – as a living and breathing capability. Figure 9 shows the maturity of businesses in their innovation capabilities, as described by Doblin's Innovation Capability Framework.

Scoring low on the scale (1-2) suggests innovation efforts that are highly random, haphazard and lacking discipline – characteristics of a novice. At the other end of the scale (5-6), companies have become truly excellent innovators, demonstrating adaptive capabilities that are ingrained at their organisational core and supported by refined innovation systems.

Electricity network businesses evaluated themselves as generally competent at innovating, averaging 3.7 on the six-point scale (with six being the highest). A similar study in the Australian mining industry averaged 3.5.

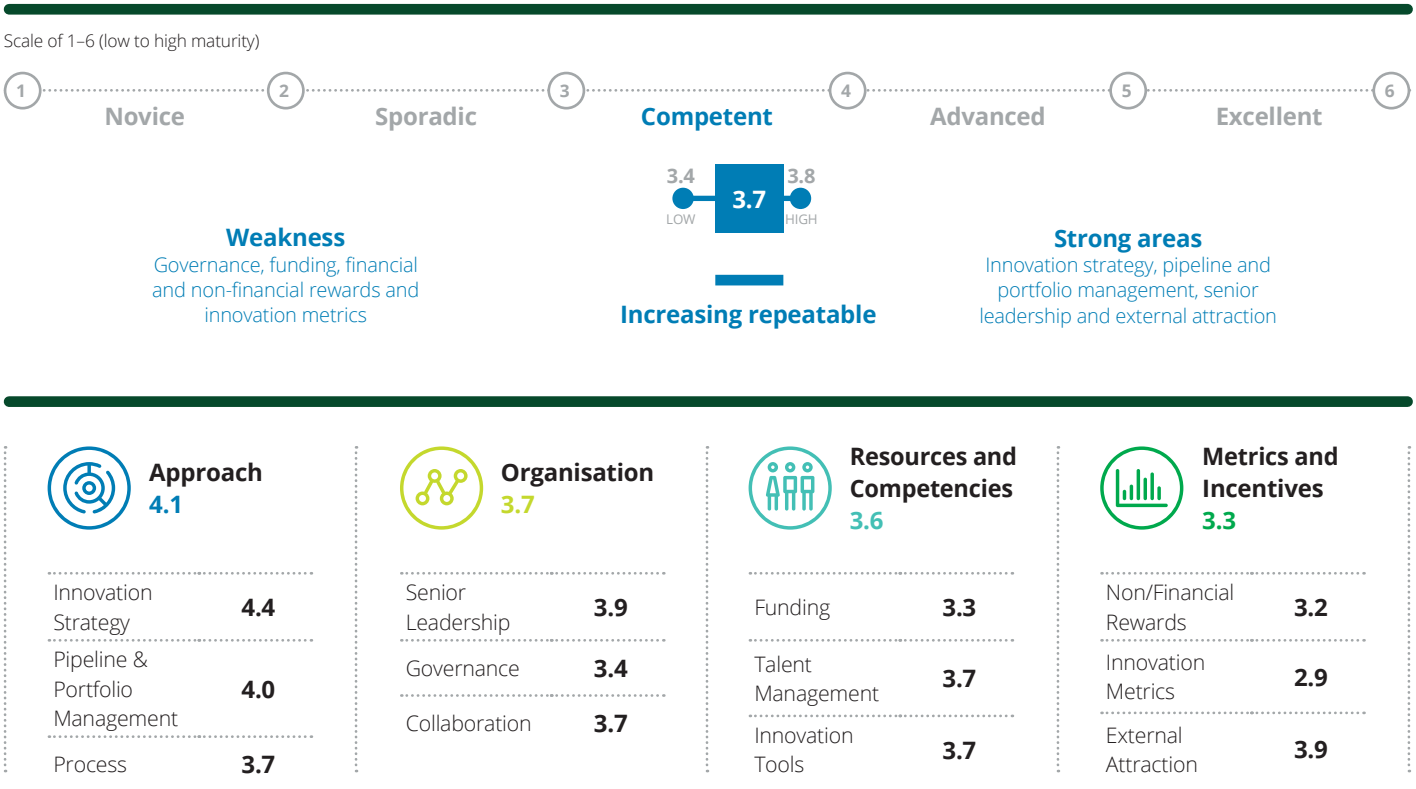
Network businesses believe they have competent approaches to innovation, however there was a lack of confidence from respondents that the metrics and incentives encouraging and rewarding innovation are living up to their overarching strategy or ambition.

There were also suggestions that burden of proof, targets and measures of success for innovation are largely undefined and do not link clearly to overall organisational management. While organisations show confidence in their management's ability to deliver incremental innovation, organisational structure and decision-making processes appear to hamper efforts to deliver Transformational innovation.

Distribution business innovation capability was rated the strongest of all businesses, with an average score of 3.7 out of 6. These are businesses that have the highest current allocation of innovation investments in Transformational innovations as well as the largest Transformational ambitions for this investment allocation in the future. Transmission network businesses, with their more significant Core innovation ambitions, scored lower than average at 3.4 out of 6.

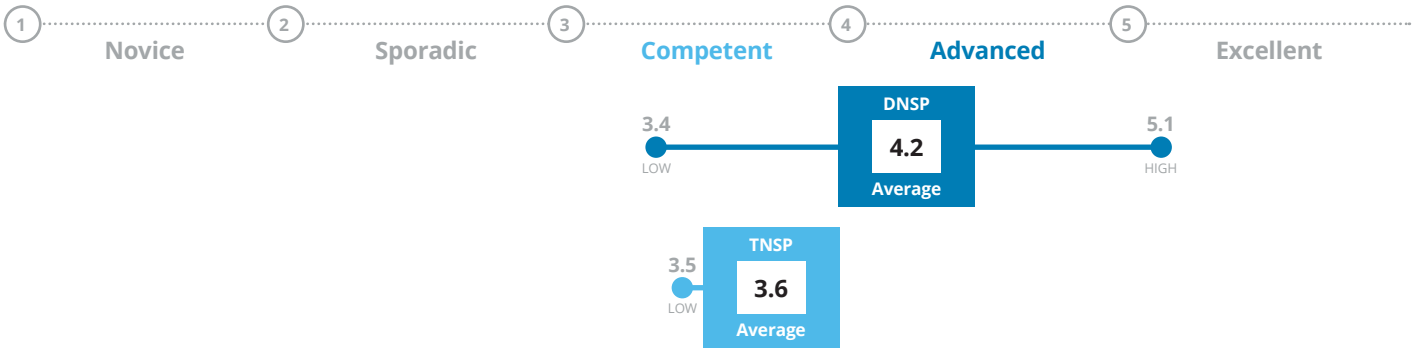
Publicly-owned network businesses rated their capabilities marginally higher than privately-owned network businesses – 3.9 versus 3.7 out of 6. On average, managers tended to rate their organisation's capabilities highest with an overall score of 3.8, while executives and team members ranked capabilities at 3.5 on average. Executives are more optimistic than staff in the businesses' ability to innovate.

Figure 9: The industry's maturity scale



Approach

(average maturity score: **4.1**)



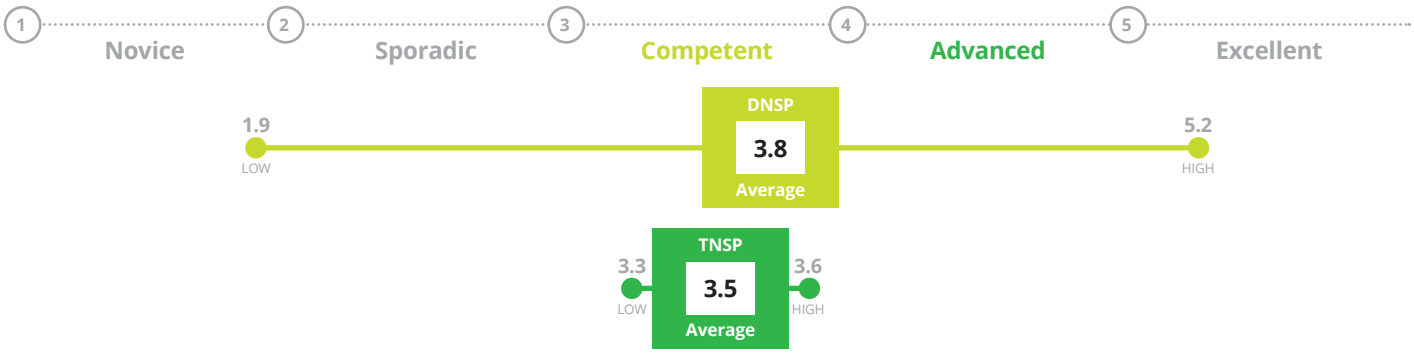
Network businesses believe they have clear strategies for innovation, but these are constrained by the processes for generating and managing innovation initiatives. This is impacting network businesses' ability to identify value-generating opportunities and improve the likelihood of success in bringing viable ideas to market. These concerns were raised more by transmission network businesses than distribution network businesses.

Leading innovators were more likely to report they are framing their innovation strategy around the external shifts (e.g. the changing environment, technology threats and evolving resourcing requirements) that matter most.

They also believe their innovation goals are well integrated and aligned with their overall strategic goals.

Organisation

(average maturity score: **3.7**)



Teams

Despite a large proportion of innovation initiatives occurring in core business, business support and back-office functions like information technology and finance were commonly nominated as the weakest parts of innovation systems.

Table 1 shows that the network businesses believe the strongest part of business innovation systems are dedicated innovation, strategy or research and development (R&D) teams. This result could reflect the concern voiced by many respondents that innovations are not being effectively operationalised or integrated into business as usual.

Linking teams across engineering, network planning and asset management was identified as the next strongest part of innovation systems. This reflects industry strength in innovation for core assets.

Leadership

Managers and teams tend to be less favourable in their assessment of innovation in their business when compared with executives. Whether distribution or transmission, executives tended to have a more favourable outlook of innovation at their firm than their teams. Executives were also likely to see their organisation's talent somewhat more favourably than managers.

When it comes to leadership, actions always speak louder than words. Employees of leading innovators find motivation in senior leaders who are willing to intervene to remove barriers and make tough decisions in support of long-term innovation (particularly Transformational innovation). These leaders express a compelling vision and can show a track record for successful delivery. Creating the right environment for innovation is essential to businesses being able to meet their innovation ambitions in the long-term.

Collaboration

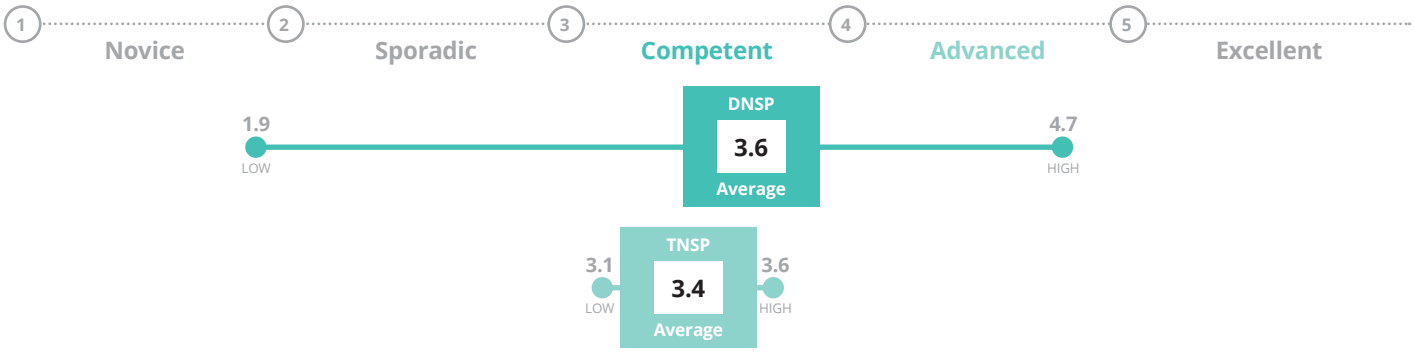
Personnel from corporate strategy, business development, IT and internal innovation functions tend to see their organisation's approach to innovation less favourably than those employed in other functions. However, these functions are critical to innovation success. Innovative network businesses were much more likely to believe their shared services help accelerate innovation. Network businesses that ranked higher in collaboration are more motivated, more likely to pursue high risk opportunities and more likely to adopt a long-term perspective to innovation. It's also important to form innovation teams with a diverse mix of skills and experiences.

Table 1: Reported strengths and weaknesses of innovation systems

Rank	**Strongest part** of innovation system	**Weakest part** of innovation system
1	Dedicated innovation, strategy or R&D team	Information Technology
2	Tie between engineering and network planning	Finance
3	Asset management	Back office/business support functions

Resources and Competencies

(average maturity score: **3.6**)



Funding

Having a specific innovation budget is an important factor in influencing innovation success. Network businesses which have a dedicated budget, report being more effective than those who are funding innovation from their general operating expenditures. In fact, respondents report having to draw from their operating expenditures were more likely to be less motivated, less capable and less effective in their overall innovation efforts. While there may be constraints on where the funds need to come from, it highlights that these businesses need to establish more effective ways of allocating resources to make innovation successful.

Allowance

It appears distribution network businesses could better use the innovation funding available to them. In particular, distribution network businesses have not been fully utilising their available funds for demand management. Over the past eight years, more than 50% of eligible distribution network businesses did not exhaust their Demand Management Innovation Allowance (DMIA).

While the scheme has been subject to criticism and the Australian Energy Regulator has recognised it has limitations, over the years, the scope of the Demand Management Incentive Scheme (DMIS) has been expanded to now cover a wide range of initiatives – many of which our survey participants have expressed interest in pursuing.

The criteria for innovation approval may be considered by some as narrow, and there are material costs to meet the reporting and administration requirements. We suggest distribution network businesses could better use this scheme and others like it, to help fund their innovation initiatives.

Investment

Some participants are naturally cautious about investing in innovation in a cost-conscious environment. This is further exacerbated by the inherent regulatory frameworks which are based on low cost of capital environments and the risk return trade-off for these businesses subject to regulatory allowances compared to those in the competitive sector. However, we found a correlation between an organisation's reported ability to reduce the cost to operate and the degree to which it is using its resources in a thoughtful and strategic manner to rapidly advance innovation.

In the words of network businesses

"Innovation is a space where you can spend a whole lot of time and energy without returns, particularly when innovation is bolted on the side."

Distribution Network Service Provider

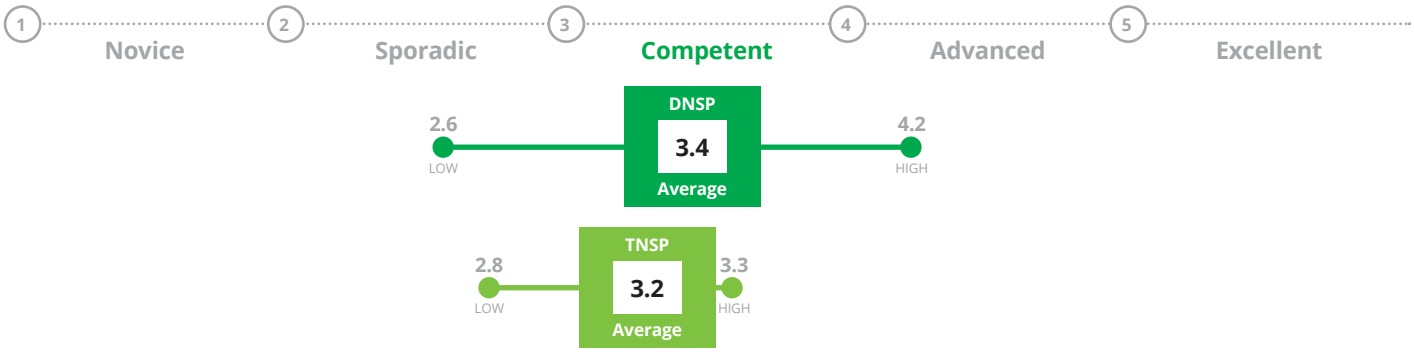
In the words of network businesses

"The more unregulated work you do, the more you change the risk appetite e.g. energy advisory, energy solutions, micro grids and many more."

Distribution Network Service Provider

Metrics and Incentives

(average maturity score: **3.3**)



Metrics and incentives are integral to managing and encouraging innovation. When the benefits of innovation are recognised through measurement and evaluation, making the case for future innovation investments becomes easier because the benefits are tangible. Metrics and incentives were the lowest scoring area for network businesses and there appears to be plenty of room for improvement.

Risk appetite was a recurring theme. Many organisations cited challenges with the regulatory framework in which they are funded as stifling investment in innovation. Despite this, many of the more innovative network businesses are more motivated to pursue higher risk opportunities where and when needed.

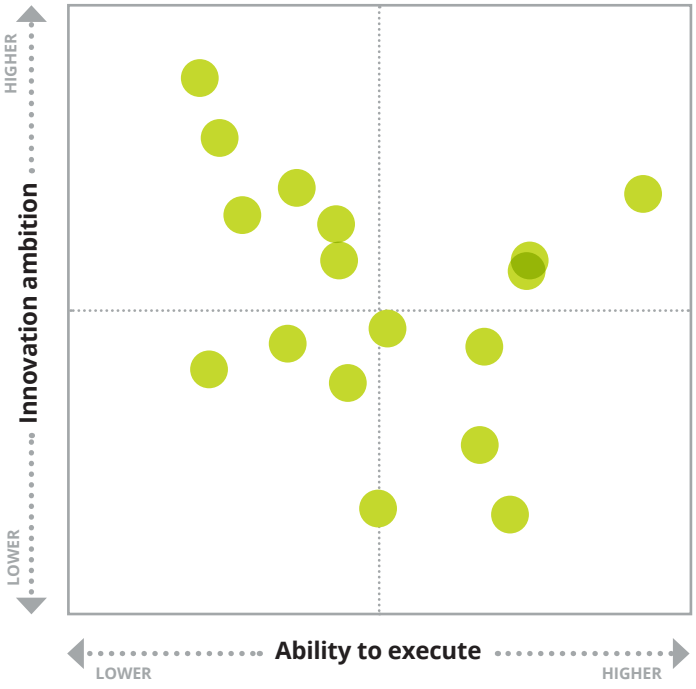
Leading innovators report having the right targets and indicators to guide innovation decisions and measure progress. Such metrics encourage the behaviours that lead to innovation success – it is important they do not simply count ideas and efforts, but measure actual outcomes and results. Leading innovators are more likely to have a set of such metrics that are common throughout the organisation and are also integrated with overall management metrics. Network businesses appear to have a long way to go in measuring and incentivising innovation.

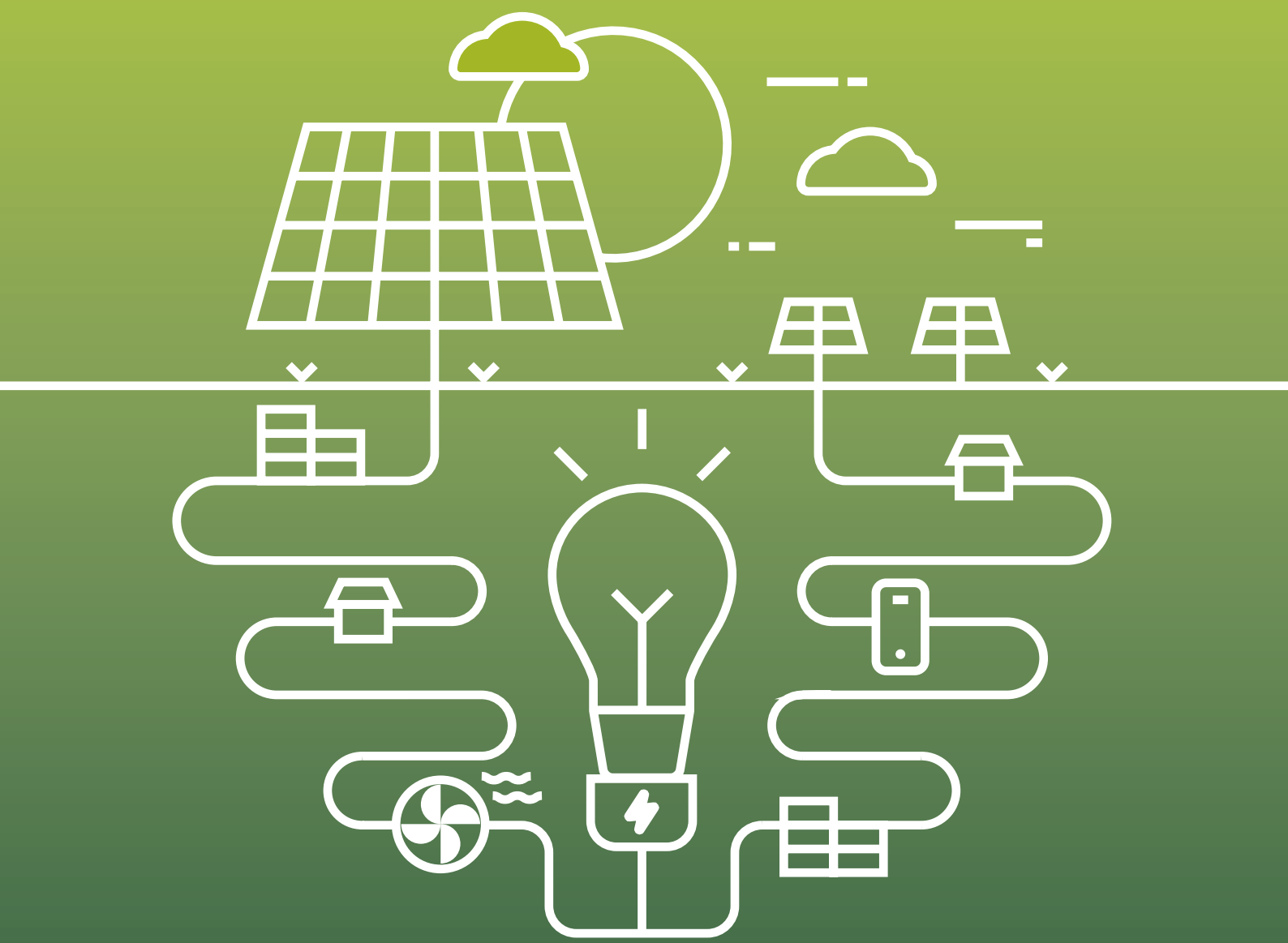
Aligning innovation ambition with capability

The desire to embrace innovation is evident across the sample of network businesses surveyed, with over nine network businesses having higher than neutral innovation ambitions.

The ability to execute is impacted by 10 network businesses having low to medium capability to embrace an innovation mindset. Of those surveyed, four businesses have low innovation ambition and ability to execute, and three businesses have a strong innovation culture to match ambition and execution capability.

Figure 10: Innovation ambition ability to execute – company level





Where to from here?

As we head into the greatest change that network businesses will face since they were first established, they must ensure they have identified likely future challenges and opportunities where possible, and are adaptable to manage or capitalise on new ones as they arise.

Indeed, network businesses are feeling the tremors of change and are preparing for greater disruption to come. They are busy exploring innovation predominantly in streamlining business processes and systems, improving product performance and exploring new products and revenue models.

However, network businesses overall are falling short of their innovation ambitions and acknowledge they need to be investing more in transformational innovations. While regulation will always present some limitations, network businesses must remain encouraged to push the boundaries where the rules are unclear, and find ways to increase their risk appetite.

It's important that organisations take stock of where they are now and where they want to be. In particular, while many network businesses believe they have clear innovation strategies, it is critical that network businesses review these to ensure they set the right ambitions, articulate expected market outcomes and describe realistic actions and capabilities required to achieve the ambitions. To cut through the complexity, we offer a few timely takeaways for network businesses who want to improve their innovation capability:

Figure 11:

Moving toward excellent innovation capabilities

Our ten recommendations

Approach

- Review your innovation strategy to ensure it sets a clear ambition.
- Establish a stronger 'sensing' function that enables the business to anticipate market trends, and place higher priority on outside-in innovation (consumer and stakeholder driven) vs inside-out (business improvements driven).

Organisation

- Establish a well-defined approach to innovation, including management of the innovation pipeline and process.
- Leadership must actively break down barriers, make tough decisions that may be perceived as risky in support of transformational innovation, and empower people to make decisions and take action – establishing two pathways for core vs transformational innovation which enable optimisation and tailoring of metrics, funding and decision-making.

Resources and Competencies

- Take time to understand the concerns of managers, provide incentives, give them room to imagine and get them motivated for change.
- Improve the organisation's ability to fund innovation out of opex, and establish dedicated funding for more Transformational innovation –businesses need to establish optimal approaches for funding of transformational vs core innovation.
- Provide teams with the right skills and tools to move innovation forward - capturing, testing, building and commercialising ideas.
- Provide people with incentives to innovate and reward them through mechanisms such as awards, rotation programs and fast track promotion opportunities when working on transformational initiatives.

Metrics and Incentives

- Establish leading and lagging metrics that support the innovation ambition and strategy, and measure them regularly. In the case of transformational innovation, leading metrics are behavior based vs financials focused.
- Reflect metrics in operational metrics for core innovation in current products and markets.

There are a set of actions that businesses can take now, for example:

- Start with consumers - look externally at the consumer, business, regulatory, and technology trends reshaping the industry and spend timing identifying the problems worth solving
- Challenge orthodoxies and assumed trade-offs - identify and think about how businesses might challenge the orthodoxies you have about your industry, your consumers, and the way you operate
- Borrow unapologetically - most of the best ideas are not ones that the organisations will be able to come up with on its own; lateral thinking and the ability to apply insights and solutions from unexpected analogous industries are amongst the most critical skills in beating competitors to market and constantly staying ahead
- In some cases 'get it out' beats 'get it right' - in a world increasingly dominated by uncertainty, a key way to get effective market feedback is by giving consumers something to react to. This could be done by rapid prototyping of new innovation platforms and getting them out into the market for feedback as quickly as possible. Then innovation platforms could be brought back in for improvement and relaunch.

Ultimately, network businesses will be able to say they have a high degree of innovation maturity and capability when innovation:

- Becomes an organisational core capability
- Is a highly systematised effort with adaptive capabilities
- Processes, governance and resourcing are refined and additional reinforcing mechanisms are implemented to accelerate outcomes
- Novel, specialised capabilities created to adapt to new opportunities.

Survey response data

		Network type		Network ownership		
	All companies	**Distribution**	**Transmission**	**Public**	**Private**	**Half/half**
Company count	17	14	3	8	7	2
Response count	114	86	28	56	55	3
Allocation of current innovation investments (%)						
Core	63.0%	60.7%	74.4%	67.4%	67.0%	37.5%
Adjacent	20.2%	20.5%	18.7%	17.2%	21.3%	28.8%
Transformational	16.8%	18.8%	7.0%	15.4%	11.7%	33.8%
Ideal future (5 years from now) allocation of innovation investments (%)						
Core	47.0%	47.4%	45.0%	44.3%	46.0%	60.0%
Adjacent	29.0%	28.7%	30.9%	30.8%	29.1%	21.3%
Transformational	23.9%	23.9%	24.1%	24.9%	24.9%	18.8%
Proportion of current innovation activities in each of the Ten Types (%)						
Profit Model	4.8%	4.3%	4.7%	6.3%	4.1%	0.0%
Business networks	1.8%	1.8%	1.4%	0.7%	2.0%	6.3%
Structure	6.1%	4.8%	11.0%	5.4%	7.1%	6.3%
Process	31.9%	31.5%	44.7%	26.1%	36.8%	45.0%
Product Performance	19.4%	20.6%	19.0%	18.7%	17.3%	22.5%
Product System	18.1%	19.0%	6.1%	26.6%	12.9%	0.0%
Service	9.9%	9.5%	7.6%	7.7%	9.2%	20.0%
Channel to market	1.4%	1.3%	1.1%	1.0%	2.2%	0.0%
Brand	0.6%	0.9%	0.0%	0.0%	2.0%	0.0%
Stakeholder & Consumer Engagement	6.0%	6.1%	4.3%	7.5%	6.5%	0.0%
Importance of innovating in each of the Ten Types to the competitiveness of the company (1=Not important, 2=Very important, 3=Critical)						
Profit Model	2.38	2.33	2.65	2.54	2.51	2.00
Business networks	2.34	2.35	2.31	2.30	2.40	2.50
Structure	2.28	2.23	2.50	2.36	2.23	2.75
Process	2.32	2.31	2.36	2.05	2.54	2.25
Product Performance	2.39	2.34	2.61	2.62	2.36	1.75
Product System	2.10	2.08	2.18	2.28	1.93	2.00
Service	2.06	2.03	2.20	2.15	1.98	2.00
Channel to market	2.42	2.38	2.65	2.35	2.40	3.00
Brand	2.40	2.41	2.36	2.48	2.28	2.75
Stakeholder & Consumer Engagement	2.57	2.58	2.51	2.53	2.42	3.00
Importance of each factor in motivating innovation in the company (Scale of 1 to 5: 1=Not at all, 5=Strong focus)						
Reducing the cost to operate	4.32	4.34	4.22	4.63	4.46	3.25
Reducing time and cost to build assets	3.79	3.73	4.09	4.02	3.94	3.25
Improving asset productivity and service management	3.76	3.68	4.13	4.01	3.80	3.50
Improving pricing	3.50	3.44	3.81	3.96	3.35	3.00
Improving returns on capital	3.63	3.57	3.91	3.50	4.04	4.00

Protecting asset valuation	2.98	2.96	3.10	3.02	3.23	3.00
Creating new revenue streams	3.70	3.55	4.46	3.57	3.94	3.25
Competing with new market entrants	2.96	2.81	3.69	2.87	3.26	2.25
Improved employee relations and retention	2.93	2.86	3.24	2.79	3.12	3.75
Reducing risk	3.79	3.73	4.08	3.82	3.73	4.25
Improving environmental sustainability	3.29	3.23	3.58	3.62	3.03	3.50
Improving safety	4.38	4.36	4.51	4.56	4.20	5.00
Improving consumer satisfaction / outcomes	4.12	4.09	4.26	4.35	4.04	4.00
Succeeding within a changing regulatory environment	3.87	3.77	4.39	4.13	3.81	4.00
Taking advantage of advances in technology	3.91	3.94	3.75	4.06	3.98	4.00
Rate how effectively the company innovates into each driver (Scale of 1 to 5: 1=Not at all, 5=Strong focus)						
Reducing the cost to operate	3.41	3.43	3.30	3.56	3.56	2.50
Reducing time and cost to build assets	3.00	2.91	3.49	3.03	3.25	2.50
Improving asset productivity and service management	3.23	3.24	3.16	3.28	3.28	3.00
Improving pricing	2.88	2.88	2.86	3.05	2.85	2.75
Improving returns on capital	3.15	3.15	3.18	2.97	3.29	3.00
Protecting asset valuation	2.93	2.89	3.14	2.98	2.98	3.00
Creating new revenue streams	2.84	2.72	3.48	2.60	3.27	2.75
Competing with new market entrants	2.52	2.41	3.05	2.45	2.89	1.75
Improved employee relations and retention	2.81	2.87	2.51	2.69	2.79	3.25
Reducing risk	3.42	3.45	3.25	3.30	3.37	3.25
Improving environmental sustainability	3.06	3.06	3.07	3.17	2.82	3.50
Improving safety	3.92	3.97	3.69	3.93	3.66	4.75
Improving consumer satisfaction / outcomes	3.56	3.59	3.41	3.47	3.48	4.00
Succeeding within a changing regulatory environment	3.59	3.65	3.32	3.60	3.41	3.50
Taking advantage of advances in technology	3.35	3.40	3.09	3.57	3.24	3.50
Maturity of innovation capability (Scale of 1 to 6: Between 1 and 2 = Novice, between 5 and 6 = Excellent)						
Innovation strategy	4.49	4.59	3.97	4.54	4.33	4.56
Innovation Initiatives Management	4.05	4.13	3.64	4.07	4.04	3.88
Process	3.73	3.84	3.20	3.87	3.76	3.55
Senior leadership	3.93	4.00	3.60	4.24	3.94	3.75
Governance	3.42	3.46	3.27	3.58	3.64	2.75
Collaboration	3.67	3.73	3.41	4.00	3.74	3.00
Funding	3.31	3.78	3.31	3.61	3.54	1.92
Talent management	3.72	3.71	3.44	3.95	3.84	3.25
Innovation tools	3.65	3.60	3.35	3.85	3.74	3.50
Rewards and Recognition	3.16	2.94	2.85	3.39	3.23	2.58
Innovation metrics	2.92	3.89	2.80	3.06	2.83	2.75
External attraction	3.86	3.35	3.74	4.07	3.82	3.63

Endnotes

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Ready to innovate?
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