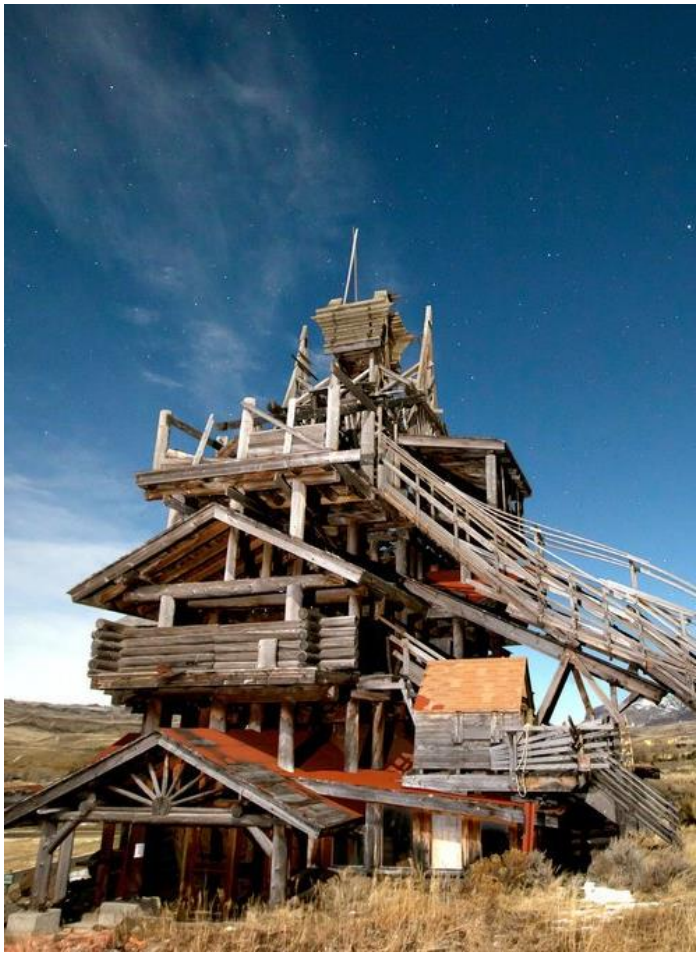
Innovation Brief



The Smith Mansion in Wyoming
(photo by John Burnham, The New York Times)

The Innovation Triangle: A Fix for Our Ramshackle House of Innovation

ABSTRACT

The science and art of innovation have evolved significantly over the several decades since Clayton Christensen jumpstarted the movement with his theories on the innovator's dilemma. Many useful methods and tools have since emerged, yet they have been *ad hoc* additions, lacking an overarching blueprint. As a result, most corporate innovation systems today are incomplete and fragmented, with much of this fragmentation occurring, not surprisingly, along functional lines.

We are now in need of a holistic, integrated and streamlined architecture for innovation if we want to realize the full potential of the methods and tools we have adopted to date – design thinking, open innovation, lean startup, as examples – and achieve sustainable outcomes on par with our innovation investments.

We propose the *Innovation Triangle* as a conceptual framework for this integrated, streamlined architecture. The Triangle encompasses the three fundamental legs of innovation – technology, business model and experience – that collectively impact the degree of adoption of any new thing. The Triangle also spans both sustaining and strategic levels of innovation and requires capabilities along four dimensions: strategy, organization, operation and people.

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> *"Everyone here seems to know the story of the house on the hill. The rambling log structure with its undulating staircases, umpteen balconies and fun-house warren of half-finished bedrooms has for nearly 30 years loomed over the Buffalo Bill Cody Scenic Byway…'There were no blueprints – the endless additions were all off-the-cuff.'"*
>
> – ***Sarah Maslin Nir, The New York Times*** [(1)]

The Smith Mansion in Wapiti Valley, Wyoming, is a large, rambling mansion, constructed piecemeal over many years. Known locally as the "cowboy mansion," it now sits uninhabited and in disrepair, its only potential value lying in its appeal to tourists – and as a useful lesson to innovators.

The mansion has a lot in common with many corporate innovation systems today, whose architects have no clear blueprint, no guiding plan or vision, and therefore stack one method or tool on top of another without fully grasping the interrelationships or cumulative impact.

After a generation designing pieces and parts, it is time to bring them all together in a complete and integrated innovation system – the Innovation Triangle – that enables us to realize the full potential of our innovation investments.

In this whitepaper, we address:

1. Why most companies take an incomplete and fragmented approach to innovation that limits the potential of best practice methods and tools as well as companies' ability to reach their innovation aspirations.
2. How a complete innovation system should integrate the three fundamental legs of innovation – technology, business model and experience – and deliver both sustaining and strategic innovation.
3. The four elements of capability – strategy, organization, operation and people – that companies must consider when designing and building this complete and integrated innovation system.

Innovation Systems: Current State

The appetite for innovation by large companies remains strong despite the challenges it presents. In 2016, Accenture conducted a survey of managers and executives across 500 U.S.-based companies larger than $500 million in annual revenue. The survey indicated that most leaders believe innovation is vital for their success, even more so than three years earlier.

> *"…84 percent said they believe innovation is key for their long-term success compared with 67 percent three years ago. The same percentage of respondents – 84 percent – said they are looking for the 'next silver bullet,' meaning a market-defining innovation rather than incremental iterations of the same products."* [(2)]

However, the same survey also suggests that the gap between aspirations and achievements continues to widen.

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"Nearly three-fourths (72 percent) indicate their firms often miss opportunities to exploit underdeveloped areas or markets versus 53 percent three years ago." [2]

As the practice of innovation has grown more sophisticated over the past several decades, it also has grown more complex. Proficiency has been a moving target, making it harder for companies to scale the learning curve. But to compete effectively, profitably grow the business and ward off disruption, companies must pursue a comprehensive innovation system, integrating three distinct but complementary legs of innovation – technology, business model and experience.

Technology innovation refers to the invention of new "effects" in the physical world of atoms and bits – digital, chemical, biological, etc. Technologies manifest themselves through both products and services.

Business model innovation refers to the configuration of how business is done (the "rules of the game") with respect to an existing or new product or service.

Experience innovation refers to the configuration of a product, service or business model to maximize the physical and emotional appeal for users, customers and other adoption influencers.

Most companies are proficient, at most, along one or two legs. It is the rare company that is proficient along all three, and the mechanisms for integrating them remain virtually non-existent. Why haven't more companies designed and built their innovation systems to reflect the Triangle framework? Perhaps because each leg has its own set of principles, methodologies, timelines and communities of practice.

Technology innovation delivers cost efficiencies, performance improvements or new dimensions of performance for downstream customers and end users. Technology innovation is heavily reliant on those educated and trained in science and engineering disciplines. The timeline for technology innovation ranges from several months (software) to several decades (life sciences). One critical distinguishing feature of technology innovation is that the legal system in most of the world's major markets protects the ownership rights of the inventor (patent filer). Another distinguishing aspect of technology innovation is that venture capital and startups are now a viable source of innovation for large companies via funding, partnership or acquisition.

Business model innovation encompasses new business processes, new partnerships, channels, customer segments, brands or revenue models. It provides novel ways for customers to access, acquire and adopt an existing or new product or service. Unlike technology or experience innovation, business model innovation is not yet recognized as a formal discipline and lacks an established community of practice. Business model innovations are relatively easy to design but can be very difficult to build, with timelines running to as long as five years. As with technology innovation, collaborating with startups can be a good source of business model innovation and growth for large companies.

Experience innovation encompasses both the aesthetic or visual experience and the interactive or physical experience of users. The practice of experience innovation is led by those educated and trained in the fields of engineering and industrial and graphic design. Legendary Apple CEO Steve Jobs said:

"Most people make the mistake of thinking design is what it looks like. People think it's this veneer – that the designers are handed this box and told, 'Make it look good!' That's not what we think design is. It's not just what it looks like and feels like. Design is how it works." [3]

The timeline for customer experience innovation runs from several months to several years. It is also not just about the end user – the benefit of experience innovation can run the length of a value chain.

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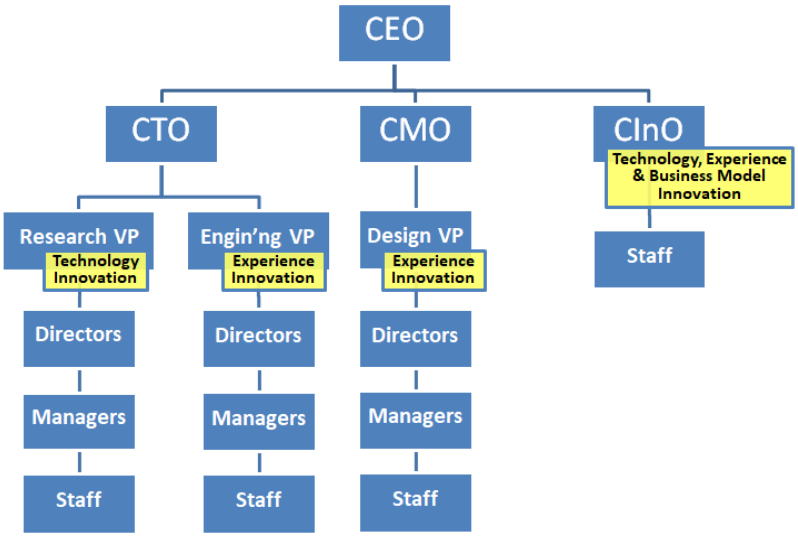
There is another reason why more companies have not designed and built their innovation systems to reflect the Triangle framework. The most relevant organizational functions – research, engineering, design and innovation – tend to live far from each other, often coming together only at the level of the CEO. Silos can be steep and hard to traverse for individuals at the staff, manager and director levels, where the real day-to-day innovation work gets done.

Typical Innovation Structure at Most Large Companies



To further complicate the challenge, companies must deliver innovation at two distinct levels – sustaining and strategic. Most companies have developed a reasonable degree of competency at sustaining innovation but struggle with strategic innovation. In the same 2016 survey, Accenture found that most leaders believe their companies do not adequately differentiate their sustaining (incremental) and strategic (transformational) innovation efforts.

> *"…82 percent admit they do not distinguish their innovation approaches between incremental versus large-scale transformational change – meaning they use a single 'one-size-fits-all' approach to achieve different goals. Most respondents said they have 'big' innovation ideas but are missing an organizational 'home' within the company. So their ideas often go nowhere."* [(2)]

Finally, companies struggle to know how to apply emerging methods and tools in context and across the innovation landscape. For example, *lean startup* is a toolkit clearly aimed at strategic innovation but the approach will differ greatly depending on which leg is the focus of the startup activity. Literature on lean startup is essentially devoid of such guidance. It is not only companies that struggle; so too does the broader innovation ecosystem – academics, media, consulting firms and others.

The Innovation Triangle – A New Innovation System Framework

Integrating three very different types of innovation isn't easy. However, the three legs of the Triangle are highly compatible from the standpoint of the customer or end user, at times even indistinguishable from each other.

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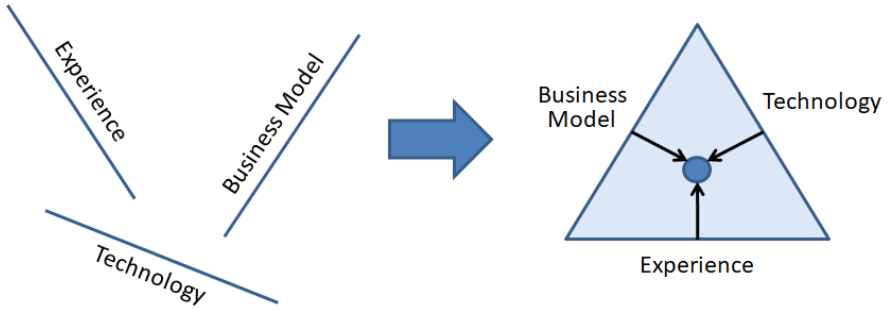
Constructing the Triangle – Part 1 of 2



Apple is an example of a company that has internalized the Triangle framework. The Apple iPod is a quintessential, and now iconic, illustration of the integration of all three legs of the Triangle. The original Toshiba 1.8-inch disk drive innovation was critical to its pocket size, song library capacity and song retrieval speed. The user experience, both emotional and physical, greatly exceeded that of prior MP3 players. Finally, the iTunes music delivery service, which created a new business model incorporating the major recording labels, was essential to making the device easy to use for millions of consumers.

Other examples of innovation successes that simultaneously deliver all three legs at once include those in the figure below.

Examples of Three-Leg Innovations Since 2000

Company	Year	Examples
XM Radio	2001	satellite radio
23andMe	2007	direct-to-consumer genetic testing
Apple	2007	iPhone smartphone
Netflix	2007	streaming video service
Amazon	2007	Kindle e-book reader
Tesla	2012	Model S battery electric vehicle
Amazon	2015	Echo home assistant

Note that some of the companies were relatively small at the time of launch (XM, 23andMe, Tesla). Triangle innovation is much easier to accomplish when you are small – it can happen quite naturally. However, many other innovations were launched by large, established organizations – Amazon (Kindle and Echo), Apple (iPod and iPhone) and Netflix (streaming video service).

Adding depth to the Triangle with sustaining and strategic innovation

In addition to the three legs of innovation, the best innovators also create and pursue opportunities at two distinct levels – sustaining and strategic. A very small number of companies, notably Google and Amazon, also pursue a third level called speculative innovation. In the illustration below, the three levels of innovation are differentiated by how new an innovative opportunity is to both the external world (y-axis) and the internal organization (x-axis).

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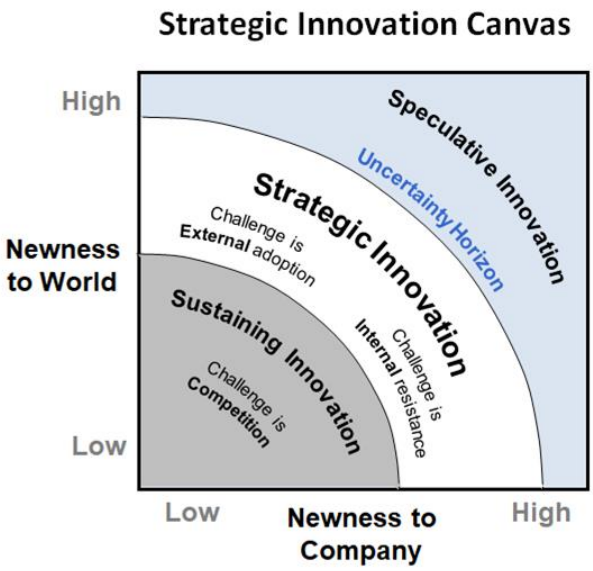
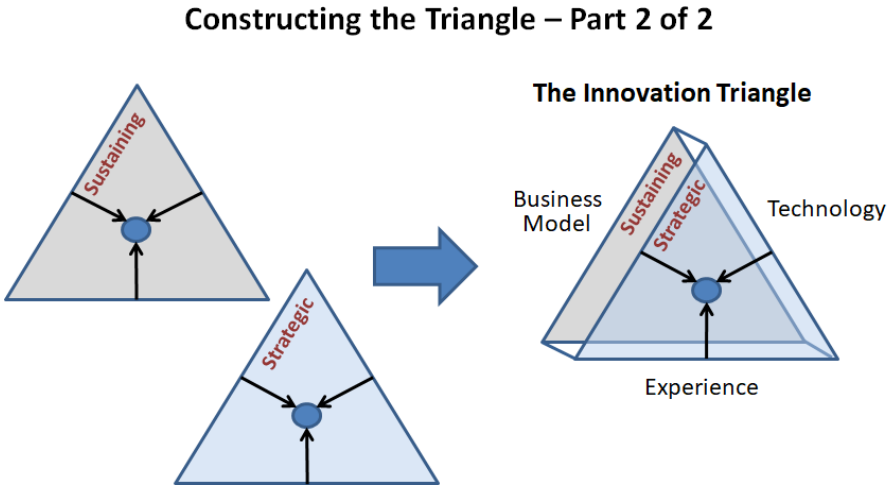


The aim of sustaining innovation is to protect a company's competitive position in the market and does not significantly alter the internal or external status quo. It is essential to survival and can be seen as the engine that generates the financial means to pursue strategic innovation.

The aim of strategic innovation is to create durable long-term advantage, potentially disrupting the prevailing industry status quo, fending off disruption or creating entirely new growth businesses outside the core business. The critical challenges for strategic innovation are the uncertainties related to external adoption and internal resistance to change.

Some companies also pursue *speculative* innovation, such as Alphabet's "moonshot" Project Loon (internet connectivity via high-altitude balloons), but few have the risk tolerance, patience or financial wherewithal to pursue this truly ground-breaking type of innovation. Even Google restructured itself into Alphabet in order to separate its core business from its more speculative ventures.

Other innovation models distinguish among *core*, *adjacent* and *transformational* levels of innovation or *Horizon 1, 2* & *3* levels. As evidenced by our Innovation Triangle, the binary distinction of sustaining and strategic innovation captures the essential difference: the durability of competitive advantage.



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Let's look at the Innovation's Triangle's leg-by-level approach through a set of automotive examples.

Automotive Examples of Sustaining vs Strategic Innovation

Legs of Innovation	Levels of Innovation	
	Sustaining	Strategic
Technology	Blind spot alert	Battery electric vehicle (e.g., Tesla)
Business Model	Comfortable waiting lounge in the dealer service area	Car sharing service (e.g., Zipcar)
Experience	LED light strip on door frame	Ride hailing service (e.g., Uber)

The right-hand column in the table illustrates an important truth about the Triangle system: strategic innovation all but *requires* an integrated three-leg approach. Each of the examples in the strategic category have a primary leg but ultimately leveraged all three legs to optimize the value proposition. In contrast, sustaining innovation can effectively be pursued one leg at a time.

Technology is a key enabler of strategic innovation. Most major strategic innovations are rooted in new or emerging technologies. This type of innovation has the added benefit that technological invention can be protected by law in most major markets around the world, which reduces the risk to large investments over time without fear of copycats. Technology innovation favors the “durability” aspect of strategic innovation.

Business model is also a key enabler of strategic innovation. A company’s existing business model can prevent a new technology innovation from being adopted and, similarly, a new business model can often enable an existing or new technology to be adopted. The clever technology in the Apple iPod might never have been appreciated without the iTunes business model.

The car sharing example above is primarily a business model innovation that is dramatically changing how consumers think about car ownership and how car makers think about their business. Business model innovation can also be quite durable, especially if critical market share is achieved before competitors jump in. The network effect inherent in a one-sided or two-sided software platform business model can also create durable advantage.

Experience innovation tends to be a more important factor in *sustaining* innovation, where a novel aesthetic or superior usability can boost the popularity of an existing product or service. However, interactive experience innovation also can deliver at the *strategic* level. Mert Lawwill’s rethinking of conventional bicycle design to enable rugged off-road use spawned the entirely new mountain biking industry and outdoor sports genre.

Uber, often categorized as a business model innovation, is arguably more about experience innovation, disrupting the legacy taxi experience with an intuitive smart phone app that dramatically simplified the task of hailing a ride. This allowed adoption to reach critical scale quickly. At a certain point, the network effect on both the supply side (car availability) and demand side (customer availability) took over and provided the durability of competitive advantage that is characteristic of strategic innovation.

The Innovation Triangle system respects the distinction between sustaining and strategic innovation and, at the same time, accounts for the fact that in reality the two exist along a continuum. Using the Innovation Triangle framework, a company's innovation system must apply the right level of integration to each opportunity based on where it sits on this continuum.

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Designing and Building the Innovation Triangle

Four elements must be incorporated when establishing any new organizational capability. The same is true for designing and building the Innovation Triangle system.

- **Strategy** – *How* you to intend to win at innovation, including vision, mission, objectives and scope of your innovation efforts.
- **Organization** – The organization design, including reporting relationships (both solid and dotted line), resource levels and decision authority and decision-making mechanisms.
- **Operation** – How the capability will be deployed through processes, activities and tools, including metrics for tracking how well the capability is delivering results.
- **People** – The roles, responsibilities, skills and mindsets of the people who will support the new capability. This element includes competencies, leadership and culture.

The following sections provide a brief overview of each of the four elements.

Strategy

Your innovation strategy should be developed in the context of your broader business strategy. This sounds intuitive, but it's often overlooked. Nearly all businesses seek growth in their economic value. The business strategy should clarify whether and to what degree this will be achieved via revenue growth or margin growth or both; whether the growth will be organic or by acquisition; and whether organic growth will come from innovation, brand/product line extensions, or geographic expansion. While rare, business strategy should also set guidelines for risk tolerance.

Business strategy clarifies the role and importance of innovation to the organization and, with this guidance, your innovation strategy should define:

1. The vision and mission of the innovation initiative, how it will support the business strategy and a positioning of its relationship to other strategic initiatives.
2. The contribution of innovation in supporting revenue, margin and economic value growth in real dollar terms. By definition, *none* of this growth will come from sustaining innovation but rather from strategic innovation.
3. The funding level that will be provided for strategic innovation to achieve this economic objective and the timeline. This timeline should be at least three years (e.g. software) and as long as ten years (for life sciences or heavily capital-intensive industries).
4. The relative importance of each of the three legs of innovation – technology, business model and experience – to your future and how each leg will be enabled and resourced. It should be clear by now that choosing to ignore any of the three legs is unwise.
5. The strategic domains the business would like to explore to find strategic innovation opportunities and examples of the types of opportunities that fall within your risk tolerance.
6. Expectations for how the future might unfold in the domains of interest.
7. Guidelines for the organization's ensuing efforts to design and build the Organization, Operation and People elements of the Triangle and the allocation of resources to do this work.

This innovation strategy work should be carried out by an advance team. Once completed, a new team can be formed to continue on with the Organization, Operation and People efforts. The new team likely will want to adjust the innovation strategy as it learns and progresses.

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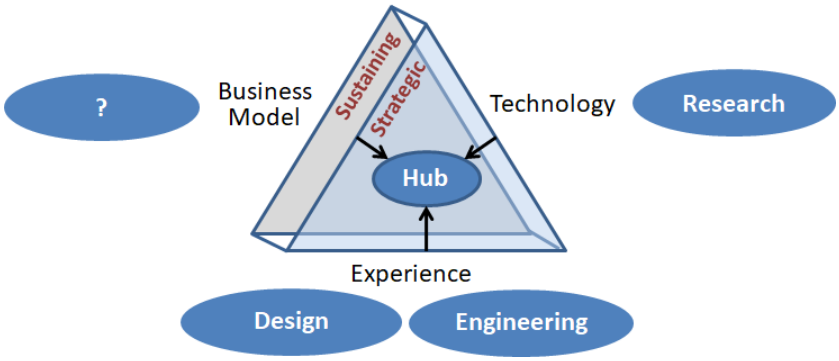
Organization

In light of the structural challenges noted earlier – that research, engineering and design are quite distinct in most organizations and that most individuals doing innovation work often function deep within these silos – structural mechanisms must be put in place to ensure integration and collaboration.

One such mechanism is an innovation "hub," a central team whose core mission is to ensure this integration and collaboration across the three critical functions.

Innovation "Hub"



The overarching role of the hub is integration, and its responsibilities should be restricted to its mission: innovation project staffing input, project oversight and pipeline monitoring. The hub should be populated with individuals who have both the mindset and skillset for each of the three legs of the Triangle. It might be one individual or three individuals or more, depending on the size of the enterprise, the importance of the Triangle to business strategy and the hub's stage of maturity.

The hub can report to the office of the chief innovation officer, if one exists, but could also report to the research or design functions. In some cases, the hub can also be the home of an incubator. Since the Triangle is most relevant for strategic innovation, the hub will largely be focused on and dedicated to this level of innovation.

The hub illustration above highlights an important and common issue – business model innovation lacks a permanent functional home in most organizations. It is often viewed simply as a competency innovators are expected to learn. In some organizations today, letting the hub own this leg of the Triangle is the default solution. But the Strategy function is another option to consider. A 2017 innovation benchmark report by the consulting firm PwC stated:

> *"Bringing people from the business strategy side of an organization into the innovation sandbox from the start—at the ideation phase of any new, potential innovation—is critical to making innovation pay off in the long term, rather than having it be a potentially losing proposition. That requires knocking down silos within a company."* [(4)]

The Strategy group already thinks about business model on a regular basis. Strategy tends to own the annual planning and multi-year strategic process, which continually reviews every aspect of the current business model and seeks opportunities for sustaining innovations in the current business model. It is not a large step for the Strategy function to be held accountable, also, for strategic business model innovation. In any case, companies must view business model innovation as a critical independent

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discipline like technology or experience innovation. And this discipline should include ongoing research into new and emerging business models that might represent both opportunities and threats.

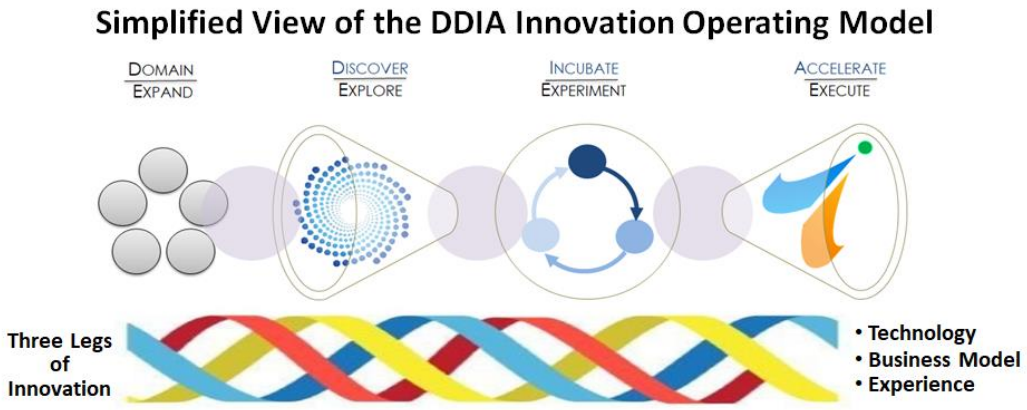
All *strategic* innovation project teams should contain people with the skillsets and mindsets for all three legs of the Triangle. Think of it as "three-in-a-box," which mimics the prevailing, two-in-a-box model for standard product development projects that pairs the marketing and technology functions. Using three-in-a-box for *sustaining* innovation projects, however, should be decided on a case-by-case basis.

Cross-functional networks comprise a third mechanism for stimulating integration and collaboration on an ongoing basis. Formalized networks are generally an underappreciated and underutilized capability within large organizations. One of the most persistent and recognized innovators in the United States, The 3M Company, credits formal networks with its innovation success over many decades. At 3M, these networks tend to be defined along technology lines, promoting the application of established technology competencies across the wide array of businesses and product categories in which 3M competes. Companies should focus on making these types of networks three-dimensional in the future – technology (Research), business model (Strategy?) and experience (Design, Engineering). (Additional thinking on innovation networks can be found here: https://www.theinovogroup.com/innovation-networks/.)

The most important decision-making task for a holistic innovation system is ensuring the innovation pipeline contains a healthy share of each of the three levers of innovation, as well as an appropriate mix of sustaining and strategic innovation. An innovation board or “I-Board” is a very sensible place to put this governance task. With an I-Board approach, members tend to be relatively senior and can represent the entire business. Its ability to enforce core principles and objectives is generally superior to that of the hub or the chief innovation officer alone. The I-Board only gets involved at key transition points (e.g. Discovery to Incubation) and should not micro-manage or meddle in the detailed, day-to-day decisions.

Operation

All innovation systems should have a basic operational framework that conveys, at a high level, the flow of innovative opportunities, including starting points, waypoints and end points. This framework also sets the preferred language of innovation.



The three-stranded helix in the illustration above represents the interplay among the three legs of the Triangle throughout the entire innovation process. The objective is to maintain the optimal mix of technology, business model and experience innovation for every domain and every opportunity in the pipeline, at every stage of the pipeline.

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For the Operation capability to add the most value, companies should broaden the meaning of research. The term typically refers to technology research (R&D) or market research. But the business model leg benefits greatly from an active research effort supporting it. New business models are constantly emerging as this discipline gains traction and as new digital technologies are created. If the Strategy function, for example, were to actively scout for new and relevant business models, it would enhance its ability to innovate along this leg of the Triangle. The Design function, too, can benefit from research into current and future technologies that can enhance experience innovation, for example in materials, coatings, software and hardware.

The Operation element also includes innovation performance metrics. Innovation measurement is difficult because the future is inherently uncertain. Current actions and decisions are necessary for, but not determinative of, outcomes – outcomes that may be realized many years in the future. (There is much more to say about metrics, and a deeper treatment can be found here: https://www.theinovogroup.com/five-things-to-measure/.)

People

Stacks of books have been written about the People element of innovation. It is hard to do the topic justice in a few paragraphs. But one topic in particular, *design thinking*, is integrative of all three of our innovation legs and their related organizational functions. All practitioners of innovation, especially strategic innovation, should embrace design thinking. Unfortunately, the level of proficiency in design thinking across the corporate landscape today tends to be low. Even the Design function can lack good design thinking skills.

Design thinking refers to an overarching mindset and skillset for "how" to do innovation. In the words of Tim Brown, CEO of IDEO:

> *"Design thinking is a human-centered approach to innovation that draws from the designer's toolkit to integrate the needs of people, the possibilities of technology, and the requirements for business success."* (5)

In this way, design thinking is different both from the design function and experience innovation. It is not a type of innovation in and of itself, the way experience innovation is.

Brown's definition speaks to both the mindset (human-centered, empathic) and skillset (designer's toolkit) and also wraps its arms around all three legs of innovation.

Increasingly, the design community – led by designers with *design thinking* ability – is being asked to play the role of integrator of the three legs of innovation. It's a reasonable ask. But not all designers are design thinkers, and not all design thinkers are designers. Also, the design function cannot possibly insert itself into all innovation activities occurring across the three legs. The preferred approach is to endow the research, design, engineering and strategy functions with a design thinking skillset and mindset. In *Change by Design*, Brown says:

> *"A competent designer can always improve upon last year's new widget, but an interdisciplinary team of skilled design thinkers is in a position to tackle more complex problems. From pediatric obesity to crime prevention to climate change, design thinking is now being applied to a range of challenges that bear little resemblance to the covetable objects that fill the pages of today's coffee-table publications."* (6)

For companies to successfully build an Innovation Triangle system in their organizations, they need to embrace design thinking.

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A blueprint for reconstruction

A truly integrated system of innovation must encompass the three legs of innovation – technology, business model and experience. Many significant innovations in recent memory have relied on all three to achieve their success, yet few companies today have established a holistic and integrated model of innovation in their organizations and so the truly significant, game-changing innovations tend to be random and inconsistent.

Adding an orthogonal dimension to our framework captures the important distinction between sustaining and strategic innovation – the durability of competitive advantage – and helps integrate the three legs.

But without the four elements of capability – strategy, organization, operation and people – companies will continue to be challenged to effectively design, build and use this new integrated Triangle model of innovation. It is a model all businesses will need to pursue to effectively compete in today's rapidly changing business environment.

Two decades after Clayton Christensen's groundbreaking work, the innovation community's house is in dire need of reconstruction. We stewards of innovation – companies, academic institutions and professional service firms – urgently need to define a simplifying and integrating architecture to begin to make sense of the rambling rooms, staircases and hallways in our house. The Innovation Triangle offers just such an architecture. What type of house will you build?

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