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Design Thinking and Innovation at Pfizer, Inc.

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"Design-thinking techniques can feel a little counterintuitive to those who are accustomed to focusing on solutions first. We all grew up in a world where we're the experts and we have to come up with solutions."[1]

– Michael Glatts, Senior Director for Global Congresses, Pfizer Inc., in May 2018.

"The essence of the design thinking movement is deep understanding of, and empathy with, the customer's attitudes, behaviors, and unmet needs. By embedding this capability within an organization, businesses become more adept at creating solutions that solve problems and "delight" customers."[2]

– Daniel Seewald, Senior Director of Worldwide Innovation, Pfizer Inc, in August 2017.

In June 2018, Pfizer Inc. (Pfizer), one of the world's premier biopharmaceutical companies, announced the three winning startups it had selected for participation in the second year of Pfizer Healthcare Hub: London. Pfizer supported this foster program for innovative startups to generate efficiencies in the delivery of healthcare solutions to patients or clinicians. *"The Pfizer Healthcare Hub: London is an initiative designed to bring companies working in digital healthcare together with the experience and expertise of Pfizer's UK and global network. The challenge for health tech start-ups in healthcare is that there is often a much longer lead time to sustainable adoption than in other digital spaces. Winners of a competitive grant process — the first of which took place in 2017 — will get the tailored support they need to move their ideas forward — including access to knowledge and expertise of the UK's complex health network ,"*[3] said Hamish Graham, manager of Pfizer Healthcare Hub London.

The three winning startups were ***Medopad***, an app platform where patients could log in and share data during clinical trials or care; ***Inhealthcare***, a remote patient monitoring company; and ***Perfect Ward***, an app-based tool that helped conduct and report healthcare inspecting results. These three startups together would receive approximately US$70,000 (£ 50,000) as a grant. Moreover, they would also get a year of support and access to Pfizer's regional partners including the National Health Service. *"It's fantastic to be working with the Pfizer Healthcare Hub: London. We really value the extra support and guidance to help us to build on our achievements to date. We're passionate about keeping people out of hospital; scaling our technology will help us to transform the health and care service and allow more people to be cared for on-the-go,"*[4] commented Bryn Sage, Chief Executive of Inhealthcare.

The winners of the 2017 competition were ***Cera***, a company that coordinated on-demand in-home care; **Echo**, a prescription reminder and tracking app which raised US$9.3 million in additional funding in October 2017; and **GiveVision**, which had made a specialized headset that could magnify or adjust visuals for patients with sight impairments.

While Pfizer had always encouraged a culture of innovation, it was in the early 2000s that the company started putting emphasis on design thinking. The company understood the importance of design thinking as a tool for innovation that it needed to integrate with its innovation journey. In

design thinking, the emphasis was always on empathy for users and the outcome would be in their best interests. Pfizer, as a pharmaceutical company, used design to drive ideas to better connect with and serve patients.

Nonetheless, the company had its share of challenges in terms of acceptance of design thinking as an innovation tool. But the fact that design thinking would remain critical to improve patient experiences and there being high demand for more patient-centered products and services, Pfizer continued its use of design thinking to improve technology, organizational processes, drug manufacturing, and many other processes.

ABOUT PFIZER

The history of Pfizer dates back to 1849 when German-American cousins Charles Pfizer and Charles Erhart founded Charles Pfizer and Company as a fine chemicals business, in Williamsburg, Brooklyn, New York. On June 22, 1942, Pfizer became a listed company when 240,000 shares of new common stock were offered to the public.

In 1950, as part of the result of Pfizer's first discovery program, the company started selling Terramycin (oxytetracycline), a broad-spectrum antibiotic. This was the first pharmaceutical product sold in the US under the Pfizer label. Terramycin, Pfizer's first proprietary pharmaceutical product, also marked the beginning of the Pfizer Pharmaceutical Sales Force. After getting approval from the US Food and Drug Administration on March 15, 1950, eight specially trained Pfizer pharmaceutical salesmen started getting the inventory to wholesalers and educating physicians about the product. Over a period of time, these salesmen became the front line of a sales and marketing organization that became recognized as the best in the industry. With the success of Terramycin, the company started expanding into overseas markets and the International Division was created. The company continued to grow and introduced a number of successful drugs in the years and decades that followed. By the end of that century, it was also investing to the tune of US$4 billion per annum in research and development.

In 2000, Pfizer opened the largest building in the world dedicated to the discovery of new medicines for human and animal health at its Groton, Connecticut, research campus. In 2002, it became the first US pharmaceutical company and first top-ten company on the New York Stock Exchange to join the UN Global Compact, an international network that promoted good corporate citizenship by fostering partnerships between companies, UN agencies, non-governmental organizations (NGOs), trade unions, and academic institutions.

In 2003, Pfizer and Pharmacia Corporation merged together. In 2004, the company launched Caduet (amlodipine besylate and atorvastatin calcium), the first single pill that treated both high blood pressure and high cholesterol.

In 2004, Pfizer Helpful Answers, the pharmaceutical industry's most comprehensive prescription medicines access initiative, was launched. This initiative would enable uninsured people in the US to obtain Pfizer medicines free or at significant savings.

In 2005, Pfizer launched Lyrica (pregabalin), the first treatment approved by the US Food and Drug Administration to treat two distinct forms of neuropathic pain associated with diabetic peripheral neuropathy (DPN), postherpetic neuralgia (PHN), and adjunctive treatment of partial onset seizures in adults with epilepsy. Throughout the 2000s, Pfizer continued launching several innovative drugs.

In 2007, it launched a website to provide up-to-date, user-friendly information on studies conducted after a medicine received regulatory approval and additional information about the medicine's safety, efficacy, or optimal use. This was considered a pioneering initiative for a pharmaceutical company.

In 2008, Pfizer launched its Medicine Safety Website to help healthcare professionals and patients make better informed decisions about treatment options. The same year, the company entered into a partnership with Grameen Health, an affiliate of Grameen Bank[a], to identify sustainable models for healthcare delivery in the developing world. In 2008, Pfizer also launched its Global Regenerative Medicine to discover and develop a new generation of regenerative medicines that may prevent disability, repair failing organs, and treat degenerative diseases. The company also entered into an agreement with Medivation to develop and commercialize an investigational medicine, Dimebon, for treating Alzheimer's disease and Huntington's disease.

During the 2000s, Pfizer entered into a series of mergers – with Warner-Lambert in 2000; Pharmacia & Upjohn in 2002; Wyeth in 2009; King Pharmaceuticals in 2010; and Anacor Pharmaceuticals and Bamboo Therapeutics in 2016.

In 2017, Pfizer reported revenues of US$52.5 billion. The majority of its revenues came from the manufacture and sale of biopharmaceutical products. Its global portfolio included medicines and vaccines, as well as many of the world's best-known consumer healthcare products. The company managed its commercial operations through two distinct business segments: Pfizer Innovative Health (PIH) and Pfizer Essential Health (PEH). PIH included six business groups – Consumer Healthcare, Inflammation & Immunology, Internal Medicine (neuroscience and pain, and cardiovascular and metabolic), Oncology, Rare Disease, and Vaccines. PEH included legacy brands that had lost or would soon lose market exclusivity in both developed and emerging markets, branded generics, generic sterile injectable products, biosimilars, and select branded products including anti-infectives. EH also included an R&D organization, as well as Pfizer's contract manufacturing business. *(Refer to **Exhibit I** for Pfizer's Financial Highlights)*

PFIZER'S INNOVATION JOURNEY

Pfizer had a continuing history of going in for large mergers together with smaller strategic ones, to grow its pipeline. However, the company also continued to put emphasis on innovation which had been its core strength for decades. It strove to find new ways to make its business more efficient and profitable.

Innovation in both products and business processes became a strategic factor for pharmaceutical companies in the rapidly changing global market. Pharmaceutical companies used innovation as a tool to respond to the massive transition taking place in how medicines were discovered, developed, and marketed to a diverse customer base.

Throughout its 170-year-old history, Pfizer had received several awards for the innovative prescription medicines and pharmaceutical products that it developed. In order to make healthcare solutions more affordable and accessible worldwide, the company strove to collaborate with leaders of innovation who delivered solutions in the following areas of interest:

- **Real World Data and Analytics** – Technologies and partnerships to aggregate medical and non-medical information and generate actionable care insights;
- **Analytics-enabled Services** – Service models and partnerships that applied analytics-generated insights to deliver personalized care services;
- **Personal and Point of Care Diagnostics** – Diagnostics and sensors used by caregivers or consumers to inform diagnosis to doctors, monitor and manage healthcare;
- **Healthcare Decision-support Tools** – Web or mobile-based tools to inform the physician as well as patient diagnosis, monitoring and management of health care.
- **Open Innovation Platforms** – Solutions to enable collaboration and solutions development with researchers, suppliers, customers, and patients.

[a] Grameen bank is a microfinance organization and community development bank based in Bangladesh. The bank received the Nobel Peace Prize in 2006 for its work to alleviate poverty

Pfizer collaborated with entrepreneurs as well as established companies to explore strategic alignment, business development opportunities, and investments within its areas of interest.

The company aimed to transform the 'art of invention into executable innovations', with new products and services, keeping in mind the changing requirements of its customers. Innovation at Pfizer was expected to complement business development by creating new ways in which the partnerships with external players could take place. *"We try to answer the question: 'Where are the new or untapped opportunities for partnering that will put us in that 'blue ocean' position where we are out in front of the competition?"*[5] said Executive Vice President Kristin Peck, who held a dual leadership portfolio as the company's chief innovation officer as well as business development strategist.

In January 2016, Pfizer announced that it would expand its R&D investment strategy to include entrepreneurs on the leading edge of scientific innovation. As part of the strategy, the company would provide them both equity and access to resources for research in areas aligned with the company's areas of interest. Pfizer would provide these entrepreneurs access to top-notch scientists, expertise and drug-discovery capabilities, including enabling proprietary technologies, and actively participate in the development of early-stage innovations as well. The first four investments of the strategy would include US$46 million in financing companies that were actively exploring Conditionally Active Biologics (CABs), immune-oncology, neurodegenerative technologies, and gene therapy. The companies were BioAtla, NextCure Inc., Cortexyme Inc., and 4D Molecular Therapeutics Inc.

The aim of these investments was to accelerate the process of turning out good ideas to become available therapies. *"There is exciting scientific discovery happening both within Pfizer and beyond our walls, and we look forward to continuing to explore opportunities to bring our resources to emerging companies investigating in areas where we feel we could make a difference to patients. The key for Pfizer is to be flexible in how we partner with different companies; we use a range of investment vehicles and collaboration models in R&D to help ensure we tap into the vast, rapidly-evolving ecosystem of healthcare innovation, looking to complement each other's capabilities so that together we can make a bigger impact,"*[6] said Mikael Dolsten, president of Pfizer Worldwide Research and Development.

In 2017, Pfizer was facing a challenge in developing a technology-enabled packaging device for its prefilled syringes, which were in high demand in the marketplace due to their injection safety and easier self-administration. The device was expected to help healthcare providers in determining whether patients were taking their prescribed medication as well as in checking the syringe's contents were at the right temperature or not at the time of administering. In an effort to find the best solution available to this problem, Pfizer arranged an open innovation contest. The final winner of the contest would receive a specified amount as prize money.

Despite being capable of designing and implementing the open innovation contest on its own, Pfizer decided to work with open innovation intermediaries, so as to increase the potential success of the project. Open innovation intermediaries were specialized service providers that supported their clients' problem-solving efforts by using external talent and skills. Pfizer chose IdeaConnection as an intermediary which specialized in team-based problem-solving. IdeaConnection also agreed to Pfizer's need for control over the firm's critical intellectual property and sensitive information. As IdeaConnection's business model was performance based, Pfizer needed to pay the service fee only when the solution met its specific success criteria. Moreover, it also had access to additional "free" prototypes, i.e. the other solutions developed during the contest that had not won the competition, and could get non-exclusive usage rights to additional solutions for a fraction of the prize money given to the final winner.

Pfizer's open innovation strategy proved to be a success. Not only did the packaging design solution exceed the company's expectations in terms of creativity and technical feasibility, it was also less expensive as the company worked on a fixed-cost basis. Besides, the company had additional prototype ideas developed by expert teams for future use.

THE INTEGRATION OF DESIGN THINKING FOR INNOVATION

Pfizer had set up **global idea management programs** since early 2000s. The company believed customer-centric ideas could come from anyone – developers, designers, salespeople, or researchers. However, it also understood that expertise alone could not be enough for a sustainable culture of innovation. *"Innovation with regard to developing new drugs has always been a core part of the success of our business. What's newer for our organization is a focus on innovation beyond drug development. How do we innovate our business model? How do we innovate our business partnerships and how do we look to operate the company in a different way,"*[7] said Wendy Mayer, vice president for worldwide innovation at Pfizer.

To incorporate a sustainable culture of innovation at the company, Pfizer started making design thinking a core component of its innovation strategy. Design thinking was a solution-oriented process that was used to achieve innovation while keeping the consumer in mind during all the development stages all development stages. According to Tim Brown, President and CEO of IDEO[b], *"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."*[8]

Rather than traditional methods of product and solution development, design thinking revolved around empathy and achieving a true understanding of the consumer's needs, not just the needs of the business. With the help of design thinking, companies tried to achieve innovation through three main factors – user desirability, market viability, and technology possibility *(Refer to **Exhibit II (A)** for the relationship between Design Thinking and Innovation and to **Exhibit II (B)** for Basic Steps of Design Thinking)*

Pfizer believed that by incorporating design thinking into its business model, it could drive ideas to better connect with its customers. Given the current demand for more patient-centered products and services, design thinking could be its core competence that would differentiate it from its competitors.

Pfizer considered design thinking as a problem solving tool that was best when used across the company, and across disciplines. According to John Gleason, Founder and CEO of A Better View Strategic Consulting LLC, the leadership often focused solely on the word "design" while implementing design thinking programs. "*As inept as [design thinking] may be named, is actually a problem solving tool. It's seeing the world differently, and solving, in many cases, very complex business challenges."*[9]

In an effort to integrate design thinking for innovation, Pfizer considered a number of factors including improving technology, organizational processes, drug manufacturing, and many other processes. The company identified several touch points with patients that provided an opportunity for the application of design thinking, as for instance, during clinical trials, diagnosis, and treatment.

The company focused on harnessing a culture that could support sustainable innovation across its workforce. It assessed different ways to signal and communicate innovation successes within the company. Anthony Lambrou (Lambrou), who headed Worldwide Innovation at Pfizer said that the company was focusing on the mindset and cultural shift. Lambrou emphasized building "experimentation learning loops," so as to make culture change more effective. Part of the design thinking framework, this approach allowed the company to balance risk while enabling short- and long-term evaluation of the return on innovation and capability-building efforts. *"There are ways and steps along the way [to] experiment, and you learn, and you quickly adapt,"*[10] added Lambrou. Moreover, he suggested that if a form of "reward structure" could be built into the

[b] IDEO is a global design and innovation company.

framework of the innovation program, it would be motivational for critical learning. Even though Pfizer's innovation model was driven centrally, it was distributed and signaled to the organization through a large network. The company had more than 400 design thinking champions to help support the right mindset.

Pfizer had always laid emphasis on the role of leadership in implementing human-centered innovation. The role of leaders in design thinking in the company was always to be a 'support and sponsor'. *"It's really important for leaders to clearly signal that [support for risk-taking] in the organization. They steer the ship in terms of how people are thinking,"*[11] said Lambrou.

In 2005, Pfizer noticed that sales for Nicorette, their nicotine replacement product, were declining as consumers were not achieving successful outcomes with it. The company decided to explore whether Nicorette could become a service. The team at Pfizer found that in order to turn Nicorette into a service, they had to find ways to link skill-driven, person-to-person services with scalable modern IT systems to create a true behavior modification platform. They chose the project code name as **"Pavlov."**

The Pavlov project team decided to target the younger smoker aged 25-35 years old as their potential customer. Research revealed that, on an average, the typical smoker made more than five attempts to quit smoking over a decade. Ironically, these same smokers were found to have no chemical addiction; instead, their smoking habit was "a lifestyle choice." This insight encouraged the Pavlov team to rebrand Nicorette into a lifestyle change service.

The team also found that many younger smokers were using support services, such as hypnosis, support groups, and especially one-on-one counseling, to help them quit smoking and were also succeeding. Pfizer found a counseling firm in Norway that was providing telephonic counseling, with very high success rates.

To offer the smoking cessation service to customers, Pfizer identified five major components: smoking cessation counseling, an online sales channel, social support, data analytics, and behavior change best practices. In order to design and execute an in-market experiment, Pfizer also engaged partners. The insights derived from the 18-month in-market experiment helped Pfizer to develop and launch **ActiveStop**, a smoking cessation service that was supported by phone-based counseling (through a third party) and the original Nicorette product. The Pavlov team used all the principles of design thinking to develop ActiveStop, which became instantly profitable. The consumer outcome was improved by over 200%. This was Pfizer's first service, and its first direct-to-consumer offering. [12]

The company understood that design thinking wouldn't only help it connect better with its customers, but also help the employees of the company. Recognizing the fact that scalable design thinking could make its workforce more connected and motivated, in 2015, Pfizer launched its flagship enterprise innovation program called **"Dare to Try"**. Pfizer's "Dare to Try" innovation program combined design thinking with scalable software to create a sustainable, coordinated framework for innovation. The aim of the program was to build an ownership culture and capabilities in design thinking through the workforce. The "Dare to Try" program comprised a variety of tools, behavioral expectations, a champion network, and training sessions so as to help individuals and teams around the company to create innovative solutions while inculcating an innovative mindset and culture within the organization. *"If you don't have a common vernacular, if you don't have a common culture, if you don't have the same frame of reference…then you lose the scalability and the impact of having one program, one mindset, and one social movement,"*[13] said Dan Seewald (Seewald), Senior Director of Worldwide Innovation at Pfizer and Head of the Dare to Try Initiative. *(Refer to **Exhibit III** for Pfizer's Dare to Try Program)*

To start the program, Pfizer identified a network of internal champions across the world. These **champions** helped the company to accelerate adoption of the program, involve employees, and make them collaborate and spread new ideas. *(Refer to **Exhibit IV** for the Role of the Champions)*

"We've evolved from a program to being a mindset, and even more importantly now, a social movement within the Pfizer organization…It's more that the people in the organization, wherever you look around the world, are asking for this. They want to be the change and they want to accelerate change in the everyday. From where [Dare to Try] started to where it is today, I believe that we are fulfilling that mission of being able to drive change and innovation…at Pfizer,"[14] said Seewald.

In December 2015, Pfizer announced the launch of the **ADAPT** (Advancing RA Disease Activity Management Using Principles of Design Thinking) project. The aim of the project was to create a method to aid a 'treat-to-target' strategy for RA (Rheumatoid Arthritis) patients. The company intended to develop a user friendly interface to present disease activity data for the benefit of patients as well as clinicians. [15]

In October 2016, Pfizer Oncology launched a technology innovation challenge, Advancing Care for Patients Living with metastatic breast cancer (mBC). The initiative was launched to find new and relevant technology-enabled solutions that would help support and empower patients with mBC around the world. The winner would get an award of US$250,000. The idea was to develop technology solutions that offered [16]

- An insightful, customizable care management solution that improved care and disease management for patients living with mBC;
- Solutions to support mBC patients with their daily living and enrich their lives; and
- Solutions to help patients living with mBC engage and support one another.

LOOKING AHEAD

Industry experts were of the opinion that by incorporating design thinking into its business model, Pfizer had truly been able to differentiate itself in the competitive pharmaceutical industry. Design thinking not only helped the company to get a fresh perspective on innovation but also became its core competence in identifying and meeting customer needs and preferences.

While design thinking could be used to drive ideas to better connect with and serve patient experience, crowdsourcing could also be used as a complement to design thinking. *"Innovation blossoms when we break down the familiar patterns that we faithfully rely on. But as individuals, we can be very reluctant to let go of what we trust and believe. The ability to convene a large, heterogeneous group of problem solvers can help to leap past conventional wisdom and vastly accelerate the blooming of insight and innovation. Crowdsourcing, when used in a thoughtful, integrative way, can improve the planning of your human-centered design sessions and deliver much better outcomes,"*[17] commented Seewald**.**

Nevertheless, it was a challenge for pharmaceutical companies in general to emphasize design thinking as the companies were not used to considering of users experience at the primary level. *"Even though there are good examples, I think it will take time before we see big pharmaceutical organizations shifting their entire culture to be truly design-driven. Pharma companies are traditionally made up by scientists (and business people). They are wired to take a technology (or business) approach to innovation, not a user experience approach,"*[18] said Marie Hartmann, Design Director and Partner at Designit.

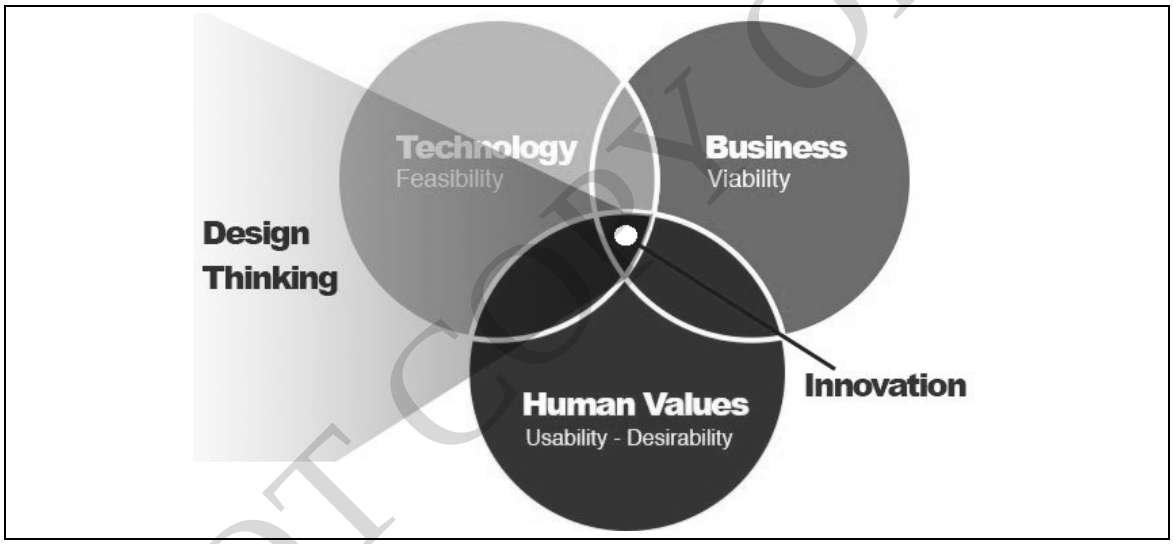
Exhibit I:
Pfizer's Financial Highlights

(US$ Millions except per Common Share Data)

Year Ended December 31	2018	2017	2016	2015	2014
Revenues	53,647	52,546	52,824	48,851	49,605
Income from Continuing Operations	11,179	21,353	7,229	6,975	9,119
Net Income attributable to Pfizer	11,153	21,308	7,215	6,960	9,135
Earnings per common Share-basic	1.90	3.57	1.18	1.13	1.43
Cash Dividends paid per common share	1.36	1.28	1.20	1.12	1.04
Assets	159,422	171,797	171,615	167,460	167,566

Compiled from Company Annual Reports

Exhibit II (A):
The Relation between Design Thinking and Innovation



Source: Rafiq Elmansy, "Design Thinking Case Study: Innovation at Apple," https://www.designorate.com.

Exhibit II (B):
Basic Steps of Design Thinking

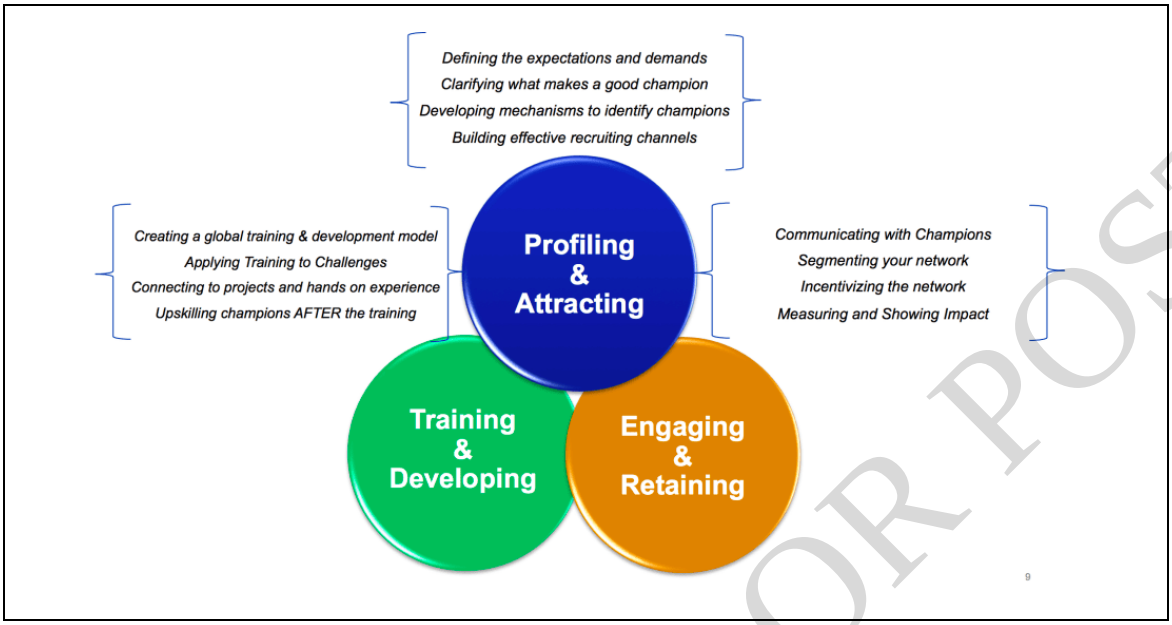
The basic steps of design thinking are empathizing, defining, ideating, prototyping, and testing.

The first step of ***empathizing*** refers to understanding the user's concerns and requirements. The second step, ***defining,*** refers to the identification of the problem. The third stage, ***ideating,*** is basically to come up with alternative solutions to that problem. The fourth stage of design thinking, ***prototyping,*** represents the chosen solution. The final stage, ***testing,*** is experimenting to see and assess the solution's real-world feasibility.

Adapted from different sources

Exhibit III:

Pfizer's Dare to Try Program: Cultivating an Innovation Network



Source: Kelsey Alpaio, "Learning's and Slides from Pfizer's Work to Foster a Culture of Innovation," https://www.innovationleader.com, January 18, 2017.

Exhibit IV:

The Role of the Champions

- Facilitator: Skillfully leads teams through the 'process' of facilitating tools and behaviors, creates team camaraderie and a sense of purpose;
- Trainer: Lead session and teach behaviors/tools 'in front of room' for future champions and participants;
- Mentor: Helps advise and guide other champions/colleagues with Dare to Try tools;
- Shepherd: Guides teams through the innovation process and drives teams toward action and commitments;
- Ideator: Challenges team's conventions and brings provocative +associative thinking style to sessions;
- Evangelist: Identifies and promotes opportunities to apply Dare to Try beyond the formal workshops

Source: Kelsey Alpaio, "Learning's and Slides from Pfizer's Work to Foster a Culture of Innovation," https://www.innovationleader.com, January 18, 2017.

End Notes:

[1] Barbara Palmer, "Design Thinking: an Event Strategist's Toolkit," https://www.pcmaconvene.org, May 1, 2018.

[2] Daniel Seewald, "Where Design Thinking Breaks Down-And How to Avoid It," www.innovationleader.com, August 9, 2017.

[3] Dave Muoio, "Pfizer Announces Winning Pitches for its UK-based Startup Innovation Competition," www.mobihealthnews.com, June 27, 2018.

[4] *Ibid.*

[5] William Looney, "Innovation at Pfizer," www.pharmexec.com, August 1, 2011.

[6] "Pfizer Expands R&D Equity Investment Strategy to Access Early-Stage Scientific Innovations," www.pfizer.com, January 8, 2016.

[7] David Sell, "Pfizer's Innovations Chief Wendy Mayer on Opening Minds to New Thinking," http://www2.philly.com, July 12, 2013.

[8] Rafiq Elmansy, "Design Thinking Case Study: Innovation at Apple," https://www.designorate.com.

[9] Kim Sykes, "How P&G and Pfizer Think Differently about Innovation," http://blog.batterii.com, May 19, 2015.

[10] *Ibid.*

[11] *Ibid.*

[12] Natalie Foley, "How Great Service Design Helped Millions to Quit Smoking," https://www.peerinsight.com.

[13] Kelsey Alpaio, "Learnings and Slides from Pfizer's Work to Foster a Culture of Innovation," https://www.innovationleader.com, January 18, 2017.

[14] *Ibid.*

[15] "Rheumatoid Arthritis Advancing RA Disease Activity Management Using Principles of Design Thinking (ADAPT), https://www.pfizer.com/node/208531.

[16] "Pfizer Technology Innovation Challenge: Advancing Care for Patients Living with mBC," https://ssci.se, December 2, 2016.

[17] Daniel Seewald, "Leveraging the Power of Crowds to Enhance Design Thinking," www.innovationleader.com, August 22, 2018.

[18] Dr. Nicola Davies, "Design Thinking: a Human-Centered Approach for Pharma," https://social.eyeforpharma.com, September 15, 2015.