L&T Technology Services

Managing Business Growth with Innovation Labs

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Abstract

While innovation is lauded as the harbinger of the future, multiple things can go wrong in the process of creating something new. Organizations often feel the pressure of incubating future-ready products and solutions to remain competitive. Driven by customers' need for better-performing products, new features, and customizable solutions, organizations are impelled to rush ahead. That said, even after heavy investments, leaders find themselves unable to manage expectations and incubate ideas that align with their business models. Others are unable to enrich the team with the required skillset and lack the metrics to track the success of an idea. Innovation Labs have emerged as a solution framework that allows organizations to remove these challenges and focus only on the business problem that needs to be resolved.

The Current Industry Perspective

As the digital headwinds sweep into businesses across industries, organizations are under pressure to shift to business models that enable organic growth in the ultra-competitive markets. A major driving force is the rising customer expectation for new product variants, unique and upgraded features, and customizable services & solutions. The constant demand shortens product life cycles and increases complexities throughout the value chain. This compels organizations to take a disruptive approach to upgrading their technology stack and enhancing operational capabilities to stay relevant in the market. Globalization adds more variables into the situation, such as complying with the local regulatory norms and meeting the local market needs.

While engineering and technology research and development R&D holds the key to dissipating these problems, finding the best solution can be a challenge. This arises from the need to master new tasks or technologies. Since all products are electronically enabled today, organizations across industries have to use several technologies that may not be part of their main business. For example, consider an O&G company aiming to automate its operations. Apart from the electronics and software requirements, the company will need complete understanding of the application of different technologies.

Then, there is a need to focus on various tasks in tandem. Consumer-packaged goods companies, for example, have to launch new product variants, develop the best preservation method to increase the products' shelf life, and optimize factory operations to minimize wastage. Many organizations facing such challenges are looking up to R&D or innovation labs for solutions. But, bringing out innovative ideas comes with its own set of difficulties.

Why is Innovation Difficult and How to overcome it?

While innovation projects begin with the promise of high returns, it often runs into problems leading to time constraints, shutdowns and restarts. There are various reasons for this, such as managing expectations, technology roadblocks, organisational culture, RoI tracking metrices. According to a KPMG survey, most organizations focus on transformational innovations rather than incremental innovations1. Yes, some innovative ideas can be immediately effective, like an extra paper around a coffee cup that protects the hand from the hot drink, but not all innovations need to change the customer experience. Some ideas can have a long-term vision and can still deliver on the innovation promise. For example, monitoring HVAC systems and using machine learning (ML) on data can improve HVAC performance leading to significant energy savings. The right strategy, therefore, is instrumental in getting organizations back into the innovation game.

Another reason that hinders innovation progress is the gap between the innovation and the operation teams. Owing to their operational orthodoxy, many larger organizations fail to accept and align innovative ideas with their existing business functions. While a cultural change is necessary, organizations must also encourage an environment of creativity for all employees. Amazon's approach to innovation is one such use case. The technology major invests about $23 billion on R&D but does not show it as a separate activity in its financial reports2. Rather the company's business model encourages and incorporates innovative designs and practices into each ongoing activity. This approach makes everyone accountable for the innovation success.

The lack of metrics to measure the success of innovation also leads to the failure of the idea. As innovation is an iterative process and may require time to give tangible returns, organizations need to establish the key performance indicators (KPIs) at an early stage. One strategy involves testing at the prototype stage with potential customers. This approach helps innovators to understand the feasibility of the idea and employ technology to create more insightful metrics (Figure 1)[3].

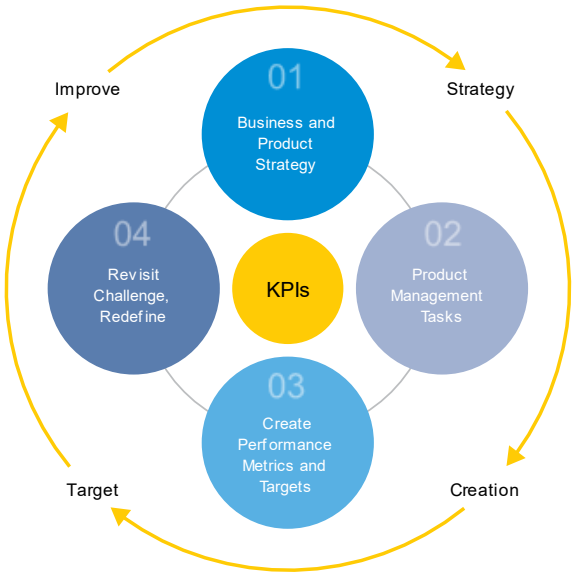

Figure 1: Iterative Cycle to Help Develop Insightful Performance Metrics for Product Innovation

Apart from these, some organizations with high R&D investments struggle to find the right mix of talent required to conceive innovation and steer it to success. By just putting the best-performing team members in a team does not guarantee innovation. More than employees with relevant skill sets, organizations need natural innovators who have experience and capabilities in multiple disciplines. This helps in developing out-of-the-box innovations that add long-standing value, even for large organizations with complex policies.

How are Organizations Innovating across Industries?

All organizations may not find relevant natural innovators to set up an in-house R&D team. So, they are turning to external collaborations - M&A, investment into start-ups, university partnerships – to stay competitive on the innovations front. (Figure 2).

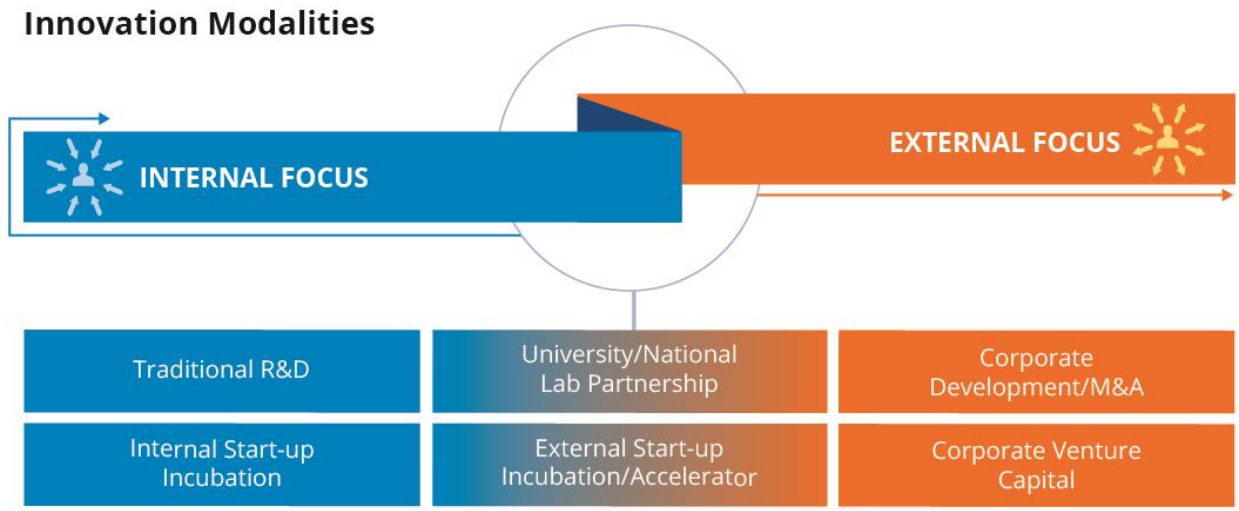

Figure 2: Corporate Innovation Methodologies across Industries (Source: Russel Reynolds Associates[4])

When it comes to collaborations with external entities, various options are in trend. A popular approach is to employ an ER&D firm to solve a certain challenge. One such challenge was to develop a remotely operated welding machine that could operate in the narrowest of pipelines under the sea. With the help of engineering R&D, the pipeline manufacturer realized an automated welding robot with a reengineered power source, delivering peak efficiency of up to 90% with consistent weld quality[5].

The use of cloud-based platforms for R&D has also gained prominence. Such collaborative platforms bring together experts to discuss scientific challenges. One such platform was used successfully by medical researchers from Finland to develop algorithms to accurately predict prostate cancer survival rates[6].

Then, there are accelerators like the wearable technology research provider, which enables companies build innovative use cases. Through one such collaboration, a textile firm was able to launch a smart t-shirt that takes electrocardiogram readings, detects heart rate abnormalities, and monitors physical activity information of the person wearing it.

Another approach is to collaborate with suppliers. Such a collaboration helped a UK-based automotive major to develop adjustable fenders for its premium models through its partnership with a US-based aerospace supplier[7].

Along with these, some organizations use multiple collaborations to further accelerate innovation. Another automaker used this 'research hub' approach to develop an innovative AI-enabled entertainment system, a gyro-screwdriver with single-handed operation, and manufacturing robots that hang from electric pylons[8].

As organizations continue to seek the best practices to resolve business pain points, a favorable approach is to seamlessly integrate innovation into the organization processes. In this scenario, an Innovation Lab with a dedicated innovation framework is emerging as a solution that cuts through bureaucratic threads and focuses on business continuity that can combat even unpredictable situations like an outbreak.

Gains from the Innovation Lab and Framework

An Innovation Lab is a technology-enabled framework dedicated to solving business problems with its focus on the future. The objective is to identify opportunities in enhancing product capabilities with new technologies and use design thinking to solve business use cases in a collaborative environment. For this, Innovation Labs provide an ecosystem where organizations can leverage new technology trends to accelerate their business decisions. As a result, they create products and solutions that can deliver short-term measurable impact with a long-term vision of sustainable competitive advantage (Figure 3).

Why is Innovation Lab a better solution?

- Understands market trends
- Develops customer-focused solutions
- Fast tracks new product innovation

Figure 3: Why Do Innovation Labs Offer a Better Solution?

What do Innovation Labs offer?

With its foundation laid firmly in engineering R&D, Innovation Labs nurture a culture of cross-industry collaboration or cross-pollination. Here's what organizations can expect to witness in Innovation Labs:

- Rich domain knowledge of multiple industries to cross-pollinate the ideas
- A new network of suppliers for rapid prototyping to quickly turn concepts into reality
- Collaboration with premier educational institutes to apply new technologies into customer products
- Large resource of engineers with a drive to take up new challenges and achieve results

How can organizations use the Innovation Lab Framework?

Behind every innovation is a team that supports each other to solve a problem or bring an idea to life. But, for innovation to be successful, factors like time-to-market, cost, and industry foresight take precedence. A streamlined approach to innovation can not only accelerate the process of launching new products and solutions, but also reduce budget overshoots and unpredictable outcomes. This is what an innovation framework brings to the table.

Given that innovation is complex, iterative, and a non-sequential practice, the framework helps prioritize and organize the actions without infringing on the creativity and thinking process. The innovation lab (Figure 4) encompasses the entire procedure – from empathizing the problem and ideation of a probable solution to experimentation with testing and enabling the launch of the final output.

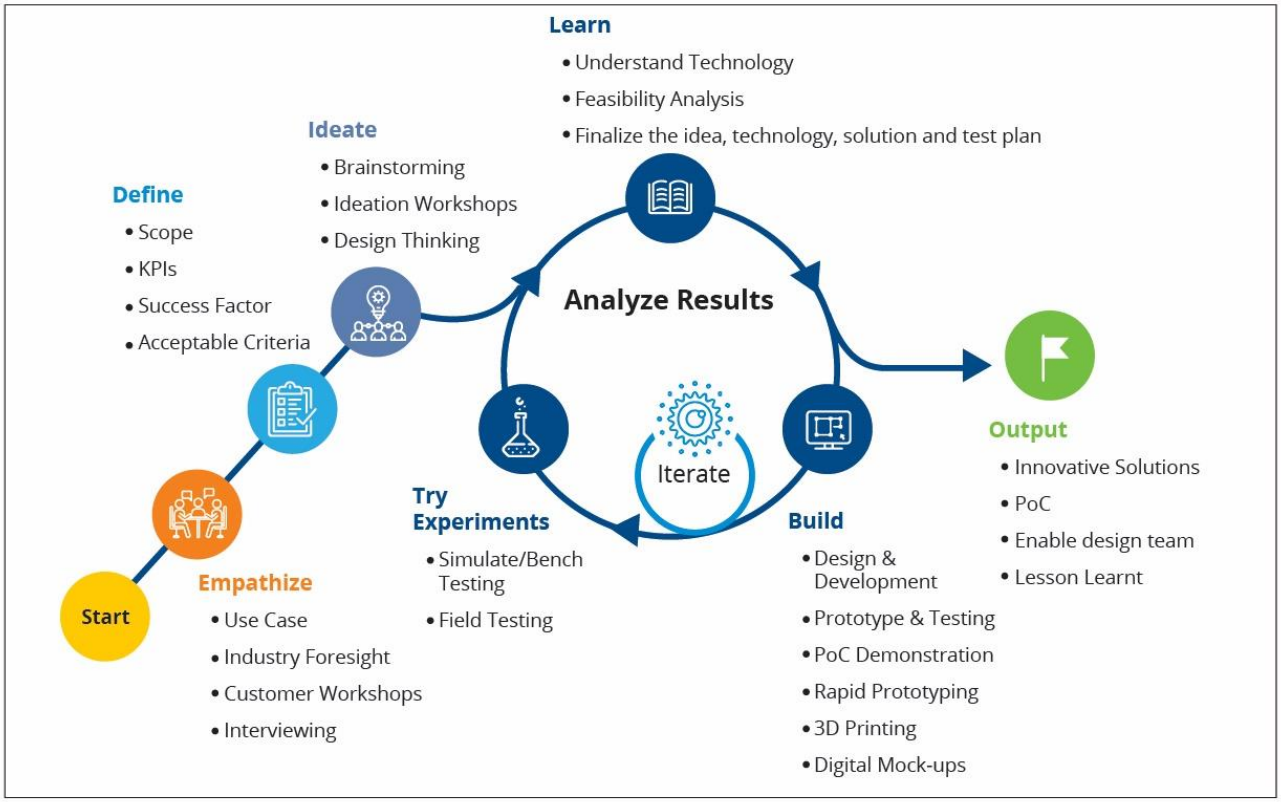

Figure 4: A Generalized View of an Innovation Lab Framework

How does the Innovation Lab Work?

While the framework only guides organizations toward the path of innovation, the innovation lab provides the infrastructure and the platform for research and development of new products based on market demands. The lab has three focus areas that aim at minimizing effort and maximizing outcome for every problem or innovative idea:

Empathy → Process → Output

Empathy

The first step to innovating is to understand the pain points. Empathy acts as major driving force in this step. Empathy involves the discovery of implicit and explicit challenges in the business. Empathy can be used in various ways such as examining a customer-generated business use case that requires a new product, feature, or solution to an existing problem, Interviewing and shadowing the users helps in understanding the process and the exact pain point better. Emapthy can also drive usage of latest technology trends in products and solutions to address specific pain points.

Alongside, an in-depth industry foresight helps understand emerging trends, competitor dynamics, potential dislocations, and alternative scenarios. An ideation workshop with a collaborative environment is set up to find the best possible solution to the challenge.

Process

The Process is the second stage, where the idea is put into development. It involves multiple iterative steps to arrive at an innovative and cost-effective solution for the given problem. The key steps in the process are:

1. Clearly defining the problem to be solved with measurable KPIs
2. Brainstorming for best possible solutions and scenarios
3. Exploring technologies that accelerate the resolution of the challenge
4. Building models and rapid prototyping with available resources
5. Testing the prototype in lab and field conditions and collecting the results for all the prototypes
6. Analyzing the test results to determine the success or failure and iterating to improve the prototype

Output

Once the team determines the best prototype or solution, it moves into the Output phase. Here, the technology-ready solution for the problem goes into the development of minimum vaiable product(MVP). The team also records the learnings from the project and trains the operational teams to work on the solution. The team also provides design support and formulates the product requirements in detail.

A Real Innovation Lab Use Case

An elevator servicing company wanted to leverage digitization to improve its service delivery. Using the services of an innovation lab helped the company to kick-start the transformation process from the ground instantly (Figure 5).

The first step involved observing field workers. Through interviewing the specialists and shadowing the mechanics, the innovators were able to empathize with the challenges faced by the workers. After defining the problem statements and identifying the gaps, KPIs, and process flows, the team collaborated to ideate and find the best possible solutions, technologies, and process optimization methods.

Once the probable solutions were narrowed down, the team began the iterative process of rapid prototyping, testing, and learning from the analyzed results. The final output presented to the company included integration of sensors and smart cameras into the elevators, connected platforms to monitor and analyze data collected from the sensors and cameras, and mobile applications to mobilize mechanics (Figure 6). The solution helped the company reduce manual effort, increase mechanic safety, and improve the efficiency of the servicing process.

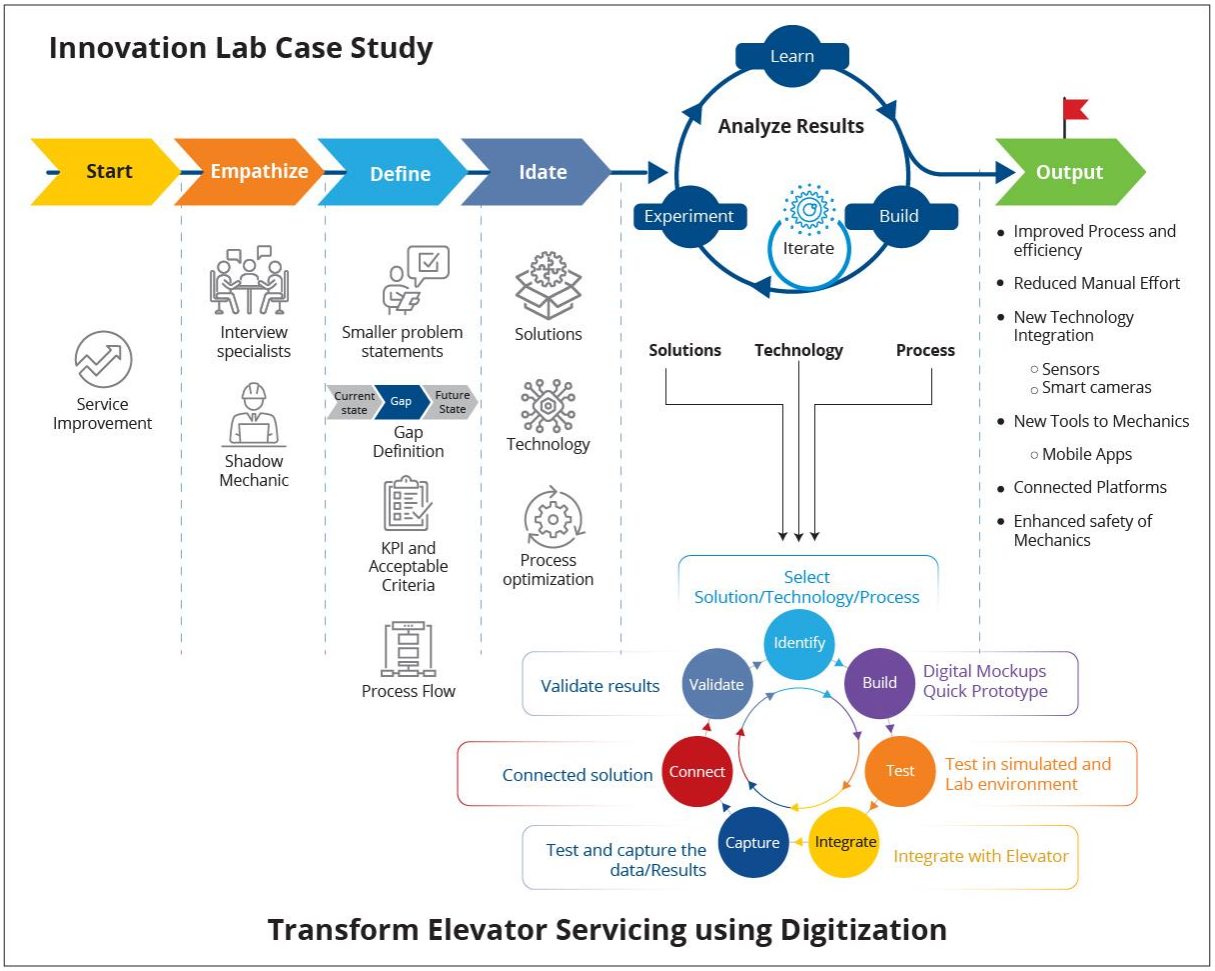

Figure 5: A Real Innovation Lab Use Case: Using Digital to Transform Elevator Servicing

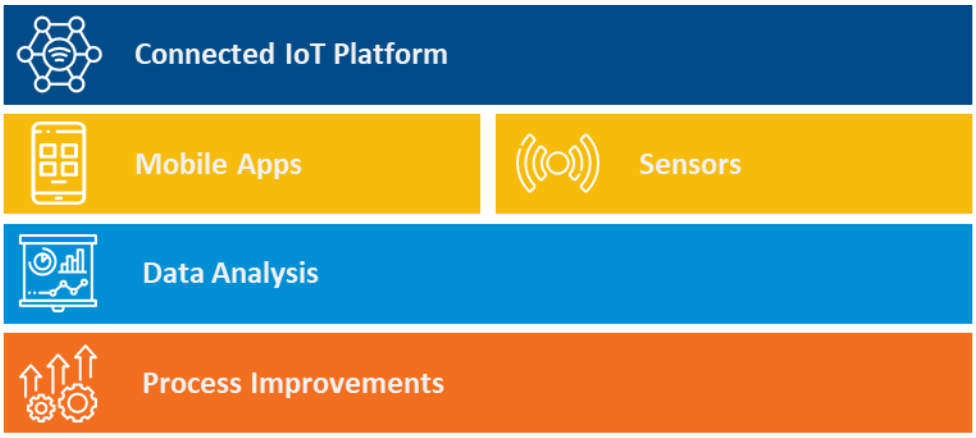

Figure 6: Innovation Lab Elevator Servicing Digitization Use Case: Solution Constituents

Business Advantages with Innovation Labs

Innovation labs offer a plug-and-play environment to organizations to come up with breakthrough solutions with quantifiable results. A talent pool with relevant engineering expertise and domain knowledge, coupled with cutting-edge resources, enables them look beyond the organizational structure and gain an outsider's perspective of the problem. The framework supports design thinking that delivers the best solutions with cutting-edge technologies. Be it for solving a business problem or enhancing a product's capability, pre-compliance testing enables further cost and time savings over and above the already streamlined framework.

Innovation is imperative for survival in this changed world. While many organizations have dedicated innovation teams, there are many more that either do not have the resources to build one or face various complexity to do it in-house. The Innovation Lab offers the complete ecosystem to such organizations to stay competitive in the race to innovate the next game-changer.

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