New ideas typically have a high-infant mortality rate. Anita Nanadikar has been charged with the responsibility of heading an incubation group for scaling up new business ideas (applying TCS R&D output to business problems) through their infancy until they form new business streams.

We bring you excerpts from an interview with Anita Nanadikar, who has led the group for over a decade.

**Anita, you have been heading Incubation, a strategic group within TCS Research and Innovation for 11 years. What was your mandate when setting up Incubation?**

AN: Incubation is responsible for creating impactful new business by fostering select ideas that are at the intersection of evolving customer needs, technology discontinuities, and emerging market opportunities.

Let me give you some examples:

We created a completely new market with digital solutions and services for a CMO, at a time when IT companies were still targeting CIOs.

We built an IoT business for TCS where we draw upon our expertise and our IP, i.e. our IoT platform, TCUP, that came from TCS Research.

We mastered emerging technologies such as drones and AI vision and used it to build business-ready solutions.

We helped TCS to grow, win business in new areas such as digital marketing, IoT, drones, AI, cognitive, next-gen operations and created a substantial financial impact as well.

You mentioned winning business in new areas. How do you identify new areas? Where do you pick good ideas from?

AN: We are alert to white spaces in the market and are aware of emerging technologies, through our constant customer interactions, extended co-innovation.
connections, and technology landscape scans. That said, we pick the most promising ideas from different sources: formal research, incremental innovations in projects, ideathons, process improvement initiatives, and proactive ideas from associates.

With the rich innovation culture spread across the organization, at any given time, more than 3,000 ideas are evaluated by the Incubation team, to select the ones that will lead to creating a high-impact new business or contributing to an existing one. We leverage our contextual knowledge to identify the right ideas. At times, the market is not ready for the idea, so the idea is shaped to address the existing market. Many times, the shaping is so extensive that the final product is very different from the idea that it started with. (View example - Symbiosis: Drones and Machine Vision).

**What is the magic mix that your function introduces to reshape an idea, and prepare an entrepreneur for the market?**

AN: TCS Incubation is like an incubator + startup builder. We select disruptive ideas with potential for high impact, help to convert fuzzy ideas and shape these to address market needs. We mentor entrepreneurs to build cutting-edge solutions by providing emerging technology talent and expertise, access to market, research, IP, and legal support. To jump-start the entrepreneur, we provide a core shared team and infrastructure to support activities linked to business development and presales, an ecosystem of co-innovation and alliances, market research, marketing, rapid development and engineering using em-tech, as well as productizing and IP expertise.

With our broad knowledge and understanding of new technologies, markets, and industries, we also help to identify adjacencies and additional value streams for the idea. Our entrepreneurial mindset, applied research, and iterative shaping of ideas based on market feedback, helps in acceleration towards creating exponential value and impact. To ensure consistency and repeatability, we have a proven and systematic process that hand holds the entrepreneur through this journey. We consciously focus on the intellectual property (IP)-driven approach to create value.

**In some cases, value creation is a struggle. You may have had to contend with failures too...**

AN: While statistics vary, it is common knowledge that the success rate of startups is less than

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**Fact File**

**Patents:** 53 Patents Granted

**Awards:** 17
Entrepreneurial mindset, applied research and iterative shaping of ideas based on the market feedback also help in acceleration toward creating exponential value and impact two digits. We have managed to flip the success and failure rates of startups, i.e. our failure rate is in one digit, so far. We also work much faster than the average startups. While most startups take up to 7-10 years to mature, many of our programs have matured in half that time. Even in case of a couple of projects where we may have not scaled out to business lines, we have reused the new skills learned and pivoted to adjacent areas.

Finding skills and other resources is often a problem for incubators. What has your experience been?

AN: Since TCS is a large and diverse organization, we have access to research, engineering, and industry expertise. However, since technologies are new, our teams require a lot of learning and we work pretty hard to get things off the ground.
Each Incubation program based on a selected idea is backed by a well-thought-out business plan that covers a design and development roadmap, competency building, target markets, and potential customers. For technology competencies, we adopt a multi-pronged approach that includes intensive, often on-the-job training on emerging technologies, leveraging TCS research and access to our partner ecosystem. Additionally, we have an incubation lab where our teams constantly experiment with new technologies and evaluate their fitment to each program. Shared teams provide sales, marketing, finance, operations, and legal competencies required by each program.

For example, the entrepreneur and the team formed for the drones program were new to the technology and went through a rapid learning cycle by co-locating with the research team. This was further complemented by physical experiments in the lab and access to partners and customers for field tests.

Can you explain how learning happens in “rapid learning cycles”? How does Incubation help build talent?

AN: Most entrepreneurs come with ideas and maybe one or two skills. Incubation helps develop a well-rounded startup team with combinatorial skills of creativity, problem-solving, technology and engineering, business development, marketing, customer engagement, and working with and in an ecosystem.

Our Rapid lab is another excellent example of honing young often fresh out-of-school talent.

Young TCSers work hands-on with new technologies and use fresh thinking to solve new problems. Since this lab is air-gapped from the enterprise network, with an open infrastructure and ecosystem support, they can try multiple options very quickly and are free to learn from failures. They have access to senior mentors and an extended innovation ecosystem.

Apart from being a sandbox for young associates, what does Rapid Lab do?

AN: Rapid Lab, one of our more recent initiatives, is gaining traction with customers’ C-level executives, innovation leadership teams and business and IT stakeholders. The Rapid Lab is a physical space equipped with cutting-edge technology and bright young talent whose fresh thinking enables us rapidly prototype innovative solutions for customers as well as social challenges.

The lab has experienced with mentors and closely collaborates with TCS’ own and the extended research and innovation ecosystem of innovation labs, government bodies, academia, startups, and partners.

Some of the challenges successfully solved by the lab include

- A lounge concierge robot built and designed ground up including hardware design and fabrication. This has been
deployed and is live, servicing customers 24*7 at a leading airline’s airport lounge

- Electronic nose deployed in TCS washrooms powered by AI and sensors to detect odors
- An AR/VR-based product configurator for one of the world’s leading high-quality audio device companies.

This has allowed them to save significant time and effort

Individual solutions developed by the lab also come together like pieces of a jigsaw puzzle to create new solutions. For example, AI solutions developed by the lab such as AI-powered call denoising, language-based call routing, emotion identification, and sentiment analyses, and AI-generated cartoon strip for agent training, have helped in creating a new solution set for AI-powered contact center or back-office value chain.

You have created a string of new solutions within Incubation. At what point do you hand off to business and how tough or easy is it?

AN: We follow TCS’ New Product/Service Development (NPSD) process, where we obtain unit buy-in early on and hand over the program once all NPSD requirements are met.

Today technologies are so complex that when we take up a new idea, many of the established business units may not have the skills for it. As we shape things over a couple of years, business interest picks up but some hand-holding may be required.

Since we ensure that our Incubation outputs are well-rounded products and solutions, so far, we have engineered a smooth transition to the identified business units.

Even as you are handing off a fresh crop of solutions to business, what do you see of the future?

AN: The future seems exciting. All along we have been working as a central team incubating and passing on mature solutions to the business units. As we speak, we are working with business groups on incubating their strategic initiatives as requested by our CEO and CTO. This will help TCS leverage the incubation expertise - so our industry units deliver non-linear value to their customers and enable them to stay competitive and ahead of the curve.

With Inputs from Amit Chemburkar and Nitin Hanjankar
A few years ago, when drones were still in the labs, TCS Incubation understood that drones offered a unique technology driven opportunity to create a new suite of solutions addressing the needs of various field operations teams across industry segments. The program primarily targeted challenges pertaining to human fatigue, personnel safety, and manual inspection of widely distributed assets on the field. The B2B market for drone solutions was not well-established while regulatory policies also restricted wide usage of drones. The opportunity, and challenge, was to create and shape a new market and pick the most promising ideas to ensure future customer needs, addressing a wider set of stakeholders beyond the Enterprise CIO – primarily the COOs and, Heads of Digital Innovation.

**Figure 1: AI Driven Drone and Computer Vision Solutions**
The program was formed by identifying an Entrepreneur in Residence (EiR) with a team new to drones and associated technologies. Incubation had to provide a rapid learning cycle complemented by physical space to conduct experiments in controlled environments/labs, access to partners and identification of anchor customers for real-world field operating environments to perform the tests.

“Co-location with TCS Machine Vision Research team was a big plus,” says Mahesh Rangarajan, the EiR for the Drones Incubation Program. “The machine vision research team enabled us to appreciate and acquire the necessary technical skills, which also helped us to better qualify the ideas and feasibility of the business use case. The presales teams brought us a market perspective, bringing in new use cases. It also helped us articulate our differentiators to customers clearly.”

A near-shore lab was set up at TCS Cincinnati, US in April 2017 where the drones and AI machine vision expertise, solution demonstrations were showcased live to visiting customers. It helped us assess the market opportunity firsthand, based on the continuous customer footfalls and their associated feedback.

An indoor environment-based warehouse inventory counting solution was selected as the first MVP with a leading logistics provider as an anchor customer. This was a quick win, as it was not impeded by regulatory compliance. The solution was further extended to retail, CPG, manufacturing, and other industries.

Many other requests and solutions followed: Inspection of large assets such as precision forestry, bridges, rail tracks, power and water utility infrastructure, sewer pipelines, and mine conveyor systems. Flying drones in each environment had its set of operational challenges - image acquisition protocols were different, the image volumes were very high and data (image and video) management was a clear big data problem. And, the problem to be solved in each case needed slightly different analyses. The learning for the team was huge and a common underlying high-scale core data processing and engineering platform was built to accelerate the individual solution development cycle.

“Incubation helped us with timely course correction and also to pivot – primarily driven by the culture of delivery and validation in continuous 30-60-90 day cycles. The Drones team thereby acquired a large machine vision footprint,” says Mahesh. The TCS Drones and Machine Vision Incubation Program has built IP and solutions for several industries against high-impact use cases covering transportation, utilities, energy and resources, manufacturing and government enterprises. TCS Incubation’s repeatable process has extended the initial idea to 16 Drone solutions and a Core Platform is now working with specific ISU and BG teams to jointly work out multi-million dollar business plans.

With inputs from — Mahesh Rangarajan
When the Incubation team came up with the idea of creating a cognitive platform, it did an extensive survey. The Incubation marketing and presales teams spoke to customers to understand their pain points. The teams also spoke to analysts to understand the market for cognitive tools. Meanwhile, it became evident to us that multiple initiatives were already in flight, both internally in TCS and within the customers’ enterprises, to harness the cognitive and AI technologies. However, customers were facing challenges in selecting the right tools and staying current in the fast-evolving AI space.

“The team decided to build a platform with an abstraction layer that would enable customers to build cognitive solutions with flexibility to select and easily integrate cognitive capabilities for the much-needed inter-operability to migrate to new tools in future as needed. This approach would enable us to bring in different cognitive capabilities, developed both by our research teams and our partners, seamlessly to help simplify and accelerate the development of cognitive applications”, says Pranav Shah, who heads the Cognitive Transformation Platform (CTP) initiative.

Being part of the Incubation team, the CTP project had access to some shared resources, such as Ninja developers and UI designers. They could also use the Ops Framework, which was being incubated.

Today CTP has evolved into a full-fledged solution that allows enterprises to adopt AI without investing in highly-skilled AI resources or long development cycles. It provides:

- Zero coding business bots that allow business users to undertake AI-powered business tasks on their own without having to wait or rely on AI developers
- Building blocks for cognitive information retrieval with an ability to ingest knowledge, infer, correlate, and dynamically learn from past experiences, data, and human input
- The ability to ingest and process multi-format knowledge and information like humans do from images, audio, documents, text, and structured data
- Several prebuilt adapters for integrating seamlessly with enterprise/third-party systems
- APIs to abstract technology and integration complexity and eliminate the need for large teams of niche-skilled AI developers
CTP can be used to simplify travel claims. Presently, TCS associates applying for a travel claim submit a set of documents such as hotel bills, communication bills, and cab bills, along with their claim form. In future, CTP can be expected to extract information from documents in various formats, and “file” the claim request by itself. Further, it can make the claims process efficient by identifying outliers to prevent potential misreporting or fraud. For example, if a cab bill from Point A to B typically amounts to Rs 500, a claim made for Rs 1,500 can be flagged as an anomaly.

TCS Incubation helped CTP evolve quickly into a robust platform, which can now power TCS and our customers to democratize the development and transformation of their cognitive business applications rapidly, without extensively investing in an AI workforce.

With inputs from — Pranav Shah

About a year ago, a service desk team, supporting 30+ customers, reached out to the presales team within Incubation with its problem. There was a mandate to improve the operational efficiency through optimization of the service desk function. One of the areas identified was customer email handling. The service desk received around 3000 emails a month, 1000 of which were actionable. Reading each mail, sorting it into different buckets along with their attachments for the next steps was a mundane and time-intensive task. The Ops Framework team used a natural language engine and automated the process: the engine mined the mails, classified the content, detached the attachment with the content and prepared it for the next steps reducing manual effort by 25-30 percent.

TCS Operations Framework is a TCS IP-based framework, which uses intelligent and integrated automation across IoT-IT-Biz-Dev-Sec-Test-Ops to improve service management processes and seamlessly integrate with existing enterprise technology stacks. This is done by continuously deriving insights about the current operating state using information from various sources, such as metrics and logs, combining them with contextual information and developing self-learning AI models that drive automated actions.

“Rapid prototyping within the incubation team helped fast-track point solutions that validated feasibility of new capabilities,” says Ravindran Subbiah, Program Owner of the Ops Framework. “The future holds tremendous promise: concepts of DevOps, Agile, and Lean will enable machines and algorithms to handle operations with the humans being involved only for exceptions. This will be a paradigm shift in organizational models.”
The NextGen Ops will leverage digital twins for IT systems and devices, to ensure that service strategy and design are well-informed of behaviors that can be planned into the service upfront. It will help services provide observability and learn from dependent services, with which they coexist. NextGen Ops will simplify capacity management processes through auto-provisioning and auto-scaling of resources. It will also monitor runtime usage, intelligently identify possible issues and preempt them through self-heal solutions.

TCS Incubation has created the foundation for the NextGen Ops business with automation, intelligence and observability built into the Ops Framework. Using the TCS Ops Framework IP, TCS has been able to tap and convert new business opportunities that have emerged, such as Drones Ops, AI Ops, Quality Ops, Business Ops and Security Ops.

With inputs from — Jayashree Arunkumar and Ravindra Subbiah

Anita Nanadikar

Anita Nanadikar is a VP and Global Head of Incubation at TCS. As a Head of TCS Research & Innovation’s Incubation function, Anita is responsible for identifying and building emerging businesses using new technologies and business models. TCS Incubation also manages an Incubation lab where customers, TCS innovators, experts, and our partners come together to rapidly convert innovative ideas into disruptive solutions.

The current focus for TCS Incubation includes IoT-IT-Biz-Dev-Sec-Test-Ops, Drones, Cognitive Transformation, AI&ML, Blockchain, and Immersive Experience.

Anita started her career with TCS and has over 35 years of industry experience.