

AGE OF POSSIBILITIES

The digital revolution and problems worth solving

For centuries, humankind has been following existing paradigms, solving problems using known and tested methods, and building upon past successes to create new milestones. There have been pockets of innovation, sanctums of academia, scientific experiments, and lives of sheer genius, across fields, which have propelled our race forward. However, something else is happening today – several revolutionary technologies have reached their tipping points, and some have converged, promising to pan out at a scale so phenomenal and pervasive, touching the lives of billions, that existing patterns and paradigms will not suffice to maximize the

benefits these have to offer.

Consequent upon this, several phenomena are creating dramatic shifts:

► **Connectedness:** Estimates say that by 2020, there will be 50 billion sensors and devices connected to the Internet. The number of mobile phone users is expected to reach 4.7 billion in 2017 and the amount of mobile data downloaded is likely to double yearly for the next few years. What makes these vast numbers important is that they indicate unprecedented sharing of knowledge, unprecedented creation of value, and emergence of new economic paradigms.





Data eruption doesn't mean a thing by itself; algorithms will weave all the magic with it. Millions of codes accomplishing various tasks and solving various problems with incredible sophistication will be available for us to choose from, in the near future.

How long before we stop owning assets that we don't use to full potential – such as vehicles and power drills?

► **Algorithms:** Data in the digital universe will grow by a factor of ten – from 4.4 trillion gigabytes in 2013 to 44 trillion gigabytes in 2020. But such data eruption doesn't mean a thing by itself; algorithms will weave all the magic with it. Millions of codes accomplishing various tasks and solving various problems with incredible sophistication will be available for us to choose from in the near future.

How long before algorithms will adapt to a moral code of conduct similar to that of humans?

► **The amplified human:** While we are watching Siri grow into an intelligent young lady, there have been other noteworthy artificial intelligence (AI) developments. Recently, a Japanese literary competition received 11 entries from books written by AI with human inputs, and one of them even passed the first round. Earlier this year, Google's AlphaGo beat the human European Go champion five games to zero. The ancient Chinese game of Go is considered tougher than chess and requires an incredibly complex mind to solve.

How long before we have AI-powered alter ego mentors?

Limited only by our imagination

In scale and reach, the Digital Revolution we are currently experiencing can be compared to the Neolithic Revolution, which taught us agriculture; and the Industrial Revolution, which taught us to create and use machines – transforming humanity's way of life. However, the lightning pace of technology today and the rapid blending of atoms and bits distinguish this epoch. Unlike the previous epochs, the Digital Revolution calls for reorienting our thinking, to observe and participate in a future that is being created by the day, yet mentally out of bounds to most of us. Can you wrap your head around combining mobility, AI, life sciences, and robotics, focused on creating computer-hybrid human beings? If you can, then you may be starting the company yourself!

This is an era of exploring possibilities. Possibilities that we cannot even imagine.

This April, Stephen Hawking, one of the greatest theoretical physicists ever, and Yuri Milner, a Russian billionaire, announced a US\$100 million investigative project to work on making travel between stars possible. They will build nanocrafts, which are small spacecrafts attached to light sails which use the power from gigawatt-scale laser arrays to reach speeds of more than 20 percent the speed of light. In this way, astronauts will be able to reach Alpha Centauri, our solar system's nearest star (four light-years away), in only 20 years. Using even the fastest spacecraft today, this journey would have taken 30,000 years!

Discovering such possibilities requires a new way of thinking. Uncreating existing reference points and examining the problem itself, rather than rushing to find solutions. In the case of the 'Breakthrough Starshot' project, considering that reaching the speed of light or close to it has been a daunting factor for interstellar travel, the question to ask was: Is the speed of light the 'problem', or the spacecraft size, tools, and methods used, to traverse the vastness of space?

This example from space travel symbolizes the zeitgeist today. Technology-driven possibilities abound. Gone are the days when technology only transformed a company, or an industry. While you may be still applauding retail's virtual stores or mobile-first banking – both digital early adopters – the traditionally conservative insurance sector is adopting AI-driven automation to drive efficiencies; life sciences is digitizing parts of clinical trials to address some of the inherent challenges; and healthcare is embracing universal accessibility as a priority, and moving towards personalized and preventive care.

The Digital Revolution has two important dimensions – the disintermediation of the supply chain (economics), and the hardware revolution (engineering) that is packing more processing power in computers, and which is doubling every two years (Moore's Law). The disintermediation is minimizing the distance between producer and consumer, and in turn ushering in new kinds of business models. Think crowdsourcing platforms, online marketplaces, branchless digital banks, publishing platforms like Smashwords, and accommodation platforms like Airbnb. The second dimension of diminishing chips



and transistors is practically enabling all the disruption. Powerful, embedded computing is making the pervasively digital experiences possible, and raising our expectations irrevocably.

Being Digital. Being More.

At Infosys, we find ourselves in the midst of all this excitement as a significant participant. We have been working with global majors, through the decades, to help them transform themselves and their client experiences, with software. Today, we are partnering with them for some of the greatest transformations cutting across industries. Recently, we collaborated with GE, the digital industrial company, to embark on a journey of creating a 'digital twins' universe, where we will digitally recreate the entire life cycle of any product, from conceptualization and development, to marketing, sales, and maintenance. This way, stakeholders can better understand and manage the underlying structure, design, and functional issues, at any point in time. As the next step, microservices can be built on top of any digital twin.

We are working at the intersection of material science and engineering to help create lighter aircraft fuselages, and applying artificial neural networks to enhance the efficiency of aircraft engines. We are using our open-source analytics platform to glean near-real-time insights for ATP to amplify the experience for tennis fans and players. Until now, the highest governing body of men's professional tennis had decades of rich data stored up in silos. Today, we are able to process 12 million data points, and growing, in near-real-time for them to generate insights. Our digital oilfield solution is helping companies in the oil and gas industry collect and analyze oil well data in real time, predict field equipment failures, reduce unplanned downtimes, enable

remote monitoring and faster control of field equipment, and so on.

As an organization, we have reoriented our thinking to the new reality. By using tools and methods, primarily Design Thinking, which teaches an empathetic approach to problem finding and problem solving, we have been able to make a cultural shift. Today, all our client projects undergo the filter of how close we are to the client's need (desirability), engineering possibility of the solution (feasibility), and the economic value it can bring (viability). More than one-third of our 190,000-plus employees have already undergone Design Thinking training, and we have conducted more than 250 Design Thinking workshops for our clients.

Why are we solving what we are solving? What more can we do, beyond the stated requirements? How can we make it even better? How can we bring the learnings from other similar projects?

These are some of the mandatory probes in our Zero Distance framework, inspired by Design Thinking, and which dictate the approach to currently 95 percent of all our client engagements.

Endnote

Like the previous epoch-making junctures in human history, the Digital Revolution will amplify the potential of humankind. This is actually a human revolution, where epitomic technology will help us to unleash our creativity, unfetter our imagination, and awaken our problem-finding instincts, both individually and collectively. The mundane, repetitive jobs will be left for the machines to do, rather for the less-intelligent machines, giving us a new space to explore possibilities.

In this issue of *Infosys Insights*, we bring you snapshots of such possibilities – of some of the larger problems worth solving.

About the Author



Pravin Rao

Chief Operating Officer, Infosys

As the Chief Operating Officer, Pravin Rao is responsible for driving growth and differentiation across portfolios at Infosys. Additionally, he oversees global delivery, quality, and productivity, the supply chain and business enabler functions. He is also the Chairperson of Infosys BPO.

Pravin has over 28 years of experience. Since joining Infosys in 1986, he has held a number of senior leadership roles such as Head of Infrastructure Management Services, Delivery Head for Europe, and Head of Retail, Consumer Packaged Goods, Logistics, and Life Sciences. Pravin holds a degree in electrical engineering from Bangalore University, India.

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