



# THE FOURTH WAVE

## Abstract

The next wave of change – driven by AI, is upon us. It is all about amplifying human potential using the power of People + Software.

# A NEW WAVE OF CHANGE

Over the course of history, human civilization has witnessed numerous changes, big and small. But across them all, three momentous changes stand out – because they not only changed how we act, but also how we think.

The first wave of change was the industrial revolution, driven by coal and steam. The second wave was the computer revolution, driven by the microprocessor. The third

wave was the Internet revolution, driven by global telecommunication satellites and undersea cables.

Now, the fourth wave is upon us – a wave of change driven by purposeful artificial intelligence.

Here we explore how that is happening, what it means for enterprises, and the limitless possibilities that lie ahead.

‘Enterprise technologists will find that with the Fourth Wave, software won’t merely augment human capabilities, but amplify them, bringing in the true power of People + Software.’

## People + Software

It is about keeping people at the center of everything you do.  
It is about using software to free people from repetitive jobs and menial work, so they can utilize their potential and talent in more meaningful ways.

# PURPOSEFUL AI

As each wave opened up new opportunities and capabilities, it replaced old ways of doing things with new paradigms and laid the foundation for the

next wave. The fourth wave is no different. Artificial intelligence has given machines the power to do what only humans could do – until now.

The combination of artificial intelligence, machine learning, and deep knowledge of an enterprise can be used to not only amplify human potential but also revolutionize business.

'Purposeful AI is about leveraging technology to amplify people. We can automate the repetitive, mechanizable tasks; we can capture the knowledge and know-how across people and long-lived systems and bring this knowledge back inside the systems to drive more value; and in doing these things we can free people to put all of our creativity, passion, and imagination into thinking about the bigger opportunities ahead of us.\*

**Dr. Vishal Sikka,**  
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Infosys

Few enterprises understand that digitizing their business is not so much about creating an online front end to engage with customers or employees, as it is about creating a future where they can leverage machine-generated insights to amplify human potential.

\* [www.infosys.com/newsroom/press-releases/Pages/launch-mana-artificial-intelligence-platform.aspx](http://www.infosys.com/newsroom/press-releases/Pages/launch-mana-artificial-intelligence-platform.aspx)

# THE AI REVOLUTION

Think purposeful AI is in the future? Think again! It's already here.



## TRANSPORTATION

One of the first applications of AI was in cars – when they got cruise control. But today, new companies like Tesla are able to compete with seasoned companies like GM and Ford, by putting AI in control of cars.

But AI is not just used in cars. It is being integrated into trucks that can deliver beer (Tesla's Otto<sup>1</sup>), military vehicles, and aircraft<sup>2</sup>.



## MEDICINE AND SURGERY

Recently a patient was diagnosed with a varying form of leukemia by an AI powered computer<sup>3</sup>, when the case had stumped doctors for months. It did it in less than 10 minutes, by comparing 20 million oncological records.

A proof of concept surgical robot<sup>4</sup> actually beat a group of experienced surgeons

when closing a patient up after surgery – on both the uniformity and integrity of the stitches.

There are also AI-powered carts<sup>5</sup> rolling around hospitals serving food and delivering medicines and supplies to patients.



## CUSTOMER SERVICE

AI is already being used to provide financial advice (Cognicor), hand-hold online shoppers (Stitch Fit), and write financial and newspaper reports (Textio and Quill).

There is even an AI-powered app<sup>2</sup> that helps people manage their bank account,

helping them keep their spending under check.

**All this doesn't mean machines can replace humans. On the contrary, they are now able to take care of the ordinary, so we can search for, and do the extraordinary.**

1. [www.wired.com/2016/10/ubers-self-driving-truck-makes-first-delivery-50000-beers/](http://www.wired.com/2016/10/ubers-self-driving-truck-makes-first-delivery-50000-beers/)
2. [letzgro.net/blog/real-life-examples-of-artificial-intelligence/](http://letzgro.net/blog/real-life-examples-of-artificial-intelligence/)
3. [www.asianscientist.com/2016/08/topnews/ibm-watson-rare-leukemia-university-tokyo-artificial-intelligence/](http://www.asianscientist.com/2016/08/topnews/ibm-watson-rare-leukemia-university-tokyo-artificial-intelligence/)
4. [bigstory.ap.org/article/0923bd28a54c4a71add4b432105a196b/robot-stitches-tissue-itself-step-more-automated-or](http://bigstory.ap.org/article/0923bd28a54c4a71add4b432105a196b/robot-stitches-tissue-itself-step-more-automated-or)
5. [www.wired.com/2015/02/incredible-hospital-robot-saving-lives-also-hate/](http://www.wired.com/2015/02/incredible-hospital-robot-saving-lives-also-hate/)

# GETTING READY

Even as enterprises show what they can achieve with AI, others have just started adopting it, while some are evaluating their options. But getting ready to ride the Fourth Wave can be a tricky exercise, and the road ahead can look complex. So where do you start?

## FINDING THE RIGHT BALANCE

As enterprises set about devising their purposeful AI strategy, it is important to understand that the method is as important as the economics. The field of AI

is vast – there are numerous solutions to solve innumerable problems.

So the key to a successful purposeful AI strategy must have the right balance of

three factors – humanics, mechanics, and economics – and that balance is different for different organizations.



### HUMANICS

Using the power of imagination to discover new possibilities and create new experiences

- Assurance – powering intuitive client experience
- Change the organizational culture
- Reskill and reorganize talent



### MECHANICS

Converting the new possibilities into reality, uncovering the massive intelligence hidden away in systems, machines, and people

- Shift from point solutions to an integrated, cohesive approach
- Reinvent system landscapes
- Migrate existing workloads to take advantage of the new AI-powered underlying infrastructure



### ECONOMICS

Finding the right economic model for the right context

- Leverage 'technology' arbitrage
- Taking cost out of business

# RIDING THE FOURTH WAVE

As purposeful AI becomes indispensable, enterprises can leverage it to:

**EMBRACE  
COMPLEXITY**

**CHANGE  
FASTER**

**INNOVATE FASTER  
AND SMARTER**

**GET MORE  
DONE**

**REINVENT  
THE BUSINESS**



## EMBRACE COMPLEXITY

Imagine you are the manager of a retail outlet, and a customer walks in. He is asking for an offer you have no clue about. He says he saw an ad, and wants it now. You start scrambling to find out where the problem is: Is it with the company's business process? Is it with the marketing department? Or is it with your own system?

Now imagine, if all you have to do is open a dashboard on your system, and voila! It tells you where the problem is, and even

recommends a fix. Just click 'OK', and you are back in business.

You don't have to call the marketing department to ask if they announced the offer before you got the information. You don't have to call the IT help desk to see if your computer has a bug. You don't have to frantically hit 'refresh' on your business application to see if there is a notification. The complexity is still there. But dealing with it has never been so easy.



## CHANGE FASTER

You have just ordered your dream car. On your way back home, you realize that it would be better to get both Android Auto and Apple CarPlay, instead of just the one you ordered.

Don't worry. All you need to do is head to the carmaker's website, and you can order the accessory. Later, a week before the car is scheduled to be delivered,

your partner remarks that the car looks better in blue, compared to the black you settled on. Again, just head to the website and customize your car. You can do this till 72 hours before your car is actually manufactured.

Extreme customization. That's how some enterprises are evolving. Changing faster to deliver amazing customer experiences.



## INNOVATE FASTER AND SMARTER

Wouldn't you like to live in a world where cars don't just drive themselves, but can also take care of themselves? Cars that learn and remember your preferences, cars that tell you what's around when you park, based on your habits, cars that tell when they need to be serviced...

This is coming, and sooner than you think – because the system is already in place. It's only a matter of getting the cars that are already on the roads to adopt the system – to become smarter.

This is the power of AI.



## GET MORE DONE

It's 5 am, but John is already up and on his way to work. And he has a long day ahead as a trader at a leading investment firm. He is soon in office, and enters a meeting with his colleagues to plan for the day's trading. As the team huddles around a set of screens, they have the latest information about the portfolios ready for them. The records have been evaluated, the accounts have been settled, and the latest market positions are at their fingertips.

All this has been done, in just a few short hours, thanks to AI. The team might have had a few hours of downtime, but the systems don't need it. They work 24/7, accurately, and quickly, to ensure everything is ready by the time the markets reopen. It takes the mundane tasks out of the hands of the traders, so they can focus on what they do best – trade – and get more done.



## REINVENT THE BUSINESS

If you are a company that manufactures cameras, printers, scanners, and office equipment, you know that your business is in a state of flux. Things are changing rapidly, and you need to do something, too. What do you do?

This was exactly the challenge a leading company faced. So, they set an ambitious

goal. They would start offering digital alternatives to physical processes for offices – like managed document services, production printing – remotely, and IT services of its own. The company has successfully reinvented itself, and generated new business worth US\$25 million.

# THE ROAD AHEAD

Riding the fourth wave can help organizations:

## REINVENT SYSTEM LANDSCAPES

The biggest opportunity before every business today is the ability to launch a human revolution, where we are all able to innovate, and create a future limited only by our imagination and aspirations.

This is only possible with technology –

especially automation and AI. And often, an organization's existing systems may be able to support the initial adoption of AI. Then, as more advanced solutions are adopted, new systems can be phased in, too.

## LOWER THE COST OF MAINTENANCE

Last but not the least, what about machine learning? ML can help enterprises simplify the monitoring and maintenance of their physical and digital assets. Algorithms that learn and adapt, can start with fixing minor problems without human intervention, and also learn from engineers when they fix major issues. It can also ensure the systems are up and running – even when they are spread across the world, and deliver information when you need it, where you need it.

## DELIVER NEW, DELIGHTFUL CUSTOMER EXPERIENCES

AI is not just about automating processes and freeing people to explore novelty. It is also about empowering them to do something novel. AI can help organizations gain insights from the information it has, and constantly collects, from its customers, and deliver delightful customer experiences – like the two auto majors whose stories we have sampled here.

## RENOVATE CORE BUSINESS PROCESSES

But new systems with new capacities cannot deliver the power of artificial intelligence and machine learning by themselves. They need to be complemented by business processes that draw on the strengths of AI and people who use it. We call it the power of People + Software. While machines can take care of the routine tasks of business, people can do what they do best – innovate.

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**'Real digitization of an enterprise means that its core processes are always improving and that this learning and evolution are automated. Simple as that.'**

# IS AI FOR YOU?



As history, and the immediate past indicate, disruption can come from anywhere, out of nowhere. But a successful enterprise is one that is prepared for the

## PURPOSEFUL AI AMPLIFIES PEOPLE WITH TECHNOLOGY

Contrary to popular belief, AI will not kill jobs. Instead, it will release people from repetitive tasks, allowing them to dedicate talent and skill to solving newer problems. This helps enterprises create dedicated talent that can take up strategic roles rather than mundane ones, and create value.

next wave of change, one that is flexible and adaptable. To do that, even as new business models emerge, here are a few things every organization must keep

## PURPOSEFUL AI IS FOR ANY ORGANIZATION

It is not just for agile companies like Google, Amazon, Facebook, Twitter, and Apple (GAFTA), but for any company that can identify the right strategy and platform.

Enterprises can take up pilot projects to test how AI can work for them. This way, they can find the right strategy and approach that fits their goals, while also measuring their potential impact.

in mind to successfully ride the fourth wave with purposeful AI – and innovate continuously.

## USE PURPOSEFUL AI SENSIBLY IN THE ENTERPRISE

If you are worried about security ramifications, you can rest assured, because your AI systems can incorporate security mechanisms that apply a final human level on authentication.

**In short, AI is for everyone!**

# AMPLIFY YOUR ENTERPRISE POTENTIAL



For an enterprise, the future is full of unrestrained possibilities. And purposeful AI will play three key roles in turning those possibilities into reality. They are:

## AUTOMATION

This is a role that AI has already taken on. And powered by machine learning, it will only become more powerful. AI will not only keep machines up and running, automatically finding and fixing errors, but it will also drive efficiency, by allowing people to use the power of automation to their advantage.

As machines take over repetitive tasks, it will free humans from monotony and allow us to be who we really are – thinkers, explorers, and dreamers.

## INNOVATION

As we get the freedom to think, explore, and dream of the many possibilities that are suddenly within reach, we will need to innovate – to ask new questions, and seek better answers. The world is a complex place, and complex problems will need complex solutions, and it is up to us – humans – to find them. Succinctly put, scientific enquiry is not about the search for knowledge, but for the gaps in it – it is a journey into the unknown.

## LIFELONG LEARNING

And as we journey into the unknown, we have to relinquish control of ‘what is’ to the machines, so we can aspire for ‘what can be’. And doing that involves learning, learning throughout our lifetimes – to seek, to explore, and to understand.

So what do you want to be? What do you want your organization to be? What do you want the world to be?

## AM I READY FOR AI?



When you decide to leverage artificial intelligence, machine learning, and deep learning, a very good first step is to evaluate the infrastructure you already have in place using the Infosys tool that measures your organization’s AI maturity index.

Find out now, at: <http://aimaturity.com/>

# Ride the 4<sup>th</sup> Wave

**WITH PURPOSEFUL AI**

at: [www.infosys.com/fourthwave](http://www.infosys.com/fourthwave)

For more information, contact [askus@infosys.com](mailto:askus@infosys.com)

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