INDUSTRY
4.0

IN COLLABORATION WITH

SHUNYA OS
Developer Preview Edition

IoTIoT.in
IoT & AI community

▶ **We**Chat

CHANDANA PAI
**Vice President,
Business Development and Strategy Partner
India 4.0 Forum - Industry 4.0 Think Tank
for India, WeSchool**

MESSAGE FROM THE DIRECTOR

Dear Readers,

It gives me great pride to introduce SAMVAD's edition every month. Our SAMVAD team's efforts seem to be paying off and our readers seem to be hooked onto our magazine. At WeSchool we try to acquire as much knowledge as we can and we try and share it with everyone.

Prof. Dr. Uday Salunkhe
Group Director

As we begin a new journey with 2021, I sincerely hope that SAMVAD will reach new heights with the unmatched enthusiasm and talent of the entire team.

Here at WeSchool, we believe in the concept of AAA: Acquire Apply and Assimilate. The knowledge that you have acquired over the last couple of months will be applied somewhere down the line. When you carry out a process repeatedly it becomes ingrained in you and eventually tends to come out effortlessly. This is when you have really assimilated all the knowledge that you have gathered.

At WeSchool, we aspire to be the best and to be unique, and we expect nothing but the extraordinary from all those who join our college. From the point of view of our magazine, we look forward to having more readers and having more contributions from our new readers.

SAMVAD is a platform to share and acquire knowledge and develop ourselves into integrative managers. It is our earnest desire to disseminate our knowledge and experience with not only WeSchool students but also the society at large.

Prof. Dr. Uday Salunkhe,
Group Director

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OUR VISION

"To nurture thought leaders and practitioners through inventive education"

CORE VALUES

Breakthrough Thinking and Breakthrough Execution
Result Oriented, Process Driven Work Ethic
We Link and Care
Passion

"The illiterate of this century will not be those who cannot read and write, but those who cannot learn, unlearn and relearn." -Alvin Toffler

At WeSchool, we are deeply inspired by the words of this great American writer and futurist. Undoubtedly, being convinced of the need for a radical change in management education, we decided to tread the path that leads to corporate revolution.

Emerging unarticulated needs and realities require a new approach both in terms of thought as well as action. Cross-disciplinary learning, discovering, scrutinizing, prototyping, learning to create and destroy the mind's eye needs to be nurtured and differently so.

WeSchool has chosen the 'design thinking' approach towards management education. All our efforts and manifestations, as a result, stem from the integration of design thinking into management education. We dream to create an environment conducive to experiential learning.

FROM THE EDITOR'S DESK

Dear Readers,

Welcome to the 115th Issue of SAMVAD!

SAMVAD is a platform for "Inspiring Futuristic Ideas" and we constantly strive to provide articles that are thought-provoking and that add value to your management education.

We have an audacious goal of becoming one of the most coveted business magazines for B-school students across the country. To help this dream become a reality we invite articles from all the domains of management giving a holistic view and bridge the gap between industry veterans and students through our WeChat section.

In this issue of SAMVAD, we bring to you half a dozen articles focusing on '**Industry 4.0**' with a new sections of 'Talk of the town'. For this edition we are collaborating with **ShunyaOS & Iotiot.in** who are on their journey to bring revolution in the AI and IOT Space. Don't miss their words of wisdom published under our new section of '**WeCollab**'.

The first industrial revolution was the use of machines, the second was the use of machines for mass production, and the third was the digitalization of Machines. Now it is the Automation of Machines- Industrial Automation. Academicians are terming it to be a new Industrial Revolution, the fourth Industrial Revolution to be precise. It focuses on the end-to-end digitization of every data in the manufacturing process from input to finished product out of the industry, also connecting and integrating digital environments with value chain partners up to customer end. This edition focuses on the technically progressing industry and its various aspects.

Hope you have a great time reading SAMVAD!
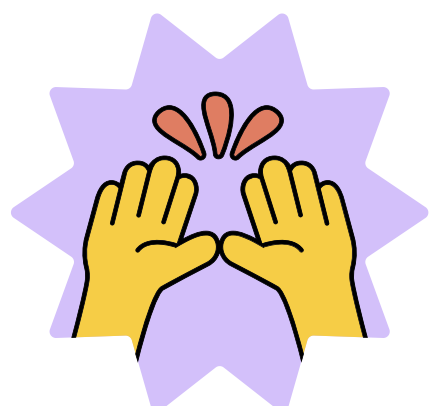Let's read, share and grow with us!

Best Wishes,
Team SAMVAD.

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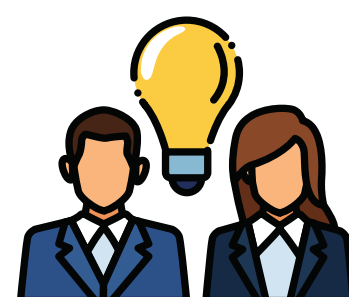we school
Welingkar Education

samvad

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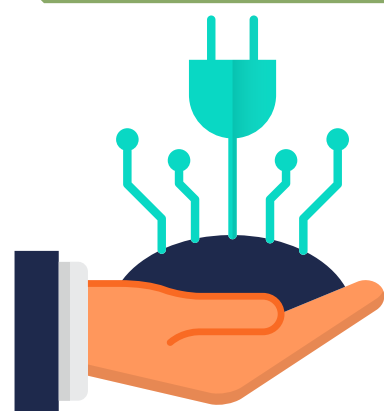
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CHANDANA PAI

Vice President, Business Development and Strategy Partner, India 4.0 Forum - Industry 4.0 Think Tank for India, WeSchool.

1. Could you please take us through your journey from being a Welingkarite to date?

I completed MBA in 2005 from Welingkar and got placed with Nicholas Piramal from campus as a management trainee, Started off in Sales and went on to become a Brand Manager in the dermatology team. I handled the largest portfolios of anti-acne and anti-hair loss cream and launched two successful products during that time and it was the first time for companies in the Pharma Industry to run a B2C campaign.

Then after that, I wanted to spread my wings and expand my canvas as a marketer, it was time for me to invest in the market and I switched over to Godrej Consumers, cause I thought

FMCG will give me that range and bandwidth to exercise my marketing muscle and I was recruited on the Godrej no 1 brand team. As a part of the brand team, I launched two products of Godrej No.1, lime and Aloe vera, and, Strawberry and Walnut cream. These two launches helped the brand cross the 500 crore mark, which was a milestone in itself cause none of the brands in the Godrej FMCG sector at that point of time had crossed the 500 crore mark. After that, I rejoined Piramal as a Senior Brand Manager and handled the biggest portfolios of anti-infectives as well as repertories. After that, I joined Abbitt Healthcare and finally Welingkar occurred. In my journey in Welingkar for the past ten years, First I was handling international tie-ups as well as strategic projects as part of the group director's office.
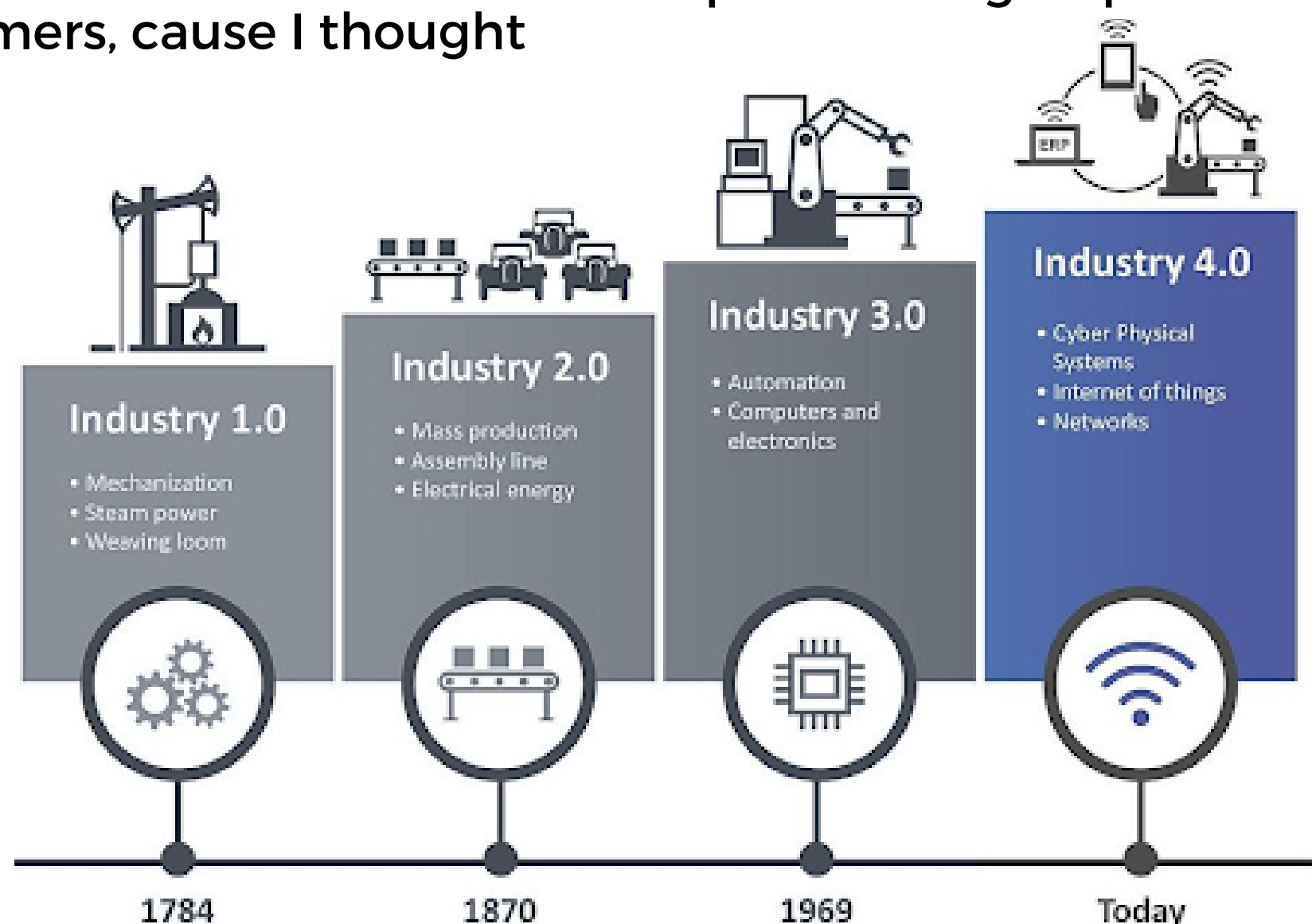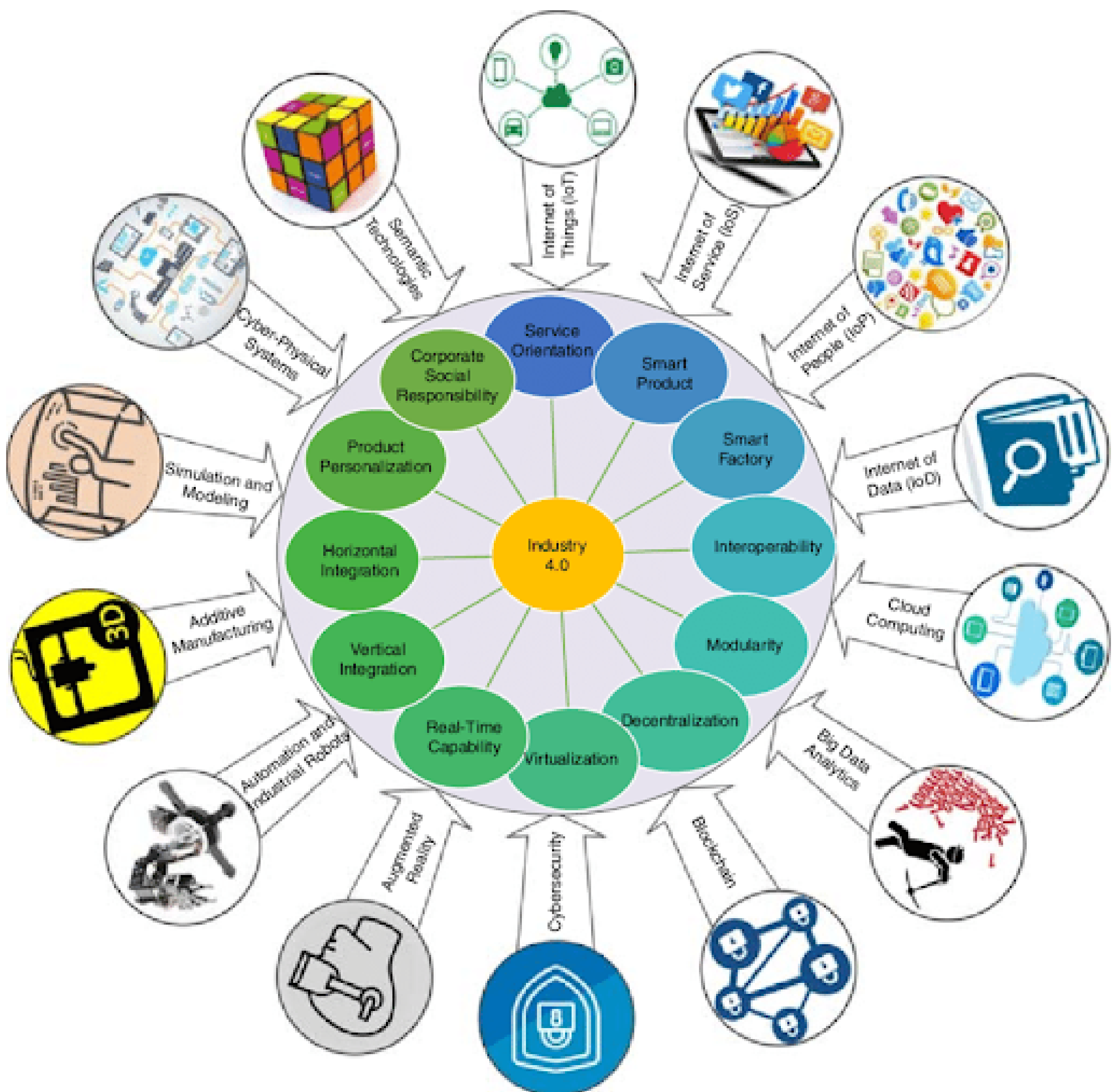
First I was handling international tie-ups as well as strategic projects as part of the group director's office. After a few years, I made a shift to the career management cell, and am now contributing as a Vice President of the Career Management Cell and Business Development along with being an Assistant Professor.

2. What are the major trends you see in Industry 4.0?

WeChat

Usually, when we talk about Industry 4.0, we think of technology, quantum computing, IoT, digitization, so on and so forth. But if we look at Industry 4.0 in totality, but at the core of it, there's an exponential change and a disruption happening in different aspects.

I'm talking about the exponential change in the climate revolution, the exponential change in the consumer revolution, consumers want products and services that are highly customized and they need it at the convenience of their fingertips. The minute a new product is launched consumers want it at their fingertips, they want it customized to their needs and at their convenience. And as you can see the global boundaries have also been minimized. Gone are the days when we had to wait for our friends and relatives to travel abroad to get us products that weren't available in India. But now because of the proliferation of technology, everything is at our fingertips, be it from the Indian market or elsewhere. So, there is definitely a climate revolution happening along with consumer revolution and exponential innovation happening and an exponential change in which technology is changing. To sum it all, as the computer processing power is getting more powerful by the minute, artificial intelligence, deep learning, and machine learning are definitely going to strengthen and change the processing power of computers or any machine.

What are the requirements that industries should fulfill for efficient adaptation of industry 4.0?

I believe it's the strategy and not technology that is driving transformation. Technology is one of the components, it will enable you to do things faster, enable you to reach faster, help you to redesign your process but if you really want to harness the power of Industry 4.0 you need to look at the strategy and not just have a myopic view of the technology.

Yes, technology is the biggest pillar that is driving the change. What happens is that the strategy building happens at the top management and the execution at the lower levels of management, and technology is a medium of communication between the two processes.

Along with that for efficient adaptation of industry 4.0 working through change management through people is important. There is a need to upgrade skills every now and then without which our existence in the organization won't be relevant. So managing people's expectations, identifying the skill gaps, and updating the skills accordingly are also essential for efficient adaptation of Industry 4.0.

4. How Connected Digital Enterprises make the process of resource planning and decision-making seamless?
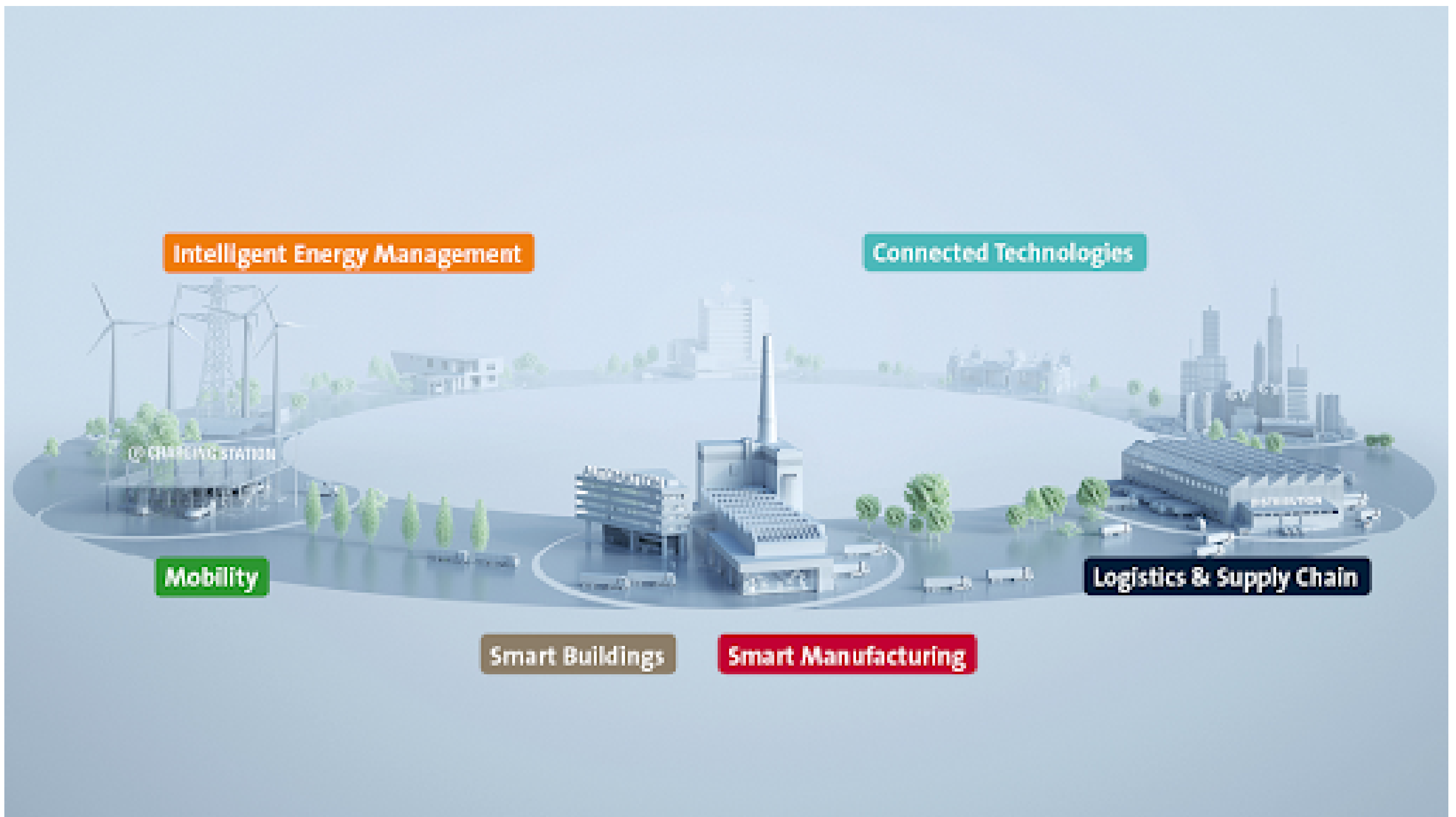
Whenever an organization, especially, a manufacturing one looks at adopting the Industrial revolution to join the bandwagon, the question arises of how to incorporate it into the system since we have already invested too much in the existing machinery. Whether to completely write it off or change it or tweak it; eventually, how should we go about it?

So, there are three steps; the first step is digital connectivity and sensors. So here we are looking at the product, the workflows that we have, the service design that we are following, and the development of that product including smart automation, adding sensors, adding certain smaller hardware, embedding software into the existing hardware.

To do so we need to have an agile workflow, not a manufacturing concept but is adopted from the software services sector. They always say one should have an agile workflow, which means the workflow should be able to accommodate all those changes. So, the first step is to re-look at your process workflow. look at where the raw materials and semi-finished components are coming from, where the market is, and how we selling to them, and maybe it's time for us to redesign the process workflow. That is a question all companies need to answer. And once you start delving deep into it, you may realize that 80% of you are right, but that 20% of the process workflow needs to be changed.
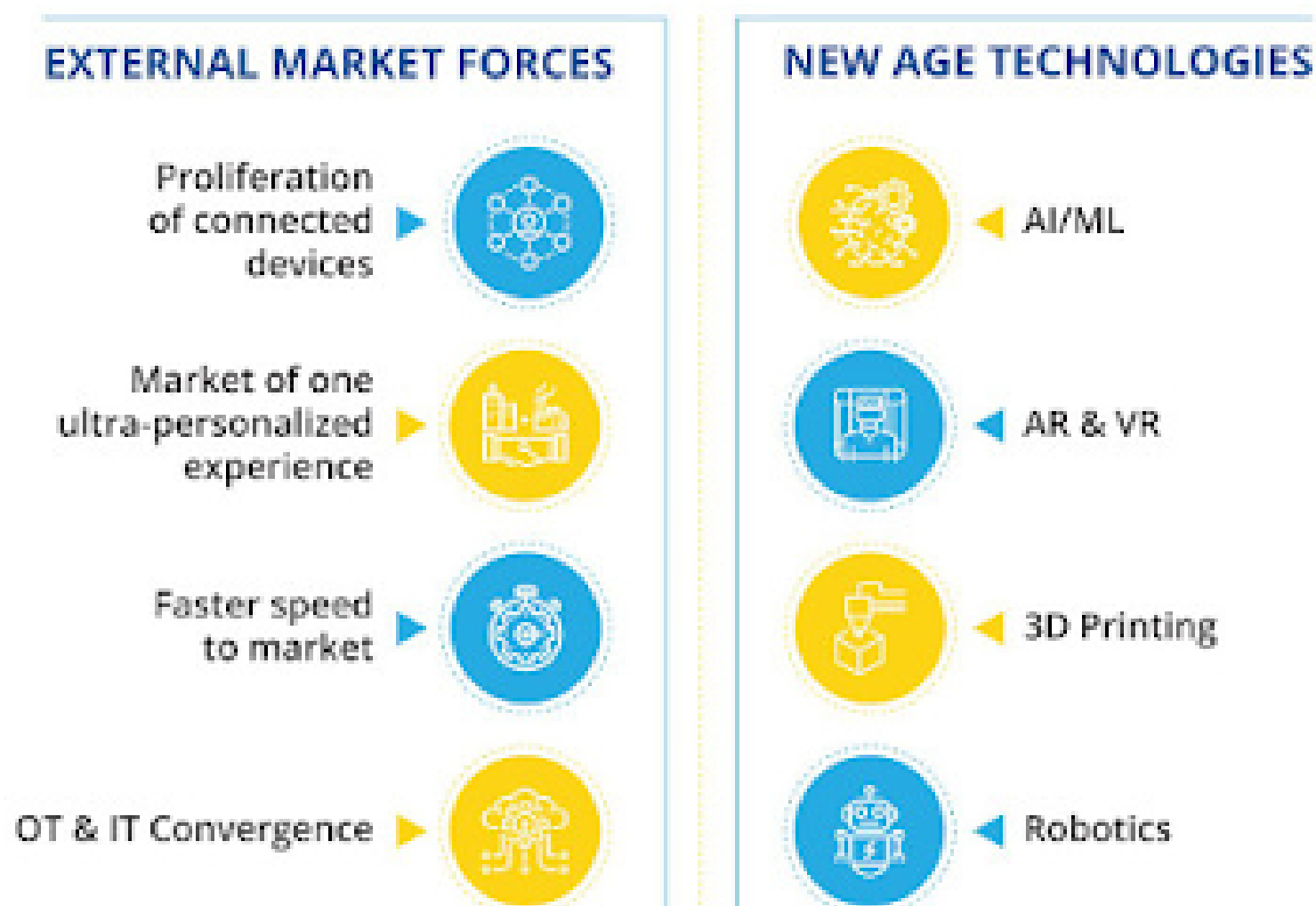
The second part is digital engineering. It is very simple. It is revolving around customer-centricity, data-driven engineering, product life-cycle management and is powered by digital twin technology, which means this new system has started to generate data for you. As everybody is connected now, your suppliers, customers, marketing, and sales staff are giving you data and at this stage, you are analyzing everything and seeing whether everything is moving in the way that you have intended it to move.

As an example, let's look at the most famous launches. Apple is very famous for launching a product and they say that within 6 months your product will be available at the Apple stores, etc. Imagine a situation wherein, Apple has launched a product and internally they have planned that their new iPhone 13 will sell 100 units across the world and the product is supposed to be available within 6 months down the line and the rest of the models i.e. iPhone 12, etc will be sold at 80 or 70 models worldwide.

Now, imagine the sophistication with which they have planned all this. They are getting fillers from the customers, which means they are tracking how many people have attended the Apple Launch event, the footfalls that come to the Apple stores; they must be looking at the traffic of the articles and how many people have responded to the articles.. So, this machinery is in place which is generating data at many levels; from my customer level, suppliers' level to my manufacturing team level, etc, and the entire data comes together in a very advanced form and says yes, we are going to get demand of 100 Apple iPhones for the new launch and we should be ready to manufacture it. So, people don't realize that the success of Apple is the advanced supply chain that they have. Of course, the products are superior, but still, the biggest success for every product has been their supply chain. That is the competitive advantage that they have over others

ROADMAP TO DIGITAL ENGINEERING

EXTERNAL MARKET FORCES
- Proliferation of connected devices
- Market of one ultra-personalized experience
- Faster speed to market
- OT & IT Convergence

NEW AGE TECHNOLOGIES
- AI/ML
- AR & VR
- 3D Printing
- Robotics

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The last or penultimate step is Digital Operations, where you have the enterprise to enterprise, shop floor to top floor integration. Imagine the shop floor sending data on a real-time basis and it gets collated in a way of dashboarding. Imagine a dashboard is rented to the top management every day or every hour for them to keep a track of what's happening which will lead to better operations management, better-connected workers, your entire AI-powered machinery in your smart manufacturing will work in a better way. So, I think these are some of the steps one can follow to make a seamless way of resource planning and decision making.

5. How do we think that the pandemic has increased the pace of the industrial revolution in India?

The pandemic has definitely woken up people, things are speeding up, a lot of projects which were kept on a 5 year or 10-year roadmap by the companies are suddenly getting their timelines crashed and people are looking at the next one or two years to complete the same tasks. The lockdown condition has created a unique atmosphere. It has made us think differently and it has also made us open to trying newer options. Like as a consumer myself, I was completely against the idea of getting fresh groceries through an online mode.

Because for me going to the market and picking/checking vegetables in my hand was more convenient as I was assured about the quality of things that I am buying. But the pandemic has made me open to buying groceries online.

Similarly, at an organizational level, it has made us rethink and try innovative options. If you look at the current startup landscape, a lot of big established companies are looking forward to tying up or partnering with small organizations which helps them get the answers quickly to fill the need gaps at a faster pace. So, rather than developing a product or service or a new online application in-house. They feel it's easier to partner with smaller organizations that will help them immediately to solve the problem. This has led to newer business models as well as newer workflows. Process re-engineering and workflows are the names of the game. Now, you don't have to go step after step, maybe you can go from the first step to the fourth step immediately.

Digital innovation is experienced at an exponential stage in industries like BFSI (fintech, online payment wallets), retail, FMCG, consumer durables, healthcare, and so forth. I've observed that the companies that have been lagging behind in technology adoption always take the quantum jump.

Healthcare might not have been part of this list before but because of the situation, it has taken a quantum jump. One of the reasons is electronic patient records. Think if we can track all the data of a person's past medical history. Along with that if we can also know the lifestyle of a person through social media. If all this data gets synthesized, analyzed, and sent to the insurance companies. They can know that this particular individual is living a healthy lifestyle. And, they can give some benefits to that individual like reducing their insurance premium. To some extent, this is already happening.
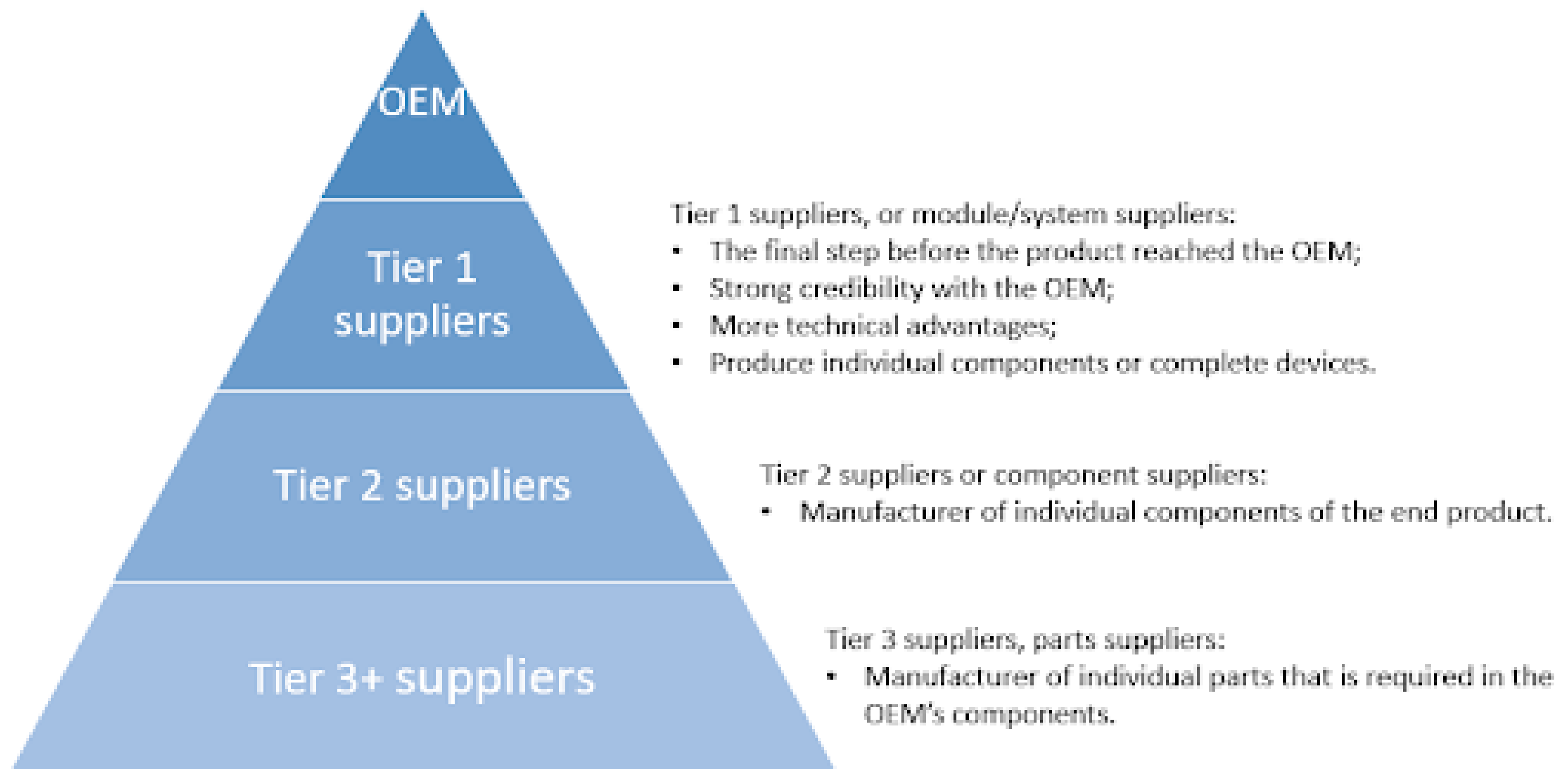
For example, you book a flight to Uttarakhand for trekking, and your insurance company messages you that they will provide insurance for your 5-day journey. We call it bite-sized insurance. Things are changing and we can surely see new trends because of both the pandemic as well as the technological advancements in different sectors.

6. What's your opinion on India's manufacturing future?

I would say the future is bright but India needs to move fasts. I'm saying this because India anyways has 3.0 to 3.5% of global manufacturing share, China has around 28.4%, the USA has around 16%, Japan is at 7.2%, Germany is at 5.8%, which is followed by South Korea, India and so on. But now companies are looking for alternat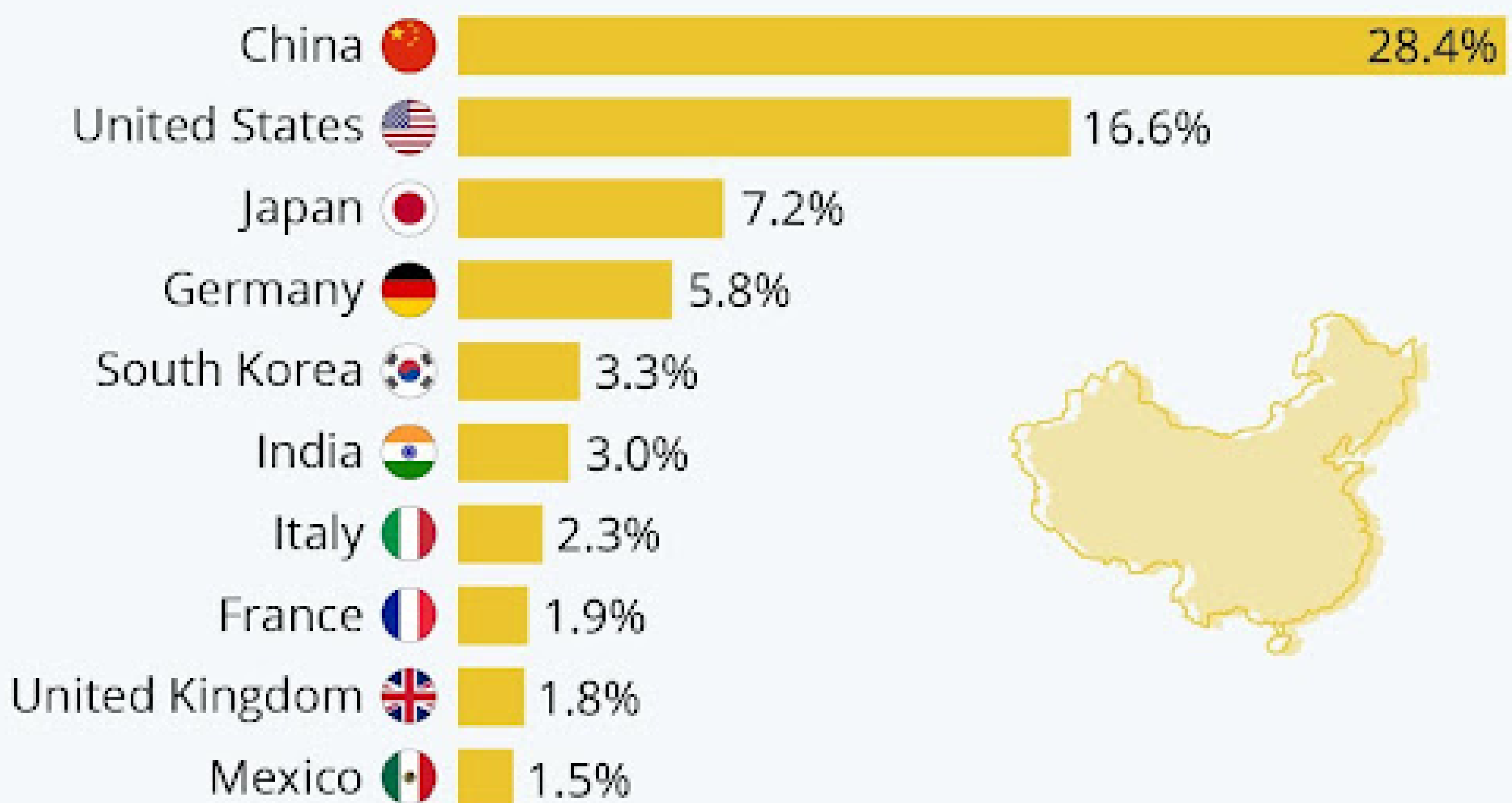ives for China, they are moving towards the smaller economies like Indonesia and Vietnam. These countries are taking away manufacturing projects from India. There are different tiers to manufacturing, typical OEMs (Original Equipment Manufacturers) are distributed into 3 to 4 tiers. Consider an imaginary example of Apple for whom I am a tier 1 OEM. Which means I am directly in contact with Apple and giving them almost finished product, I am also part of Apple's supply chain which means whenever Apple does demand forecasting, I am also kept in the loop because I am a tier 1 OEM for Apple. After tier 1, tier 2 comes which provides a little less finished product and might be a little less connected to apple. Then comes Tier 3 OEM which is an almost raw material supplier with no contact with apple. So, tier 3 will provide the product to tier 2 which will provide to tier 1 which will finally provide to the main company. Tier 1 will have a comparatively higher margin compared to Tier 2. So, what European countries did, they outsourced their products from different smaller countries like China. But, because of the pandemic, they now think that depending on other countries is a high risk. Therefore, they started to pull back tier 1 and tier 2 OEMs. This will tremendously impact different OEMs in various countries. The margins reduce as we go down the tiers, similarly, the complexity of jobs also reduces as we go down the tiers. By looking at this global condition, on a personal note,

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OEM

Tier 1
suppliers

Tier 2 suppliers

Tier 3+ suppliers

Tier 1 suppliers, or module/system suppliers:
- The final step before the product reached the OEM;
- Strong credibility with the OEM;
- More technical advantages;
- Produce individual components or complete devices.

Tier 2 suppliers or component suppliers:
- Manufacturer of individual components of the end product.

Tier 3 suppliers, parts suppliers:
- Manufacturer of individual parts that is required in the OEM's components.

China Is the World's Manufacturing Superpower

Top 10 countries by share of global manufacturing output in 2018*

Country	Share
China	28.4%
United States	16.6%
Japan	7.2%
Germany	5.8%
South Korea	3.3%
India	3.0%
Italy	2.3%
France	1.9%
United Kingdom	1.8%
Mexico	1.5%

* output measured on a value-added basis in current U.S. dollars
Source: United Nations Statistics Division

statista

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By looking at this global condition, on a personal note, I would say, India is pretty late. Few states like Telangana truly have a single-window clearance which rolls out the red carpet for foreign investors to come to the state and set up sophisticated manufacturing units.

But, Overall, as a Country we are not able to give that, there can be multiple factors responsible for that

7. Any suggestions for the young professionals?

Try to see things at a macro level as well as have an ability to deep-dive into certain aspects. Having a T-shaped mindset is absolutely necessary.

Make a connection between your work and the overall strategy of the organization. Because a lot of time I've seen that people feel that their job is very minuscule and it is not impacting the wider goal of the company. But it does have an impact on a broader level. And, for you to grow you have to look from the lens of the CEO. The minute you do that you'll be able to do your current job in a better way.

Also, I suggest to start reading about different articles. Which helps in developing a strategic thought process and makes it easy for you to grow in an organization. Start preparing for it from today to seize the opportunity whenever you get the chance.

Try to digest all the information that you are getting and retain it. It might get overwhelming but it will help in building your own thought process. Try to overcome that feeling of getting overwhelmed by the amount of data. Because, whether we like it or not, we are a part of the knowledge economy. On top of that, we are MBAs who are soon going to be part of the corporate world. So, learn to make your own opinions.

Be an Agile Learner. The world is rapidly changing so always keep upgrading yourself. Never stop investing in yourself. There is a different thrill in getting your first salary, becoming economically independent, and buying things on your own. But, don't forget to use this economic independence to upskill your mind. Because the world that you are seeing right now and the one that you are going to see after a decade will be very different from today.

Learn to take a pause. At the beginning of your career, you are so excited to prove yourself. You work very hard. You clock in almost 12 hours on workdays. You lose track of the overall picture. It's very easy to get lost in day-to-day activities. There will be no time to think. So, make sure to take a pause and reflect on things to ensure that you are on the right track.

And, always keep your final goal in mind. Don't forget to take care of your health. Keep growing and achieve what you want to achieve.

Industrial Internet of Things

NIKHIL BHASKARAN
Founder,
Shunyaos.org

WeCollab

SHUNYA OS
Developer Preview Edition

IoTIoT.in
IoT & AI community

The Information Technology boom is very well known. IT (hardware) followed by the internet, followed by mobile and social media were the major disruptors of the past 2 decades.

They propelled both industry and mass into a hyper-connected world.

Digital transformation has accelerated at a pace where we are no more talking of a connected digital world but a MetaVerse where physical and virtual identities merge and co-exist.

Metaverse is a concept in itself and deserves a full article, but today we will examine a part of transformation - IIoT in our journey towards this digital future.

In a hyper-connected world, where everyone is getting onboard the internet ship, how can 'Things' be left out, so IoT is the Internet of Things where every 'Thing' gets connected to the internet. Today since this is a productivity-linked article, we will focus on the Industrial IoT vertical, especially the manufacturing and production floor, where this connectivity brings both new jobs and new possibilities. Before knowing Industry 4.0, we need to be familiar with Industry 3.0.

Industry 3.0 is when PLC, Scada, and automation were introduced into the manufacturing floor. Most of the repeated logical processes were fed into PLC (Programmable logic controller) and automated during Industry 3.0. Most machines were given language (protocols) support to talk to each other, and they all were connected but within the factory floor disconnected from the internet.

Industry 4.0 is connecting this factory floor to the internet and the highly evolved web and app ecosystem. So factories are no more the old boring places with a lot of worksheets but will get the same style and class of slick web and apps.

This was the first phase of I4.0, but as we started pulling data from machines to the internet cloud, designers realised not everything needed to go to the cloud. Some data can and must be processed at the factory floor itself, and the need for 'Edge Computing' was felt, and edge devices got created. As data started coming on edge, the need to analyse them on edge and take quick decisions before they were sent to the cloud became a challenge, and AIoT (AI+IoT) was born.
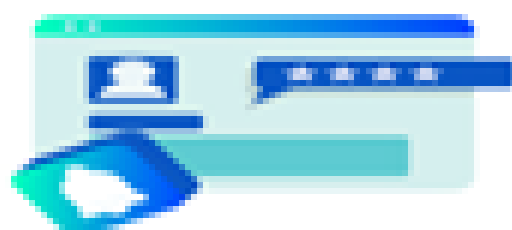
Industrial Internet of Things (IIoT)

Why manufacturers deploy IIoT

44% To reduce costs

37% To improve business processes

30% To improve customer or citizen experience
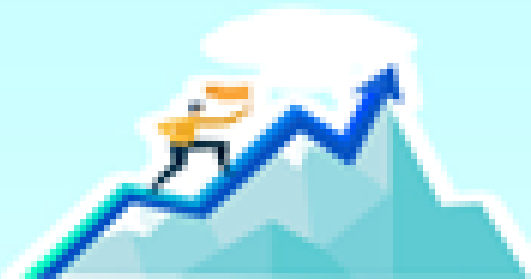
33% To increase competitiveness
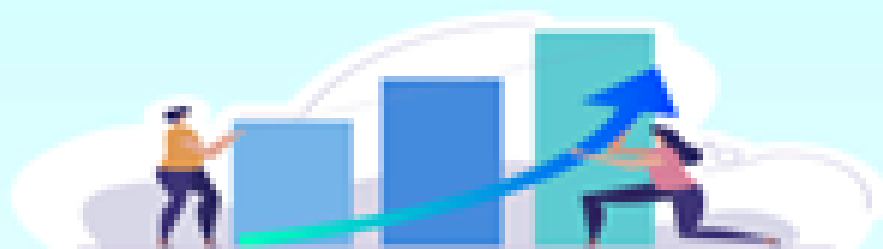
33% To increase productivity

IIoT in numbers

17% The share of IIoT in the IoT market

14% The average yearly increase in the worldwide supply of industrial robots

58% Of manufacturers say that IoT is crucial for the digital transformation of the industrial sector

$123 billion The size the IIoT market is predicted to reach in 2021

92% Of industrial organizations will in some way adopt IoT by the end of 2019

Sensors
- Motion
- Temperature
- Pressure
- Humidity
- Altitude
- Analog Voltage
- Analog Current
- Light Intensity
- Distance
- And more ....

AI & ML on device
- Face Detection
- Face Recognition
- ML Algorithms
- And more ....

Actuators
- LED
- Relay
- Solenoid
- And more ...
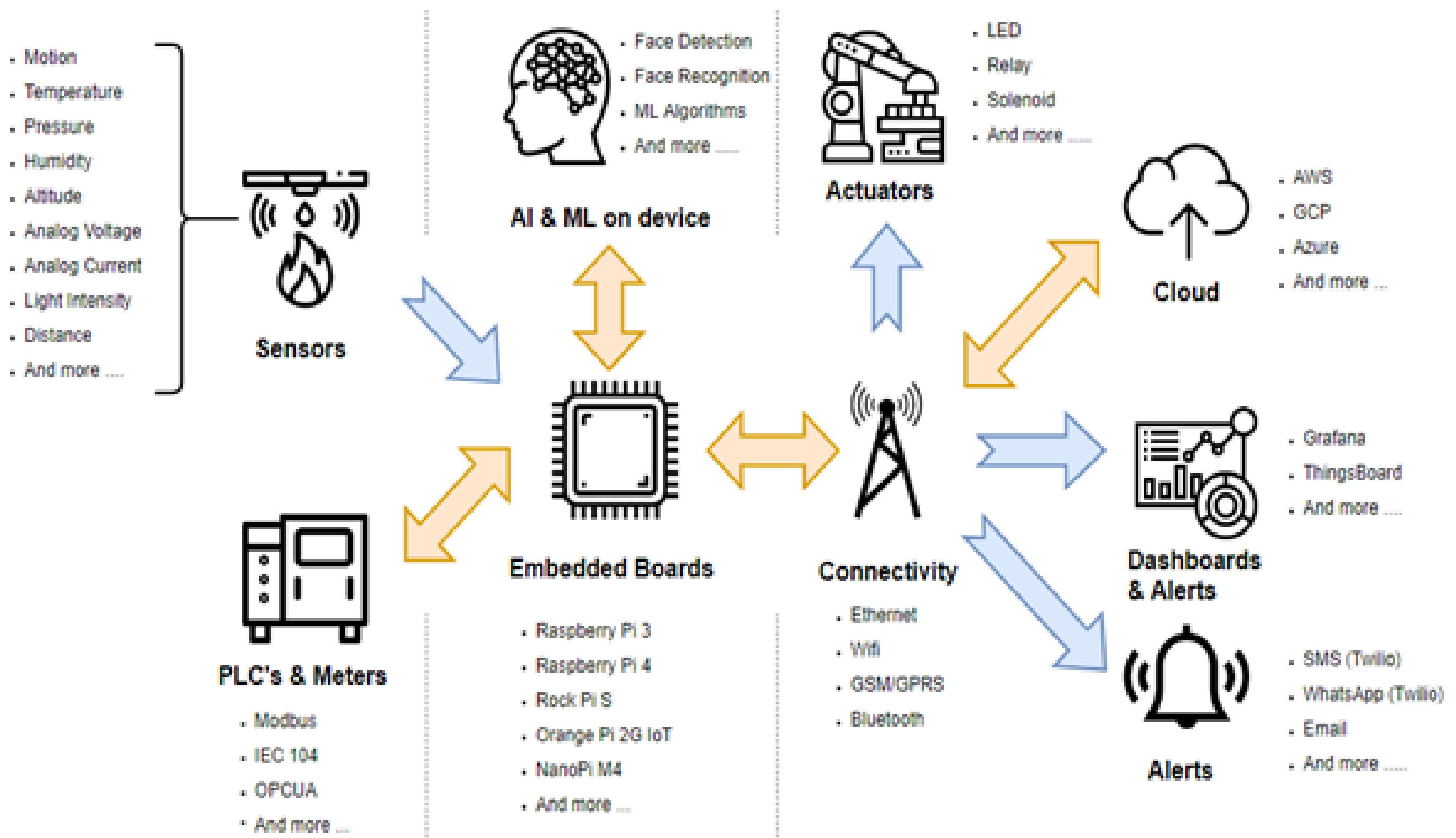
Cloud
- AWS
- GCP
- Azure
- And more ...

Embedded Boards
- Raspberry Pi 3
- Raspberry Pi 4
- Rock Pi S
- Orange Pi 2G IoT
- NanoPi M4
- And more ...

Connectivity
- Ethernet
- Wifi
- GSM/GPRS
- Bluetooth

Dashboards & Alerts
- Grafana
- ThingsBoard
- And more ....

PLC's & Meters
- Modbus
- IEC 104
- OPCUA
- And more ...

Alerts
- SMS (Twilio)
- WhatsApp (Twilio)
- Email
- And more ......

Shunya OS is an OS that caters to this exact need. **It packs all the protocols of IoT and the needed stack of AI into a tiny footprint OS of less than 70 MB**. Though small in size, it has numerous capabilities of Industrial protocols (Modbus ,opcua , 4-20ma), AI computer vision, including reading digital meters via AI.

The vision of Shunya is to create a super-efficient Lightweight OS for Tiny devices that run inside these infinite number of small devices from Industrial Gateways to smart cameras to Digital Telescopes, VR devices, etc. Today almost 100% of phones use ARM technology for their CPU, and Shunya runs efficiently on ARM.

Beyond the tech side Shunya team has a bigger vision to empower the future generation with these technologies and provide them a platform to work collaboratively as a team to experience, learn and market these future ideas, and so we run iotiot.in and projects.iotiot.in to support aspirants who want to get on to AI and IoT.

Coming back to the metaverse , Industry 4.0 is just connecting all physical machines to the digital universe. The future factory manager will not be sweating on the factory floor, going through papers and worksheets but will have a cockpit-like view of multiple factories he is managing.

Microsoft, because of its office 365 presence, has one of the most comprehensive packages to achieve this by adding Azure IoT and Power BI . AWS IoT and Google also have solutions around the same. All of these platforms have pre-built support inside Shunya OS too. So Managers seeking next-generation jobs must be familiar with these technologies at a birds-eye level so they can create analytics and dashboards to find absolutely new insights from the data generated from these disparate devices of the past. Once all of this data comes online, and we will have a full view of what we are doing in terms of productivity, management, environment.

ESG compliance brought in by stock markets for corporates will make these reports mandatory too.

So if you are ready to jump into the spaceship towards metaverse understand how these physical objects connect, and then they're a lot more virtual objects and their NFTs who will also join this new Universe as we move in time.

Industry 4.0 is just the beginning and small part of the massive Metaverse we are all joining, time to give a hard look towards career planning and where you want to be in this future universe .

P.S. For more information readers can visit -
https://demo.shunyaos.org/
http://iotiot.in/

Intel India, SINE-IIT Bombay join hands to form Plugin Alliance

IIT Bombay

SINE
Business Incubator

intel

Intel India on Thursday said it has collaborated with Society for Innovation and Entrepreneurship (SINE)-IIT Bombay to launch Plugin Alliance that will focus on accelerating Industry 4.0 transformation in the country.

IIT Bombay

SINE
Business Incubator

intel

With 'Making Industries Intelligent' as its motto, Plugin Alliance's focus areas include increasing awareness and enabling the adoption of Industry 4.0 among larger enterprises and SMEs; identifying and exploring current and future Industry 4.0 solutions; and accelerating startups to develop market-ready solutions.

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Google launches 'digital twin' tool for logistics and manufacturing

Google announced Supply Chain Twin, a new Cloud solution that lets companies build a digital twin, of their physical supply chain to get a more complete view of suppliers, inventories, and events like the weather. Arriving alongside is the Supply Chain Pulse module, which can be used with SCT to provide dashboards, analytics, alerts, and collaboration in Workspace.

These follow the rollout of Google's Visual Inspection AI, another industrial olution that taps AI to spot defects in manufactured goods. McKinsey's research with the World Economic Forum puts the value creation potential of manufacturers implementing "Industry 4.0" — the automation of traditional industrial practices — at $3.7 trillion in 2025.

First Prize

Paras Pawar
MM 2020-22
JBIMS, Mumbai

The days of the 'dumb' machines are now gone, with the industrial world being taken over by 'smart' technology. The invention of the steam engine by James Watt in the 18th century triggered Industry 1.0, or the mechanization of production. At the beginning of the 19th century, Henry Ford borrowed the idea of mass production from a slaughterhouse in Chicago and started Industry 2.0, driven by electricity. In the 1970s, the dominance of programmable logic controllers and robots gave rise to Industry 3.0. These machines were dumb because they were automized to perform only a particular or set of tasks. Industry 4.0 (I4.0) or 'Industrie 4.0', as originally coined by Henning Kegermann, head of the German National Academy of Science and Engineering, has changed the rules of the game. The machines can now communicate among themselves, and human intervention is supervisory at best in most scenarios. This revolution has made machines smarter and the complete ecosystem a 'smart' technology.

The implications of Industry 4.0 are far-reaching, and perhaps more so on the logistics than any other business function apart from manufacturing.

Although the practice of moving men and materials is quite ancient, the word 'logistics' was popularized in the 19th century. Logistics meant the art and science of moving and maneuvering armies, including their food and supplies. The war-winning strategy of balancing troop movements with food and supplies is today's equivalent of sound logistics strategy of balancing supply and demand to achieve timely delivery at optimal costs.

Greeks and Romans conquered the lands on the back of highly efficient logistic systems. In the Middle Ages, elaborate supply systems, road networks, and warehouses were used. Modern times shifted the importance of logistics from the critical function of war to the critical function of the business. Today, Supply Chain and Logistics are entirely different fields of research and study.

Every industrial revolution causes disruptions and has created opportunities, none greater than I4.0. Customer expectations have grown. They are demanding increased customization, ease of ordering, quicker delivery at a low cost, etc. Technological breakthroughs are changing how logistic companies operate today.

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Cloud-computing systems enable on-demand and decentralized availability of IT resources integrated under Cyber-Physical Systems (CPS), where mechanical and electronic elements of the system communicate with each other, adding to technological complexity.

This communication or 'Internet of Things' (IoT) provides useful information to make critical decisions to predict and plan inventory and capacity. New entrants in the logistics space are trying to add value by exploiting digital technology.

The industry has also seen a rise in collaboration efforts to thrive in the market and move towards more standardized shipment sizes, labelling, and systems. Simply put, companies that are 'Digitally Unfit' and refuse to collaborate will have to rethink their strategy.

As the consumers' expectations keep growing, the importance of Physical Internet (PI) does as well. Logistics companies, manufacturers, and retailers are struggling to deliver reductions of emissions and remain competitive at the same time and ensure good value to their customers and society.

A solution to this problem is sharing. Physical internet is a shared network of supply chains used to transport materials like data transfer through virtual internet. This sharing can start at the company's departmental level and grow towards sharing transport means and storage space with other businesses.

Although achieving this could take years, a step in this direction will have significant sustainability results. Industrial customers will also benefit from reduced costs and increased efficiencies.

New entrants are the drivers of technological innovations in logistics. They are quick to identify customers' needs and develop their business model based on data analytics, blockchain, and other such relevant technologies. Transparency, visibility, security, and traceability are few issues bugging the supply chain and logistics industry.

Ahmedabad-based startup OpenXcell offers blockchain technology solutions to transform the supply chain efficiency and engage with a distinct approach with the customers and partners. Other foreign startup companies like RoadLaunch, CargoCoin, Bonafi, Curv offer similar analytics and blockchain technology-based solutions. The logistics industry has become quite competitive in recent years. E-commerce companies are expanding their own logistics offerings. Large retailers are looking to integrate the supply chains of their brick-and-mortar stores to utilize full capacity through in-house logistics services. The service providers (2PL, 3PL, 4PL, 5PL) may expand their service offerings and essentially become competitors of their clients.

Sophistication in the use of advanced robotics, drones, automated repositories, 3D model owning, digital twins, etc., may result in driving out of the traditional logistics solution providers by the technology companies. Therefore, partnering with AI solution providers or 'disruptors' is critical.

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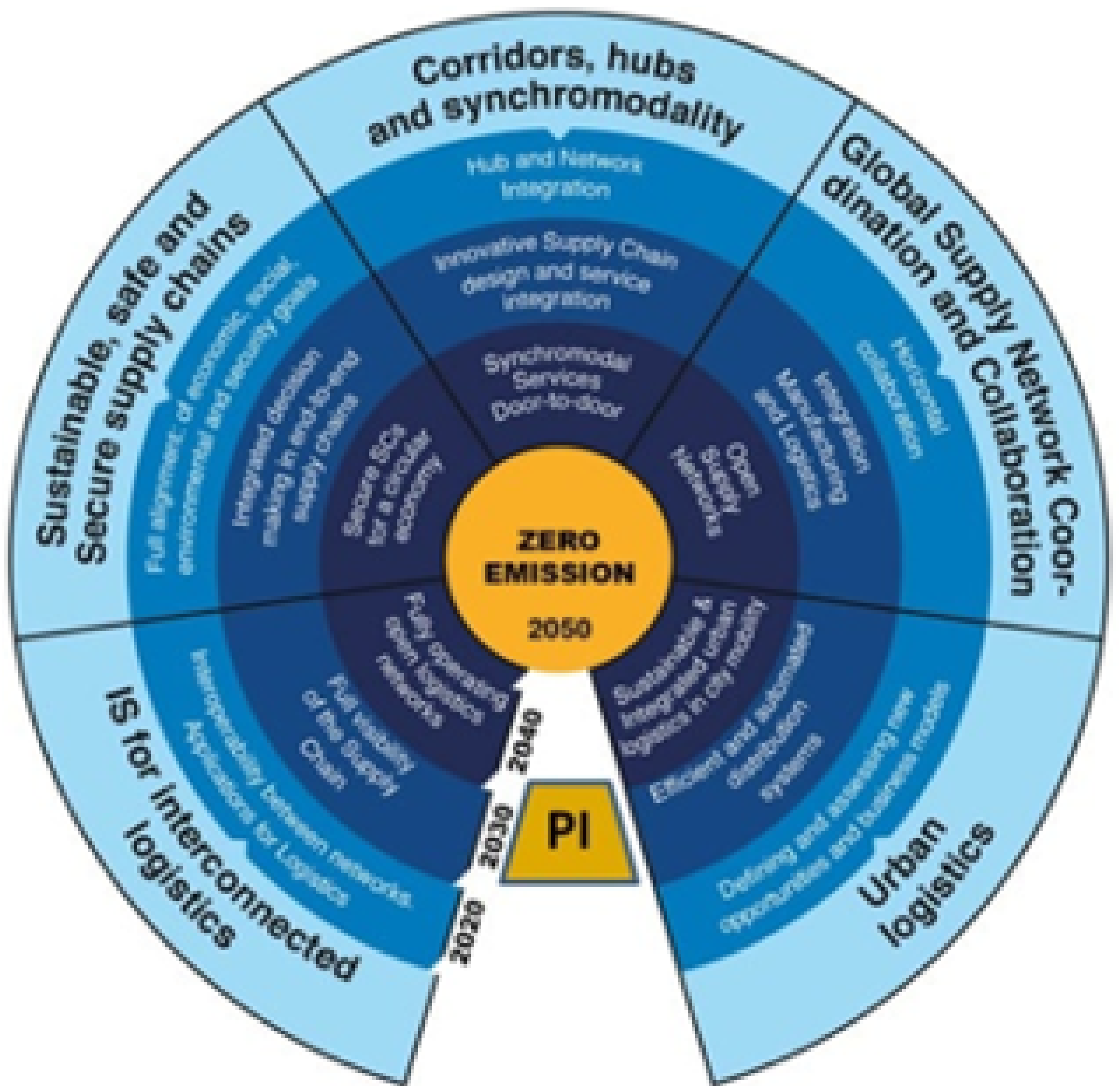
Sustainable logistics network through Physical Internet.
Image source: http://www.etp-logistics.eu/

This is apparent from the acquisition of Quifers, a logistics tech startup revolutionizing logistics and developing disruptive technologies, by Sitic Logistics Solutions in May 2021. In October 2019, industry leader Deutsche Post DHL Group announced its plans to invest a hefty $2.2 billion in digital initiative and technology through 2025. In 2020, the logistics sector witnessed $454.2 million in total funding, out of which early-age startups secured nearly 45%.

According to one estimate from McKinsey, venture funding towards logistics startups has increased 17 times in 5 years (2014 to 2019).

The opportunity is huge, considering over 80% of global importers still use spreadsheets to manage their complex international supply chain.

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Funding volume growth in logistics startups has outpaced overall venture growth

Venture funding growth in logistics compared to overall venture growth
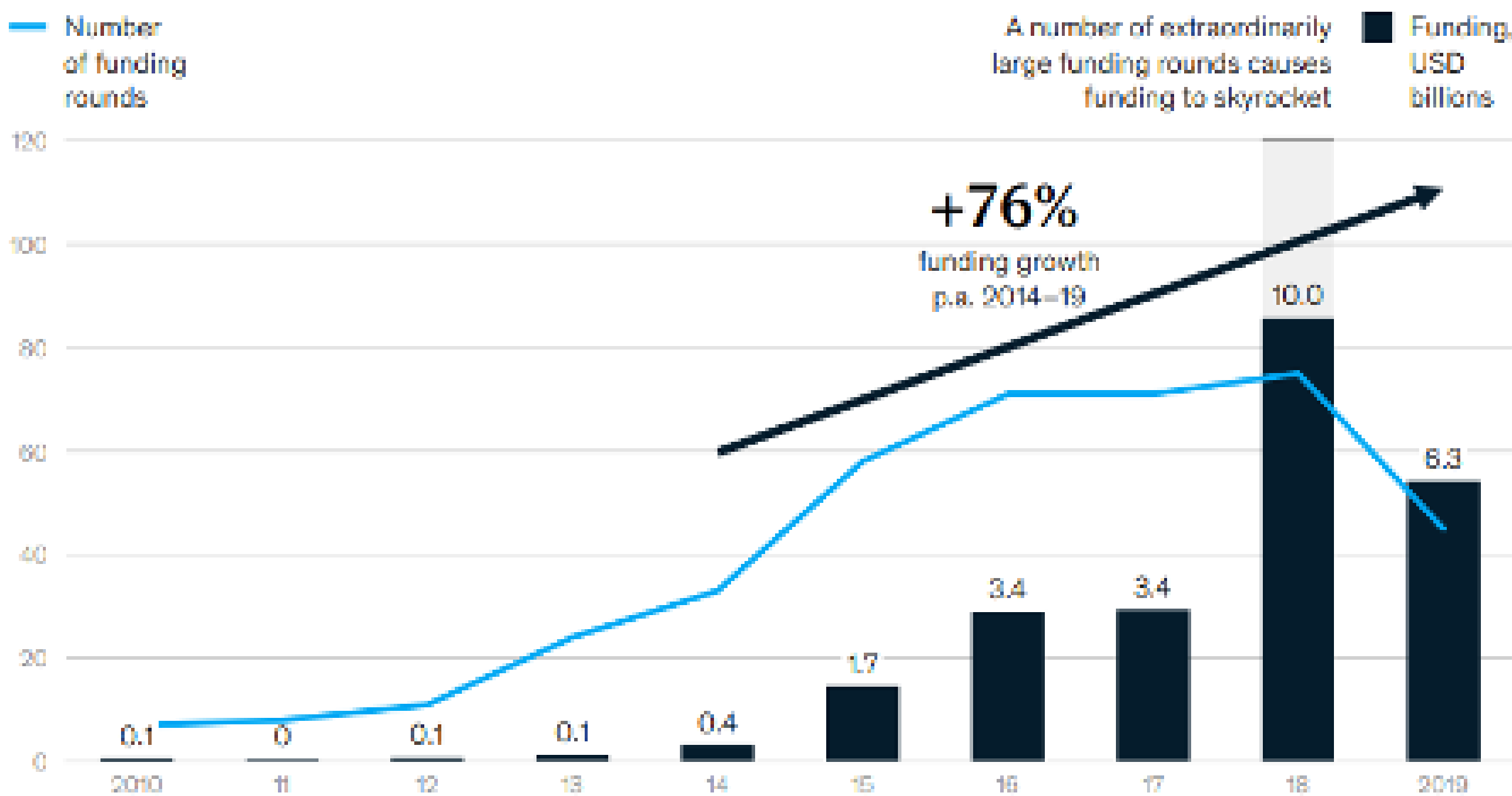Indexed growth, funding in 2014 indexed to 1x

Logistics startup funding growth[1]

Overall venture funding growth
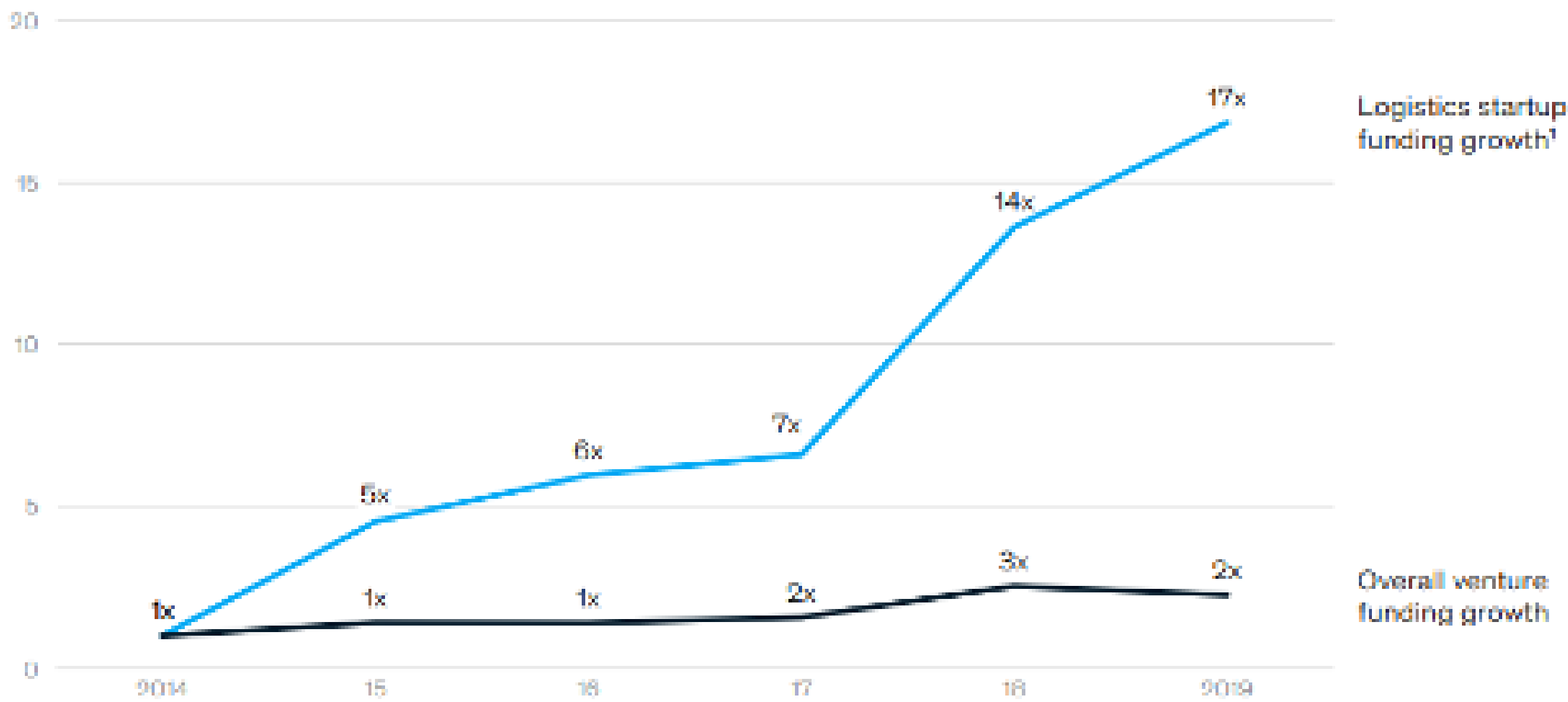
1. Excludes PE, corporate, and all other rounds; only venture rounds considered.

Source : McKinsey

Total funding in logistics startups has seen a dramatic increase over the last few years, growing at a 76% CAGR from 2014

Total funding and number of funding rounds 2010–19

— Number of funding rounds

A number of extraordinarily large funding rounds causes funding to skyrocket

■ Funding, USD billions

+76% funding growth p.a. 2014–19

Source : McKinsey

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Companies like FedEx and DHL have been collaborating with small local players for many years now. But the challenges presented by the collaboration are not easy to tackle. For instance, every company has its labeling system; thereby, maintaining uniformity for easy clearance, tracking, traceability is challenging. Also, the last mile delivery standard may not reflect the true service level qualities of the bigger brands.

A high level of co-operation is expected among the industry players to manage optimal container space utilization as container size may be standard. But the packages that go into them aren't. However, these challenges bring in new opportunities for contract logistics management companies. Their co-operation with shippers and maintaining data privacy can boost efficiency and business revenues.

According to European Commission's Research and Innovation wing, a 10% to 30% increase in efficiency in the EU logistics sector would translate into 100-300 billion in savings.

Lastly, the Covid-19 pandemic has highlighted the importance of logistics to everyone. For instance, the lack of availability of semiconductors has forced Mahindra and Mahindra to halt production for seven consecutive days in September 2021, resulting in a 20-25% reduction in output. Pandemic has also highlighted the need for collaborative technology-led supply chain infrastructure.

A recent report published by DHL express – 'Revisiting Pandemic Resilience' – states that

approximately 10 billion vaccine doses produced only in 8 countries would be required by the end of 2021.

This is where the last mile tech-based delivery startups are pivotal. Bengaluru-based Spoton Logistics uses technology-driven systems to monitor critical pickup and delivery information, transport data, and asset recovery of critical pharmaceutical products to serve 22,000 pin codes across the country.
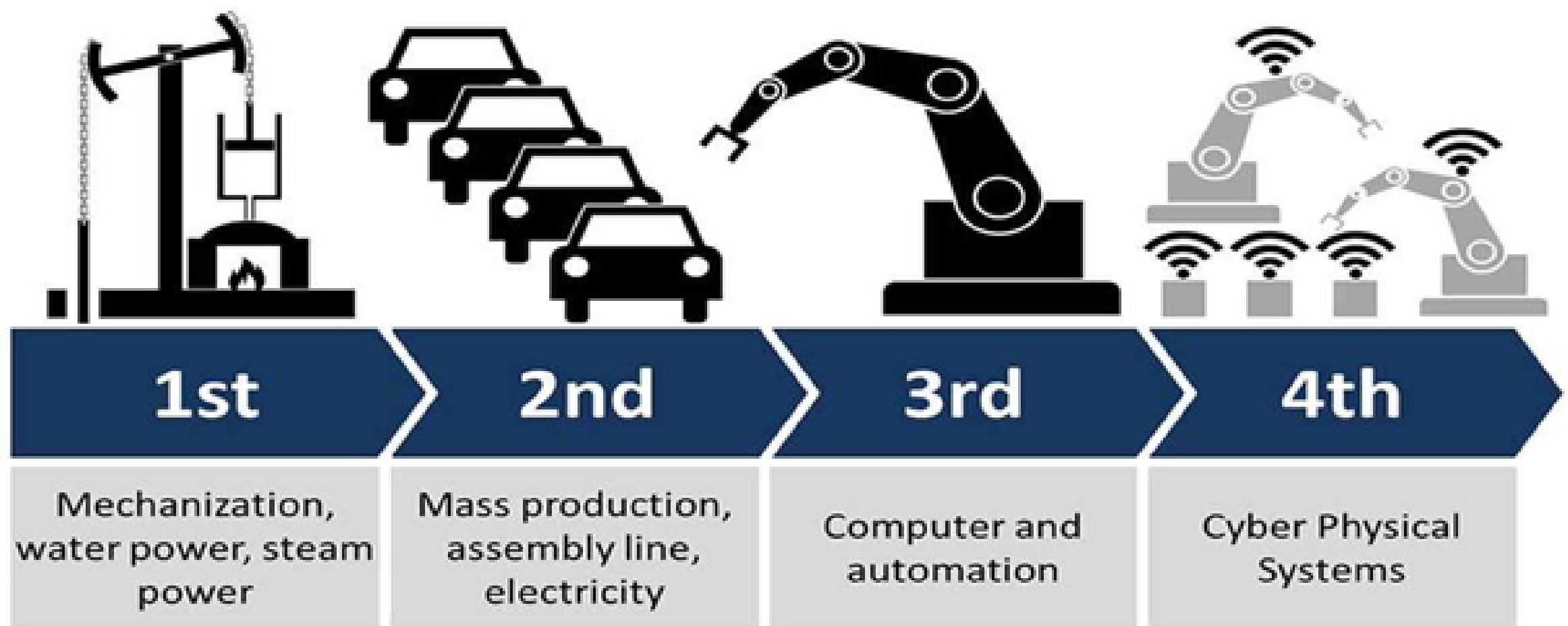
While container imbalance, faster technology adoption, and environmental sustainability pose great challenges to the world

IMPACT OF INDUSTRY 4.0 ON FINANCIAL SERVICES

Runner Up

Pushkar Kumar
MBA Finance 2021-23,
Symbiosis Institute of Management Studies

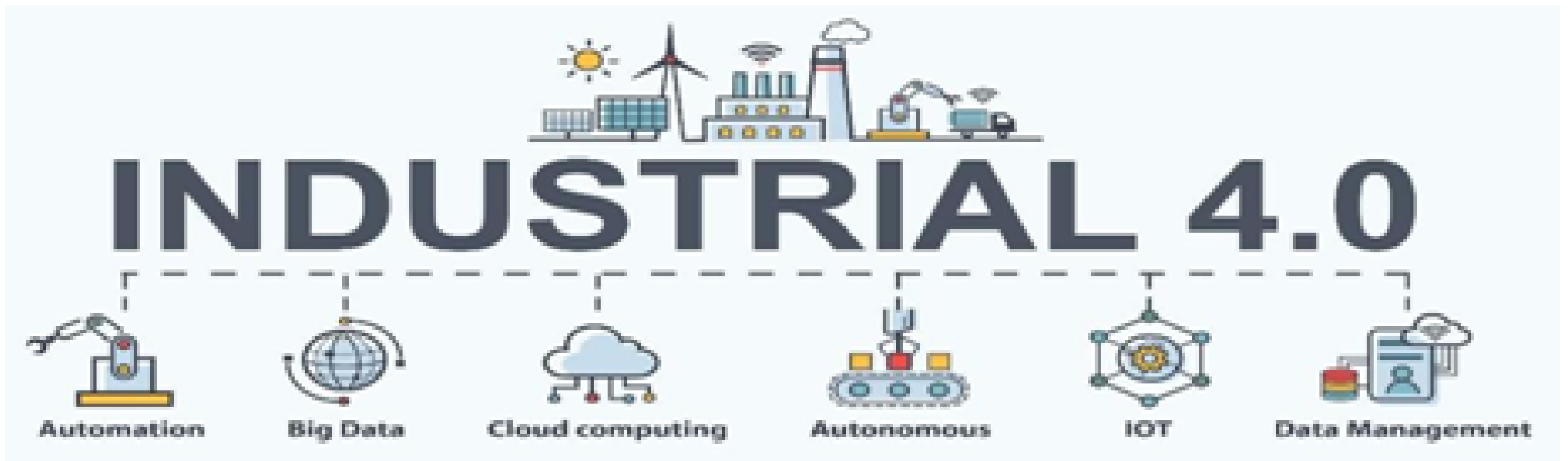| 1st	2nd	3rd	4th
Mechanization, water power, steam power	Mass production, assembly line, electricity	Computer and automation	Cyber Physical Systems

The world's economic history is riddled with industrial revolutions which have completely altered firms that have evolved and functioned today. The printing press was invented during the time of the renaissance, which is when these industrial revolutions commenced. The introduction of the printing press inspired a whole slew of innovations that revolutionized people's lives and established plenty of business entrants. The industrial revolutions have changed the direction of the business and related services since then. While Industrial Revolution 1.0 was propelled by the advent of steam as a source of energy and resulted in mechanized manufacturing, Industrial Revolution 2.0 was propelled by the invention of steam as a source of energy and resulted in mechanized production. Power was fundamental to the second revolution, which led to mass production.

The third industrial revolution was centered on electrical and information technologies, and it resulted in production automation, laying the groundwork for the fourth industrial revolution. The first industrial revolution took place mostly in the British Empire, with the colonies serving as major providers of raw materials. This first industrial revolution lasted nearly half a century until the beginning of the 19th century, laying the foundations for the second industrial revolution. This revolution began in the United States of America and subsequently extended to other European countries and Japan. The repercussions of the third industrial revolution were extensive and global, other than the first two revolutions, which were limited to specific geographical areas.

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The fourth industrial revolution, dubbed Industrial Revolution 4.0, is now taking place in the global economic world. The Fourth Industrial Revolution is marked by a convergence of technology that blurs the distinctions between the physical, digital, and biological realms.

What Is Industry 4?

In today's modern industrial world, the term "Industry 4.0" has become mainstream. In 2011, the German government launched a high-tech manufacturing project, and this word was introduced. This term refers to the Fourth Industrial Revolution, which uses the power of digital automation in manufacturing operations to digitally alter the manufacturing industry. Industry 4.0 is a component of the fourth industrial revolution that focuses on using modern information technology to enhance and strengthen production processes.

Impact of Industry 4.0 On Economy

Industry 4.0 has already had a tremendous impact on the modern global economy. Additionally, Industry-4's future influence will be enormous in the next few years because practically all industries and business sectors are constantly working to harness the potential of industry 4.0. To manifest the de facto objectives of this modern paradigm, all major economies and large corporations are investing heavily in R&D center activities and software development team professionals.

According to the McKinsey Global Institute, Finance 4.0, a subset of Industry 4.0, will help developing nations grow by over 6% by 2025, accounting for around $3.7 trillion. According to data from the United Nations Trade and Development Organization, technology contributed to more than 37% of all foreign direct investment (FDI) into developing nations.

The addition of over 10 billion mobile internet devices to the worldwide market boosts the world economy by billions of dollars. In 2016, the market for mobile accessories was only worth $62.7 billion. Not only has software development enhanced the effectiveness and competitiveness of manufacturing, but it has also improved the efficiency and productivity of practically all other types of organizations, all of which add significantly to the global economy.

According to the Market Watch market prediction, a new industry known as self-driving cars is predicted to generate a stunning sum of over $173.5 billion by 2023, growing at a 36.2 percent CAGR over the next three years. The software consulting services business provides a significant contribution to the global economy. According to Grand View Research, the worldwide economy's share of software consulting services might be over $382.62 billion by 2025.

There is a slew of additional industries fuelled by the industry 4.0 concept that are making substantial contributions to the global economy. To recapitulate, the industry 4.0 ecosystem in all areas of global enterprises and industries will play a critical role in the future and will prove to be a driving factor in catapulting the global economy's future growth.

How Industry 4.0 Is Impacting the Financial Services Sector?

The fourth industrial revolution has widened its scope across all industries, having a positive impact. Financial services is another industry that has made great use of industry 4.0's potential. Banking, insurance, mortgages, forex, stocks, and many other financial industries are growing across the globe as a result of the positive impact of digital innovation and financial process automation.

Smartphones have become the new norm for financial activity, according to Nielsen Research. In the United States, computer algorithms account for more than 70% of stock trading choices, whereas person specialists account for less than 10% of stock trading decisions. This saves a lot of money on financial consulting. Microloans enabled by technology in Bangladesh have ushered in a new era of financial empowerment for the poor in rural areas.

The new crypto banking system, which is based on blockchain technology, is set to revolutionize the financial sector shortly.

Let's highlight the impact of industry 4.0 on financial services.

-The world's fastest financial transactions

-The most affordable financial service fees.

-Financial institutions' operational costs have dropped dramatically.

-24 hours a day, 7 days a week, the most convenient access to financial services

-The elimination of the middleman and the establishment of centralized regulation

-The need for human tech talent is being minimized.

-Robotics and artificial intelligence will be used more frequently.

-Marketing that is effective, efficient, and targeted.

-Bots provide effective customer service at a low cost.

-An expanded operational area.

-Risk factors have been reduced because of data-driven analyses.

-Improvements in business intelligence

-An improved user experience

-The leakage of funding and projects is reduced.

-Increased transparency and confidence in financial transactions

-New business domains such as FinTech, payment gateways, and others have emerged.

-Poor and disadvantaged people's financial inclusion

-Increasing the number of liquid assets

-Making the best use of limited resources and funds

-Stock and currency trading that is both efficient and profitable

-The number of frauds and break-ins has decreased.

-Customer satisfaction has improved.

-Easier accountability and responsibility mending problems

-Smart contracts are driven by blockchain technology

Final Takeaway

The industry 4.0 idea, which is based on software engineering and information technology, has a significant impact on the financial services business. Industry 4.0 has already had a positive impact on the global economy, introducing a slew of new industries and generating substantial market value. Financial services have benefited the most from Industry 4.0, as it has considerably increased their growth and market size.

New digital innovations and technology are growing in the banking and financial sector, allowing them to improve consumer experiences, increase security, and become more adaptable. However, if businesses in the sector want to stay viable, they must adopt new strategies, they must be aware of and respond to security threats, rising competition, and keeping the trust and loyalty of their customers.

ROLE OF INTERNET OF THINGS IN INDUSTRY 4.0

National Finalist

Ranjani Sridhar
PGDM RBA 2020-22, Prin. L.N.Welingkar Institute
of Management & Research, Mumbai.

The need for Digital transformation had pre-existed and therefore the Pandemic has only fueled such transformations. We have been noticing quite a few Digital disruptions & Innovations that have been taking place during recent times. And those who adopted technology have been able to sustain and emerge as roaring leaders in the industry gaining the edge over their competitors.

Innovations in technology are proportionate to the expansion of worldwide automation driven by the Internet of Things & Physical systems.

What exactly is IoT?

IoT refers to a system of interconnected physical objects(sensors) which can collect & communicate data with software or other systems via the Internet.

Simply put, The Connected machines over the internet will interact & make decisions autonomously without any human intervention thereby increasing efficiency in a business process.

According to Statista, the number of installed IoT devices will reach 75.44 billion.

The study conjointly highlights that the number of IoT devices can outnumber the population in the next 10 years.
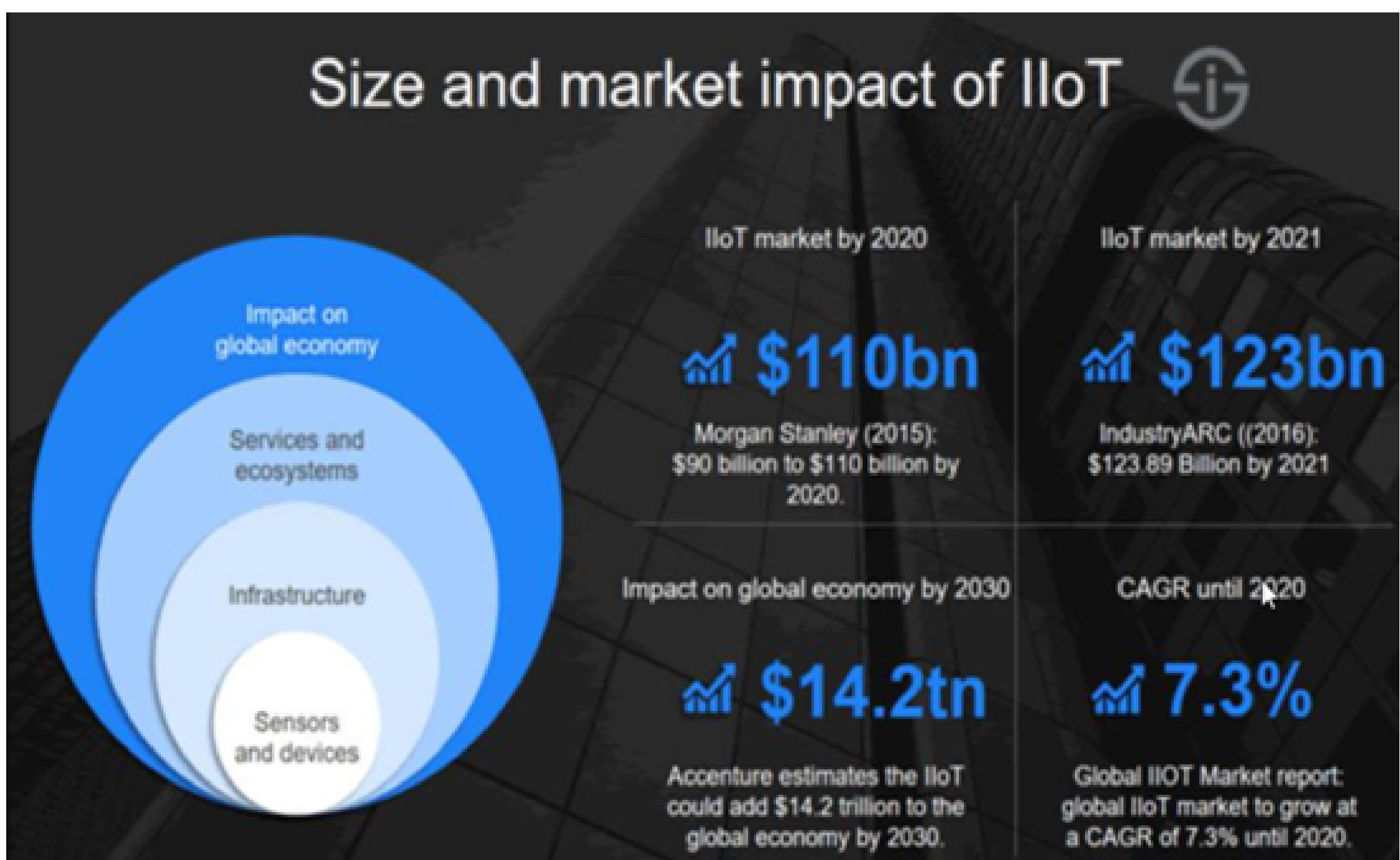
Industrial Internet of Things (IIoT)

IIoT is nothing but an extension of the application of IoT in Industrial sectors where it creates an ecosystem of people, machines, applications belonging to Industries, resulting in a Centralized IoT platform that coordinates all the functions with automated Decision-making.

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1 Number of Installed IoT devices around the world Source: Statista

Year	Devices
2015	15.41 billion
2016	17.68 billion
2017	20.35 billion
2018	23.14 billion
2019	26.66 billion
2025	75.44 billion

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Size and market impact of IIoT

IIoT market by 2020	IIoT market by 2021
$110bn	$123bn
Morgan Stanley (2015): $90 billion to $110 billion by 2020.	IndustryARC ((2016): $123.89 Billion by 2021
Impact on global economy by 2030	CAGR until 2020
$14.2tn	7.3%
Accenture estimates the IIoT could add $14.2 trillion to the global economy by 2030.	Global IIOT Market report: global IIoT market to grow at a CAGR of 7.3% until 2020.

Why Industries are interested in IoT?
-Reduction in overall costs
-Optimizing Business processes
-Increase Competitiveness
-Improve Customer experience
-To grow Revenue from existing customers.
The applications of IoT are almost omnipresent across Industries. Let's discuss a few of the exciting applications across industries.

Healthcare
A Digital Twin-Siemens
Digital Twins are used to create the replica of the biophysical model of an Individual with the assistance of data collected from sensors and simulating in a Software environment. The main case of this is to create numerous 'what-if' scenarios and predicting the future result without performing operations on the Individual.

Based on the data collected, this model can also predict the probability of certain diseases that the person might get soon.If preventive measures are taken in the early stage, the fatality rate can be reduced to a greater extent.

Manufacturing
Predictive Maintenance-Chevron
Manufacturers are under pressure to improve their competitive landscape, have to optimize the operations & get higher quality products to market. **Predictive maintenance is widely used in cases where it utilizes data from ERP systems, critical sensors, CMMS, production data, and detect deviations even before it happens in real-time scenarios.** A survey suggests that the revenue is increased by an average of 28.5% for IoT-enabled plants compared to Traditional manufacturing.

E-commerce
Asset Tracker-Amazon

Amazon utilizes IoT-enabled robots in Asset Tracking which carries the products to and frofrom the warehouse shelves based on the order received instead of staffs searching for the products.

It has significantly reduced the Time & Energy costs of the Employees thereby reassuring the concept of Amazon's Just-In-Time (JIT) and helps in building a Sustainable Supply chain.

Automobile
Autonomous Cars - Auto X

The Pandemic has augmented the need for self-driving cars with self-disinfecting capabilities & driverless logistics. Auto X, an autonomous car driving system by Alibaba is one of the perfect examples. Robot taxis with IoT-enabled sensors can detect speed-breakers using sensors like Radar, Lidar & Video cameras to establish Vehicle to Vehicle communication. It can predict an approaching Vehicle's driving pattern and can potentially avert accidents if there is any unusual behavior observed.


Financial Services

Contactless Payments - Maestro Cards
The Financial Services industry has already started embracing IoT and it will reach a valuation of $2 billion by 2023.

General Insurance companies use theMask R-CNN model with advanced IoT sensors to determine the extent of damage on the vehicle and help calculate Premiums accordingly. It is also being adopted increasingly in ATMs in combination with security systems to prevent fraud. Digital contactless payments like Tap & Pay have slowly replaced the traditional method of transactions through RFID readers.
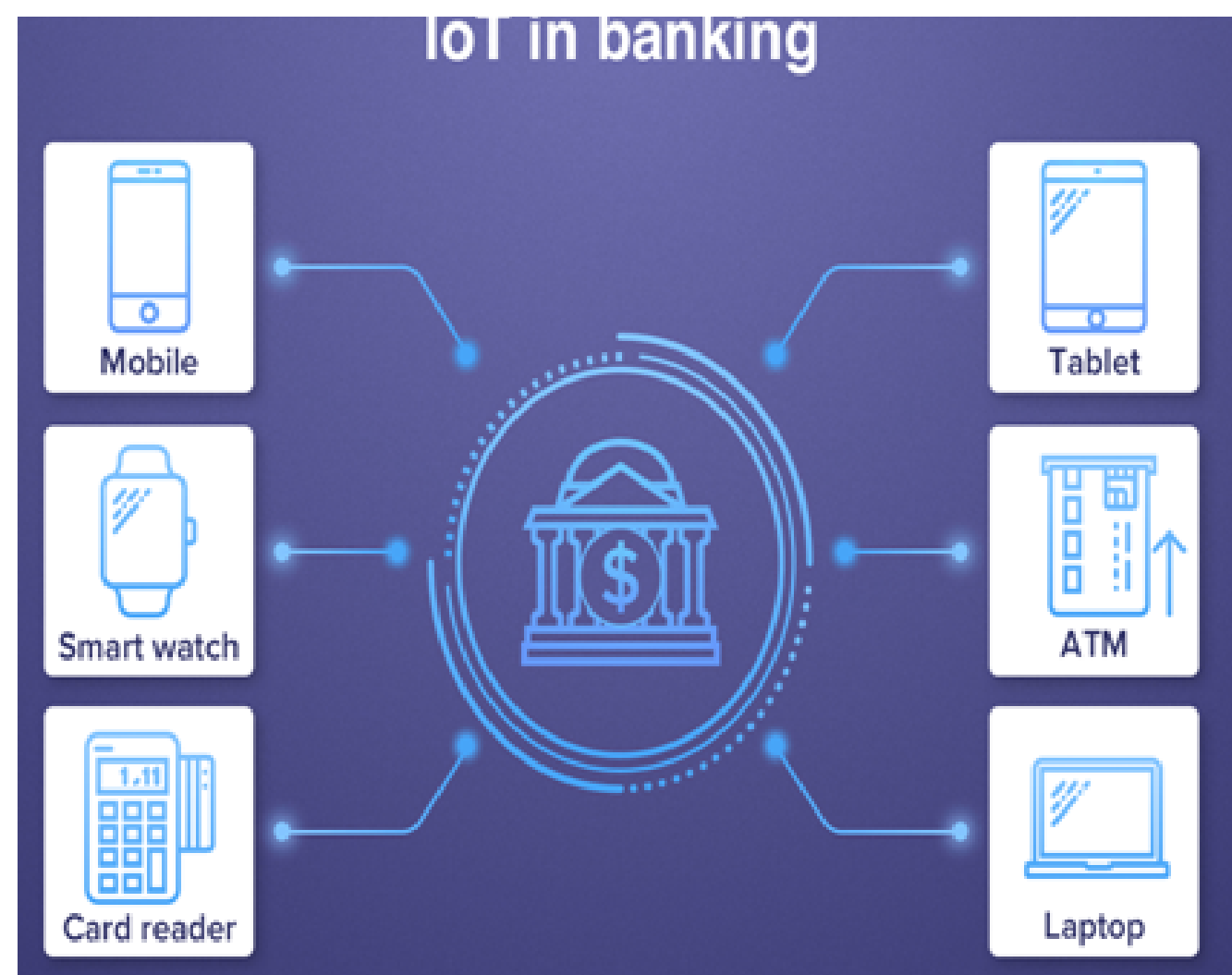
Energy
Smart Grid – ABB

Instead of depending on Legacy equipment, energy companies have started to adopt Smart Grids that allows for quicker restoration after power failures, distributes power based on the varying load. These power grids can also supply power to Smart Households where the clients are additionally educated with regards to their day-to-day utilization of power.Additionally, a Smart Grid could lower carbon footprint by effectively managing energy consumption.

Smart Grid

Conclusion

Connected devices from Consumers to Industries will emanate more data. With the power of Analytics, these data can be successfully utilized to make well-informed decisions. Advancements & Breakthroughs in IoT will have a considerable impact on the development of the world thereby making the world a better place to live in. At the same time, Cyber security breaches have also continued to be on the rise. It is the responsibility of an organization to maintain the privacy of the customers as well as the end consumer's duty to utilize technology with vigilance.

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MARKETING INNOVATIONS IN INDUSTRY 4.0

National Finalist

Abhijit Kundu, Sarthak Satyabrata Mishra
MBA 2021-2023
SIBM, Pune

What is Innovation?

The word Innovation is derived from the word 'innovare' in the Latin language means "to renew" or "to create something new". In the age of globalization, companies are faced with rapid changes in customer needs and the nature of the market. For the company to gain a competitive advantage and improve its performance, it must develop new products and strategies to attract new customers and satisfy existing customers.

That is why the innovative concepts that drive the company forward are now increasingly important. From the perspective of a company, innovation is a key activity for companies to develop and improve their competitiveness in today's globalized market.

Industry 4.0: What is it?

As of 2011, when a group of Germans pooled their ideas to improve competitiveness in their manufacturing industry, this term has been officially adopted by the public. To make this vision a reality, however, technology has only recently caught up.

Industry 4.0 or the Fourth Industrial Revolution refers to the new stage of the industrial revolution, which mainly focuses on interconnection, automation, machine learning, and real-time data. Smart interconnected technology is changing the way parts and products are designed, produced, and used. This Industry 4.0 is based on 6 key principles:

1) Interoperability
2) Virtualization
3) Decentralization
4) Ability to work in real-time
5) Service orientation
6) Modularity and reconfigurability

Source : https://www.researchgate.net/figure/Six-main-principles-of-Industry-40
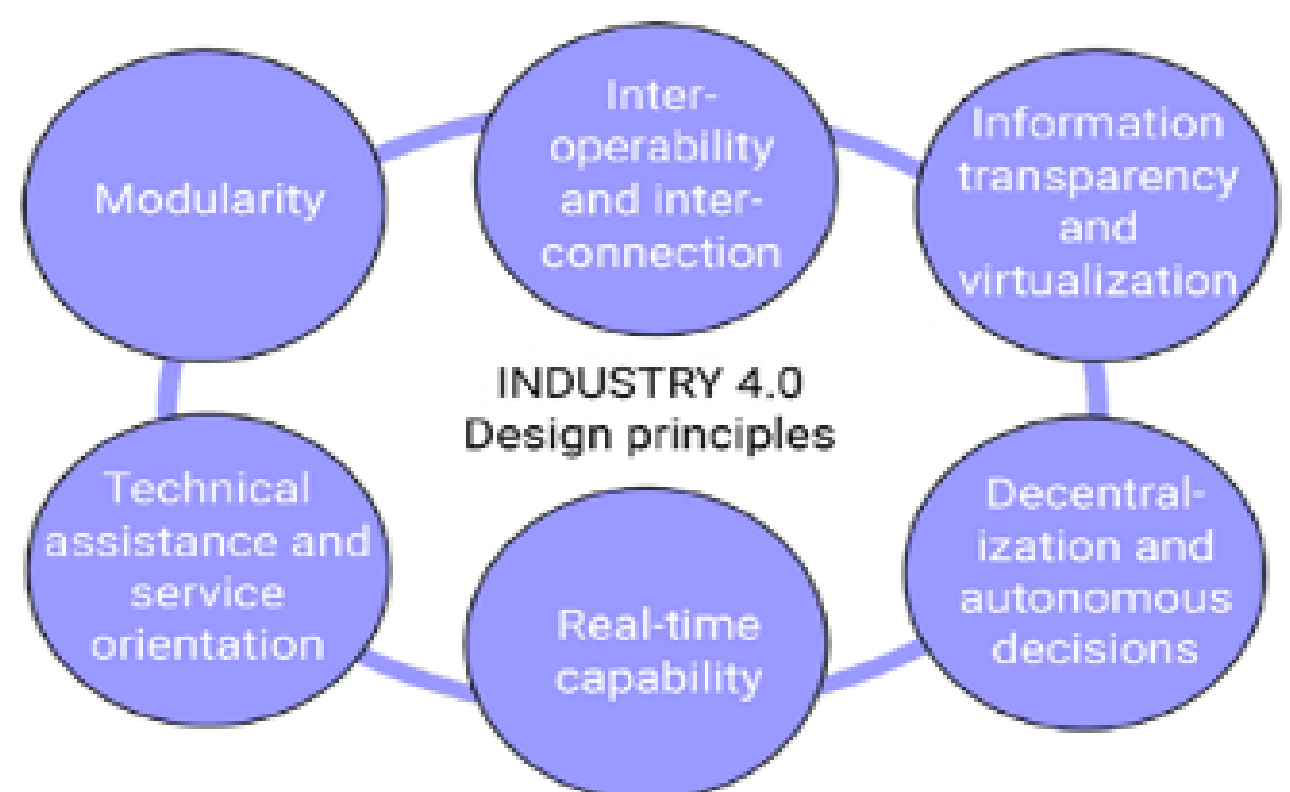
As this new digital reality changes the factory floor, it is accelerating the digital transformation of the entire enterprise.

Marketing innovation, according to Philip Kotler, means "By innovative (lateral) marketing we mean a sequence of work that, when applied to existing products, leads to the creation of new products or new services to meet new needs, bring new areas of use, new situations or discover new target groups of consumers. It is therefore a process, offering a significant opportunity to create entirely new product categories or to form entirely new markets."

Speaking of the digital business ecosystem, we are talking about the connectivity between stakeholders, which makes it possible to collaborate, communicate, and co-create personalized value, which is created from real-time available data and processes which analyse the behavior of customers.

Considering this, we can form the 5Cs of marketing in Industry 4.0 (Nosalska & Mazurek, 2019):
a) **Co-operation**
b) **Conversation**
c) **Co-creation**
d) **Cognitivity**
e) **Connectivity**
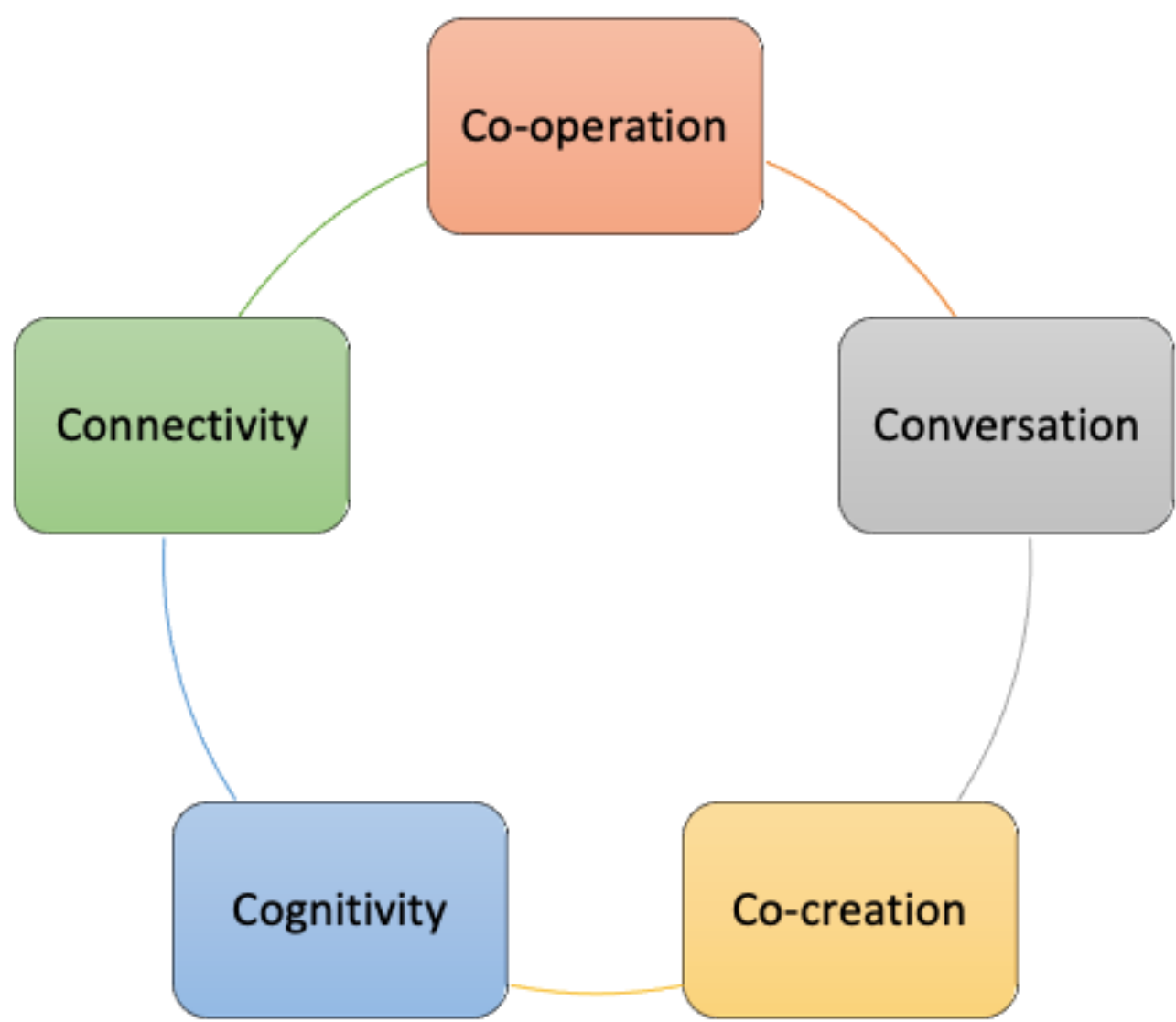
5C's of Marketing in Industry 4.0

Ways Industry 4.0 can change the ways of Marketing:

1. Evolution of Sales Channels

With this new interconnected model, manufacturers are considering conducting more business. If products and services are sold through OEM channels or indirect channels, traditional sales channels may not want to or are ready for a switch to Industry 4.0 technology (Ďaďová & Soviar, 2021).

It is a tough challenge to train the sales channels they don't want and help them understand the fact that the entire industry is expected to change. However, this is necessary for long-term growth.

Through Industry 4.0 technology, digital information from various physical and digital sources can be combined and shared, such as the Internet of Things (IoT), advanced sensors, predictive analytics, artificial intelligence (AI), or cloud solutions.

By effortlessly integrating with other systems, these technologies can capture information and establish digital records, providing real-time predictive analysis and visualization.

Predictive analysis can be coordinated with different other technologies Internet of Things(IoT), machine learning, Software-as-a-Service (SaaS), and cloud solutions to assist traditional manufacturing companies to understand customers and determine potential sales targets better.

2. Strengthened Direct Contact with End Customers:

With such swift advancement of technology in this new world, the end customer establishes direct contact with the manufacturer at the beginning of the purchasing process.

After initial sales, interconnected products and technologies provide revenue opportunities that were previously not easy to obtain. In traditional sales, the sales team interacts with customers before the point of sale.

The Internet of Things expands relationships by providing seamless connections and using it now to provide updates, service additions, and even new features throughout the product lifecycle; it has vastly changed the way modern sales are done.

3. Enhanced Productivity through Automation and Optimization:

As manufacturers around the world integrate automation and new technologies into their operations, the results are encouraging.
In fact, as of July 2018, the manufacturing job growth rate in the past year was the fastest since 1995, with an increase of 327,000 jobs, which is the most in any 12-month period since the increase of 345,000 jobs in April of that year (Gupta et al., 2016).

Accounting and bookkeeping are completely transformed through software and applications. Analytics is a key part of the next generation of technology leverage, which can better respond to customer trends and needs in real-time.

4. Digital Marketing and Marketing Automation:

Everything that uses an electronic device or the internet to market is considered digital marketing. Digital channels such as search engines, social media, e-mail, and other websites are used by businesses to communicate with current and prospective customers. As a result of digital marketing, you can reach a much larger audience than you could with traditional methods, and you can target the prospects who are most likely to buy your product or service in the future and it is cheaper than traditional advertising. In Industry 4.0,

Marketing Automation helps us to use marketing actions based on intent to convert site visitors into leads. It actually helps us to individualize our messaging to reach out to specific customers. With the help of automated messaging, we can nurture leads down the funnel on an all-in-one marketing and sales platform.

5. Targeting Audiences:

Marketing innovations help to understand customers better. Through social networks, credit cards and other Internet footprints, companies will have relevant information about everyone.

By processing big data, they can gain a close understanding of customer behavior and adjust their communication mix according to their needs, thereby gaining greater satisfaction. Each marketer tries to provide an enhanced consumer experience so that products and services can be personalized.

Impact of Marketing Innovation during Industry 4.0:

The impacts of marketing innovation, especially in Industry 4.0, are huge and noteworthy. It would greatly improve productivity. Due to increased productivity, less time is required to produce the same. It's important to note that the entire production process, including development and post-production, is interconnected, which will ultimately speed up and refine the whole production process.

It would help in the emergence of new business models. Business models based on new technologies and big data are centered on new services, value-linked ecosystems, customer's perspectives, allowing for better user-focused design in the manufacturing process as well as to better align with the processes and contexts involved in creating value for the customer.

Incorporating IoT and other technologies into process automation The introduction of 4.0 tools will result in a significant shift in the workflow changing the way work is organised. As a result of all of this, companies' organizational structures will change, and traditional line models will be abandoned.

It will increase competitiveness. Industry 4.0 companies are focused on quality and precision processing as a competitive strategy. The opposite is also true: Industry 4.0 increases production efficiency and lowers costs. The price may then be the competitive advantage for a company.

IMPLICATIONS OF INDUSTRY 4.0 ON HRM PRACTICES

National Finalist

Darshana Rajhans
MBA - HR 2020-22, Symbiosis Centre For
Management And Human Resource Development

Industrial Revolution 4.0 is a phenomenon that is already on us and getting a competitive advantage. **Companies must change their attitudes to the environment that changes.** Developed countries are already experiencing the transformation caused by Industry 4.0 in their production environments.

The evolution of technology impacts the empowerment of humans throughout the company hierarchy. The sudden hit of automation, digitalisation and industry 4.0 across all industries compels us to transform the HR practices that were followed for years. The traditional approaches must be reframed and reused with what the industry prevails. It is expected that changes will be expanded worldwide in the coming years because technological developments constantly stimulate industrial revolutions. The areas affected by the transformation are not only relevant to the production environment. Still, they will also impact the essence of employee duties, which is destined to change the prospects of employees of the human resources profession (HR).

Having the proper human resource development policies can be challenging since they require extensive knowledge in various HRM practices.

It is believed that combining knowledge with academic training can successfully launch the HR 4.0 digitization. Through this partnership, HR professionals can acquire the necessary skills to manage the various functions related to IR 4.0 in the future. They can also work with educational institutions to improve their skills. Through this project, we will introduce new concepts and practices related to Human Resources 4.0 into higher education. This will help prepare the workforce for the changes brought about by the new economy. In order to be more competitive in today's world, employees must have the capacity to innovate and solve problems.

Also, they must have the right skills to handle high-tech machines and automation. **HR 4.0 is recommended to improve employee development. It is also a key component of implementing IR 4.0**. With the help of technology, HR professionals can use reward systems to help employees avoid wasting their time and money. This can help avoid costly maintenance.

It is also important that the reward system for employees is structured and consistent. The HR department should also use STR 4.0 to predict the rate of employee departure.

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This technology can help HR in developing effective and motivating employees, which can help avoid high turnover rates. It can also help organizations avoid high rolling costs. To motivate and promote creativity within the organization, employees should be rewarded with tangible or intangible rewards (V. L. Silva, 2019). Organisations could also develop strategic approaches for developing green reward systems by addressing the employee commitment towards environmental management programmes. The principles of HR 4.0 have affected the development of the employment project of organizations. Scholars believe that the HR 4.0 framework should focus on the flexibility and opening of the HR project, as this will help in preventing the project from being neglected.

Such organisations who implement green HR practices like Paperless office, green building, green employee relations gain competitive advantage over other organisations.

With the evolution of Industry 4.0, green HR is also a booming concept which appears to be promising but there is a need to bridge the gap between IR 4.0 and Green HR practices.

The concept of HR 4.0 can be seen in the transformation of organizations' operations (Jen Ling Gan, 2019). However, it is not yet clear if this concept will be applicable to all employees. It is suggested that the various approaches to the employment project should be considered in order to meet the principles of IR 4.0.

HR Policies
Tailoring the HR policies with the human capital of Industry 4.0

Training
To match the competencies and quality of employees to achiever IR 4.0

Green HRM
Shifting the mindset and model to green HRM

Recruitment
Blockchain based HRM System for effective decision making

Reward System
During uncertain times in IR 4.0 employees must be motivated and rewarded

Job Design
Job Enrichment to meet the principle of IR 4.0

Fig. 1. These are six HR practices to assist companies on how to achieve the goal of IR 4.0

To achieve the goal of IR 4.0, HR professionals must also adopt a green HRM. Green HR practices and IR 4.0 are directly related to each other.

The table below depicts a few insights of the leading companies that would help in changing the HR practices for the 4IR.

Companies	FMCG	Consulting	Telecommunication	IT
Set of Values Involved	Trust, Commitment	Digital acumen, Innovation, Self-Awareness	Develop and learn, Leadership support	Entrepreneurship, Employee Engagement
Framework of Strategy	Purpose-driven, agile fit	Employee experience, sustainability	Employee engagement	Employee focus
Culture	Sustain employability, People-driven	Personal, team Organizational health, transparency	Perpetual learning, enhancing mobility	Lifelong learning, support from management
New Developments	Purpose-led, Future fit	Network Leadership Development Programme	Workforce 2020 programme	Focus on soft skills
HR Practices used	Upskilling & Reskilling,	Digital Upskilling	Reskilling and retaining existing employees	Multiple learning approach

Table 1. Leadership Practices of Big Companies

In IR 4.0, HR practices can help improve the performance of an organization by providing employees with up-to-date skills and capabilities. With the digital transformation of businesses already in full swing, it is important that HR leaders start thinking about how they can best utilize this opportunity to improve processes and lower costs. Creating the HR 4.0 mindset is also important to help HR professionals adapt to the changes brought about by the new world. This will help them avoid making the same mistakes they made in the past.

Call forArticles

We invite articles for the 116th Issue of 2021 of SAMVAD.

The Theme for the edition - "FAST FASHION"

The articles can be from Finance, Marketing, Human Resources, Operations or General Management domains.

You may also refer to sub-themes on Dare2Compete.

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LOVE ALWAYS
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