



ROCHESTON® CERTIFIED
IoT ENGINEER

Network of the Future

Only a decade ago, devices connecting people were few and communication as well as the exchange of information was limited to landline phones, radios and analog televisions dominated homes. These devices only offered a one-way user experience with limited interaction. The Internet was in its nascent stages, only just making its way into personal computers and laptops.

It was a huge breakthrough when mobile phones first were enabled with the Internet, transforming them into gadgets with numerous features, applications and capabilities.

Connecting the mobile phone to the Internet opened up a world of possibilities.

“Smartphones”, as they came to be known, have become an integral part of our everyday lives. This first step eventually led to a “smart revolution”, with an increasing number of everyday devices joining the network. **The Internet found its way into appliances, wearables and automobiles, connecting all of them to the network. It was then that the Internet of Things was born.**

Living in **Smart Cities**

Imagine a world where every inanimate object around you will be brought to life using the Internet. A world that you can switch off and on at the touch of a button is the future. It runs on your fingertips, caters to your every need and most importantly, makes pressing problems of today such as poverty and natural resource depletion, vanish like it never existed in the first place.

This world, created through Smart Cities, will become a reality even before you know it. **The smart city revolution tries to lift existing cities and put them on the digital grid, through autonomous transport, fiber connectivity, infrastructure (both macro and micro) that can detect human movements and Artificial Intelligence that converges with human intelligence to develop ultra-efficient energy systems, Governments, inventors and engineers.**

In essence, IoT will help bring Artificial Intelligence and Human Intelligence to create a fast, efficient and ultra-advanced world of the future.

Smart City



Changing the World at the **Click of a Button**

The Internet of Things (IoT) is a widespread network that connects everyday objects to the Internet, enabling them to interact with each other and exchange data. Simply put, the IoT is a concept that allows any device that can be switched on and off to be connected to the Internet. This could be household appliances like refrigerators, coffee makers and washing machines, paving the way for a “smart”, connected home. It could also be applied on a grander scale, like with the recent Industrial Internet of Things (IIOT) revolution that automates mechanical processes in factories through IoT. **It allows for two-way interactions between connected devices, and will eventually minimize the need for human intervention and manual input.**

With this new technology that connects everything around you to the Internet and enables things to communicate with each other, the possibility of applications of IoT in different industries is infinite. According to American research firm Gartner, over 26 billion devices would be connected to the Internet by 2020, turning the world into a giant network powered by the Internet of Things.

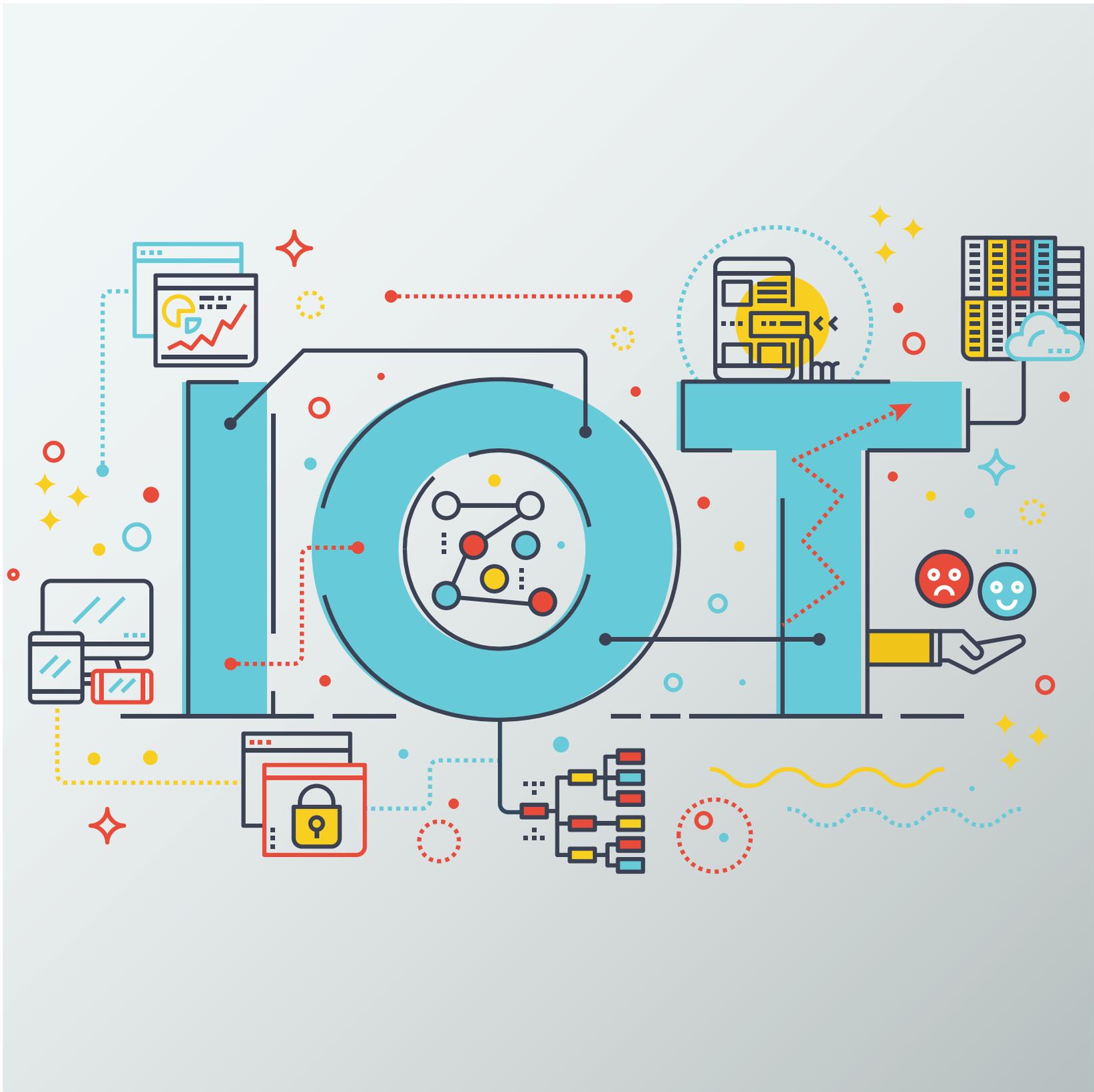
Internet of Things



Changing the World at the **Click of a Button**

Described as the “infrastructure of the information era”, IoT is being touted as the next big thing in today’s world of technology. **The development of IoT implies that our society is not far from transforming into a digitally connected world.**

“In the next century, planet Earth will don an electronic skin. It will use the Internet as a scaffold to support and transmit its sensations.” - Neil Gross (1999)



Transforming the World **IoT and its Impact**

IoT will aid various processes and activities, improving people's lives by making the world faster, smarter and better.

In essence, IoT impacts our lives in two ways it reduces the need for human interference and manual input in all activities by enabling devices to communicate with each other through the Internet and carry out functions autonomously and it also, impacts communication by enabling device-to-device communication, and device-to-people communication.

With increasing number of devices interacting with each other, the IoT will simplify our daily activities in numerous ways. A smart alarm clock will communicate with the coffee machine, ensuring that you have cup of steaming coffee waiting for you as you rise from bed.

A car connected to the IoT can interact with your phone calendar to learn your schedule and also suggest the best routes for you to reach a destination.

Transforming the World **IoT and its Impact**

On a macro level, the IoT will form the backbone of smart cities by revolutionizing traffic systems and connecting buildings and other infrastructure to the Internet. In household units, waste segregation and disposal from buildings will be carried out automatically through sensor embedded drainage systems and pipelines.

When it comes to hospitals and healthcare, doctors will be able to remotely monitor a patient's health from anywhere through automated healthcare systems. These are a few examples of the industries, the IoT could impact. In reality, the increasing integration of IoT in our daily activities would cause a quantum leap in the number of industries, businesses and sectors, it would impact and revolutionize.

“The Internet will disappear. There will be so many IP addresses, so many devices, sensors, things that you are wearing, things that you are interacting with, that you won't even sense it. It will be part of your presence all the time” – Eric Schmidt



1800



1950



2000



INDUSTRY 1.0

01



1700

02

INDUSTRY 2.0



1900



1850

INDUSTRY 3.0

03



04

INDUSTRY 4.0



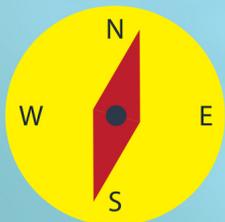
2050

Internet of Things and Market Demand **A Billion-dollar Industry**

Today, IoT is burgeoning into a billion-dollar industry. Companies with innovation at their core are moving towards producing smart devices to take full advantage of this growing demand.

In a few years, gadgets and appliances not connected to the network will become obsolete and IoT will become the norm.

According to a research done by McKinsey and Company, IoT will have a “potential economic impact of \$3.9 trillion, increasing to \$11.1 trillion by 2025”. The industries where value will be predominantly accrued are manufacturing, healthcare, retail and infrastructure. **It is predicted that 2017 will witness a tremendous increase in Internet of Things with a significant raise in IoT investment across the world.**



MAP

15:52

Oct 13 2016



Coffee

1,487



107 M



Hotel

2,075



305 M

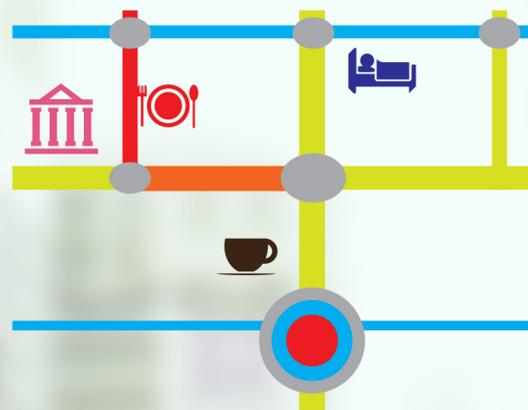


Restaurant

1,014



657 M



Where are you
looking for



Recent History

National Park

Movie theater

Zoo

Internet of Things and Market Demand **A Billion-dollar Industry**

With the increase in integration of IoT technologies in business practices and industrial processes, the market demand for IoT devices, tools and even industry specific “smart” machinery will arise. Additionally, demand for professionals trained specifically to handle IoT devices and IoT processes in businesses will skyrocket, expanding existing job opportunities in the field.

While there are great benefits and advancements that come with IoT, there are also certain challenges that have to be addressed, like increasing energy demands, security and privacy issues. However, while the above subjects create perplexing challenges in the development of the IoT, they also create new demands and exciting opportunities that need to be addressed.

IoT in **Business**

Upcoming innovative businesses are projected to become the largest adopters of IoT. IoT has the potential to improve work efficiency and productivity as well as transform the way industries consume energy.

Integrating automation and IoT-connected devices will result in improved productivity and safety in various manufacturing industries.

IOT HEALTHCARE



IoT in Healthcare and Wellness

IoT is playing a major role in improving healthcare through remote monitoring and consultation. Personalized devices monitor every aspect of an individual's health, thereby improving healthcare and identifying life-threatening conditions.

Looking forward, health insurance companies will also evolve as a result of it, becoming well-equipped to manage and prevent chronic health conditions.



IoT in Manufacturing

Industry 4.0 is the latest wave of revolution in manufacturing, made possible with IoT. **It introduces the concept of “smart factories”, in which computers with machine learning algorithms will be in control of the robotics, removing the need for physical interference from humans.**

This revolution aims to automate the manufacturing processes in the factories, drastically reducing the need for human operators. With Industry 4.0 model, the manufacturing system in factory units itself turns into Internet of Things with communication and data sharing between robotics, computers and humans happening in real time via the Internet.

IoT in **Public Infrastructure**

In terms of infrastructure and rural development, buildings in smart cities will be designed and constructed with environmental sustainability as the primary focus. For instance, sensors that can actively shut down systems, when a building is unoccupied, will be deployed.

Furthermore, prefabricated materials with sensors will actively transmit data about the pace of construction as well as predict maintenance requirements for large commercial buildings.

IoT in Education

In education, greater choice and a better quality of education will be made possible by smart classrooms, advanced learning materials, interactive educational devices and remote education.

There will be efficient monitoring, and interaction between students and educators who will be better facilitated with the help of a central facility.



The illustration features five hands holding smartphones against a dark grey background with a faint city skyline. The top-left hand holds a phone with a food app showing a pizza. The top-right hand holds a phone with a travel app showing an airplane. The bottom-left hand holds a phone with a search app showing a globe and a 'SEARCH' button. The bottom-center hand holds a phone with an email app showing an envelope and a 'check' button. The bottom-right hand holds a phone with a checklist app showing a list with red checkmarks and a 'CHECKLIST' header.

internet of things

IoT in Retail

In retail, customer experience, service and speed are expected to become the main focuses of IoT. **Automating of the billing process and predictive services such as the automatic delivery of products will enhance the experiences of customers.**

With companies like Amazon already experimenting with IoT in the form of their Amazon Go stores, the transformation to a one hundred percent automated retail experience is just around the corner.



Exploding Job Market **Need for IoT Engineers**

A rising need for the Internet of Things will see a directly proportional demand for trained IoT professionals. **IoT as a system was built, and continues to be developed, by highly skilled engineers. Therefore, to operate this system with a thorough understanding of how it works is crucial to maximize its efficiency. This demands professionals with a strong technical knowledge and specialization in IoT.**

IoT engineers trained in NoSQL and cloud computing, IT infrastructure and network security, 3D design and electrical engineering are much in demand by many of the top companies that have adopted IoT. The sound technical knowledge they have will equip them to customize the technology for specific projects, understand the limitations and advantages of using automating processes, experiment with the technology, design by modifying codes and explore fresh areas that can be integrated with IoT.

This demand for IoT engineers has created several new designations and openings for trained personnel, within the corporate sector. We will explore some of these career opportunities in jobs of the future ([link](#)).

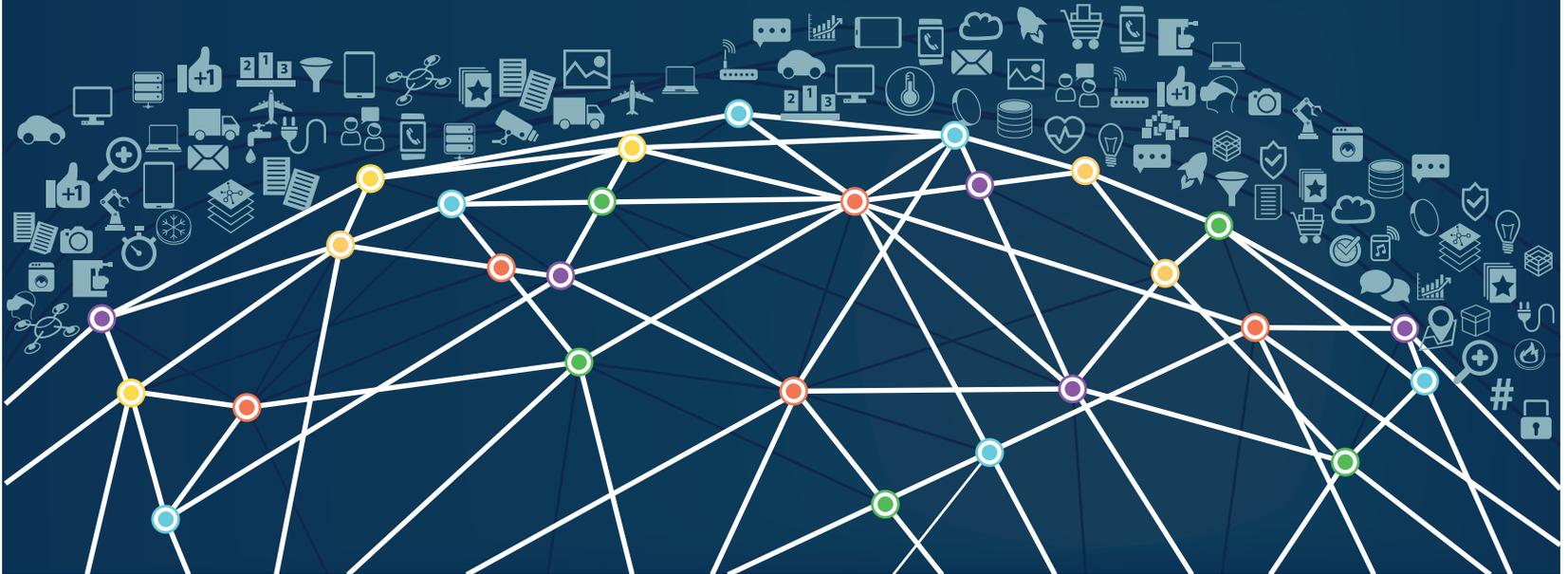
Internet of Everything



Exploding Job Market **Need for IoT Engineers**

"IoT is changing and transforming everything from business to life. Everything is being wired up or connected wirelessly — architecture, energy efficient sensing, secure networks, quality of service, new protocols... It simply means that powerful information will be at our fingertips." — Mehul Nayak, author at Tech.io

INDUSTRIAL INTERNET OF THINGS



Career Advancement **Push Your Boundaries**

With the rising dominance of the Internet of Things as well as its widespread applications, a well-rounded skillset in the field is extremely essential. It can tremendously improve the marketability and career prospects of individuals either aspiring to move forward in their present fields or seeking new opportunities in a rapidly transforming and ever-changing job market.

While IoT technology aims to replace the need for several conventional jobs, it also gives rise to a plethora of opportunities that do not exist today. Given the constantly increasing ubiquity of IoT, professionals from a wide range of sectors and industries will potentially be able to enjoy an advantage in contributing to both their existing careers as well as new and promising prospects that are expected to arise.

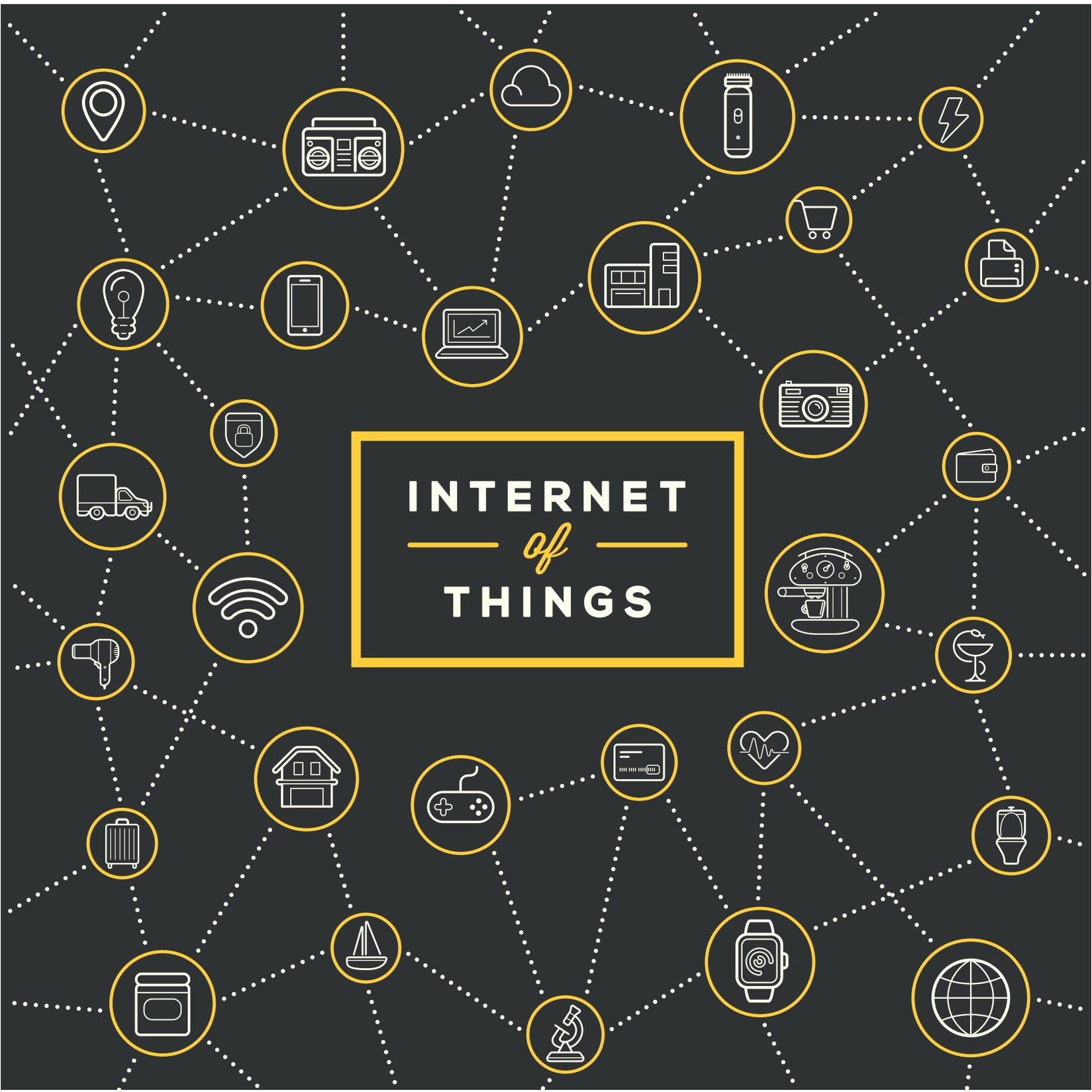
Entrepreneurship Development **Be a Game Changer**

IoT is a complex network and isn't a one-man job. With a competent team and suitable personnel, it can generate profitable business solutions. Recently, there has been increase in the number of IoT startups that produce and fund IoT devices and related projects. These initiatives have been successful; several of these startups have worked in collaboration with popular companies while others have been bought outright by them.

Nest Labs, a startup company producing thermostats and smoke detectors, was bought by Google for \$3.2 billion, attracting the attention of many investors and entrepreneurs, all of whom started viewing IoT as an emerging and lucrative gateway for their businesses.

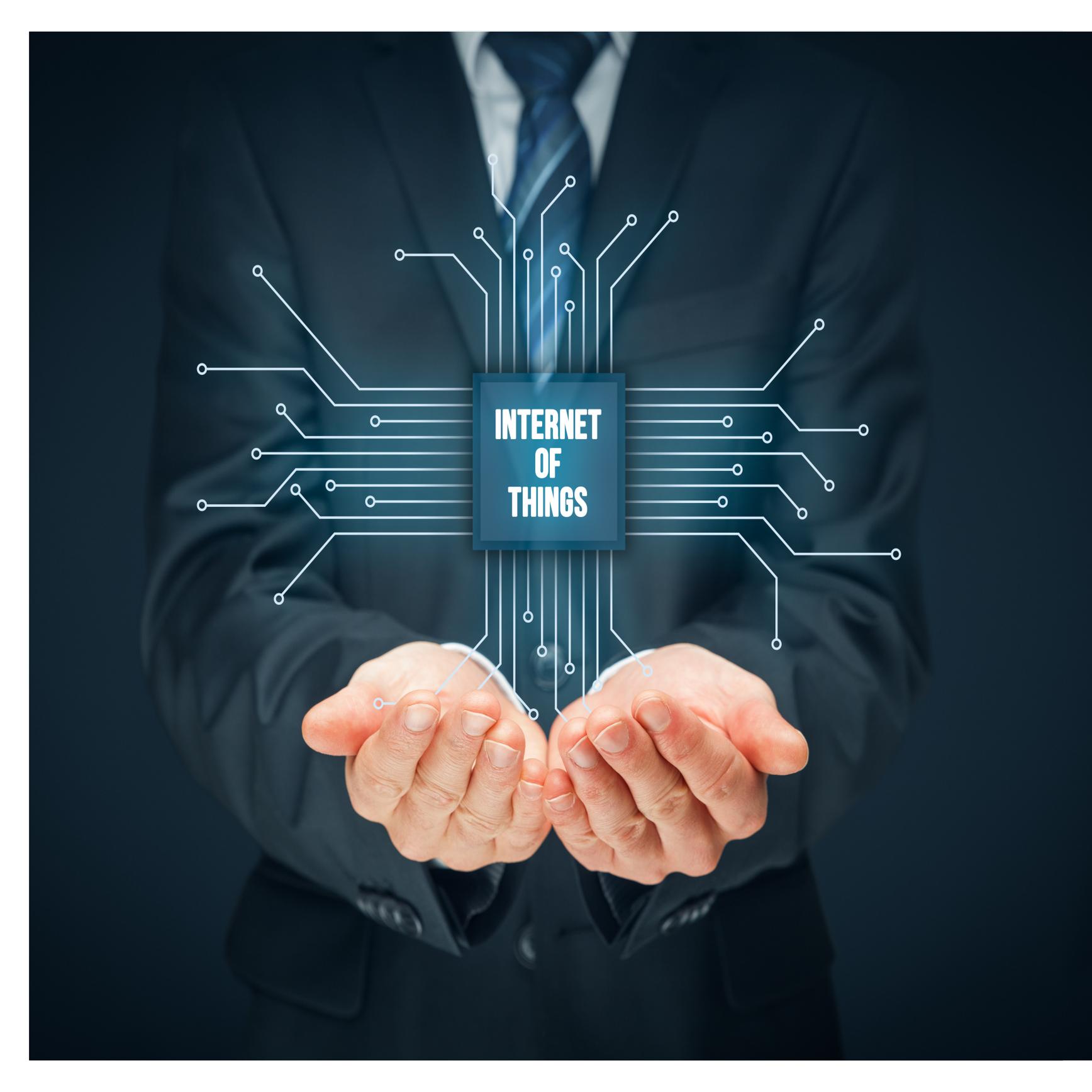
While there are many challenges, the right guidance and training can help future entrepreneurs and technology professionals lead the way in IoT-related development. Many professionals who have undergone proper training have started their own IoT companies and found success through various opportunities that have presented themselves.

INTERNET
of
THINGS



Entrepreneurship Development **Be a Game Changer**

'There is one quality that one must possess to win, and that is definiteness of purpose, the knowledge of what one wants, and a burning desire to possess it.' - Napoleon Hill

A person in a dark blue suit and tie is shown from the chest down, holding a glowing blue square chip with the text "INTERNET OF THINGS" in white. The chip is held between their hands, and numerous white circuit lines radiate from it, extending across the frame. The background is a dark, blurred blue.

**INTERNET
OF
THINGS**

IoT Professions

IoT is a vast network enabled by the latest in technology. It requires qualified and knowledgeable professionals to navigate the challenges it poses. To keep up with the rapid growth of technology, IoT needs to be constantly improved and developed by engineers, designers, technology developers and programmers.

Moreover, big players in the field of technology such as Google, Nokia and Intel are looking to work with aspiring professionals qualified in the domain of the Internet of Things.

IoT technology is making markets and industries more dynamic than they have ever been, creating new and unique jobs in various fields of work.

"Smart homes and other connected products won't just be aimed at home life. They'll also have a major impact on business. And just like any company that blissfully ignored the Internet at the turn of the century, the ones that dismiss the Internet of Things risk getting left behind." — Jared Newman

4.0



IoT Sectors

IoT is expected to be at the forefront of the next technological revolution. At present it finds application in the fields of transportation, design, education and healthcare. The sectors, where knowledge of the IoT is being sought, include:

- Product Management
- Robotics
- Hardware Engineering
- Business Intelligence
- Networking
- Industrial Programming
- Software Development
- User Interface and Experience Design (UI/UX)

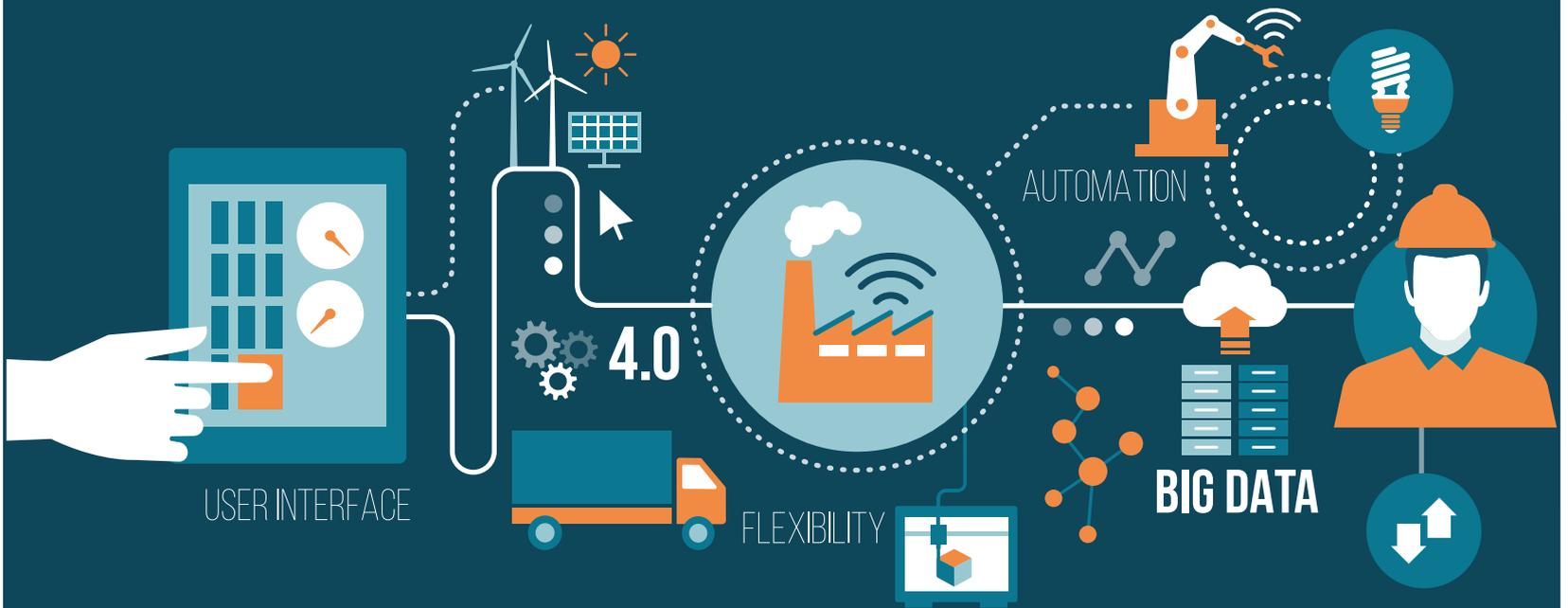
Industry 4.0

ideation trend **cloud** revolution project
business resources smart **physical** sensors connected exchange technology fourth sector
industry manufacturing **future** **internet** **data** **cyber** **computing** **machines** **tech** **digital** **sales**
iot automation engine robot industrial systems **tech** **digital** **sales** **intelligent** **automotive**
digitization robot **internet** **data** **cyber** **computing** **machines** **tech** **digital** **sales** **intelligent** **automotive**
strategic render connectivity **tech** **digital** **sales** **intelligent** **automotive**
logistics strategy

Skills Required for a Career in IoT

- Business Intelligence
- Computer Programming
- User Interface Design
- User Experience Design
- Information Security
- Mobile Development
- Artificial Intelligence Development
- Hardware Engineering
- Circuit Design
- AutoCAD
- Machine Learning
- Security Infrastructure
- Electrical Engineering

SMART INDUSTRY



Jobs of the **Future**

In addition to the importance of IoT in conventional careers such as business management, engineering software development, mobile application design and UI/UX design, the Internet of Things also gives rise to several new career paths. As the IoT develops, we can expect to see a myriad of new opportunities being created.

- **Chief Internet of Things Officer**

The Chief Internet of Things Officer, or CIoTO, is an upcoming C-Suite title being added to the world of business.

Polls and studies have shown that many businesses are eager to appoint a Chief Internet of Things Officer who will be responsible for making decisions regarding the adoption of IoT technology with a view to improve business results. They will also be assigned to developing the larger IoT strategy of the company.



Jobs of the **Future**

- **IoT Business Designer**

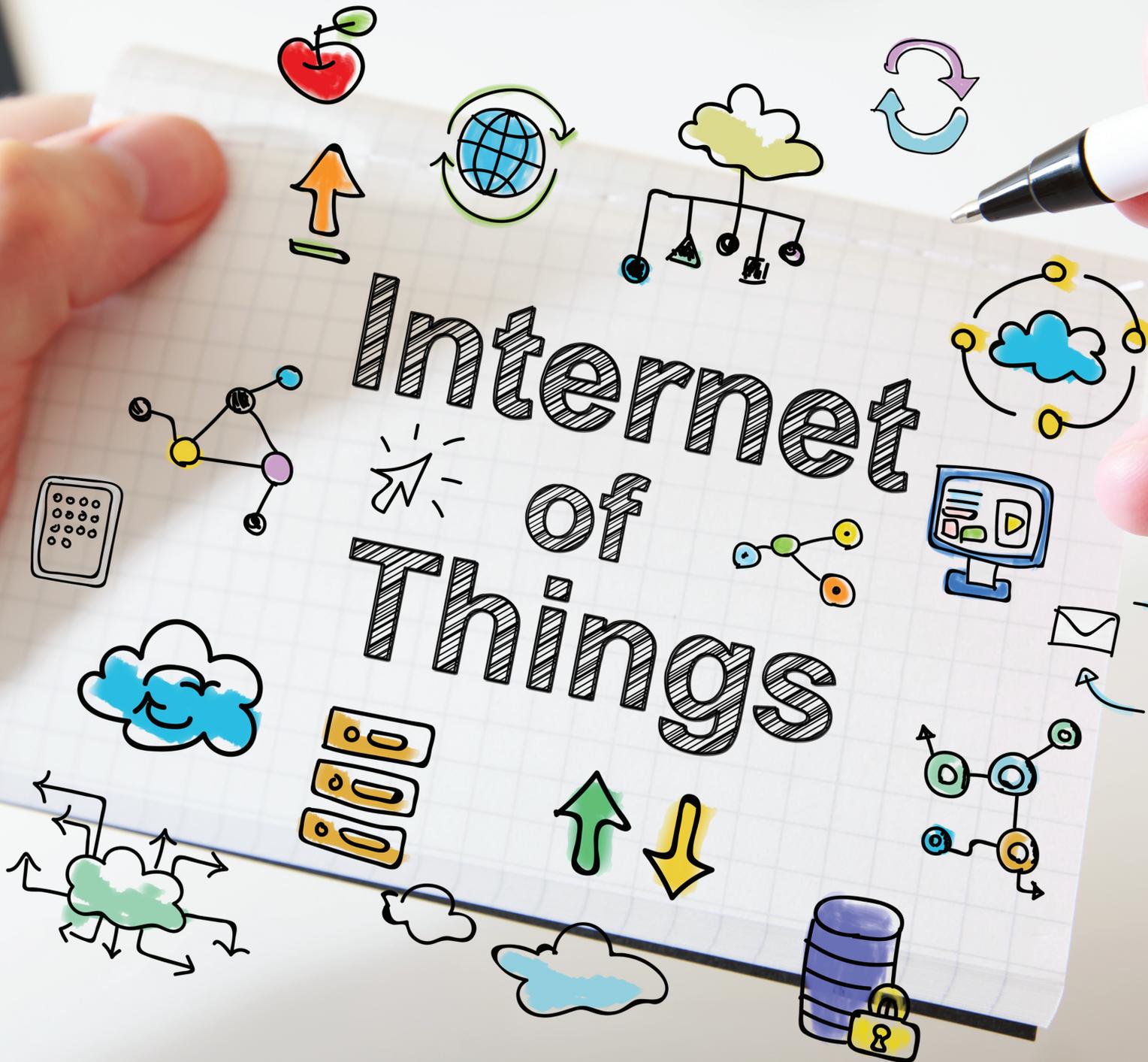
An IoT Business Designer is a creative strategist. His or her primary role is to draft a vision for a company and execute it with the help of IoT Technology.

An IoT Business Designer studies and understands the technologies and processes enabled by the IoT, and also presents business opportunities and solutions that can be addressed using IoT technology. Business designers will also oversee the application and execution of these aforementioned strategies.

- **Embedded Systems Engineer**

The Internet of Things connects devices to both the Internet and to other devices using embedded sensors, applications and systems. With the emergence of IoT, there are a number of new job opportunities arising and as a consequence of new products being developed.

Internet of Things



Jobs of the **Future**

These job opportunities include a variety of professions in engineering and design, including firmware engineering, PCB design, component engineering, signal conditioning, digital signal processing and Internet gateway interfacing, among others. Each of these professions presents new challenges that need to be addressed by future-oriented professionals well versed in IoT technology.

- **Security Engineer**

One opportunity that presents itself in the form of a challenge is the threat to data security and privacy. The emergence of the IoT in the market will certainly create opportunities for engineers to build systems and offer solutions to help protect the data and privacy of users. A security engineer will require expertise in IoT technology and an understanding of the security risks posed towards IoT systems.

Jobs of the **Future**

- **Robot Coordinator**

The growing significance of robots and autonomous machinery in industries has created the need for robot coordinators, whose primary responsibility is to supervise the working of robots and address malfunctions and maintenance concerns. A robot coordinator is largely a management position, involving the sourcing, acquiring, programming, operating, servicing, working and maintaining of robots.

- **Product-Service Hybrid Developer**

One of the ways in which the Internet of Things is changing the world is by giving birth to devices that are a combination of products and services, also known as “product-service hybrids”. This presents challenges and also adds an extra dimension to the work of a product developer, inadvertently creating the need for “Product-Service Hybrid Developers”.

A Product-Service Hybrid Developer will be involved in developing and launching these hybrids as well as overseeing their management as single entities.

Rocheston Certified **IoT Engineer**

Tapping into the potential of IoT and all of the possibilities that it brings to businesses requires a well-rounded knowledge base and insights into the new technologies and systems emerging today.

Understanding how machines and devices are built with embedded sensors, intuitive and interactive user interfaces enables professionals and businesses to take advantage of the opportunities created by the Internet of Things.

A Rocheston Certified IoT Engineer will be trained in the various disciplines required to navigate the challenges of the Internet of Things revolution. The Rocheston Certified IoT Engineer course is made up of a comprehensive set of modules that provide both an understanding and insight into developments in networking, data management and analytics, communication devices, embedded systems and user interface design.



CERTIFIED CHIEF
INNOVATION OFFICER

®

Conquer the Future **IoT and Training**

The RCIE program has been meticulously crafted and designed to suit the needs of various sectors in the industry. The program developed by Rocheston, is based on extensively researched modules. **The program is designed to provide an insight into the significance of IoT in the current and future business scenario through interactive and unconventional training methods.** The course's outline will be based on the following sessions:

- IoT Concepts
- Infrastructure for IoT
- IoT Business Models
- Entrepreneurship Opportunities in IoT
- Innovation and Creative Ideas
- Industry 4.0
- Smart Cities
- IoT Standards
- IoT Architecture

Conquer the Future **IoT and Training**

- IoT Platforms
- IoT Development Boards
- IoT Circuits and Wirings
- IoT Sensors and Actuators
- IoT Wireless Communication Protocols
- IoT Programming Languages
- IoT Building Prototypes using 3D Printers
- Building iOS and Android dashboards
- IoT Cloud Data Storage
- Machine Learning and Intelligent Systems
- Deep Learning
- Big Data Analytics
- Connected Cars
- Patents, Trademarks and Intellectual Property

About **Rocheston**

Rocheston Accreditation Institute, or RAI, is a professional membership organization that provides training, networking, standards compliance and other resources for organizations and individuals. **Rocheston produces proprietary patent pending customer happiness metrics known as 'Nebula Metrics' that measures customer satisfaction.**

Rocheston in Training

Rocheston has five cutting edge certification programs to prepare students, professionals and businesses in being leaders and the game changers in today's competitive business markets.

School of Business

- CMBL - Certified Master of Business Leadership

School of Innovation & Technology

- CCIO - Chief Certified Innovation Officer
- RCIE - Rocheston Certified IoT Engineer

School of Filmmaking

- Rocheston Certified Director
- Rocheston Certified Screenwriter
- Rocheston Certified Art Director
- Rocheston Certified Cinematography
- Rocheston Certified Actor
- Rocheston Certified Production Designer
- Rocheston Certified Sound Engineer
- Rocheston Certified Film Editor

School of Liberal Arts

Rocheston in IoT and Innovation

Rocheston has multiple patents related to mobile phones, operating systems and IoT devices in various fields. Some of the revolutionary innovations at Rocheston include the Cyfone - a revolutionary mobile phone developed for the future, Cycle OS - an operating system for mobile phones, Rocheston Rose - an innovative custom built operating system for laptops/mobiles and many such cutting edge IoT appliances and devices.

With over 30 years of cumulative expertise in the IT sector, Rocheston brings this expertise to IoT and Innovation, equipping students with hands on training on how to conceptualize, build and program their own IoT devices.

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