Strategic Services Marketing
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Internet of Things (IoT) in Service Ecosystem

Hello everyone. In this session, let's comprehend the importance of the Internet of Things, that is IoT, in service ecosystems. What is IoT or Internet of Things? It is nothing but the network of interconnected devices, objects or things embedded with sensors, software and other technologies that enable them to collect and exchange data over the Internet or other communication networks. In simpler terms, IoT is the concept of connecting any device with on-off switch to the Internet and or to each other. This includes everything from smartphones, wearable devices and household appliances to industrial machines, vehicles and infrastructure components. The goal of IoT is to enable these devices to communicate, interact and collaborate with each other automatically or autonomously, without human intervention, to gather and analyze data, monitor conditions and control some processes.

This connectivity and data sharing enable a wide range of applications and services across industries, including smart homes, smart cities, healthcare, agriculture, transportation, manufacturing and many more. Let's understand what exactly is this Internet of Things and how it works through an informative video. Have a look at this video. The Internet of Things or IoT is influencing our lifestyle from the way we react to the way we behave.

From air conditioners that you can control with your smartphone to smart cars providing the shortest route or your smartwatch which is tracking your daily activities, IoT is a giant network with connected devices. These devices gather and share data about how they are used and the environment in which they are operated. It's all done using sensors. Sensors are embedded in every physical device. It can be your mobile phone, electrical appliances, vehicles, barcode sensors, traffic lights and almost everything that you come across in day to day life.

These sensors continuously emit data about the working state of the devices. But the important question is how do they share this huge amount of data and how do we put this data to our benefit? IoT provides a common platform for all these devices to dump their

data and a common language for all the devices to communicate with each other. Data is emitted from various sensors and sent to IoT platforms securely. IoT platform integrates the collected data from various sources. Further analytics is performed on the data and valuable information is extracted as per requirements.

Finally, the result is shared with other devices for better user experience, automation and improving efficiency. Let’s look at a scenario where IoT is doing wonders. In an AC manufacturing industry, both the manufacturing machine and the Belt have sensors attached they continuously send data regarding the machine health and the production specifics to the manufacturer to identify issues beforehand. A barcode is attached to each product before leaving the belt.

It contains the product code, manufacturer details, special instructions, etc. The manufacturer uses this data to identify where the product was distributed and track the retailer's inventory. Hence the manufacturer can make the product running out of stock available. Next, these products are packed in parcel to different retailers. Each retailer has a barcode reader to track the products coming from different manufacturers, manage inventory, check special instructions and many more.

The compressor of air conditioner has an embedded sensor that emits data regarding its health and temperature. This data is analyzed continuously allowing the customer care to contact you for the repair work in time. This is just one of the million scenarios. We have smart appliances, smart cars, smart homes, smart cities where IoT is redefining our lifestyle and transforming the way we interact with technologies. The future of IoT industry is huge.

Business Insider Intelligence estimates that 24 billion IoT devices will be installed by 2020 and IDC predicts that IoT revenue will reach around 357 billion in 2019. Resulting in a lot of job opportunities in the IT industry. Want to become a part of the IoT revolution? Come and master IoT with Edureka. I hope you got what IoT is all about. Now let's understand the importance of IoT in today's service ecosystems.

The first and foremost importance is with respect to enhanced customer experiences. IoT enables businesses to deliver personalized, context-aware experiences to the customers. By leveraging data collected from interconnected devices, firms or service providers can tailor services to individual preferences and behaviors, improving customer satisfaction and loyalty. For example, in retail, IoT-powered solutions can offer personalized recommendations based on customers' browsing history and location, leading to more relevant and engaging shopping experiences. Another importance of IoT is with respect to improved operational efficiency.

IoT helps businesses optimize processes, reduce their costs and improve the productivity factor. By connecting devices and systems, businesses can automate tasks, monitor some

operations in real-time and identify opportunities for efficiency gains. For instance, in manufacturing, IoT sensors can track equipment performance, predict maintenance needs and minimize downtime, leading to increased operational uptime and cost savings for the firm. Another importance of IoT is with respect to having real-time monitoring and insights. IoT devices or systems provide businesses with real-time data and insights into service performance and customer behavior.

By collecting and analyzing data from connected devices, businesses or service providers can gain valuable insights into customer preferences, market trends and operational inefficiencies. This enables data-driven decision-making, strategic planning and the ability to respond quickly to changing marketing conditions. Another importance of IoT is with respect to smart service offerings. IoT enables the development of smart, connected services that offer new value proposition to customers. For example, in healthcare, IoT devices such as wearable fitness trackers and remote patient monitoring systems enable continuous monitoring of health metrics and early detection of health issues, leading to improved patient outcomes and reduced healthcare costs.

Another importance we can see here is with respect to integration with emerging technologies. IoT serves as a foundational technology that integrates with other emerging technologies such as AI, machine learning and blockchain. By combining IoT with AI and ML algorithms, service providers can create intelligent systems that automate decision-making and provide predictive analytics. Similarly, IoT can enhance the transparency and security of transactions when integrated with blockchain technology, enabling secure data sharing and traceability in supply chain management and other applications. Now what is the role of IoT? The Internet of Things plays a transformative role in service delivery and customer experiences by enabling connectivity, automation and data-driven insights across various industries.

So let's discuss some key ways IoT enhances service delivery and customer experiences as roles of IoT in service ecosystems. The first role here is connected devices and systems. IoT connects devices, sensors and systems to create a network of interconnected objects that can communicate and collaborate autonomously. This connectivity enables seamless interactions between devices and enables businesses to monitor, control and optimize service delivery processes in real time. Another role is with respect to personalized and context-aware experiences.

IoT enables businesses to deliver personalized and context-aware experiences to customers by leveraging data collected from all of these connected devices. For example, in retail IoT sensors can track customer movements and preferences within a store, allowing retailers to offer personalized recommendations, promotions and even offers based on individual shopping behaviors. Third role of IoT in service ecosystem is with respect to automation and efficiency. IoT automates tasks and processes, streamlining

service delivery and improving operational efficiency. By connecting devices and systems, businesses can automate routine tasks, optimize resource allocation and minimize manual interventions.

For instance, in logistics, IoT-enabled tracking devices provide real-time visibility into shipment's, enabling companies to optimize routes, reduce delays and improve delivery times. Another role is with respect to predictive maintenance and service optimization. IoT sensors monitor the performance of equipment and assets in real time, enabling predictive maintenance and proactive service optimization. By analyzing data collected from connected devices, businesses can identify potential issues before they escalate into costly failures. They can also schedule maintenance activities more efficiently and optimize service delivery processes to maximize uptime and reliability.

Another role is with respect to data-driven insights and decision-making. IoT generates vast amount of data that businesses can analyze to gain valuable insights into customer behavior market trends and operational performance by collecting and analysing data from connected devices. Businesses can make informed decisions, identify opportunities for improvement and also tailor services to meet customer needs more effectively. Another role played by IoT in the context of service ecosystem is with respect to smart service offerings.

IoT enables the development of smart, connected services that offer new value proposition to customers. For example, in healthcare, IoT devices such as variable fitness trackers and remote patient monitoring systems enable continuous monitoring of health metrics and early detection of health issues. So, IoT plays a central role in transforming services delivery and enhancing customer experiences by enabling connectivity, automation and data-driven insights. By leveraging IoT technologies, businesses can deliver personalized, efficient and innovative services that meet the evolving needs and expectations of consumers in today's digital age. Now, let's understand how IoT can be helpful in terms of enhanced customer services or experiences.

There are multiple ways through which IoT can enhance customer experiences. For example, data collection and sensors, through data processing and analysis, through contextual understanding, offering real-time adaptation and personalization possibilities, providing automation and decision-making abilities and going for seamless integration across channels. Let's discuss these one by one. First here is data collection and sensors. IoT devices are equipped with sensors that collect data on various parameters such as location, movement, temperature, humidity and user interactions.

These sensors continuously gather data from the surrounding environment and transmit it to centralized systems for processing and analysis. Secondly, IoT also helps in data processing and analytics. The data collected from IoT devices is processed and analyzed

using advanced analytics techniques such as machine learning algorithms. These algorithms identify patterns, correlations and trends in the data, extracting meaningful insights that can be used to understand customer preferences and behaviors. Third, with respect to contextual understanding.

By analyzing data from multiple sources, including customer interactions, historical data and environmental factors, IoT systems develop a contextual understanding of each customer's unique situation. This contextual information includes factors such as location, time of the day, weather conditions, past purchase history and current activities. Another point here is real-time adaptation and personalization. Armed with contextual insights, IoT systems can dynamically adapt and personalize experiences in real-time based on individual customer preferences and situational context. For example, in retail, IoT-enabled systems can offer personalized product recommendations, promotions and offers to customers based on their location within a store, their browsing history and purchase behavior.

Coming to the next point, that is automation and decision making. IoT systems automate decision-making processes, enabling instantaneous responses to changing customer needs and preferences. For example, in smart homes, IoT devices can adjust lighting, temperature and other environmental settings automatically based on user preferences and occupancy patterns, without the need for manual intervention. Another aspect is with respect to offering seamless integration across channels. IoT enables seamless integration across multiple channels and touchpoints, allowing customers to interact with businesses consistently across different devices and platforms.

For example, IoT-powered smart home systems can synchronize settings and preferences across smartphones, tablets and even voice-enabled devices, providing a cohesive and unified user experience. IoT enables personalized context-aware experiences for customers by leveraging data collected from interconnected devices to understand individual preferences, behaviors and environmental conditions. By analyzing these data and dynamically adapting experiences in real-time, IoT systems deliver tailored and relevant interactions that meet the unique needs and expectations of each customer. Now let's understand some examples of how IoT enhances customer experiences. The first example here that we have is from Comcast Xfinity Home Security Systems.

Comcast offers Xfinity Home, a smart home automation service that leverages IoT technology to provide homeowners with greater control and security over their homes. The features include smart thermostats, lightning controls, security cameras and door or window kind of sensors that are interconnected and can be managed remotely through a mobile app or web portal. With IoT, homeowners can monitor and adjust their home temperature, lightning and security settings from anywhere, enhancing convenience,

energy efficiency and peace of mind. Let's have a look at this particular commercial that talks about this particular product from Comcast that is Xfinity Home.

Have a look at this video. The smart home never sleeps. It doesn't shout at you to get out of bed. It wakes you up with the soft morning light and the smell of coffee. The smart home knows the weather outside and it knows how you like it inside, saving money and energy. It helps you keep your house and your household in check.

Xfinity Home cameras. The smart home helps you do things you may have forgotten about. It keeps an eye on things when you're away and provides 24-7 professional monitoring. The smart home makes moves so you don't have to. It keeps track of everything and updates you no matter where you are. It makes life's conveniences even more convenient.

The smart home gives you peace of mind that the things you value most are safe because a smarter home is a safer home. Another example here is from UPS Smart Logistics Network which is from a transportation services context. UPS has implemented a smart logistic network powered by IoT technology to optimize its package delivery operations and improve efficiency. IoT sensors are embedded in delivery vehicles, packages and sorting facilities to track location, temperature, humidity and package status in real time. This data is integrated into UPS Logistics Management System, enabling root optimization, real-time tracking and proactive problem solving to ensure timely and secure package deliveries.

Another example that we have here is from Philips. Philips has this HealthSuit digital platform specifically designed for healthcare service providers. Philips offers the HealthSuit digital platform, an IoT-enabled healthcare platform that integrates data from various medical devices, wearables and health monitoring systems to provide personalized care and improve patient outcomes. Healthcare providers can remotely monitor patient vital signs, medication, adherence and even activity levels in real time, allowing for early intervention and proactive care management. The platform also facilitates remote consultations, telemedicine services and patient engagement initiatives. Let's have a look at this video that talks about this particular product HealthSuit from Philips.

Today, people are more connected in more places than ever and we are becoming more active participants in our own health. At the same time, healthcare providers are looking for deeper clinical insights and actionable information to make better decisions and improve patient outcomes. While health systems must deliver high quality care with more efficiency at lower costs, treat aging populations and more people with chronic conditions and engage younger consumers who expect healthcare to be mobile, digital and at their fingertips. Against this landscape, we see the power of a connected health ecosystem, devices and data, patients and providers, in hospitals, at home and on the go to help usher

in a new era of continuous health and more personalized care. The Philips HealthSuite digital platform is an open platform of services, capabilities and tools designed to inspire and enable the development of next generation connected health and wellness innovations.

Imagine, a mobile app paired with connected health devices that allows people managing diabetes to capture and monitor their diet, glucose, insulin and more, all from their smartphone. The same data can be shared with their healthcare providers so the clinicians have a better picture of the patient's condition for more informed decisions. Reminders and alerts for medications and testing are programmed to support the person's individual treatment plan and a curated social community of others managing diabetes is just a poster way for advice and support. Unlike other cloud computing platforms, HealthSuite was purpose built for healthcare. Its health optimized infrastructure allows for seamless integration with existing health enterprise ecosystems.

Multi-layer security protects sensitive health data and safeguards patient data privacy. Clinical decision algorithms and predictive analytics can leverage different health propositions and help make sense of data while optimizing care delivery. Collaboration tools facilitate better coordination among healthcare consumers and their caregivers, patients and their care teams and entire health populations while access to open cloud-based programming interfaces built specifically for health applications accelerate innovation and rapid prototyping. The Philips HealthSuite digital platform offers seven distinct services from our core services that authorize users, store data, connect devices and host applications. To our robust capabilities and tools that empower advanced analytics, data sharing and workflow orchestration.

The platform is optimized to speed the development of consumer health and professional healthcare applications across the health continuum. HealthSuite digital platform powers connected health solutions from Philips and other parties and gives health tech developers the tools and services to co-create innovative health applications that can deliver a more personalized care experience for individuals and caregivers. Or take on larger challenges in care delivery across entire populations. By connecting care on our HealthSuite platform, healthcare IT professionals can reduce infrastructure costs and better integrate their enterprises. Independent software vendors are able to accelerate innovation and then build, scale and deploy applications faster and easier.

Health system executives have the tools and technologies in place to enable a smoother, more cost-effective transition to value-based care. Care providers can experience closer, more personalized connectivity with their team and patients at the point of care and across care settings. And healthcare consumers are able to take more control of their personal health and wellness journeys. Philips HealthSuite, empowering continuous health and personalized care for people, patients and populations across the health continuum.

Innovation and you, Philips. These examples demonstrate how service firms across different industries are leveraging IoT technology to deliver smarter, more connected services that enhance customer experiences, optimize operations and drive business value. Now let's look at some emerging trends and future opportunities for IoT in service ecosystem. The first opportunity or trend is the growing use of edge computing systems. As IoT devices generate massive amounts of data, edge computing is emerging as a critical trend. Edge computing involves processing data closer to the source at the edge of the network rather than relying solely on a centralized cloud servers.

So what you can see in this image, so this is the cloud server and this is like edge nodes. So whatever the data coming from these devices are getting processed at this level itself without relying on the cloud for all those processing and etc. Edge computing enables faster data processing, reduced latency and improved efficiency, making it ideal for real-time IoT applications such as autonomous vehicles, industrial automation and smart cities. Another emerging trend is use of 5G connectivity. The rollout of 5G networks is set to revolutionize IoT connectivity by offering higher bandwidth, lower latency and greater reliability.

5G connectivity will unlock new possibilities for IoT applications requiring high-speed data transmission and real-time responsiveness such as augmented reality, virtual reality and remote surgery. Service firms can leverage 5G to deliver richer, more immersive experiences and enable innovative use cases across various industries. Another trend is with respect to AI and machine learning integration. Integrating IoT with AI and ML algorithms enables smarter and more autonomous decision making. AI-powered IoT systems can analyze vast amounts of data collected from interconnected devices.

It can identify patterns and predict outcomes as well and automate processes without human interventions. This opens up opportunities for predictive maintenance, personalized recommendations and adaptive service delivery tailored to individual preferences and behaviors. Another emerging trend is with respect to blockchain for security and trust. Blockchain technology offers decentralized and tamper-proof data storage and verification, making it well-suited for enhancing security and trust in IoT ecosystems. By leveraging blockchain, service firms can ensure the integrity and authenticity of IoT data, secure their transactions and establish transparent and auditable supply chains.

This is particularly relevant in industries such as healthcare, supply chain management and finance, where data integrity and privacy are paramount. Now let's understand the importance of IoT per overall services industry. IoT's are beneficial in multiple ways as shown in this particular figure. Let's discuss these one by one.

First here is with respect to enhanced customer experiences. IoT enables personalized, context-aware experiences that anticipate and meet individual customer needs and preferences driving satisfaction and loyalty. Secondly, IoT enables operational efficiency. By automating tasks, optimizing processes and providing real-time insights, IoT improves operational efficiency, reduces cost and enhances productivity for service provider. Third, data-driven decision making. IoT generates vast amount of data that can be analyzed to gain valuable insight into customer behavior, market trends and operational performances.

Empowering businesses and service providers to make more informed decisions and drive strategic initiatives. Fourth, innovation and differentiation. IoT opens up opportunities for innovation and differentiation by enabling the development of new products, services and business models that deliver added value and address emerging customer needs. Then we have security and trust. Prioritizing security and privacy in IoT developments is essential to building trust and confidence among customers.

Implementating robust security measures and ensuring data integrity are critical for safeguarding sensitive information and protecting against cyber threats. Next, collaboration and ecosystems. Collaboration with technology providers, industry partners and ecosystem stakeholders is key to driving innovation, interoperability and scale in IoT deployments. By participating in cross-industry ecosystems, businesses can access a broader range of resources, expertise and opportunities for value creation. Overall, IoT plays a pivotal role in transforming service ecosystems by enabling connectivity, automation and data-driven insights that drive customer satisfaction, operational excellence and business growth.

Embarking IoT technologies is essential for service providers to stay competitive, meet evolving customer expectations and unlock new opportunities for innovation and differentiation in today's digital age. So in this session, we try to comprehend the importance of the Internet of Things, that is IoT, in the context of service ecosystems. Thank you.