

An **KFX** Services Paper

How is the Internet of Things Changing the Payments Landscape?

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Introduction

Digital payments space is in the midst of a rapid evolution, pulled by a growing customer demand for easy payment solutions, and pushed by a rising tide of powerful new technologies. With the internet becoming intertwined with everyday life, it is safe to say that Internet of Things (IOT) is one of the biggest trends of the 4th industrial revolution. The IOT sector is growing by **15%** per year, with the financial services sector becoming the largest market segment. During the industry's goal of displacing cash, IOT expands the payment-acceptance network. The Internet of Payments (IOP) is refurbishing how businesses operate. It is predicted that by 2022, **\$7.5 Billion** in new transactions will be generated in the United States through IOP. With IOP, a new opportunity for things to become platforms for commerce is presented. IOP eliminated the friction in the payment process, given that payment happens at the time and place of a consumer's choosing. With this new movement towards the financial sector, the Internet of Things is driving innovation in the payment space



The Mystery Behind the Internet of Things:

Internet connectivity continually pushes back the limits, winning new markets. The IOT market is expected to reach **\$410 Billion** by 2023, and **\$13 Trillion** by 2025. The Internet of Things extends the connectivity between things without the need for human intervention. IOT devices are those that are connected to the internet, integrating a connected world, as seen in figure 1.

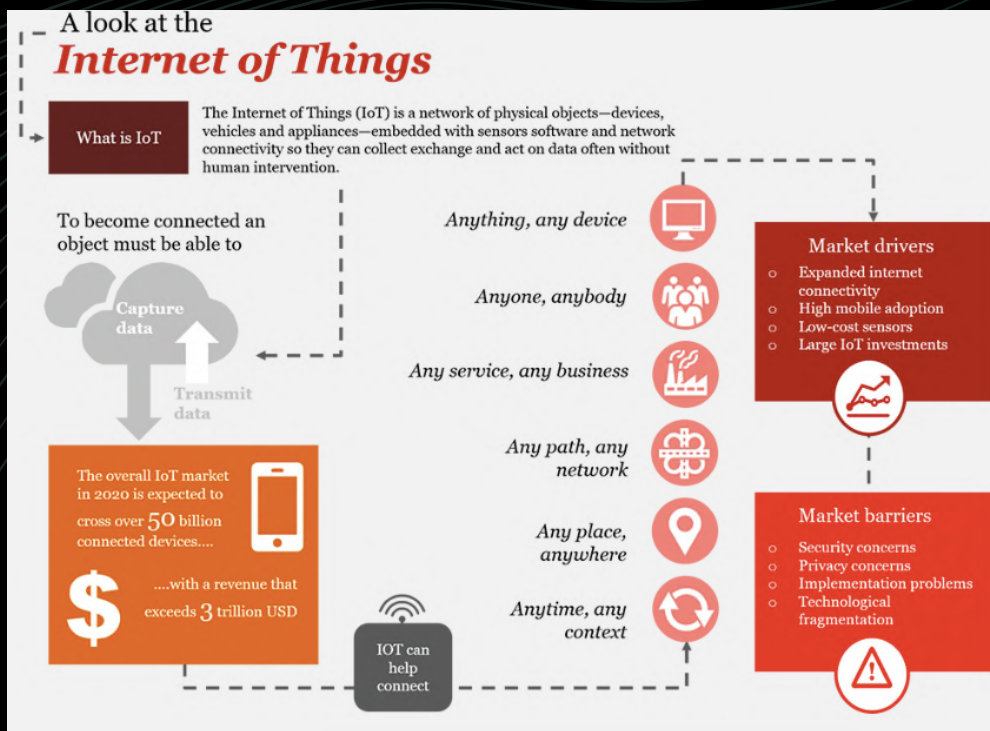


Figure 1: A Look at the Internet of Things (PWC, India)

Devices with built-in sensors are linked to the Internet of Things platform which pools data from multiple gadgets, analysing them and transferring the most valuable data to specific appliances designed to address the needs. In doing so, such devices help discover patterns, problems and gives recommendations. IOT is shifting the way we interact with surroundings with **80%** of IOT transactions occurring on smartphones and tablets by 2023. By 2027, there will be **41 billion** IOT devices, with global spending on IOT technology reaching **\$1 Trillion** by 2022. It is safe to say that IOT adoption is and will be progressing at an incredible pace.

A Never-Ending Innovation – The Internet of Payments: 04

The Internet of Things is revolutionising the payments industry, with IOT payments paving the way towards the future cashless society. An IOP is a machine-triggered payment based on a real-time data analytics, processing payment automatically. This machine-to-machine (M2M) trends illustrates how humans are not the primary initiator of payments. With IOP all devices have the potential to become a platform for purchasing goods and services. As consumers want to make purchases when, and where they want, they are able to authorise IOT devices to trigger payments. With payments, IOT means that a consumer can pay any way whether it be through their phone or a voice activated device like Alexa. In 2019, it was estimated that **31 million** people use smart speakers to shop for groceries. Smart speaker voice-enabled commerce transactions are forecasted to reach **\$51 Billion** by 2023. As payments are fully automated, in an IOP age, everything from a household appliance to a car has potential to become an endpoint for payments as seen in Figure 2.

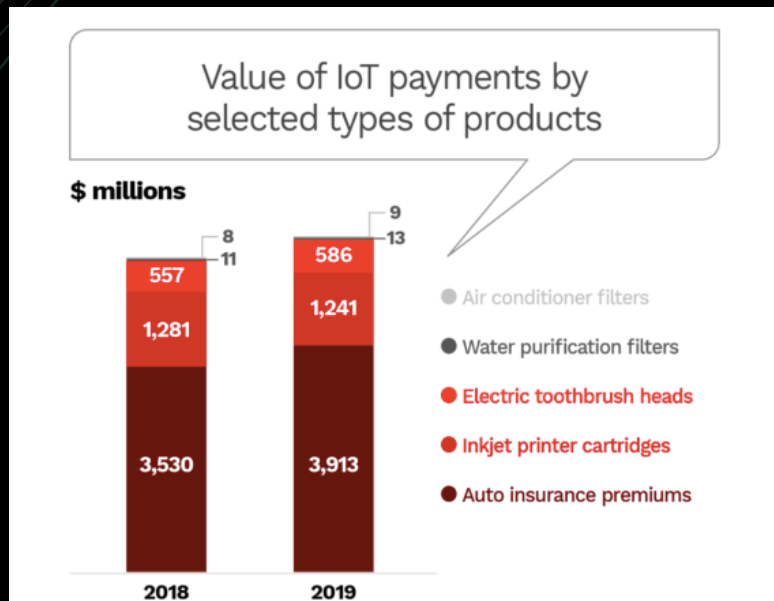


Figure 2: The Value of IOT Payments by Selected Types of Products (The Financial Brand 2020)

Automation is key component in IOP. Smart printers sense when ink levels are low and make the decision to order and pay for more ink. Smart fridges tell you when you need milk, and make the order without you lifting a finger. Consumers are also to make an in-app purchase with apple pay, or pay with a fingerprint identification within seconds. The IOP revenue opportunity will be found in harnessing the explosion of new data that can provide a deeper and more granular insight on customer data. With IOP moving to a future where payments come so easy and convenient, charges become invisible at the point of sale.

Case Studies

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Wearables: As the world is becoming more digitised, customers are finding new ways to track their health status, messages and spending. Wearable devices such as Apple watches are becoming more and more popular due to its convenience. The number of connected wearable devices will reach **1.1 billion** by 2022, allowing consumers to monitor their spending and set their own limits. IOP wearables allow customers to connect with various banking apps, streamlining the spending process for users. This innovative IOP solution extends beyond Apple. Visa collaborated with the last World Cup, supporting wearable wristbands that fans could pay for goods with at the stadium.

Amazon has been utilising the innovations in the Internet of Things and Payments through various initiatives, one of them being Amazon Go. Amazon Go is an IOP store where shoppers are able to purchase groceries and leave the store without physically checking out their items. With the help of IOT sensors and an Amazon account, consumers are automatically charged directly to their card listed on their personal Amazon account, taking convenience to a new level. To further enhance Amazon's goal of streamlining a consumer's shopping experience, Amazon have collaborated with Samsung and MasterCard to create a smart fridge. With **Samsung's Smart Fridge**, consumers are able to order products and meals from Amazon, pay for their groceries and get them delivered straight to their door. Furthermore, the fridge is able to autonomously re-order items with the permission of consumers.

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Vehicles: Vehicle based payments are expected to propel financial IOT to **\$410 Billion** in transaction by 2023 thanks to in-vehicle payments. With the US & China expected to be the largest market for in-vehicle payments, IOP in this industry is extremely promising. It's predicted that China will reach **\$50 Billion**, the US will reach **\$100 Billion** and Germany at **\$19.6 Billion** in transaction revenues by 2022. Many payment companies such as VISA and MasterCard are getting into car commerce to prevent themselves from being displaced, and allowing themselves to capture everyday consumers. Honda has collaborated with VISA to transform a car into an epicentre for commerce with **Honda Dream Drive**. With Honda Dream Drive, drivers are able to make an in-vehicle payment from paying for petrol, parking or coffee. In doing so, especially in light of the pandemic, consumers are able to make more secure, safe and convenient payments. On top of in-vehicle payments, the automotive industry is making tremendous innovations when it comes to car insurance, thanks to the use of the data collected with IOT sensors. With IOT insurance payments, a transponder is placed in a car, tracking the average speed. In doing so, the insurance provider tailors the price of the insurance based on the consumer's driving habits.

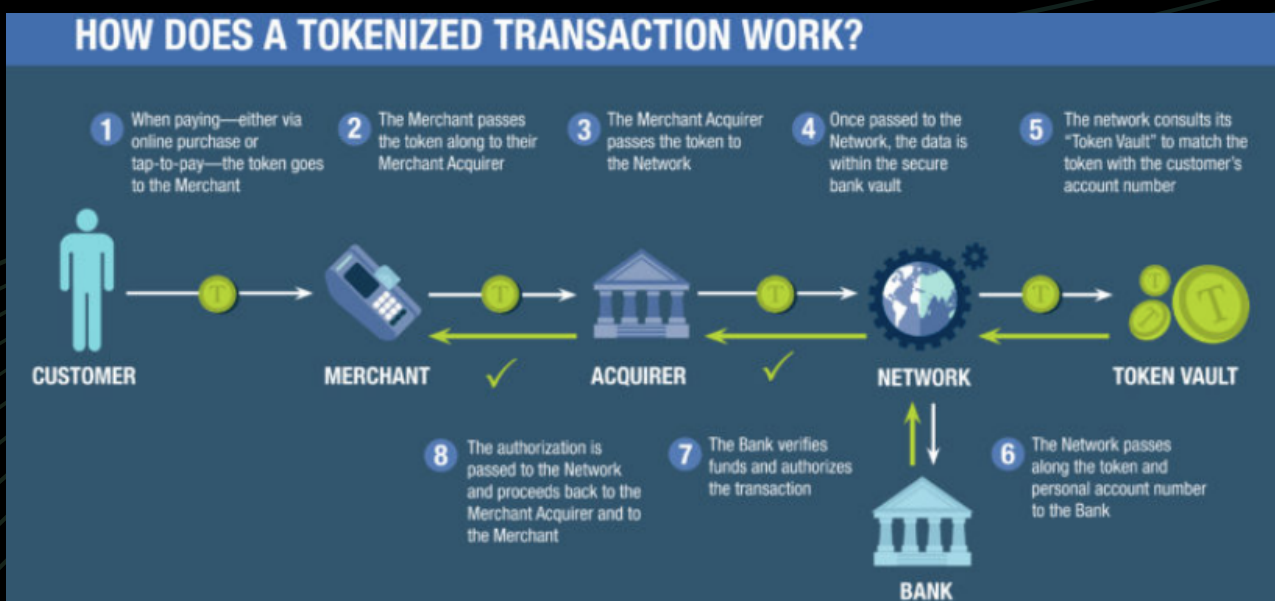


Honda Dream Drive

Security & Tokenisation:

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With billions of devices becoming payment solutions, it is vital to ensure each device remains secure. IOT devices increase security vulnerabilities, with user authentication and accountability being big issues in IOT. With information shared across devices being endless, hackers will want access to valuable data. In the event of a breach who is accountable when hackers order \$1000 worth of toner instead of \$10. As IOT continues to further expand, securing this data and validating identity is a challenge, especially when IOT begins to access consumers' payment credentials and conduct transactions on their behalf. MasterCard and Visa adopted tokenisation services that remove sensitive information from IOT devices. Tokenisation is the process of replacing sensitive data with unique identification symbols that retain all essential information about data. With tokenisation, a system grants a "token" to a single device that allows for a specific transaction. It creates an encrypted dynamic transaction number, keeping account data undisclosed. It eliminates the card number, CVV and expiration date from the transaction, preventing hackers from finding any personal payment data. IOT must include tokenisation to become a payment device, and with transactions linked to digital wallets and secured by a token, every device has the potential to become a payment method.



What Does IOP Bring to the Table?

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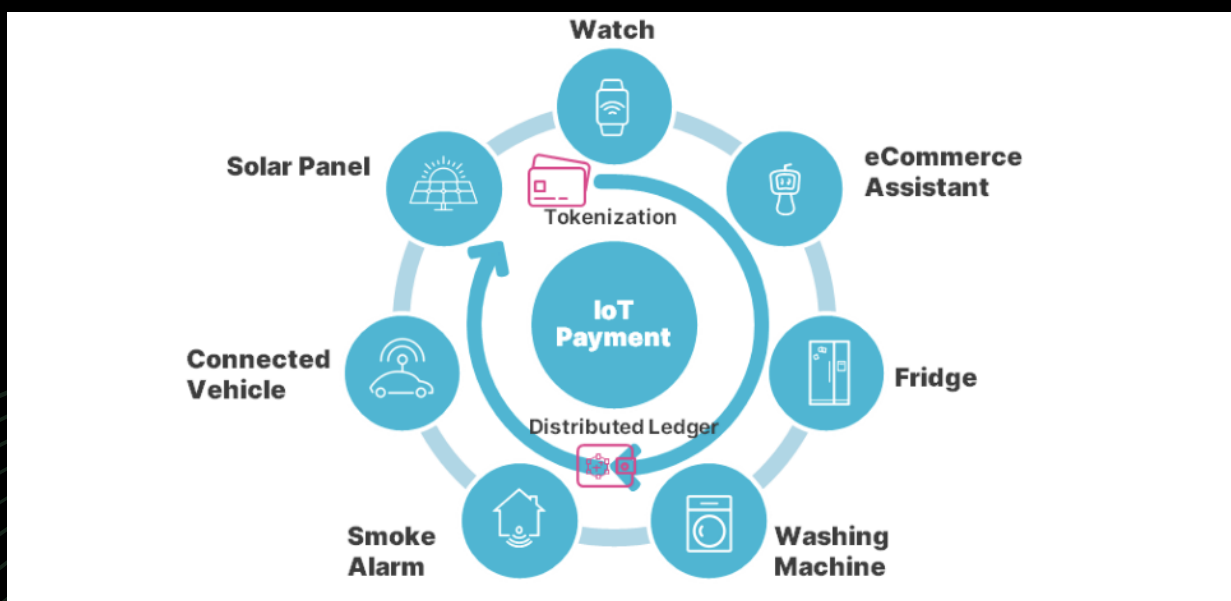
Due to digitisation, consumers are more comfortable with the idea of paying online. As such, it is only nature for merchants to capture this market and obtain valuable information, creating frictionless payment experiences. IOP is a customer focused innovation, allowing for smart possibilities and seamless synergies between financial gadgets. Making payments as easy as possible for customers takes strategic priority. Amazon is a prime example of customer centricity, with its single click-to-buy innovation creating a milestone in the digital space. The various innovations in IOP allows for waste prevention and resource conservation opportunities. IOT gadgets only re-order products when the stock is low, allowing for a seamless supply of products. Furthermore, as this is done autonomously, shoppers are able to save time, energy and effort. The Internet of Payments has the ability to speed up efficiency and the process of purchasing.

As aforementioned, customer centricity is deeply rooted into IOP, allowing sellers to study consumer habits. IOP monitors and measures data in real time, allowing for the identification of customer needs. So much of a wealth manager's ability to assist a client, for example, is dependent upon their ability to understand them on a deeper level. Gathering data on client behaviour, interests and preferences allows them to tailor offerings, offer personalised and convenient products and/or premiums, with respect to risk tolerance and spending patterns. In doing so, a competitive advantage is gained, as well as operational efficiency through innovative and predictive consumer insights.

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IOT has mushroomed into a critical tool for businesses to differentiate themselves by adding more value to consumers' everyday lives, whilst improving business performance. With IOP, businesses have access to real-time data, lowering inventory mismanagement, human error and enhancing the supply chain efficiency. Furthermore, businesses experience recurring revenue and customer retention. With IOP, consumers go back to their original manufacturer to repurchase their items, allowing for a reliable revenue stream for the manufacturer. IOP has the potential to transform the finance industry as dramatically as the introduction of credit cards. With the slow displacement of the need for cash, IOT payments are potentially challenging credit card existence and empowering consumers to make frictionless and faster purchases. The integration of IOP, especially within the automotive industry, minimising human contact ensuring physical distancing and a safe environment in this challenging period of time. With these developments, IOP is looking to further empower automated cashless payments.



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