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Making it pay: Will the internet of things become the internet of payments?

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ParalympicsGB

Introduction – The Internet of Things (IoT)

- What is the IoT?

  A network of objects – devices, machines, vehicles, buildings – with inbuilt sensors and processors that connect with each other through communications networks

- Physical objects – transformed into smart devices that can exchange data about themselves and their surroundings with other devices (M2M) / people (M2P)

- Aims
  - The collection, exchange and utilisation of data
  - Create a 'smart environment' in which to automate actions in the real world

Introduction – The Internet of Things (IoT)

- What and where?
  - Anywhere – phones and tablets, watches and other wearables
  - In the home – fridge, printer, voice assistants
  - Out and about – vehicles, transport networks, shops
  - Health – implanted devices, prosthetics
  - Industry – connected machines, consumables, throughout the supply chain

Background

- Development of the internet
  - Static content – one way communication
  - Interaction – two way communication
  - The IoT – multi-directional communication / possibility for automation

- Growth of IoT
  - The IoT is growing at great pace
  - It is anticipated that there could be 75 billion connected devices globally by 2025
  - The majority of these devices will have the technical functionality to make payments

IoT - Application

- Developing solutions that enable product manufacturers to embed secure payments functionality into IoT devices

  - Automotive industry focus on connected vehicles

  - Automotive IoT market forecast to grow to 470 million connected devices in 2020 (24% increase from 2019)

- Global application

  - The use of IoT solutions will likely vary on a country/region basis

    - Smart home capabilities likely to grow in UK and Western Europe

IoT – Regulatory framework

- Technical infrastructure may be in place but the IoT needs to work with existing legal and regulatory frameworks

- Legal and regulatory barriers

  – Varies by jurisdiction

  – Privacy

  – Cyber security

- Industry specific issues

  – E.g. Aerospace, health, communications networks

Internet of Payments (IoP)

- Connected devices turned into a means to make purchases
  - Possibilities of IoT enabled payments include:
    - A fridge sensor detecting that you have run out of milk, so places an order at the supermarket and makes the payment directly
    - A car detecting that it is in a car park and subsequently paying the appropriate charge
- IoT payments vs traditional payment channels
  - IoP transactions will displace traditional payment methods and behaviours – petrol purchased from within the vehicle instead of paying by card (or cash);
  - Potential to increase the volume and nature of payment transactions – e.g. IoT fridge sensors could result in an increase in smaller automated transactions, as opposed to a single weekly in-store payment

Internet of Payments (IoP)

- Focus on micro- / low value payments where card transactions are uneconomical

- Move towards subscription services and pre-paid budgets where users pay for access, content, goods and services

- Difference for business vs consumer applications – volume, size and frequency of payments
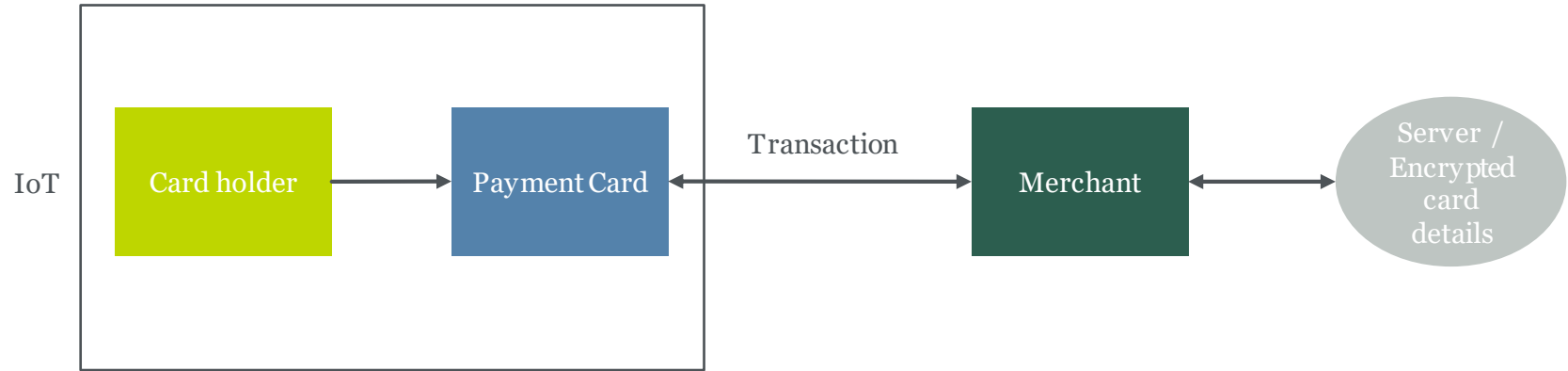
IoP - Infrastructure

- Existing payment technology and infrastructure:

    – Link to a server triggering automated payment (e.g. Hewlett Packard's printer refill service)

    – Credit/debit card can be tokenised and used by an IoT device to initiate payments (e.g. payments through mobile phones or smart watches)

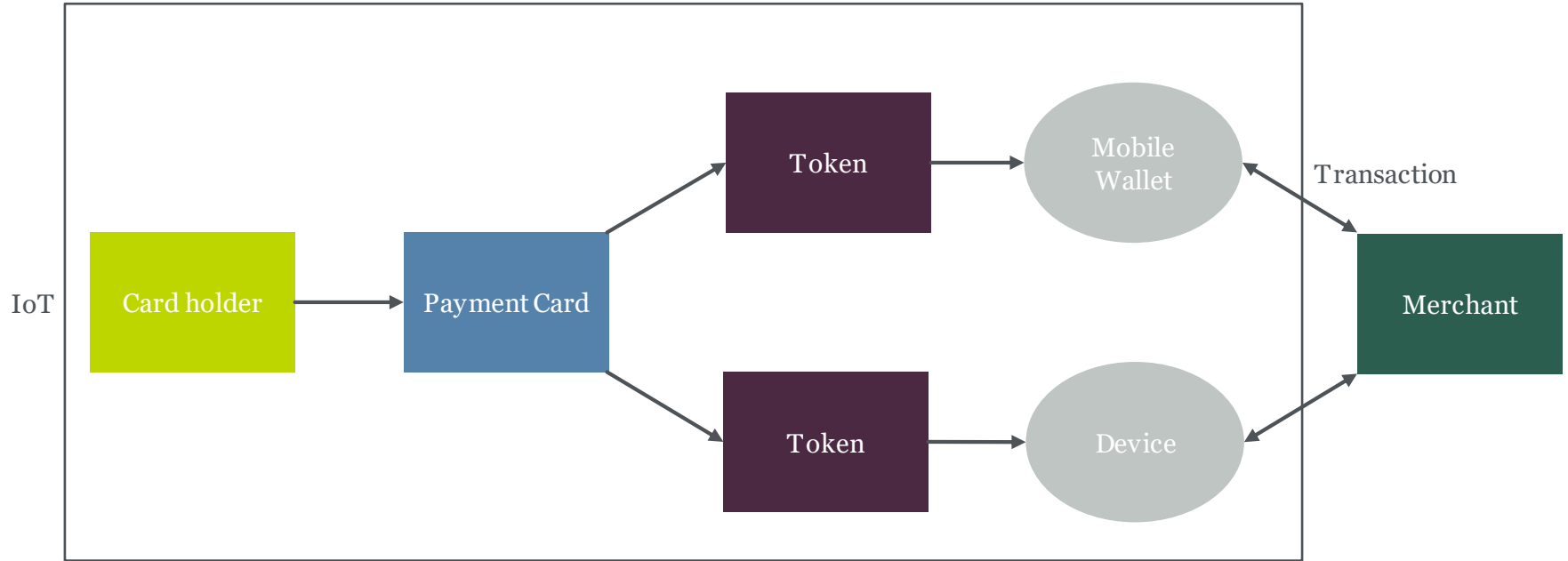   – Relies on current payment rails / card schemes

Existing Payment Methods - Server-based/Card on file

IoT

Card holder → Payment Card ←→ Transaction ←→ Merchant ←→ Server / Encrypted card details

Existing Payment Methods - Tokenised payment instruments

IoT

Card holder → Payment Card → Token → Mobile Wallet

Payment Card → Token → Device

Mobile Wallet ↔ Merchant (Transaction)

Device ↔ Merchant

IoP - Infrastructure

- Innovation

  - New / adapted payment methods required / preferable – increased tokenisation, removing the need for physical cards altogether

  - NFC, sensors, payment apps

  - Need to reduce inefficiencies of micro and international transfers

  - Centralised systems - blockchain / crypto / stable coins

  - Stored value

IoP - Innovation

- Opportunity for new players / business models
  - Role of third party payment service providers
    - Services to retailers
  - Retailers as third party payment initiators?
  - Device manufacturers
  - Tech designers/integrators
  - Software developers
  - IoT service suppliers

IoP - Innovation

- Future of IoT enabled payment:
  - Full integration with cloud based platforms; big data; artificial intelligence; biometrics - creating a whole new Internet of Payments
  - This will give rise to multiple legal and regulatory issues, eg:
    - Intellectual property
    - Contract
    - Data protection/Privacy
    - Data security
    - Payments regulation
    - Consumer protection

IoP – Payments regulation

- Does IoT require new law/regulation or does it simply require the application of existing principles to new scenarios?

- Issues around authentication and consent - SCA

- Existing framework – PSD2 / PSRs

  – Firms involved in payments for the first time – manufacturers, communications network providers, software developers

  – In the flow of funds – marketplaces / e-commerce consideration

  – Perimeter guidance and authorisation

IoP – Upcoming developments

- Upcoming developments that will support (or delay!) IoP for IoT development

  – UK New Payments Architecture

  – Competing standards? - Adoption of ISO200022

  – Device security

  – Access / vulnerable customers

IoP – Practical issues

- Consumer confidence and uptake
- Collaboration vs competition

Internet of Things (IoT): what about the data?

- Processing of huge amount of data

- Massive data lakes

- Data monetisation

- Other uses for the data

- Application of AI and machine learning
  - Algorithm bias and data ethics
  - What next?

Internet of Things (IoT): Key Takeaways

- IoT payment currently relies on existing payment technology and infrastructure

- Financial services markets are focused on providing solutions to product manufacturers to facilitate the introduction of secure payments systems into IoT devices

- IoT + payments will give rise to a range of legal and regulatory challenges for financial services markets and product manufacturers

- Payments as a key driver for development and expansion of the IoT

- Difficult to predict direction of travel – apart from that there will be huge growth and opportunities for innovation and then consolidation

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