Quantum Gadget and Mobile Payments Security

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Introduction

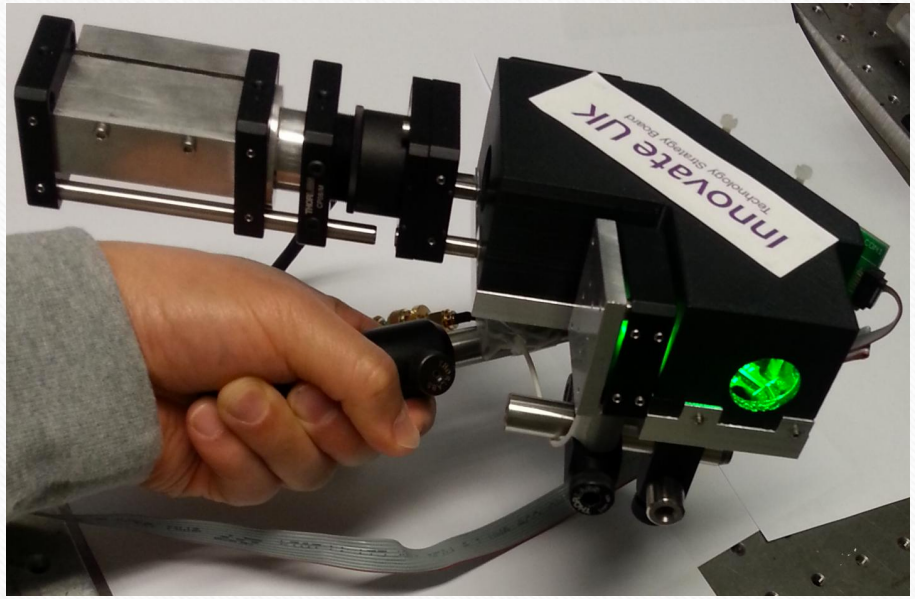
- Mobile Payments: Apple and Android Pay
  - Becoming incorporated into everyday lives
  - Almost any smartphone with an NFC chip can use them
- Slow adoption rate in the UK
  - Security concerns and fear of theft

Security Concerns

- Hackers are able to intercept and read the data sent by consumers
- Near field communication (NFC) can't protect against eavesdropping
  - Main way to combat this is using a secure channel, like 3DES or AES
  - Android and Apple Pay both use a tokenization process for security
  - Doesn't stop the hackers from getting the data

Solution

- Quantum technology: Developed by Dr. Iris Choi and an Oxford University collaboration along with Nokia and Bay Photonics
  - Detects eavesdropping and other hacking
  - Millions of single particles of light are used to send encryption keys



How It Works?

- Uses movable mirrors and ultrafast LEDs for the data transmission
- 6 pairs of LEDs: each pair is polarized and positioned differently
  - Circular polarized pair: main key
  - All others: Check security and errors in transmission

Security Methods

- Detects eavesdropping
  - Steering System:
    - Lights have to go to exact position: any deviation causes the system to detect an error
      - Ex. Hackers trying to intercept the quantum transmission
    - Prevents false readings by counteracting the natural motion of humans when trying to hold items still
- Secures information
  - Using a long quantum key

Future

- Miniaturization
  - Prototype: hand held size and clunky
  - Researchers believe it can be shrunk down and put into phones
- Greater trust in mobile payment security and adoption rates

References

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