SEMINAR PRESENTATION
Defining the Smart Cards

It is any pocket sized card with embedded integrated circuits which can process information. Also called chip card, or integrated circuit card (ICC).
An Overview

- Credit card sized dimensions.
- Tamper resistant properties.
- Card reading devices.
- Effective business transactions.
Contact smart card

The first category of smart cards, have a contact area comprised of several gold plated contact pads, about 1 cm sq. Do not contain batteries, energy supplied by the card reader.
An Example of contact smart card
ISO/IEC 7816 and ISO/IEC 7810 standards define:

- The physical shape
- Position & shapes of electrical connectors
- The electrical characteristics
- The communication protocols
- Robustness of the card
- The functionality
Usage of contact smart cards

Most common use is in GSM devices, as SIM cards.

SIM-OS comes in 2 main types-
Native & Java Card.

SIM cards store ICCID, IMSI, Ki, LAI, Operator specific emergency number, SMSC number, SPN, SDN.
Contactless smart cards

Chip communicates with the card reader through RFID induction technology. They require close proximity to an antenna to complete a transaction.
ISO/IEC 14443 standards define:

- 2 types of contact less smart cards—“A” and “B”.
- Allows communications at distances upto 10 cm.
- Alternative standard ISO 15693, allows communication upto 50 cm.
RFID technology

An automatic identification method, relying on storing & remotely retrieving data using devices called RFID tags or transponders.
An RFID tag used for electronic toll collection
RFID tags are classified as:

- Passive
- Active
- Semi-passive (battery-assisted)
Passive RFID tags

- No internal power supply.
- Current induced in antenna by incoming radio frequency signal is just enough for CMOS ckt to transmit a response.
- Practical read distances range from 10cm.
Active RFID tags

- Have their own internal power source.
- Much more reliable due to ability to conduct a “session” with reader.
- More effective in RF challenged environment like water, metal.
Semi-passive RFID tags

- Have their own power source, but battery only powers microchip & does not broadcast a signal.
- 100 times more sensitive than passive tags
- Performs active functions even when no reader is present.
Cryptographic smart cards

Equipped with specialized cryptographic hardware that lets use algos such as RSA & DSA.
Also able to generate key pairs on board, to avoid risk of having more than 1 copy of key.
Applications

- Financial
- Identification
- Others
SMART CARDS FOR PUBLIC USE

Singapore Metro EZlink

Novosibirsk (Russia). Transport farecollection terminal CFT
Smartcard used for paying for public transportation in the Helsinki area; the card is read remotely.

Obverse side of a standard adult Octopus card, a contactless smart card.
THANK YOU!
ANY QUERIES ??