

NFC Smart Door

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Motivation

- Metal key replacement
- Smartphone integration
- Away from home peace of mind
- Lockitron, August Smart Lock, ADT Pulse Door Lock, etc.

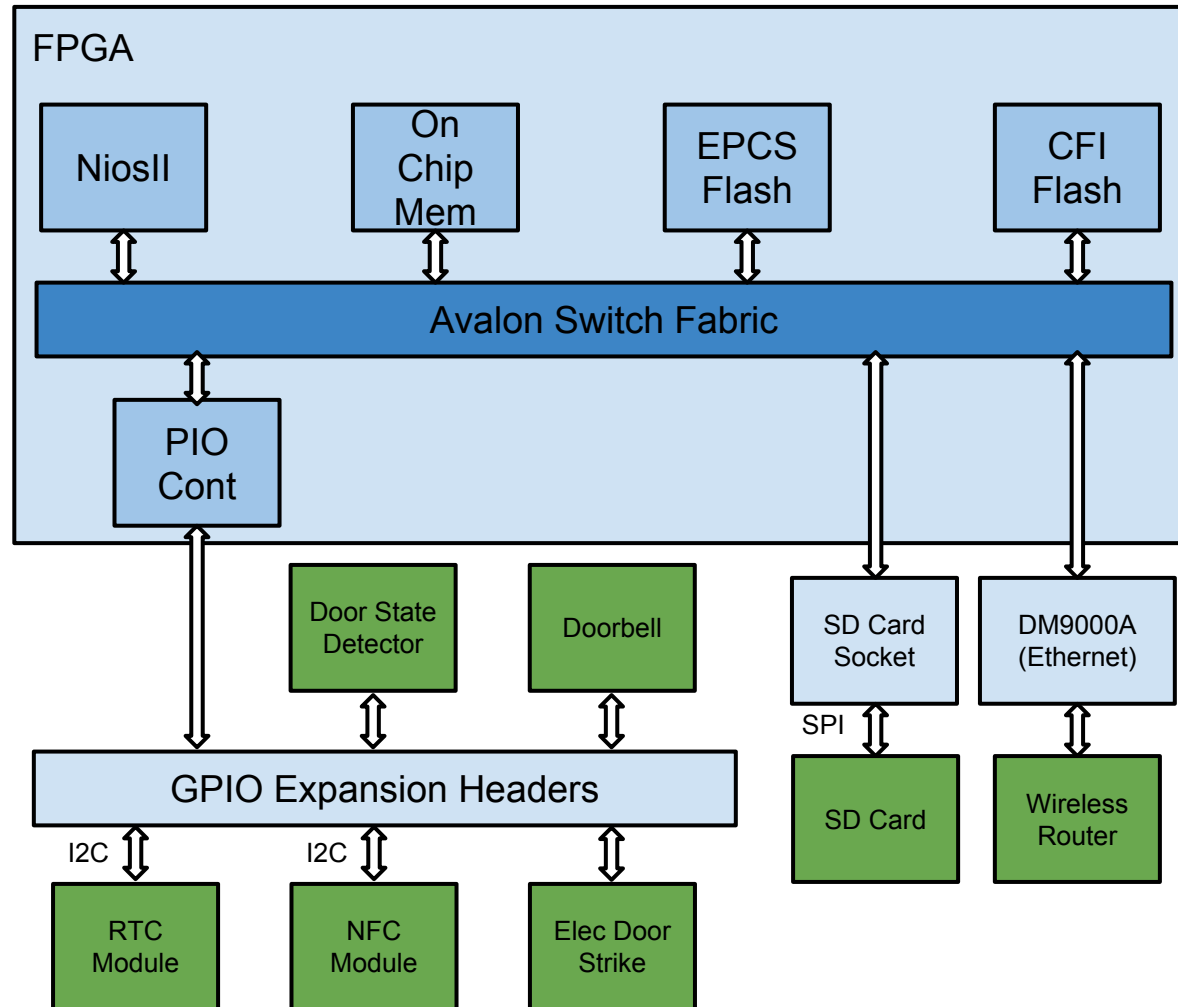


Features Implemented

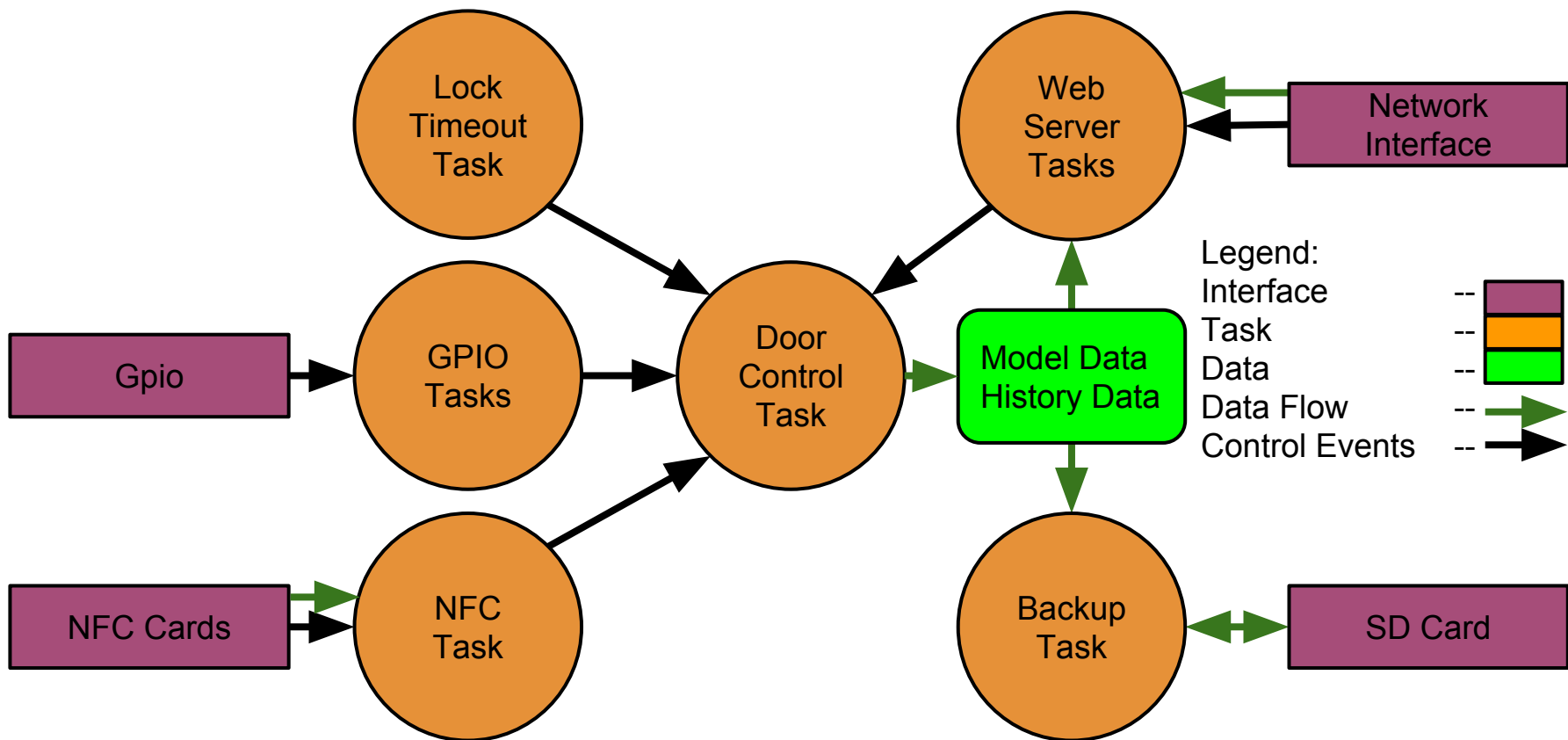


- NFC device support
- Web interface
- Remote unlock
- Monitor status
- Track history
- Accurate timestamps
- Persistent data
- Fail-Secure

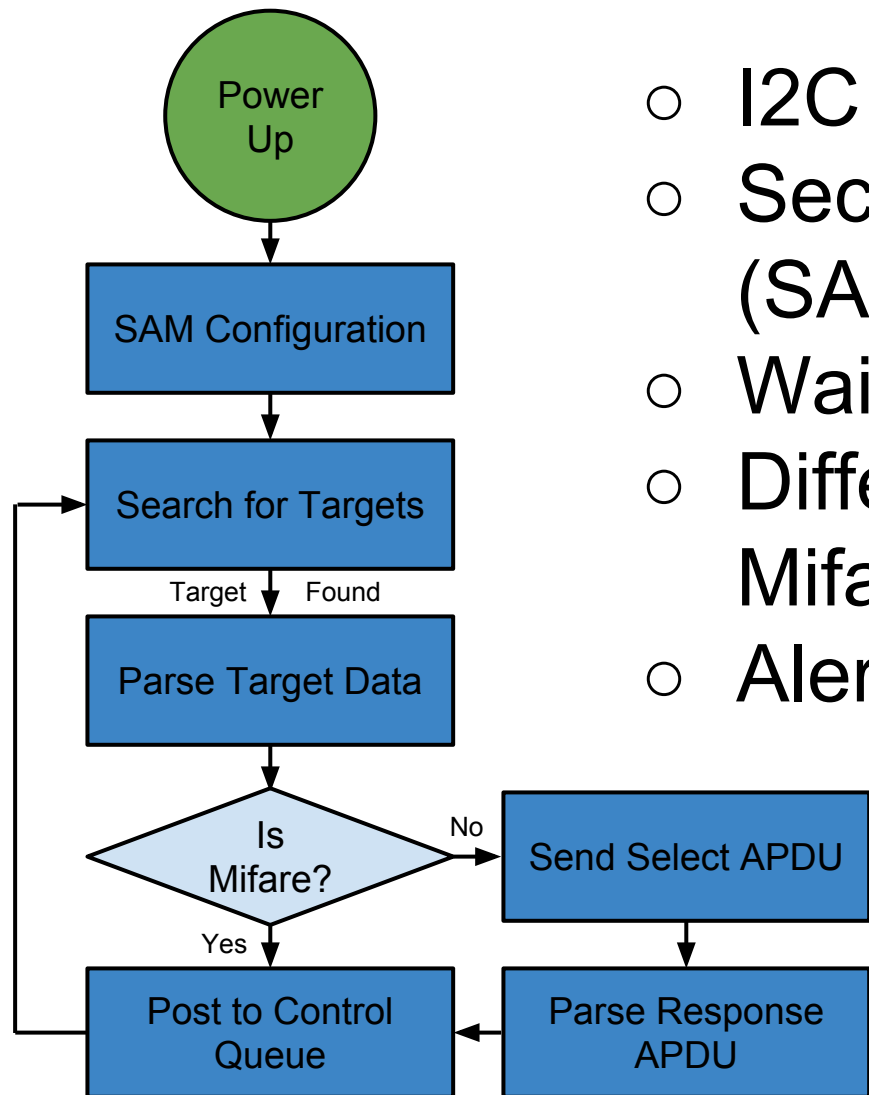
Hardware Design



Software Design



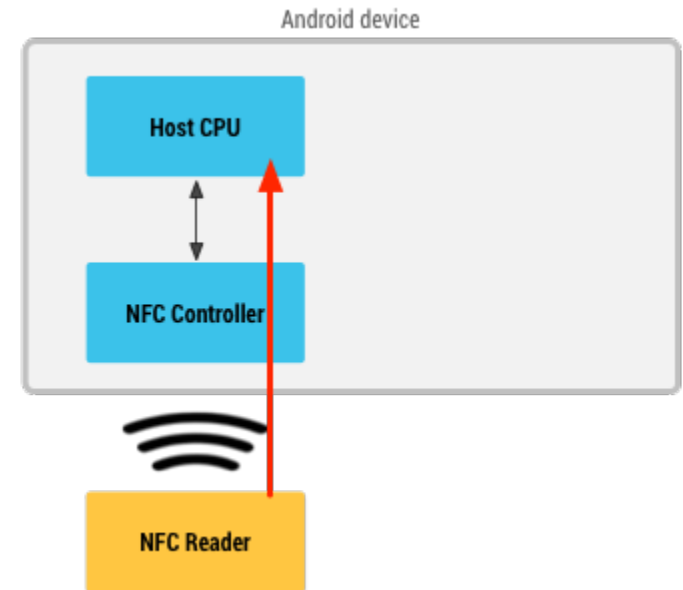
NFC Overview



- I2C & IRQ communication
- Secure Access Module (SAM) configuration
- Waits for an NFC tag
- Differentiates between Mifare and 14443 cards
- Alerts the door control task

Host Card Emulation

- HCE allows an Android app to emulate a card and talk to an NFC reader
- Android phones return a random UID
- HCE is used to return the static 8-byte Android ID



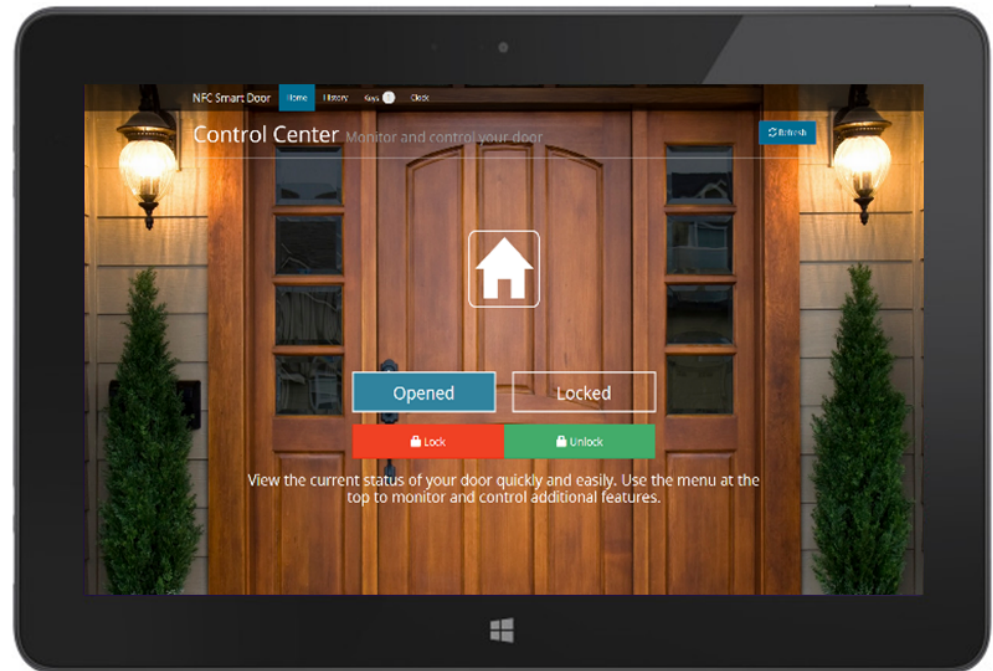
NFC Smart Door Android App



- Android application and HCE service
- API Level 19
 - 4.4.2 Kitkat
- Tested on Nexus 4 and Nexus 5

Web User Interface Design

- Browser and device independent
- HTML5 CSS3
- Clean
- Simple
- Responsive
- Intuitive
- Mobile support



Future Features



- More statistics and analytics
- Camera with live streaming
- HTTPS and NFC security
- User accounts
- Time restricted access

Demonstration

- Live demo of the NFC Smart Door