

# Mobile Money

Lecture 9: CSE 490c



# Announcements

- Homework due Wednesday
- New topic starting Wednesday
  - Global good software systems
- Guest lectures Oct 22, Oct 24, and Oct 26

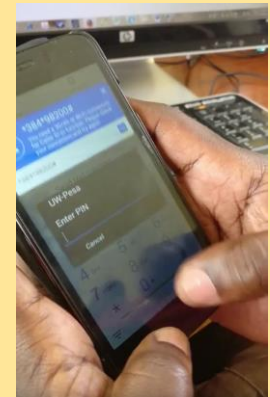
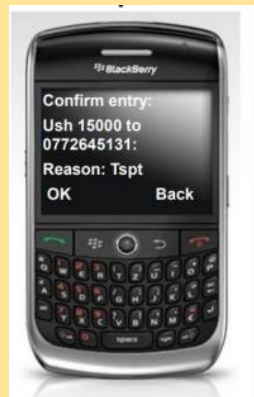
# Mobile Money Technology

- Financial accounts associated with mobile phone
- Over the counter (OTC) agents are available for Cash In, Cash Out



# Mobile Money Transactions

- Transmit and validate transaction with back end account



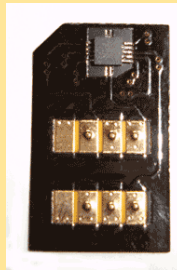
- Account ID
- Transactions details
  - Amount and receiver
- Credentials

# Last Week



- SMS
  - Information in a cleartext message, risk of interception
- USSD
  - Multi round encrypted communication with phone
- Sim App
  - Computations on phone supporting communication
- Security of Handset, Cell Tower Connection

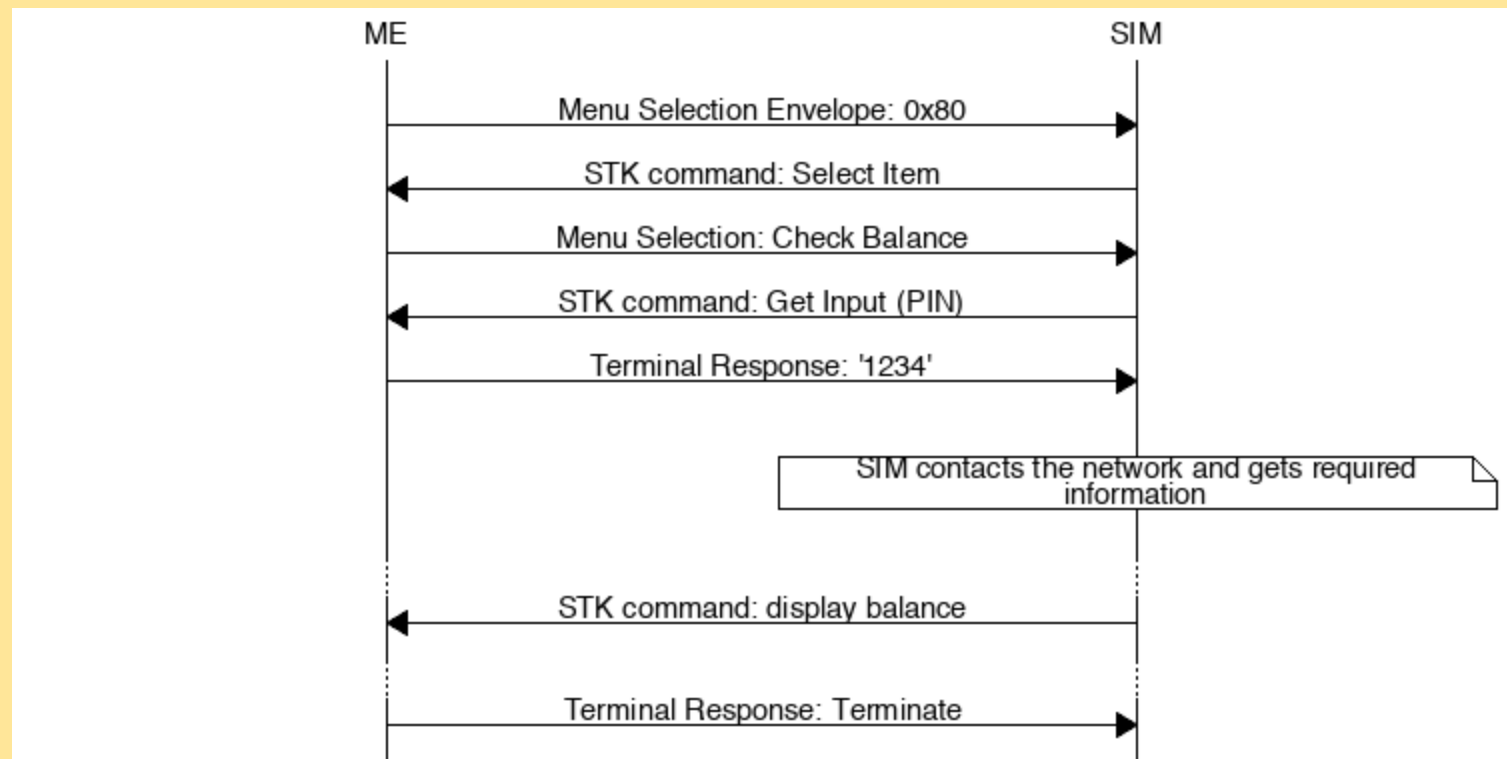
# Thin Sims



# Thin Sims: What

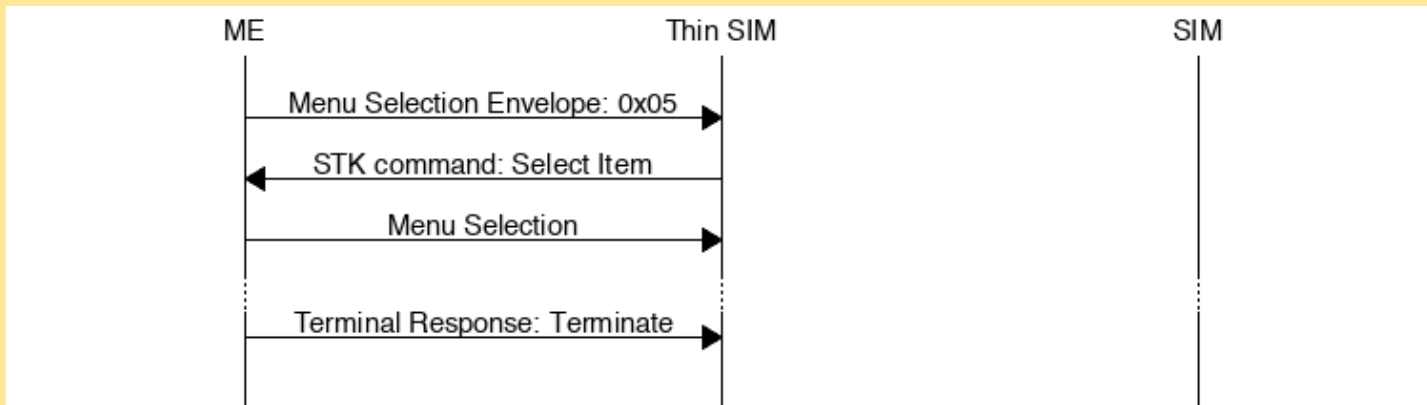
- Field installable
- Contains all the functionality of a sim card
- Allows third party apps
- Free from carrier restrictions
- Can read and modify all communication between the phone and the sim card

# Communication between Person and SIM

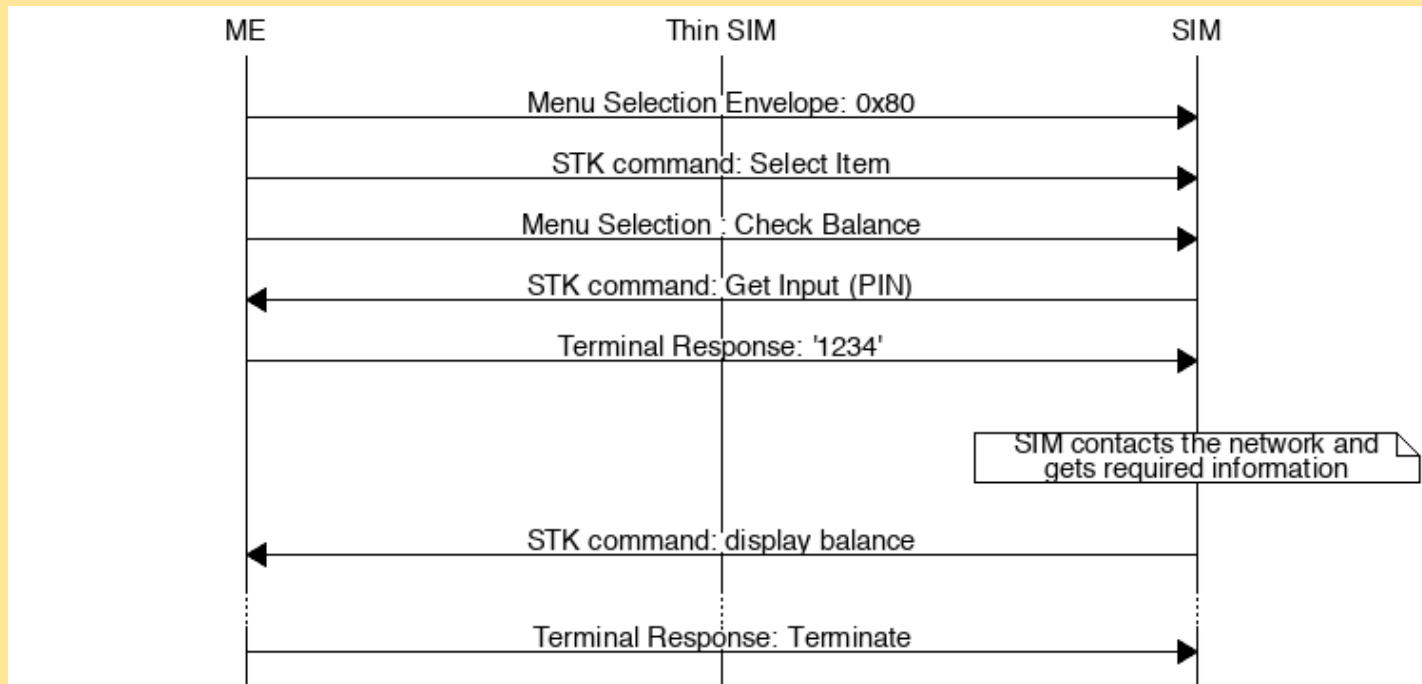




# Communication between Person and Thin SIM



# Checking mobile money balance



# Thin Sims: WHY

- Cell phone unlocking
- Distribution of apps
  - Equity Bank, Mobile Money, Kenya
  - Community Health Worker application, Medic Mobile
- Malicious Installation



# Mobile Money and Financial Inclusion

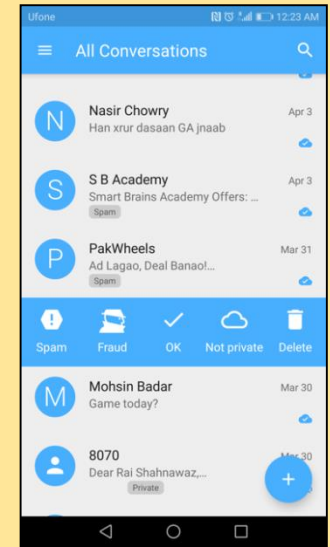
- Better access to finance will help people get out of poverty
  - Reduce the cost of being poor
  - Create opportunities for financial growth
  - Increase efficiency of government programs
  - Protect against financial shocks
- Basic financial services
  - Remittances
  - Savings
  - Government payments
  - Digital payments
  - Insurance
  - Bank accounts



# ITU - UW FinTech Center

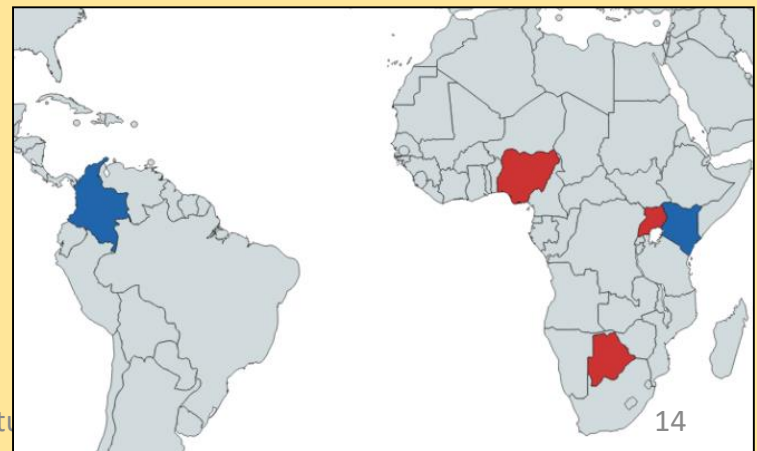
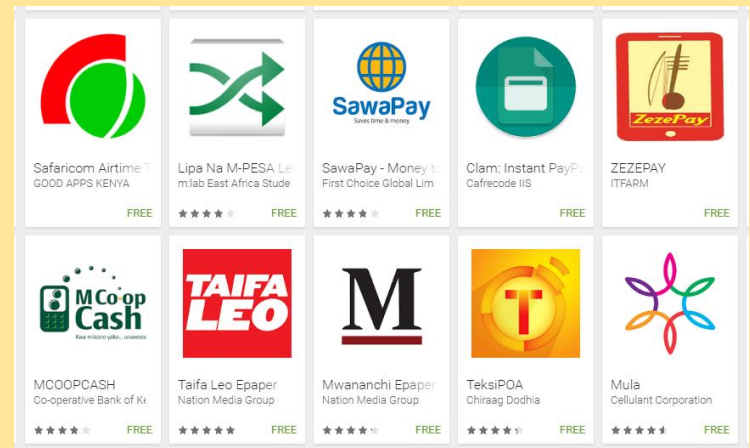
- Detect SMS Fraud
- Study ROSCAs to evaluate potential for digitization
- Analyze Telenor mobile phone data to understand handset distribution
- Interview of women mobile money agents

Waseela-e-haq program  
ki taraf se apkay  
Rs.25200 rupay aya  
hain.apka ye  
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# Security

- Audits of DFS applications demonstrate many vulnerabilities
- Interviews with software developers expose challenges in creating secure applications
- Need for security validation tools



Castle, Pervaiz et al. (2016): Let's Talk Money: Security Challenges of Mobile Money

# The Android eco-system for DFS

- Many uses of Android devices for
  - Financial applications
  - Point of sale devices
  - Biometrics
- What are the limitations of low cost Android phones?



Home > Mobiles > Google Mobiles > Google Pixel XL Price in Pakistan (SKU: 10340)



### Google Pixel XL

by Google

Google Pixel XL smartphone was launched in October 2016. The phone comes with a 5.5-inch touchscreen display with a resolution of 1440 pixels by 2560 pixels at a PPI of 534 pixels per inch.

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### GFive President Smart 2

by GFive

GFive presents Smart series 2, an excellent model for those who value functionality and high quality technology and at the same time does not want to overpay for unnecessary features. GFive Smart 2 modern smartphone is designed for two SIM-cards and supports almost everything, that maximizes your chances of communication.

**5,289 PKR**

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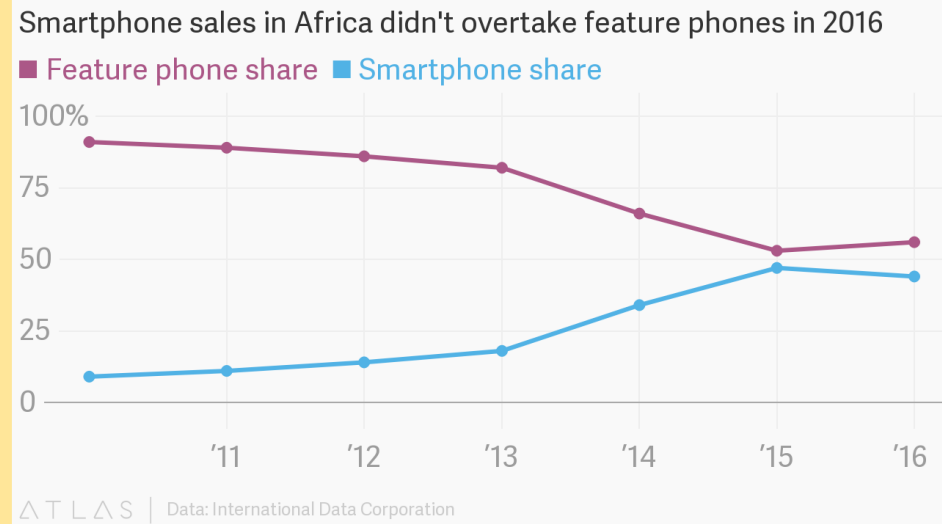
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Shipping Info: 24 - 48 Hours  
Stock Info: Available

# Is there space for a smart feature phone?

- Some evidence that feature phones are making a comeback
- Distinction between smart phone and feature phone controversial
- Introduction of phones such as Jio





# Gender, Financial Inclusion, and Technology and the Family

- Interview based studies in Pakistan and other countries
- Complex situation relating to family, marriage, technology access, finance management, and national ID
- Investigate 'tipping point' opportunities for services/financial instruments for women
- Theory of readiness: Barriers, technology access and financial transactions



# Technology Explorations



- USSD
- SimApps
- ThinSims
- Interledger Protocol
- Blockchain
- Voice biometrics
- Fingerprint recognition
- India Stack

