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What is Mobile Money?

- Financial accounts associated with mobile phone
- Over the counter (OTC) agents are available for Cash In, Cash Out
- Examples: M-Pesa, Tigo Pesa, Easypaisa



Mobile Money Interfaces

- Agent
- USSD
- Smartphone App (Android, iOS)
- SIMApp (via ThinSIM)

What is UW-Pesa?

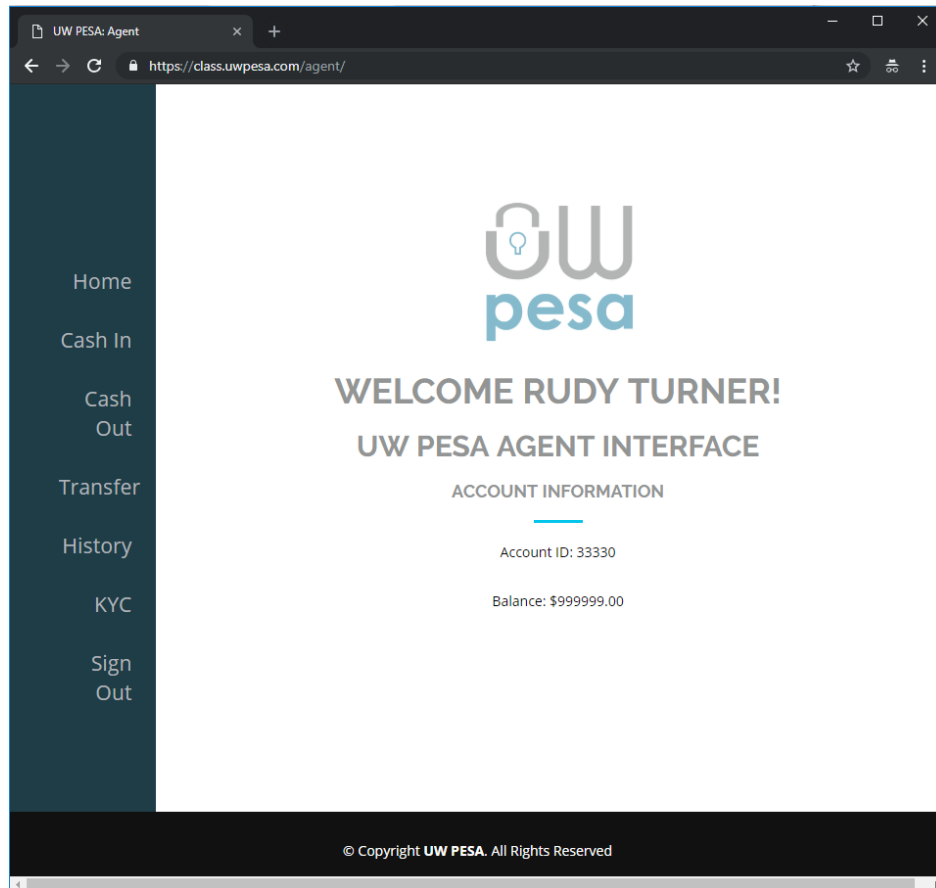
- Demo platform for mobile money technologies
- Sandbox for experimentation
- Not targeting high performance, scalability, strong security

What does UW-Pesa do exactly?

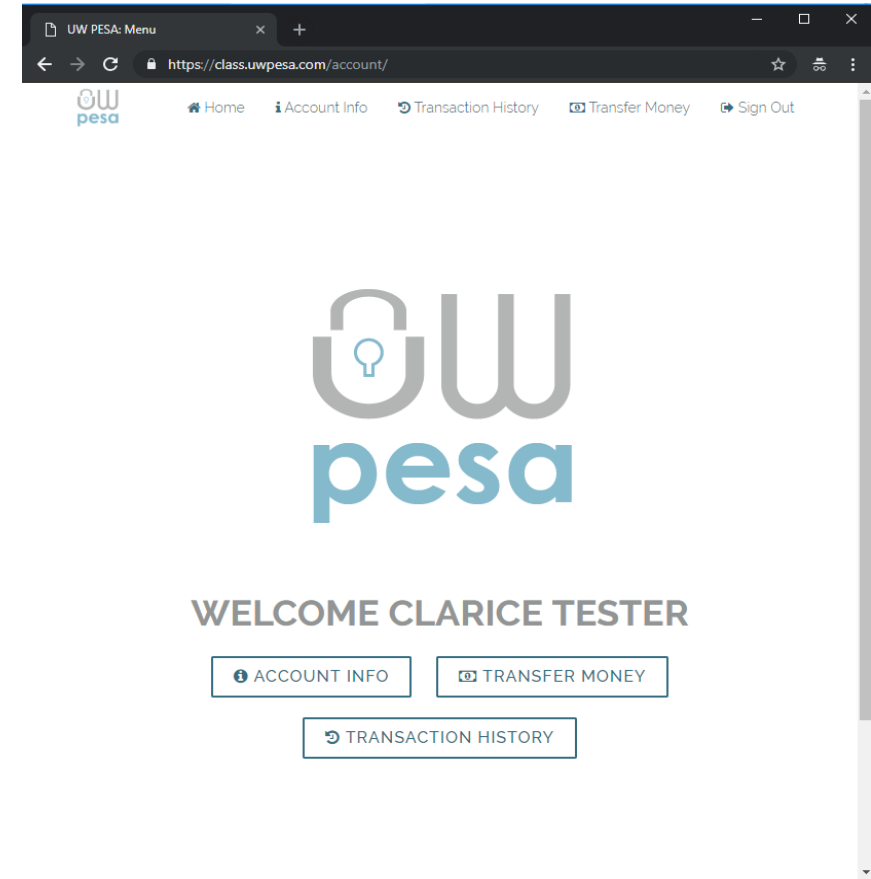
- Supports basic ledger services
 - Creating accounts, account management
 - Peer to peer transactions
 - Cash in/Cash out
- Can support various interfaces
 - Web portal
 - USSD
 - Smartphone App
 - SIMApp (via ThinSIM)

UW-Pesa Web Portal

Agent



User



UW-Pesa Web Portal

Server for CSE 490c

<https://class.uwpesa.com/>

APIs to interact with class.uwpesa.com

<https://documenter.getpostman.com/view/5162128/RWgwQvKP>

Brief Overview of USSD

Why is USSD important?

... majority of large scale mobile financial services (MFS) deployments in the developing world use USSD as their primary mechanism for communication between customers and their mobile payments platform.

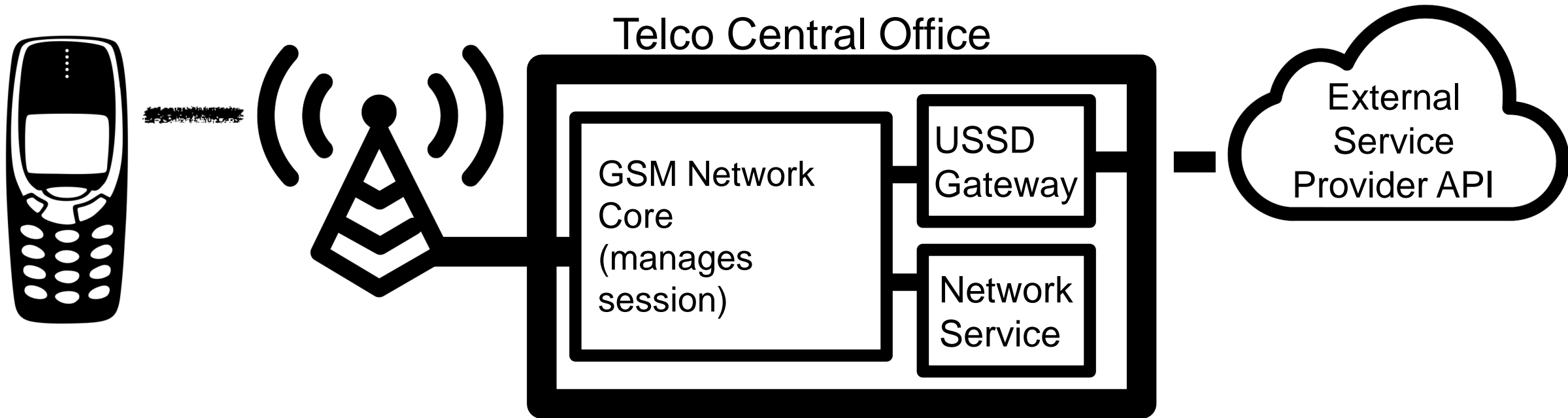
— CGAP, 2015

DIAL *99#



T&C apply.

A Typical USSD Flow



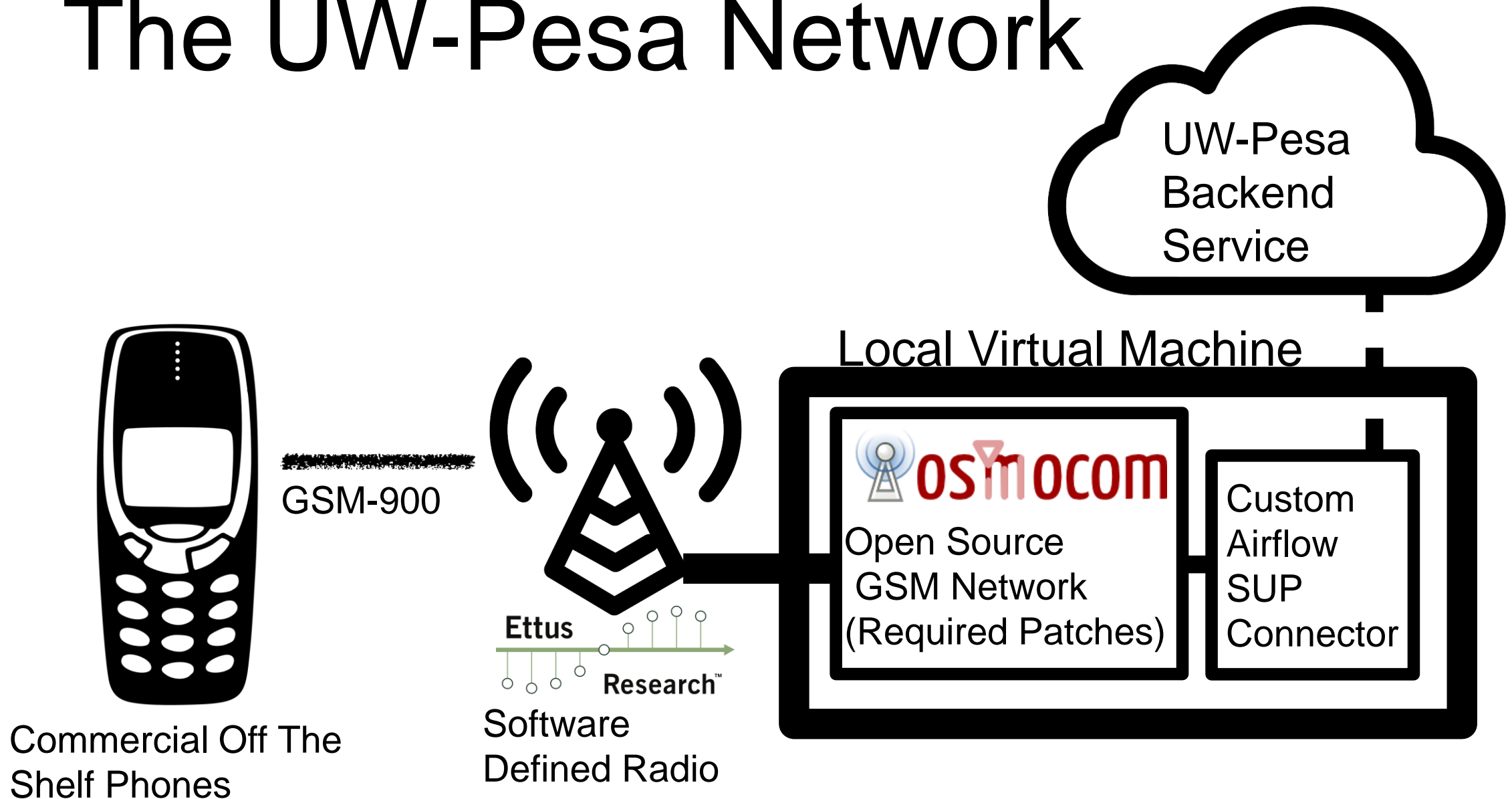
Research Complexities

- Non-commercial research on USSD is rare due to the complexity of running the entire USSD stack
- Using real phones requires integrating with a telco network
 - Probing the security of a running commercial network is unethical and/or illegal
 - Running your own network requires a spectrum license

Becoming a research telco

- Cellular networks operate in licensed spectrum
- Coordinated in the United States by the Federal Communications Commission (FCC)
- Granted a license to run a research network in GSM-900e band on the UW campus

The UW-Pesa Network



Demo Overview

Joseph Adoyo



Gender: Male

DOB: 5 June 1977

Phone No: 40001

Joseph has a job in Nairobi. His family (wife, three kids, and parents) lives in a Kinamba, a town 100 miles from Nairobi. Joseph sends money home every two weeks using UW-Pesa.

Mary Adoyo



Gender: Female

DOB: 17 September 1975

Phone No: 40003

Mary, Joseph's aunt, lives alone in Magadi, a town 70 miles from Nairobi. Occasionally she receives money from Joseph through UW-Pesa. She withdraws the money through an agent. She hasn't yet registered for UW-Pesa.

Dennis Adoyo



Gender: Male

DOB: 25 May 2002

Phone No: 40002

Dennis is Joseph's eldest son and takes care of the family while Joseph is away. He receives money from Joseph through UW-Pesa.

(Agent) David Otieno



Gender: Male

DOB: 15 September 1972

Phone No: 30000

David is a UW-Pesa agent. He runs a small mobile shop. To stay competitive in the agent market, David offers excellent customer service, managing his float well and going out of his way to help his customers.

UW-Pesa Team

Faculty

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