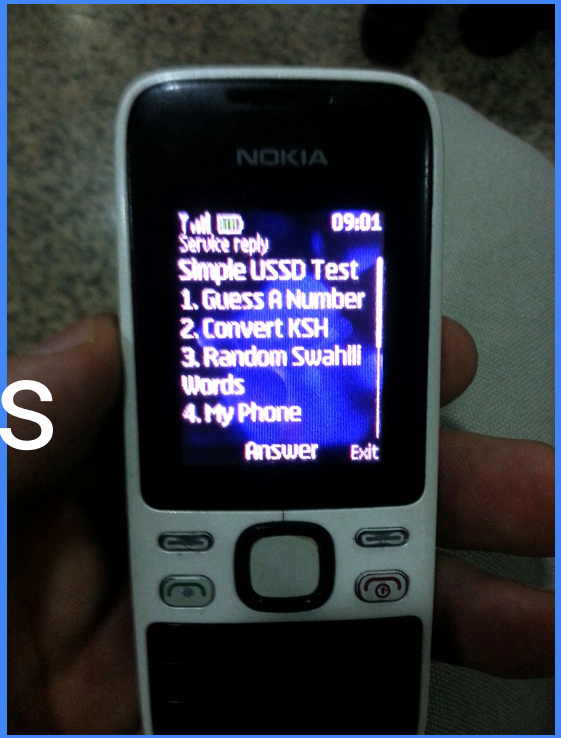
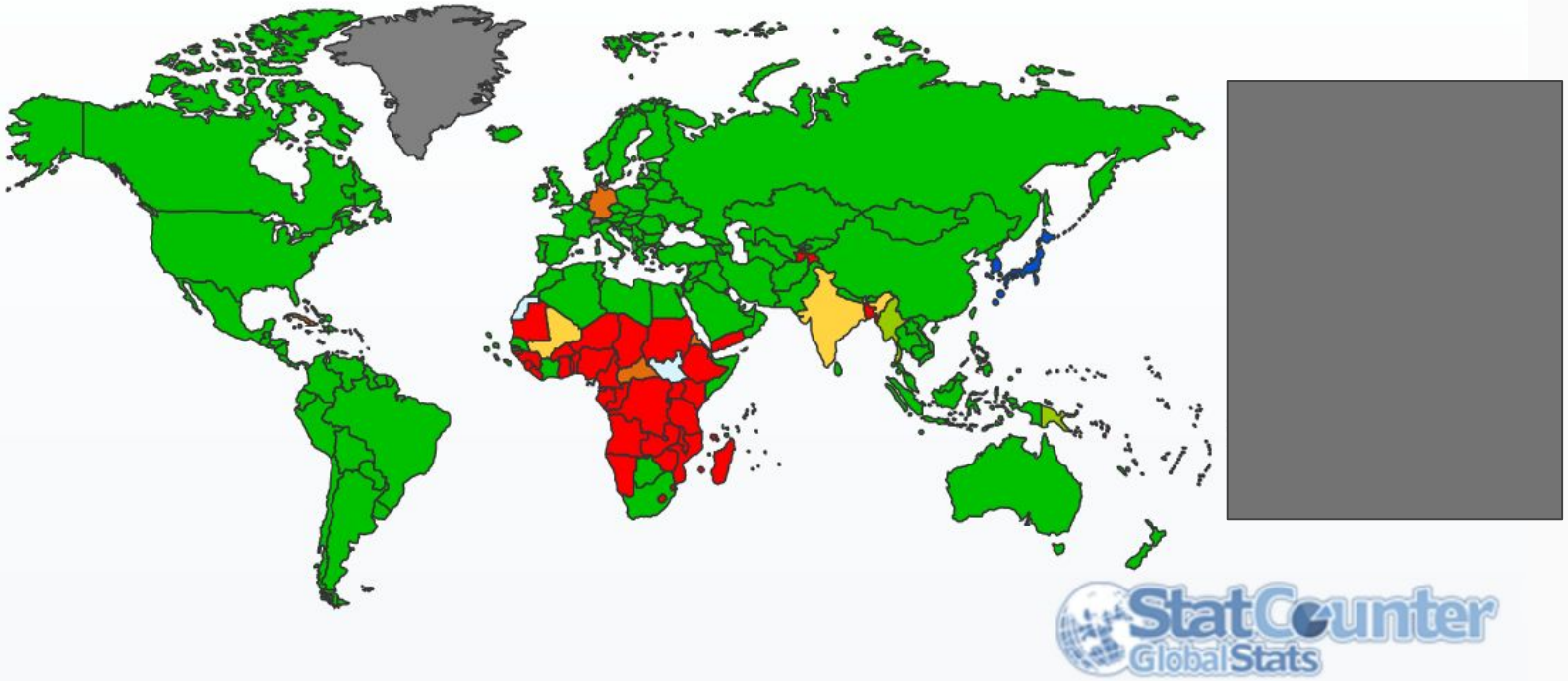
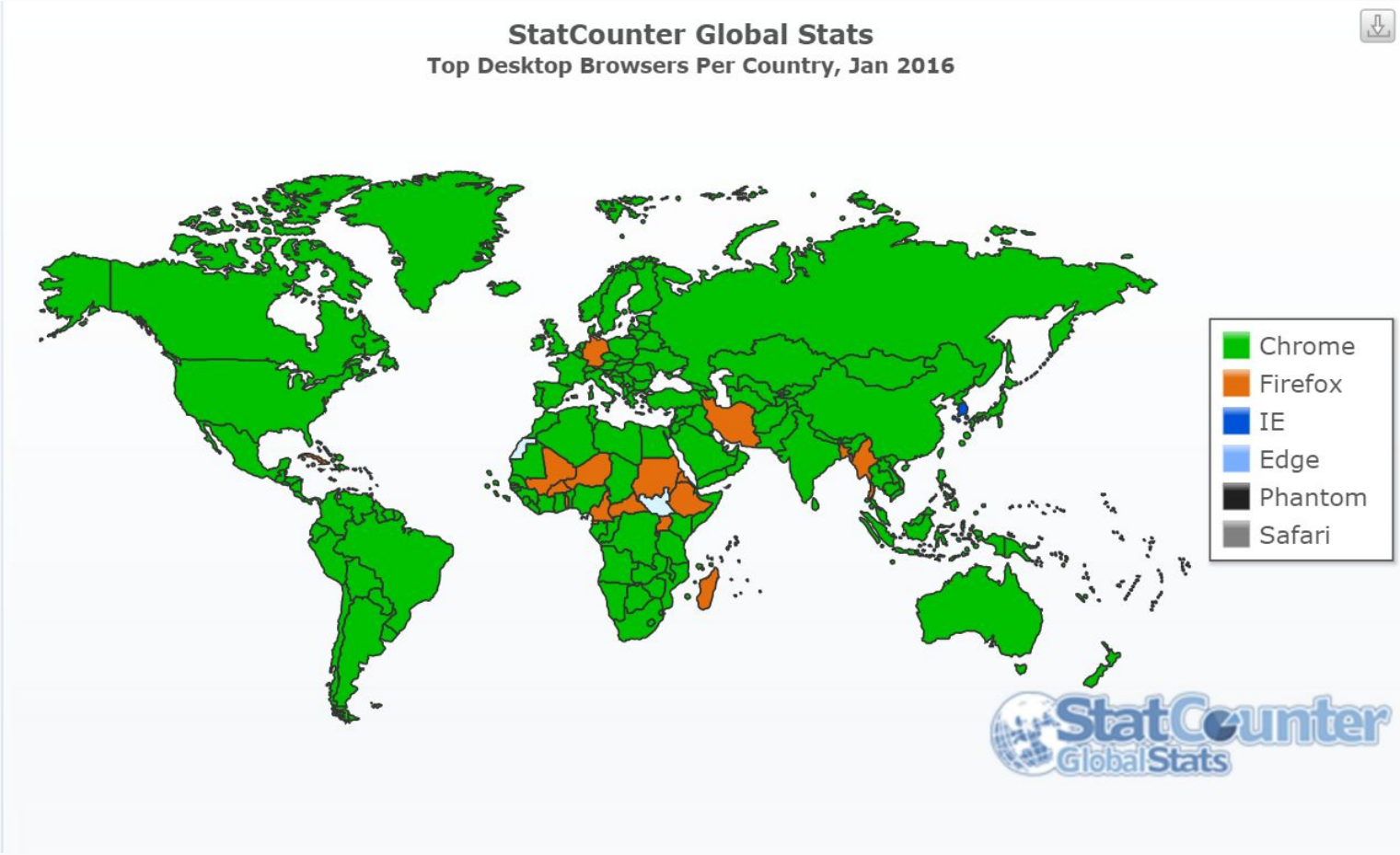
# Universal Mobile Apps

IVR, USSD, SMS, and the STK



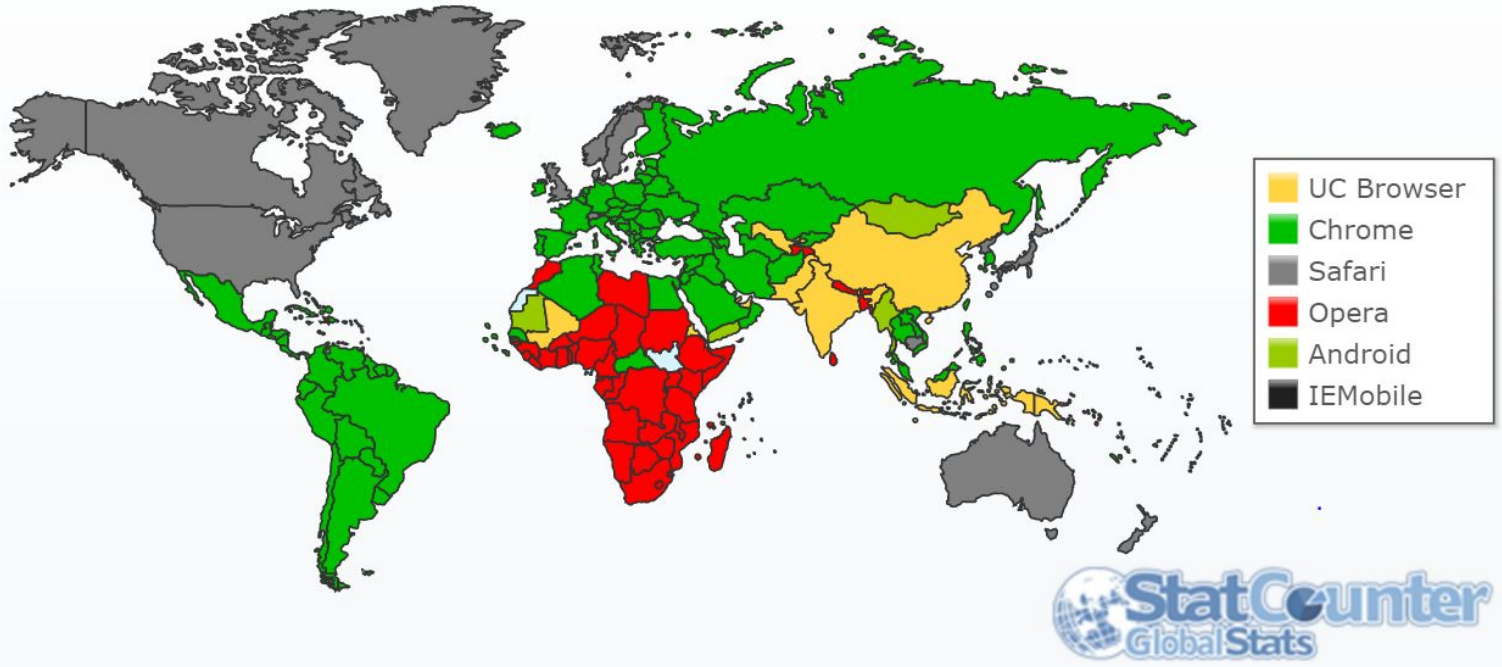

490d - Digital Financial Services
Feb 3, 2016
Trevor Perrier

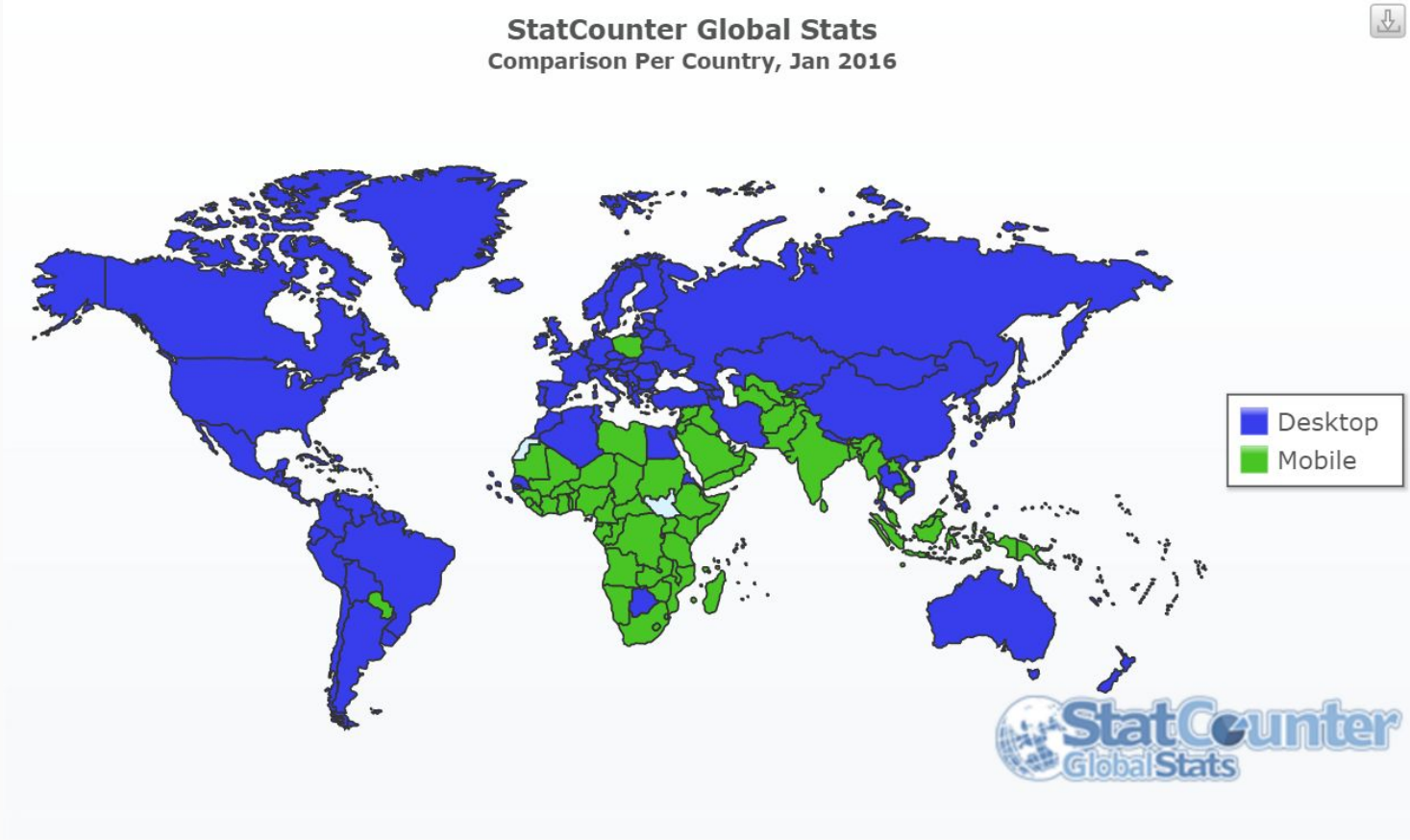

StatCounter
GlobalStats


StatCounter Global Stats
Top Desktop Browsers Per Country, Jan 2016
Chrome
Firefox
IE
Edge
Phantom
Safari
StatCounter
GlobalStats

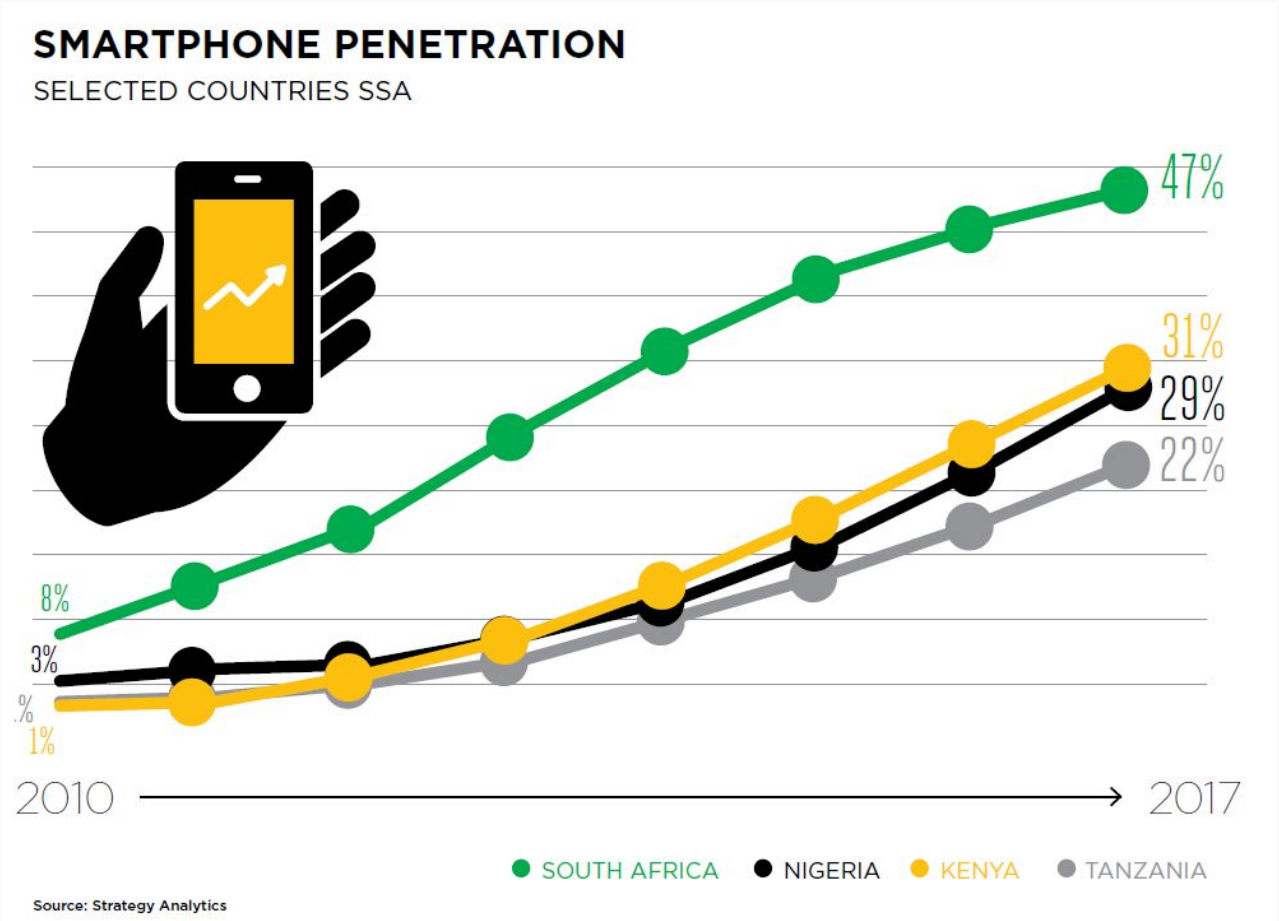
# StatCounter Global Stats

## Top Mobile Browsers Per Country, Jan 2016




StatCounter Global Stats
Comparison Per Country, Jan 2016
Desktop
Mobile
StatCounter
GlobalStats

# Quick Aside - Smartphone Penetration in Africa

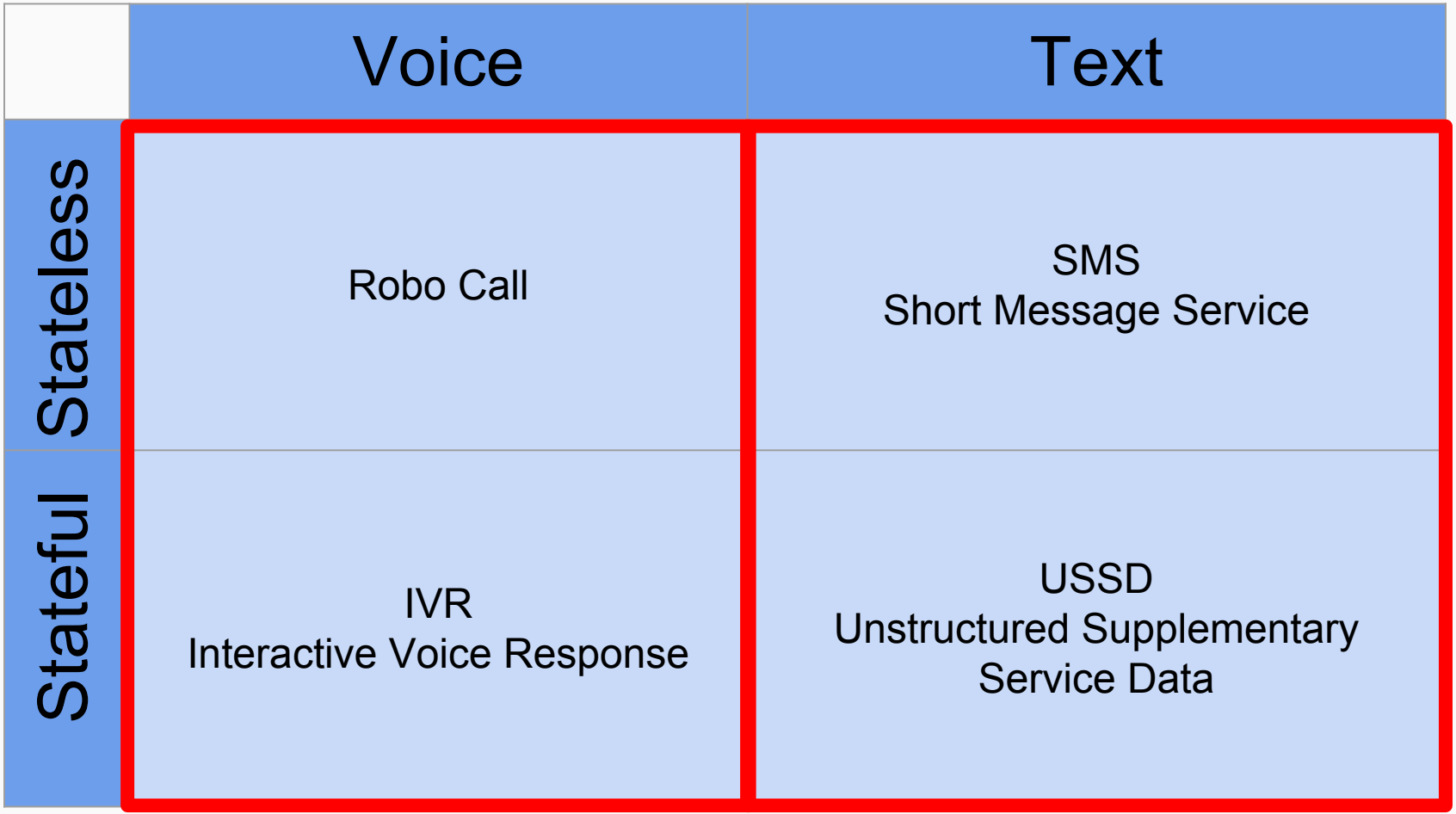


# Universal Applications Work on ANY Phone

What does this leave out?

| | Voice | Text |
| --- | --- | --- |

| | Voice | Text |
| --- | --- | --- |
| Stateless | | |
| Stateful | | |


Voice
Text
Stateless
Stateful
Robo Call
SMS
Short Message Service
IVR
Interactive Voice Response
USSD
Unstructured Supplementary
Service Data

| | Voice | Text |
| --- | --- | --- |
| Stateless | Robo Call | SMS<br>Short Message Service |
| Stateful | IVR<br>Interactive Voice Response | USSD<br>Unstructured Supplementary Service Data |

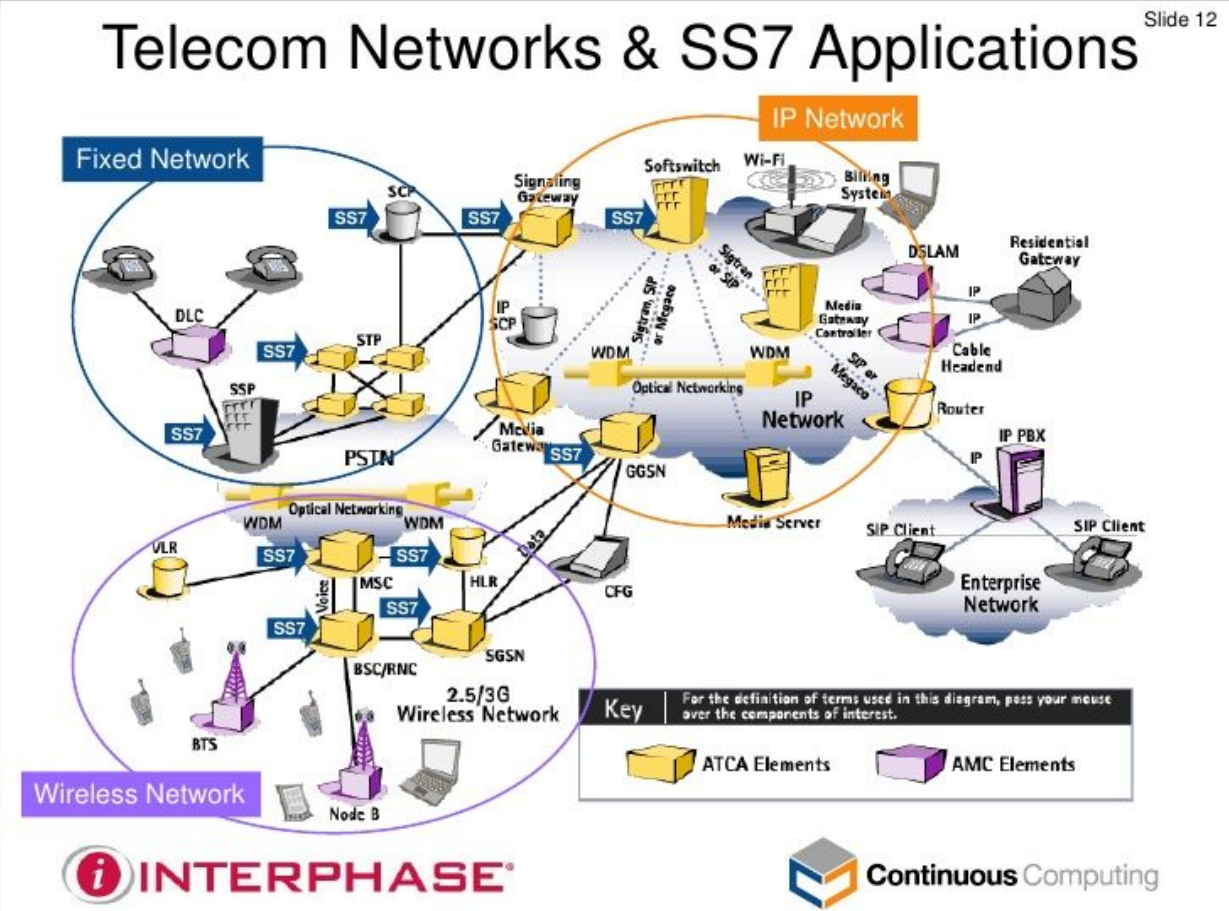
# Africa’s Talking USSD gateway

# USSD vs STK by Example

- USSD example gateway running on Africa’s Talking
- mPesa on a Windows phone

# USSD vs STK by Example

# Signaling System 7

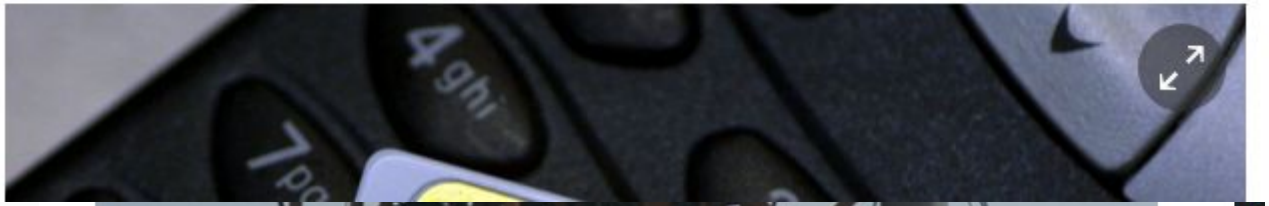


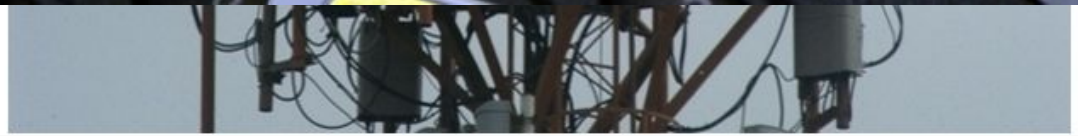
# How safe is GSM - USSD/SMS

## Rogue cell towers discovered in Washington, D.C.

## Sim card database hack gave US and UK spies access to billions of cellphones

International row likely after revelations of breach that could have given NSA and GCHQ the power to monitor a large portion of world's cellular communications



# STK - SIM Application Toolkit

- Basic UI - display text, menus, play tones, read input.
- Launch URLs
- Send SMSes, initiate calls, use data
- Interact with the rest of the SIM card
- Run arbitrary AT commands on the phone

# Discussion

- Regulatory issues around USSD and STK
- Usability issues between SMS, USSD, STK
- Is Facebook Money or SquareCash mobile money?