Infrastructureless Communication on the Android Platform

### Motivation

- Consider the recent events in Egypt where communication was disrupted when the government cut Internet connectivity. Given the ubiquity of smartphones and the bevy of radios onboard each phone, there is little reason that the scenario in Egypt should have impeded electronic communication between citizens. This is to say that since smartphones are fully equipped to communicate with one another, there is little reason for the Internet to be the only communication substrate. Therefore, by developing a delay-tolerant peer-to-peer message passing library, we remove reliance on the cellular networks; hence, we potentially enable people to exchange information in the absence of traditional communication infrastructure.

- They lied [to] us. Told us Egypt died 30 years ago, but millions of Egyptians decided to search and they found their country in 18 days.”
  -- @Ghonim

- “There are certain core values that ... we believe are universal: freedom of speech, freedom of expression, people being able to use social networking.”
  -- President Obama

- “URGENT CALL: Wounded desperately need medical supplies in Rab El Log and transport to hospital. DM me for details.”
  -- @occupiedcairo

### Operation

- Devices form a mobile ad hoc network using onboard wireless radios
- All participating devices store and opportunistically forward messages
- Devices in active mode seek, connect, and exchange stored messages with devices in passive mode

### Architecture

- **Application Layer**
  - Authenticates and filters messages based on groups
  - Manages application data based on UI interactions

- **Network Library**
  - Maintains connectivity to other devices
  - Buffers and forwards messages