NONET AD HOC NETWORK FOR EMERGENCY COMMUNICATION

FixIT

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OUTLINE

- Introduction
- Main Requirements
- Implemented Scenarios
- Techniques & Algorithms
- Application Architecture

INTRODUCTION

- What is our motivation?

  Communication infrastructure collapse in disaster areas.

- Our solution

  Enabling mobile devices to communicate with each other without using GSM and the Internet connection.

MAIN REQUIREMENTS

➢ Unicast, multicast and broadcast text messages,

➢ Delivered unicast messages will be ACKed,

➢ Not delivered messages will give time out,

➢ Send current location by a click,

➢ If the battery is low, user can choose not to attend the Ad Hoc Network.

➢ Bluetooth technology is used to meet this requirements.
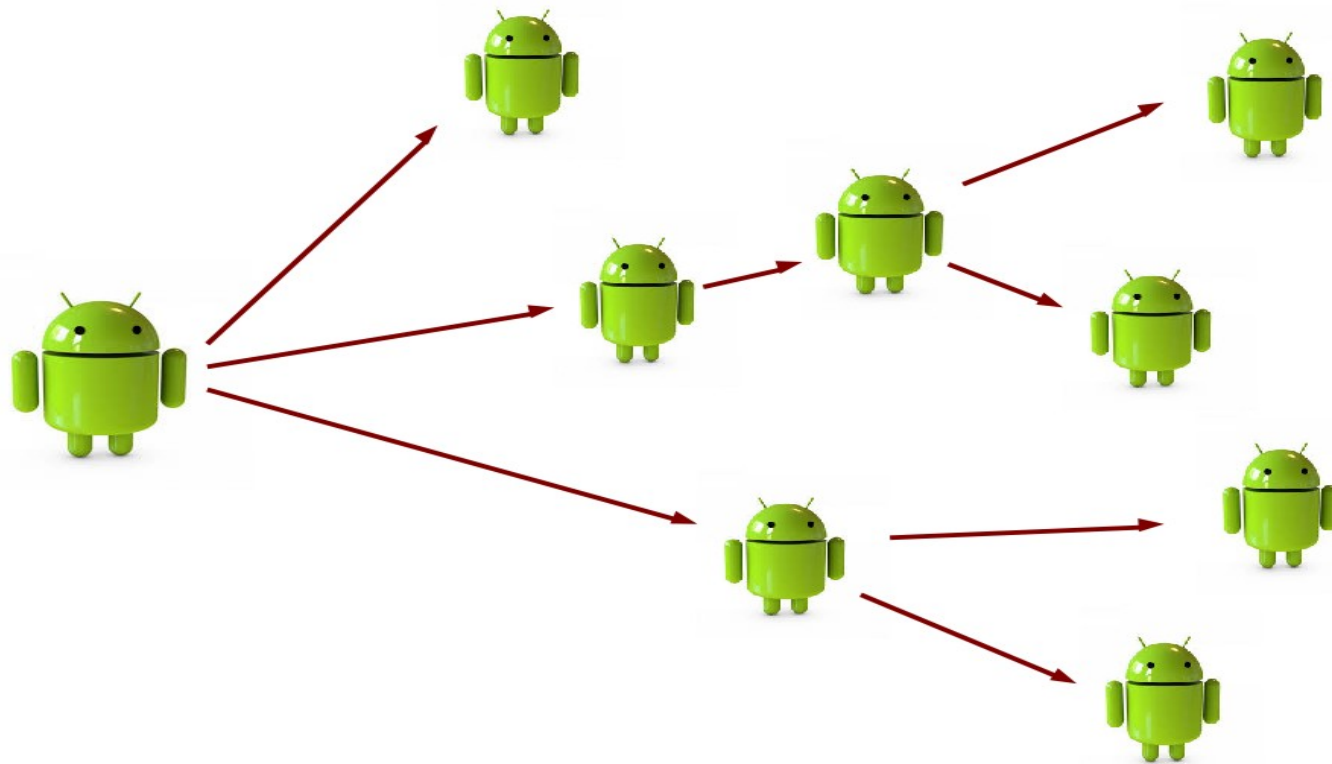
IMPLEMENTED SCENARIOS

SCENARIO 1

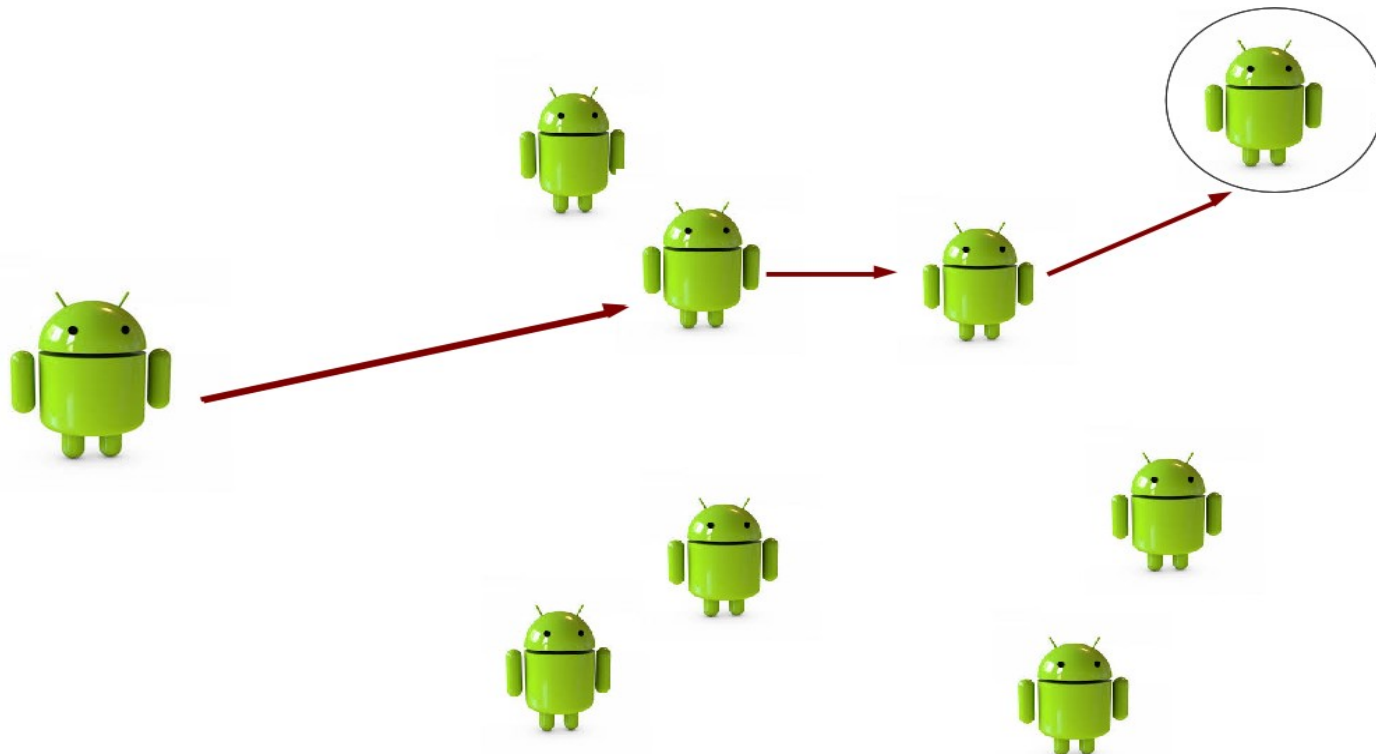**PEER TO PEER COMMUNICATION**

SCENARIO 2

DATA FLOODING

BROADCAST A MESSAGE

SCENARIO 3

AODV ROUTING PROTOCOL

SEND A MESSAGE TO A DISTANT PEER

TECHNIQUES & ALGORITHMS

A MOBILE AD HOC NETWORK (MANET)

- is a continuously self-configuring,
- infrastructure-less,
- wirelessly connected,
- network of mobile devices.
- Devices with no direct link may communicate, using other devices in the network to transfer their data.

AODV (AD HOC ON DEMAND DISTANCE VECTOR) ROUTING PROTOCOL

- AODV is a routing protocol designed for wireless and mobile ad hoc networks. This protocol establishes routes to destinations on demand and supports both unicast and multicast routing.

- Why we choose AODV as a routing protocol?
  - High mobility
  - Shortest transfer time

APPLICATION ARCHITECTURE
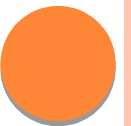
LAYERED ARCHITECTURE

Layer 4	User Interface
Layer 3	Routing Algorithm
Layer 2	RF Encapsulation
Layer 1	RF API

DATAGRAM

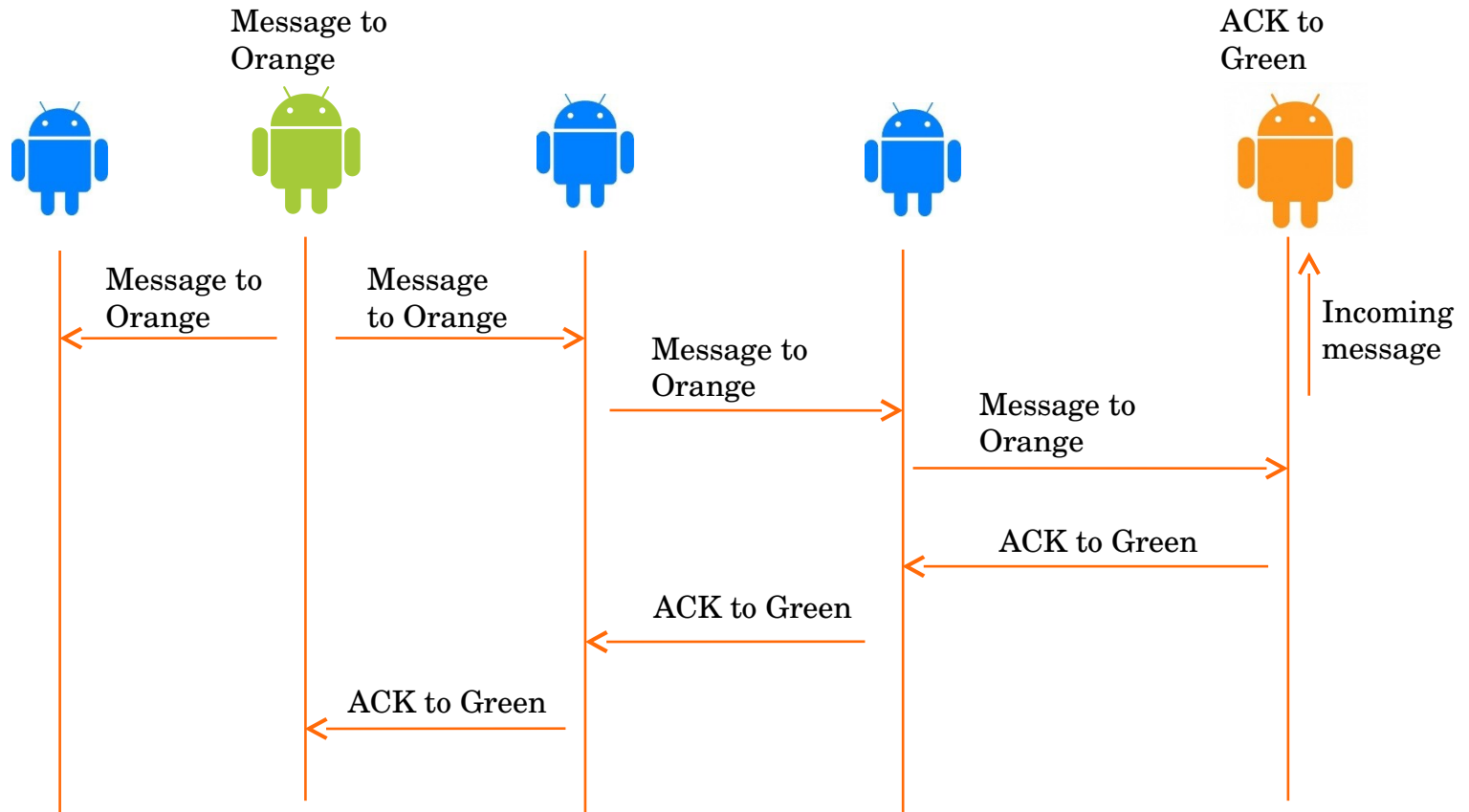| Destination Address |
|---|
| Source Address |
| Time that datagram is created |

- Unique identifier of data:

    1. Destination address,

    2. Source address,

    3. The time that data was created

- Data types:

    Message,Control, ACK

APPLICATION MESSAGE FLOW

REGISTRATION PAGE

- One can register to the system by his/her phone number.

MAIN PAGE

- In order to send messages to distant devices, we use phone numbers as a destination address.
- We can check the sender's phone number from our contact list and retrieve the contact name.
- We can unicast, multicast and broadcast messages by selecting the check mark next to user names and broadcast.

INBOX

Received messages are shown here.

OUTBOX

- Sent messages are shown here.
- Delivered messages,
- Timed out messages and
- Broadcasted messages have special symbols.

REFERENCES

1. AODV : Retrieved from https://www.techopedia.com/definition/2922/ad-hoc-on-demand-distance-vector-aodv

2. Mobile Ad hoc Network: Retrieved from https://en.wikipedia.org/wiki/Mobile_ad_hoc_network