LECTURE

MOBILE APPLICATION DEVELOPMENT

By: AbuBakar Ubaid

ANDROID

BROADCAST RECEIVERS

By: AbuBakar Ubaid

ANDROID

Basic Building Blocks

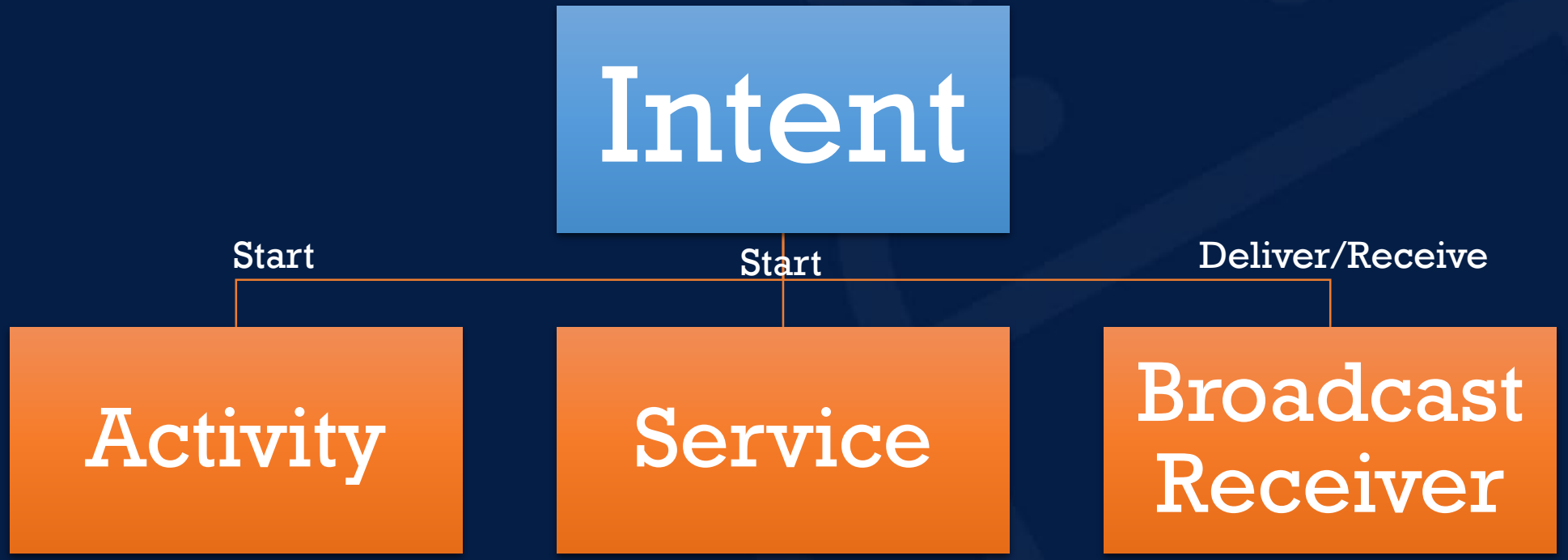
Activity

Content Providers

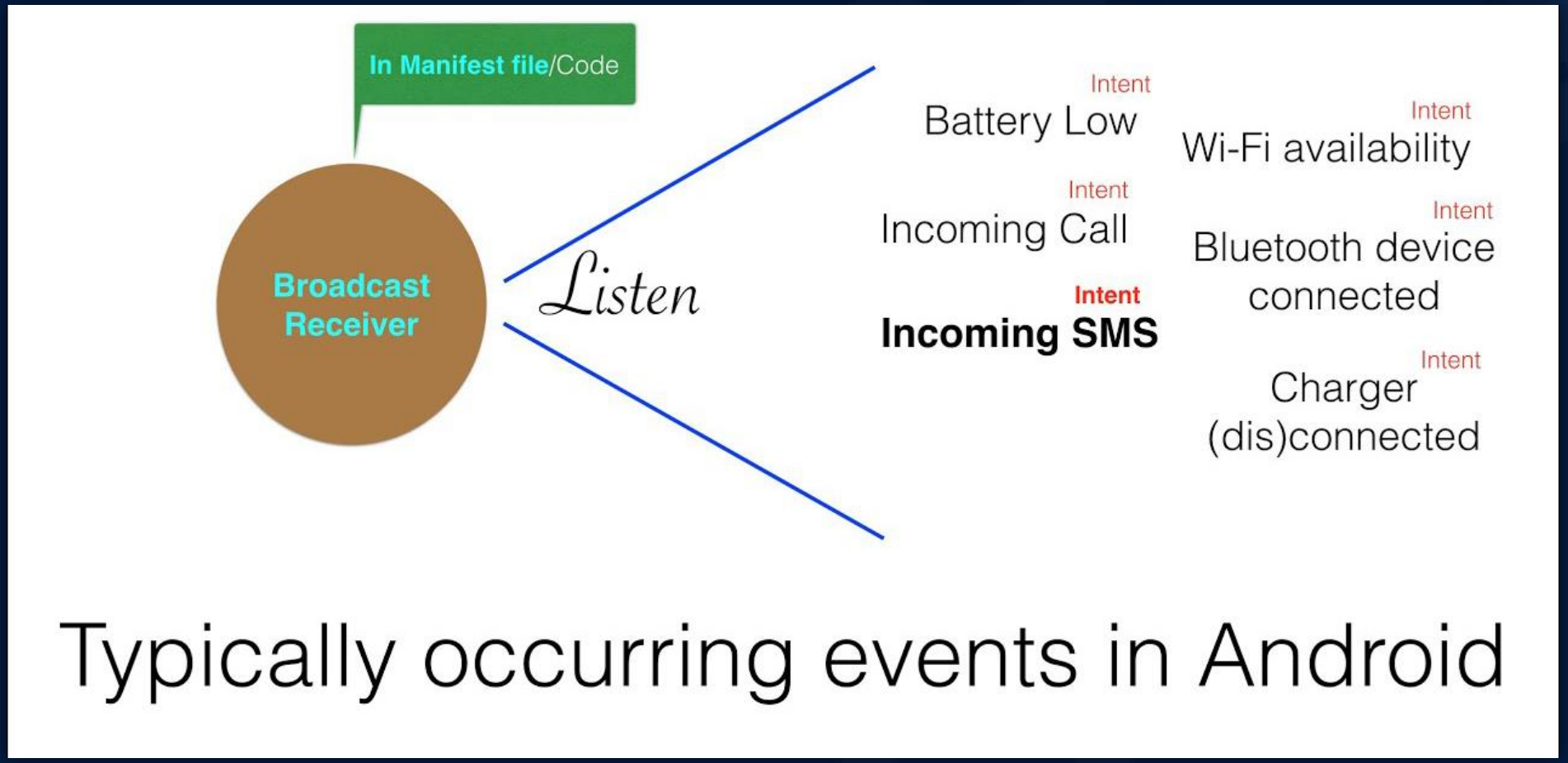
Broadcast Receivers

Services

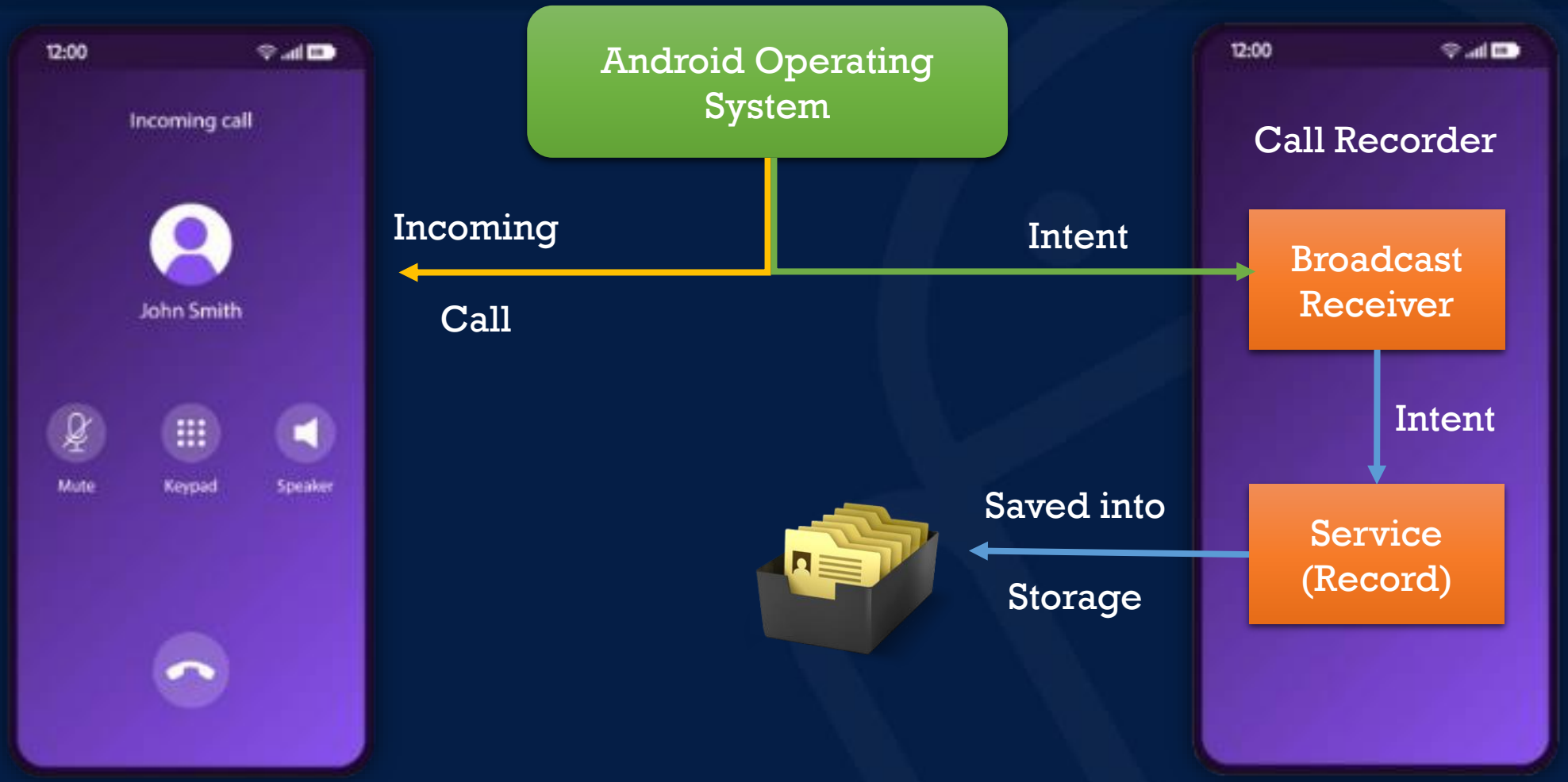
Usage of Intent



Introduction



Example – Work Flow



Flow of Broadcast Receivers

1. Between Operating System & yourApp
   - Operating System ⟶ yourRecceiver

2. Between Two Applications
   - abc App ⟶ yourRecceiver

3. Within the Application
   - MainActivity ⟶ yourRecceiver

TYPES of Broadcast Receivers

- Normal Broadcasts
- Ordered Broadcasts
- Sticky Broadcasts (deprecated)
- Local Broadcasts

Creating/Registering Broadcast Receivers

Static Receivers

- Event Registered in Manifest
- There are some limitations on background execution from Android Nougat

Dynamic Receivers

- Event Registered in Java classes or where you need
- There are no limitations on Dynamic Receivers

Why Dynamic Broadcast Receivers?

Required Temporary

- Running Application required some receiver for current time
- Example: Internet Connectivity

Some Events Required

- Some Events of Android only need Dynamic Receivers.
- Example: Time

Static Broadcast Receivers?

- Register in manifest
- Define an intent-filter & specify ACTION_NAME

```
<receiver  android:name=“.MyReceiver”>
      <intent-filter>
          <action android:name=“android.intent.action.ACTION_TIME_TICK” />
      </intent-filter>
</receiver>
```

Dynamic Broadcast Receivers?

- Lives as long as the creating receiver is not destroyed

For Registering Receiver use
- registerReceiver()

For Unregistering the Receiver use
- unregisterReceiver()

Explicit vs. Implicit Broadcast Receivers?

Explicit Receivers

- Same like as Explicit Intents
- Targets a specific Broadcast Receivers
- Only target Receivers receives the broadcast message

Implicit Receivers

- Same like as Implicit Intents
- Doesn't Targets a specific Broadcast Receivers
- Define an Action in manifest
- All the receivers receives message with the same action
- Limitations are applied

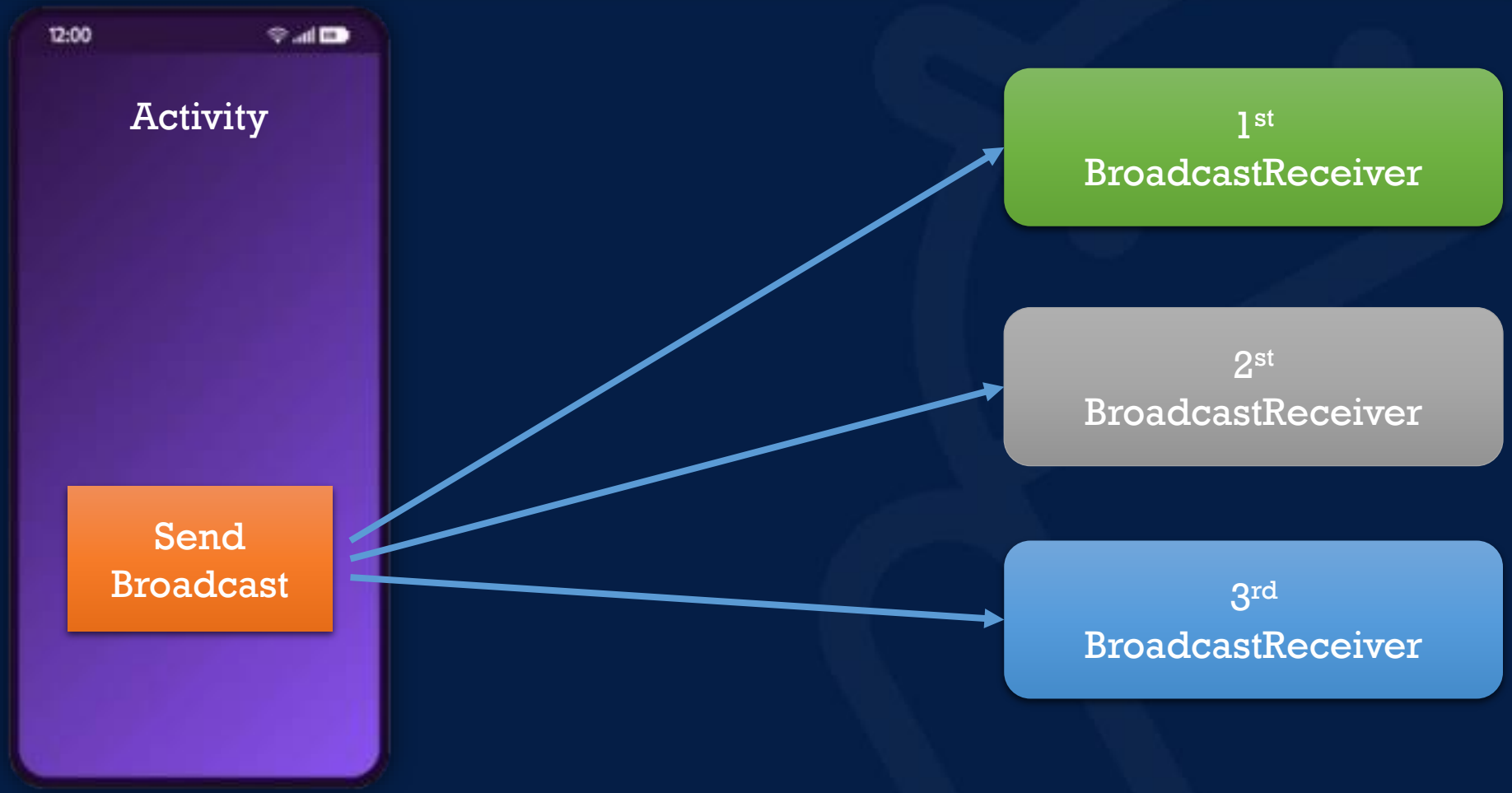
By: AbuBakar Ubaid

Normal
BROADCAST RECEIVERS

By: AbuBakar Ubaid

ANDROID

Normal Broadcast Receivers



Normal Broadcast Receivers

- Override the onReceive() in sub class
- Can be declare in inner class

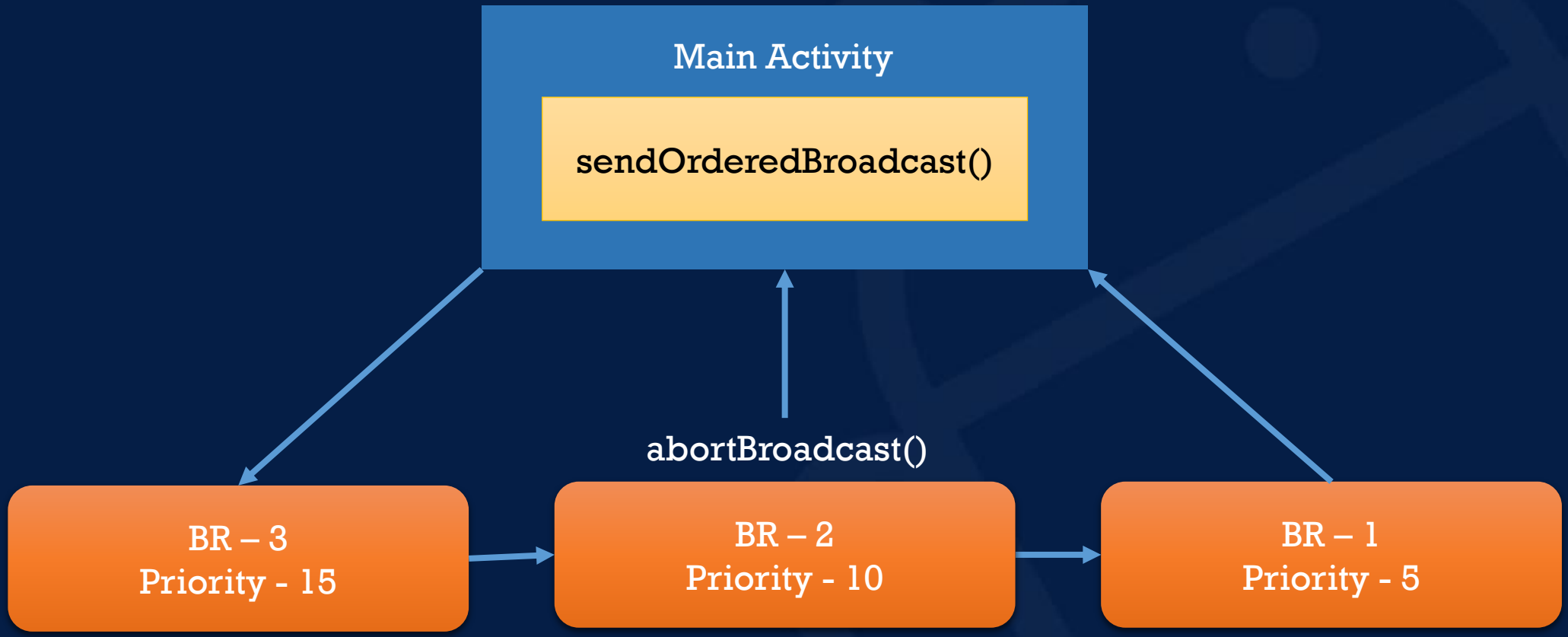
- Never perform Long running tasks inside the onReceive()
  - Receiver works in main thread
  - It will be block the main thread
  - System will generate ANR
  - Use Services

Ordered
BROADCAST RECEIVERS

By: AbuBakar Ubaid

ANDROID

Ordered Broadcast Receivers



Ordered Broadcast Receivers

- While sending Ordered Broadcast
  - Initial int code
    - getResultCode / setResultCode
  - Initial String data
    - getResultData / setResultData
  - Initial Bundle Extras
    - getResultExtras / setResultExtras
- Short Method
  - setResult(code, data, extras)

Sticky
BROADCAST RECEIVERS

By: AbuBakar Ubaid

ANDROID

Sticky Broadcast Receivers

- Applicable only for Dynamic Receivers
  - sendStickyBroadcast()

- Deprecated in API 21 [Lollipop]
- Poor Protection Level
- Poor Security
- Poor Flow of Application

Sticky Broadcast by OS

- ACTION_BATTERY_CHANGED
  - BATTERY_STATUS_CHARGING
  - BATTERY_STATUS_FULL
  - BATTERY_STATUS_USB

- ACTION_DEVICE_STORAGE_LOW

Local
BROADCAST RECEIVERS

By: AbuBakar Ubaid

ANDROID

Local Broadcast Receivers

- Use within the Application
- Use LocalBroadcastManager()
- Introduce in Support Library
- Interaction between two different components of same Application

Why Local Broadcast Receivers?

Interaction between two components

- Between two Activities
- Between Activity & Service
- Between Activity & BroadcastReceivers
- Between Service & BroadcastReceivers

More Security

- Works locally
- Doesn't leave app
- No data leak

Limitations
On Background Execution

By: AbuBakar Ubaid

ANDROID

Limitations On Background Execution

- Broadcast Limitations
  - With limited exceptions, apps cannot use their manifest to register implicit broadcasts
  - Register these broadcasts at runtime

OVERVIEW

- Normal Broadcast
  - sendBroadcast()
  - Could be Implicit/Explicit
  - Counld be Dynamic/Static
- Ordered Broadcast
  - sendOrderedBroadcast()
  - Could be Implicit/Explicit
  - Counld be Dynamic/Static
- Sticky Broadcast
  - Deprecated in API 21
- Local Broadcast
  - Local Broadcast Manager
  - Could be Implicit/Explicit
  - Dynamic

THANK YOU ☺

By: AbuBakar Ubaid