DIY Augmented Reality

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Tampa Bay Cocoaheads, April 2017

“Augmented Reality” - What is it, actually?

“Augmented Reality is the fusion of information from the real world and virtual worlds on a device for a user.”

–me

AR Components

- Real World
- Virtual World
- Device
- User

“Real World”

- Images
- Sounds
- Touch
- Balance
- Smell, taste

“Virtual World”

- Images
- Sounds
- Touch
- Balance

“Device”

- VR Goggles
- Aircraft or Automotive HUD
- Google Glass
- Amazon Echo
- iPhone

iPhone - Sensing the Real World

- Camera
- Microphone
- GPS
- Compass
- Gyroscope
- Accelerometer
- Proximity
- Bluetooth LE
- Touch ID

iPhone - Projecting the Virtual World

- Screen
- Speakers
- Haptic (Vibration)

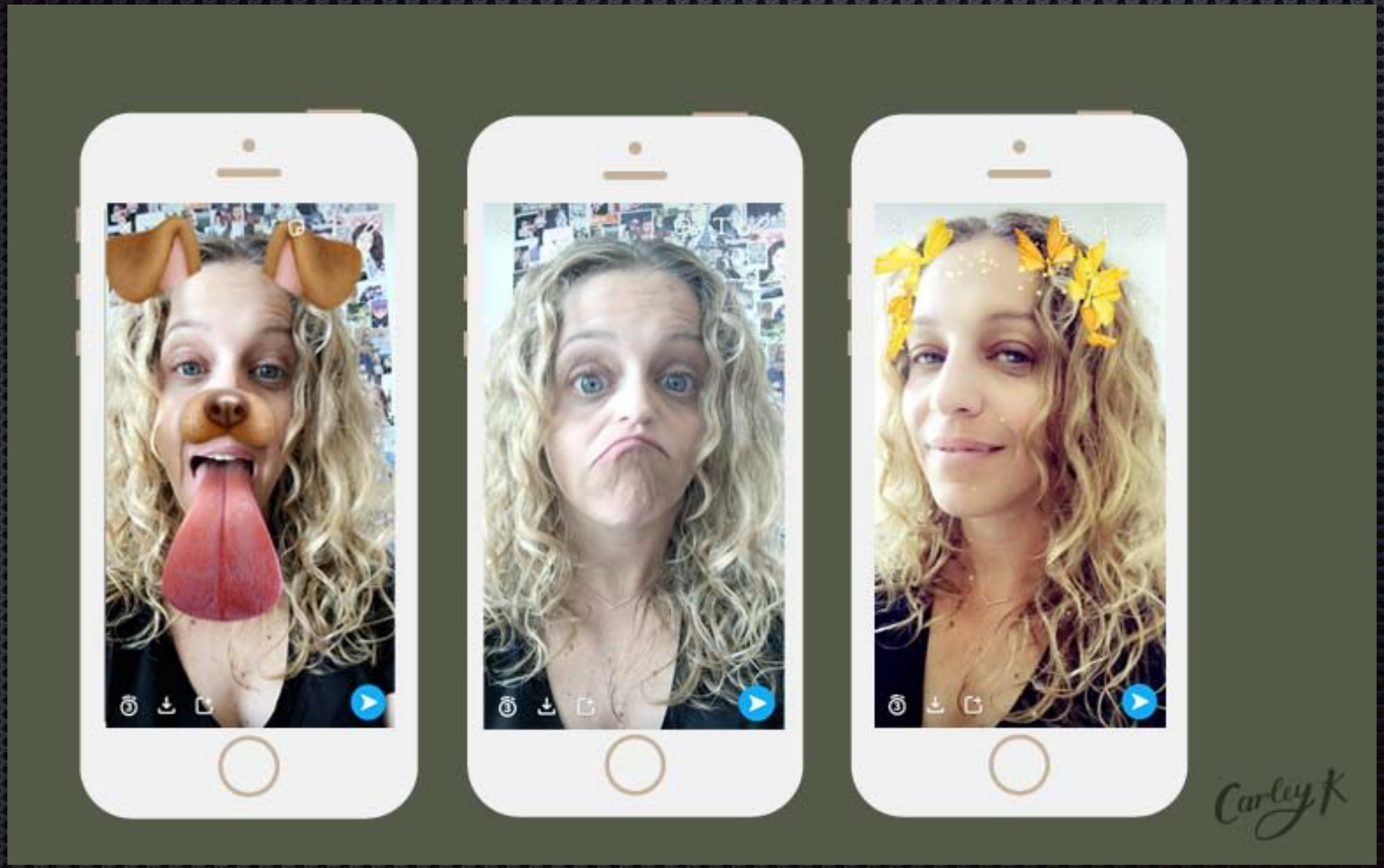
“Virtual Worlds”

- Has to filter through human perception
- Regular environment
  - Spatially organized
  - Linearly organized
- Generated objects & actions
  - Regularity of behavior
  - Recognizable

Fusion

- Overlay
  - HUD
  - Google glass
  - Snapchat
- Integration
  - PokeMon Go

“SnapChat” (tm)



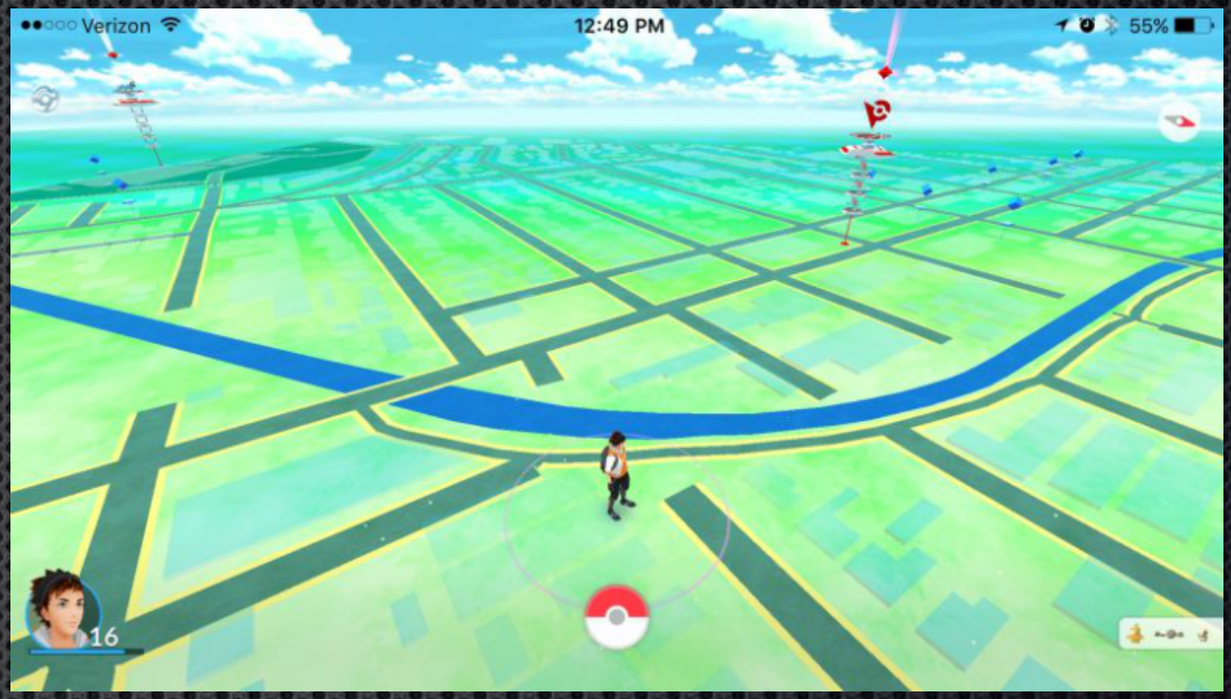
“PokeMon Go” (TM)

PokeMon Go Virtual World

- Has to filter through human perception
- Regular environment
  - Spatially organized
  - Linearly organized
- Generated objects & actions
  - Regularity of behavior
  - Recognizable

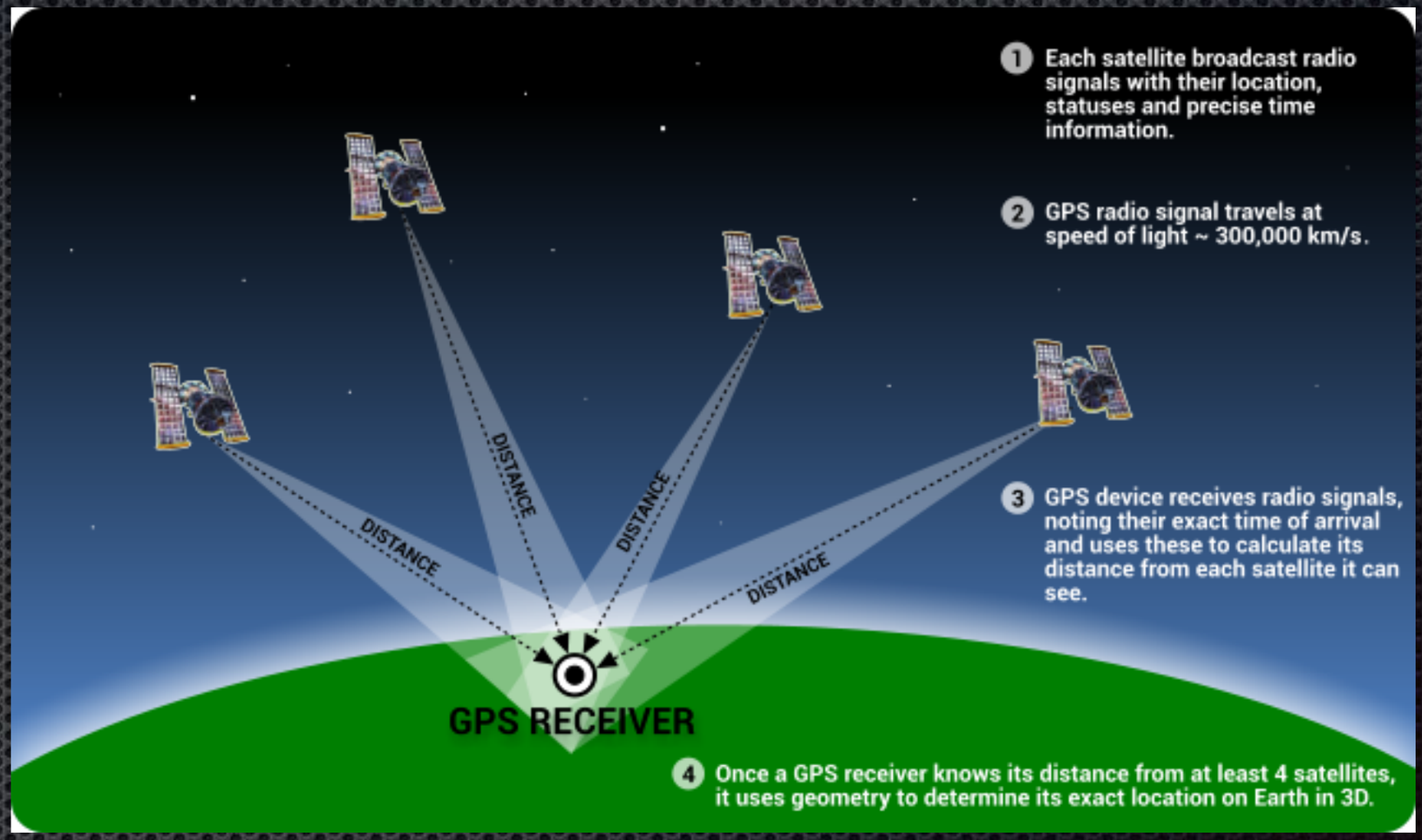
For Virtual/Real World Fusion

- "Overlaid" on real world
- Generated objects & actions
  - Virtual world location
  - Virtual world orientation
- Device needs
  - Real-world location
  - Real-world orientation



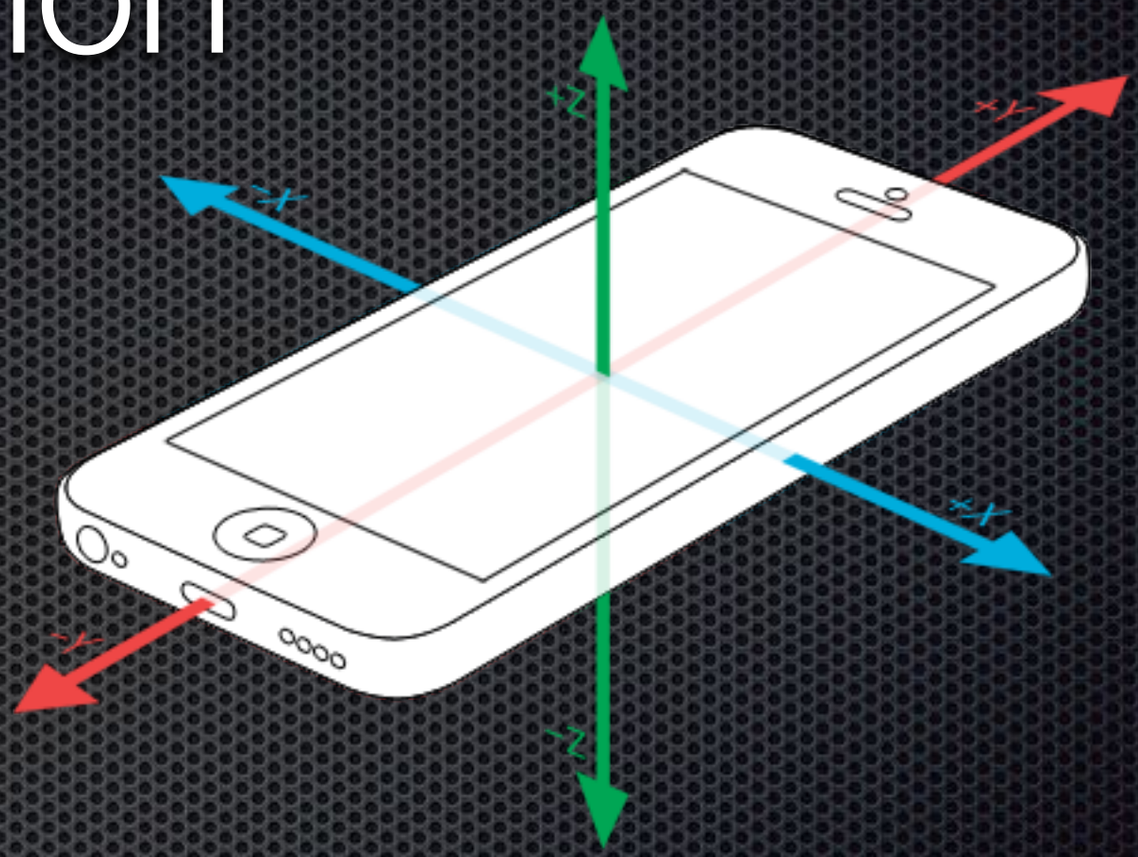
Device Location

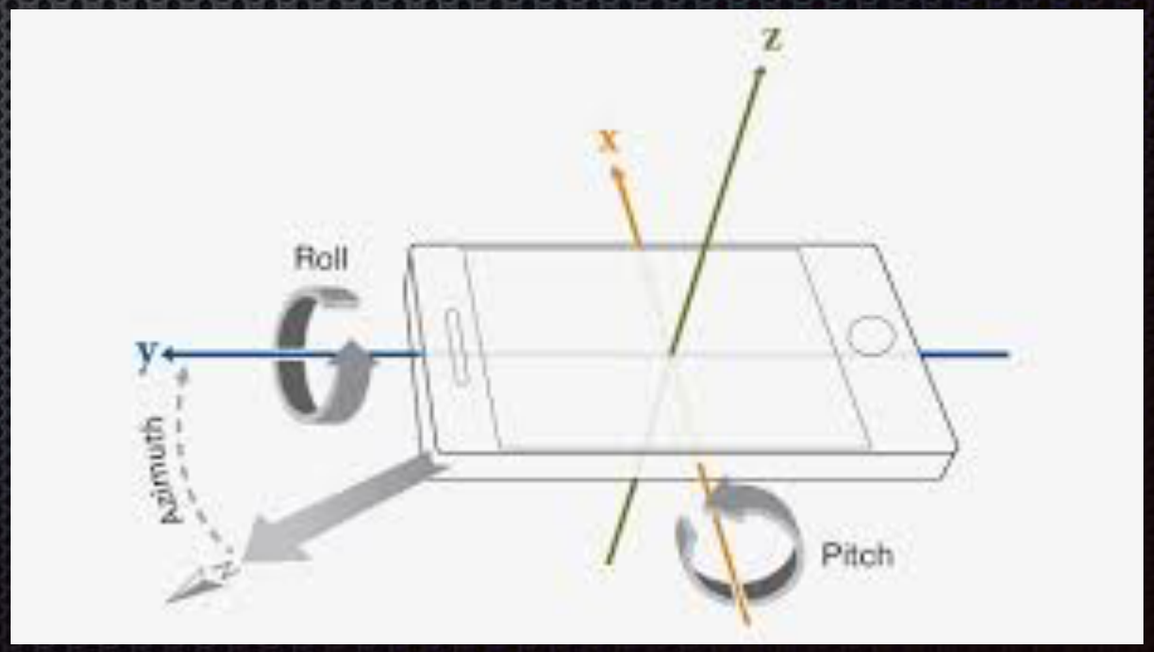
- Latitude and Longitude
- Speed and Heading



Device Orientation

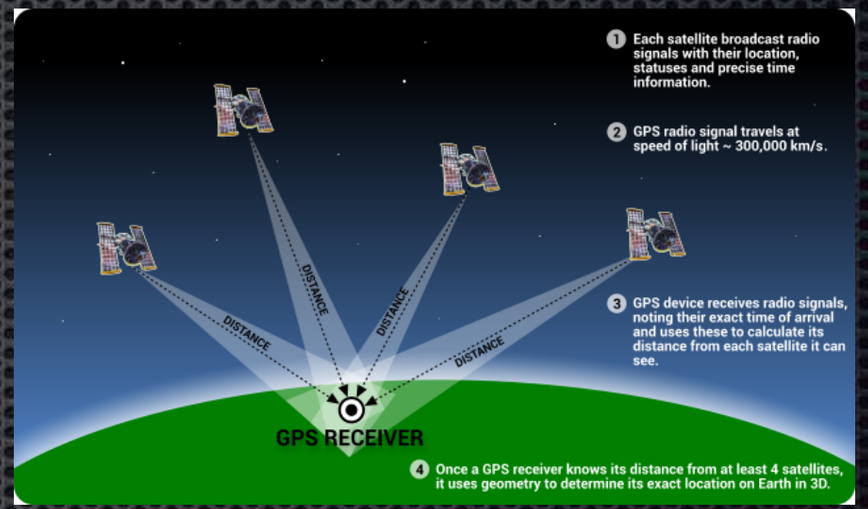
- Compass (Magnetometer)
- Gyroscopes - pitch, roll, yaw
- Accelerometer



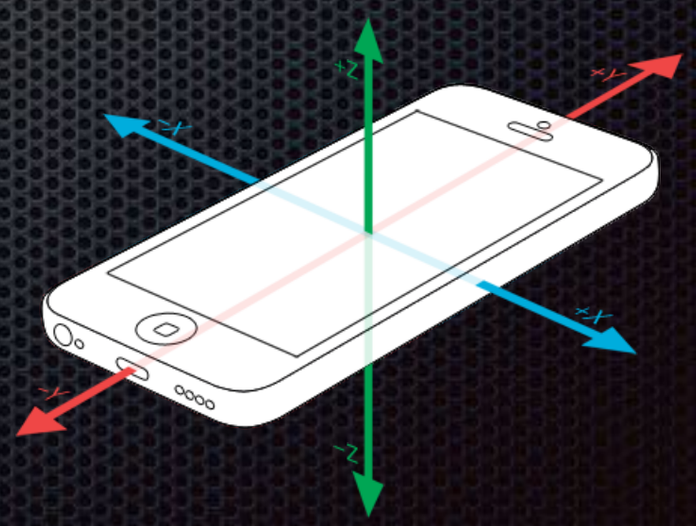


How Your App Knows...

- **Core Location**
  - Latitude/Longitude
  - Compass Heading



- **Core Motion**
  - Gyroscopes - pitch, roll, yaw
  - Accelerometer



Code