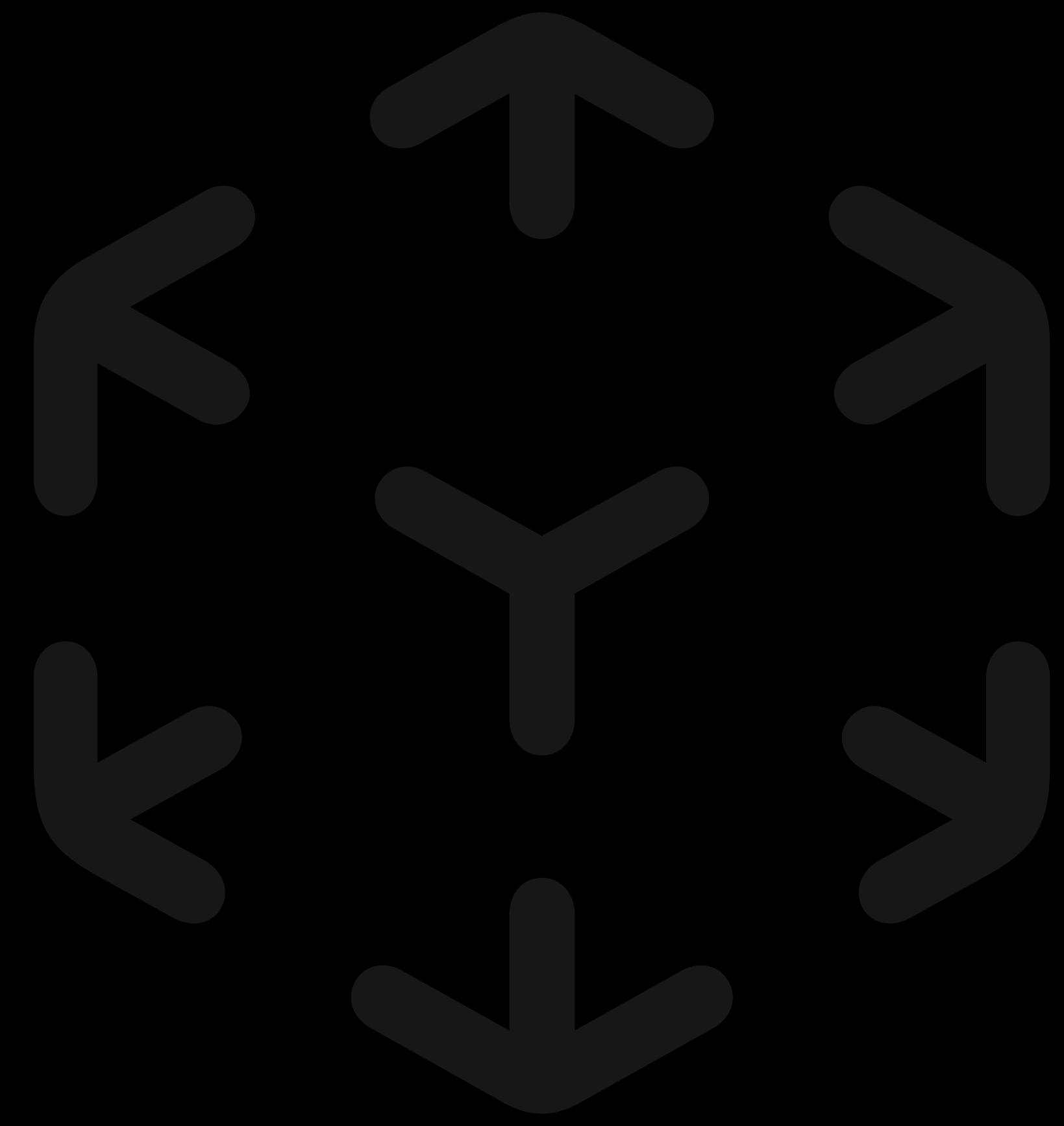


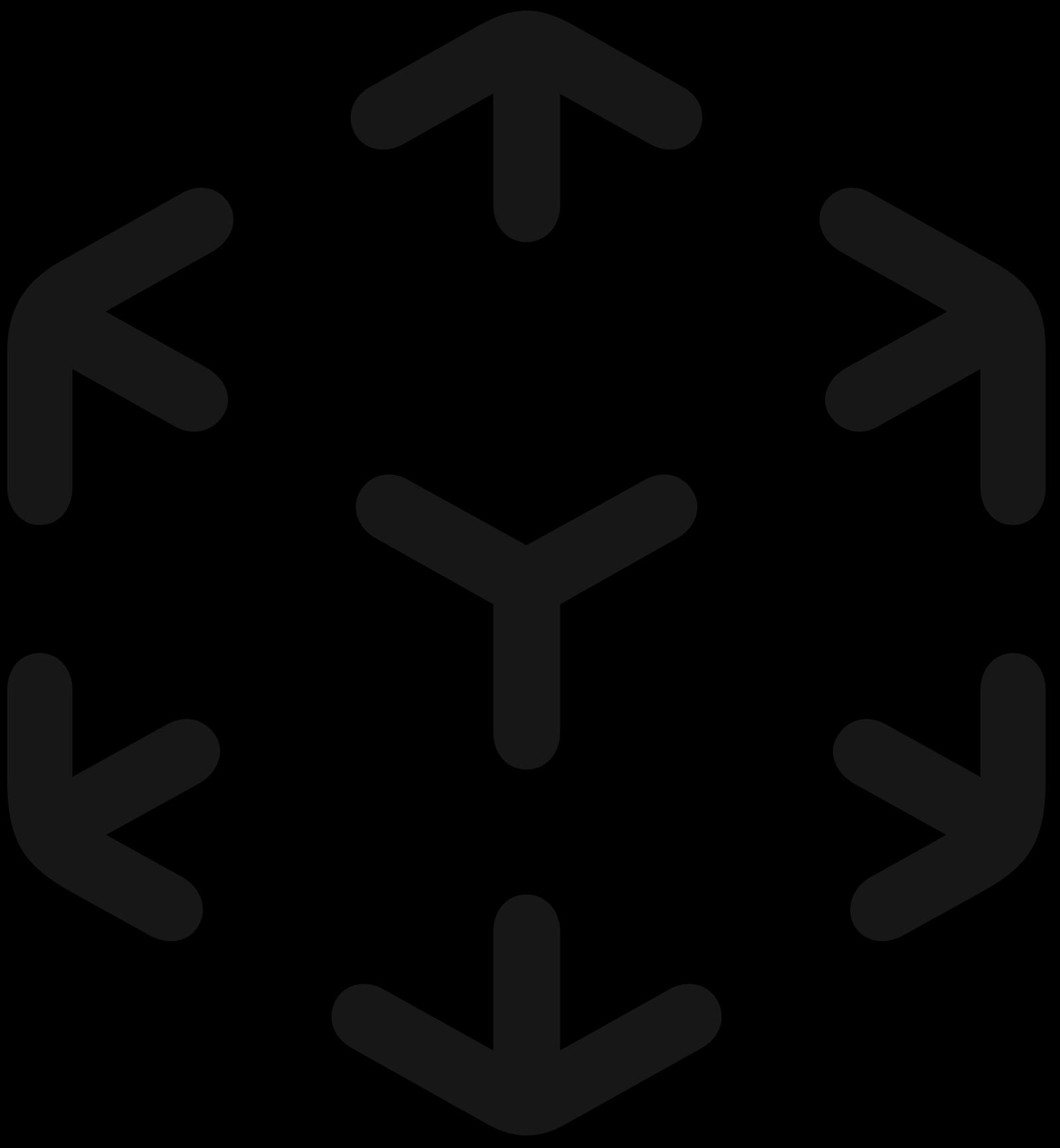
AR on iOS

Introduction to ARKit



AR on iOS

- What's AR?
- ARKit



What's AR?

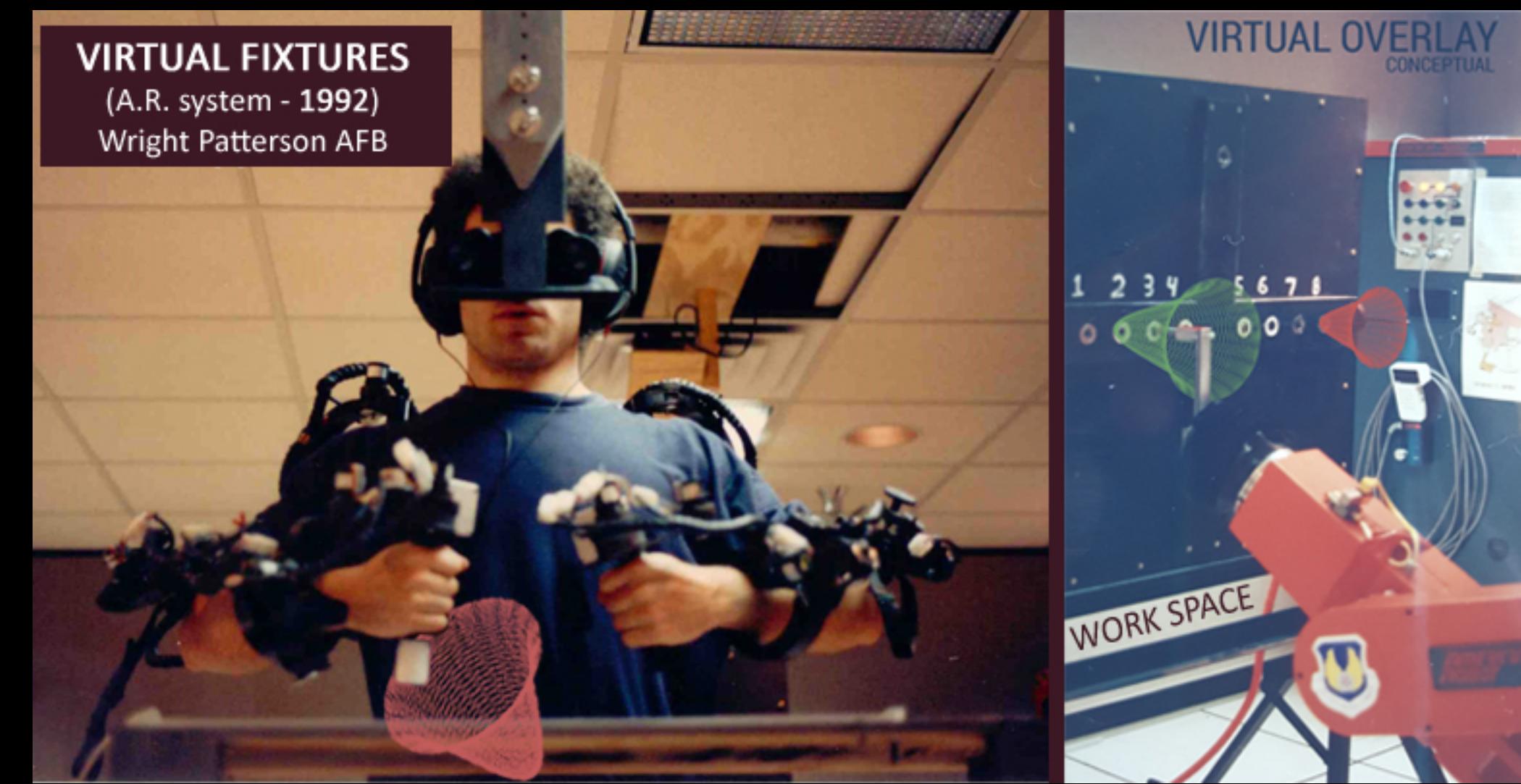
"Augmented reality (AR) describes user experiences that add 2D or 3D elements to the live view from a device's camera, in a way that makes those elements appear to inhabit the real world."

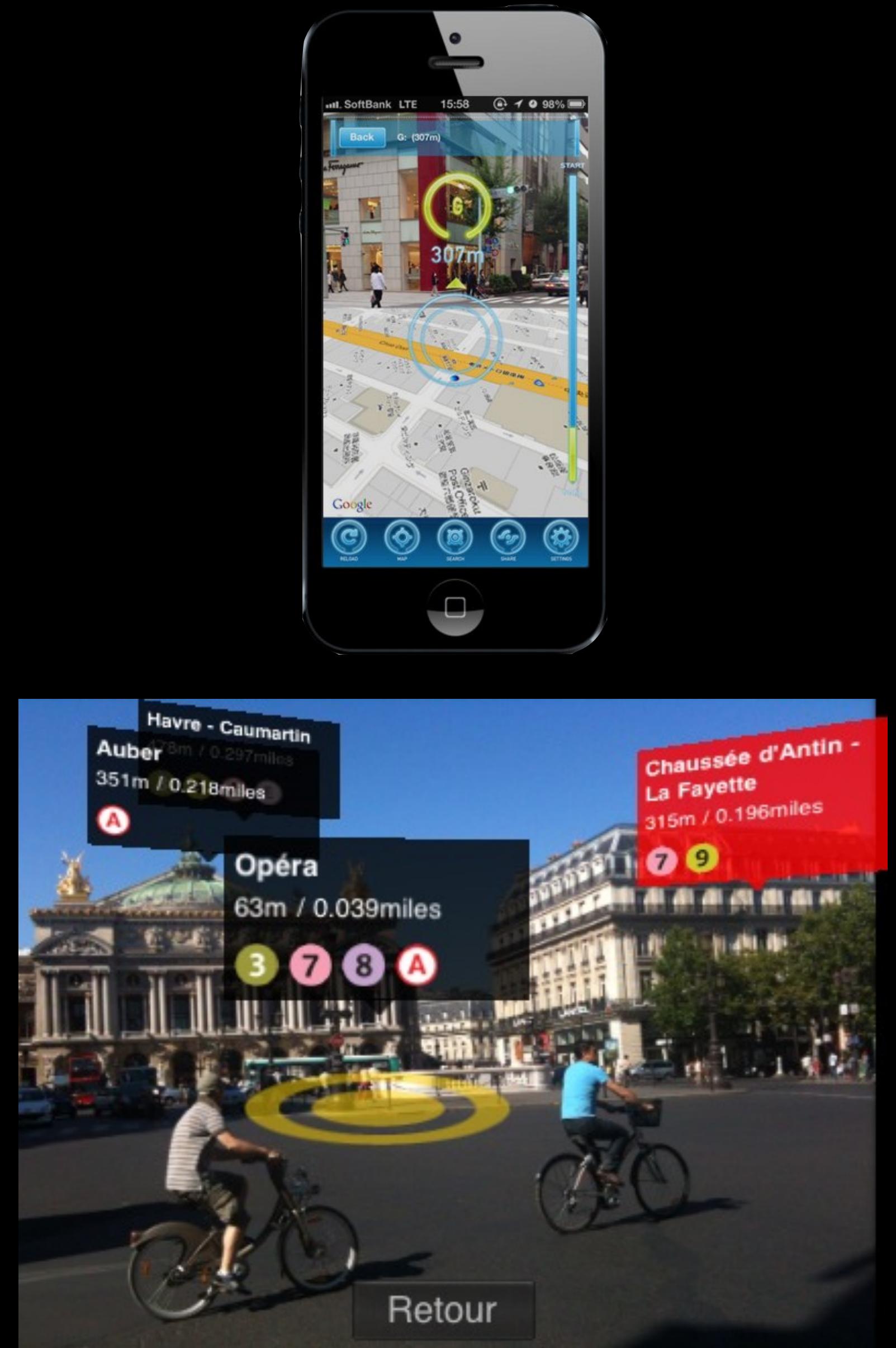
- Apple Developer Documentation

**"La réalité augmentée ? C'est simple, tu prend l'image de la caméra,
et tu rajoutes ce que tu veux dessus !"**

- *Yannick Nay, Ingesup Bordeaux, 2010*

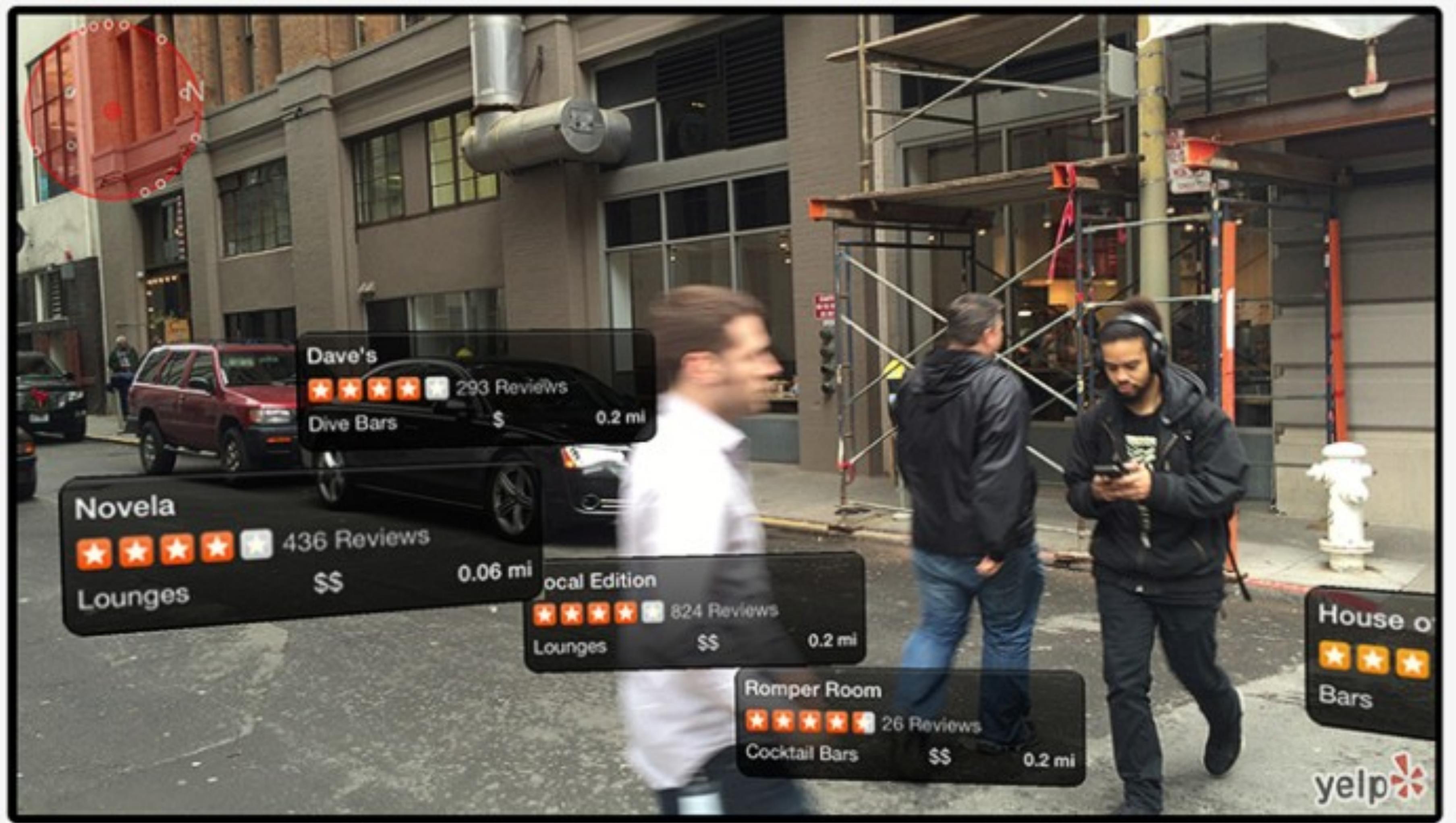




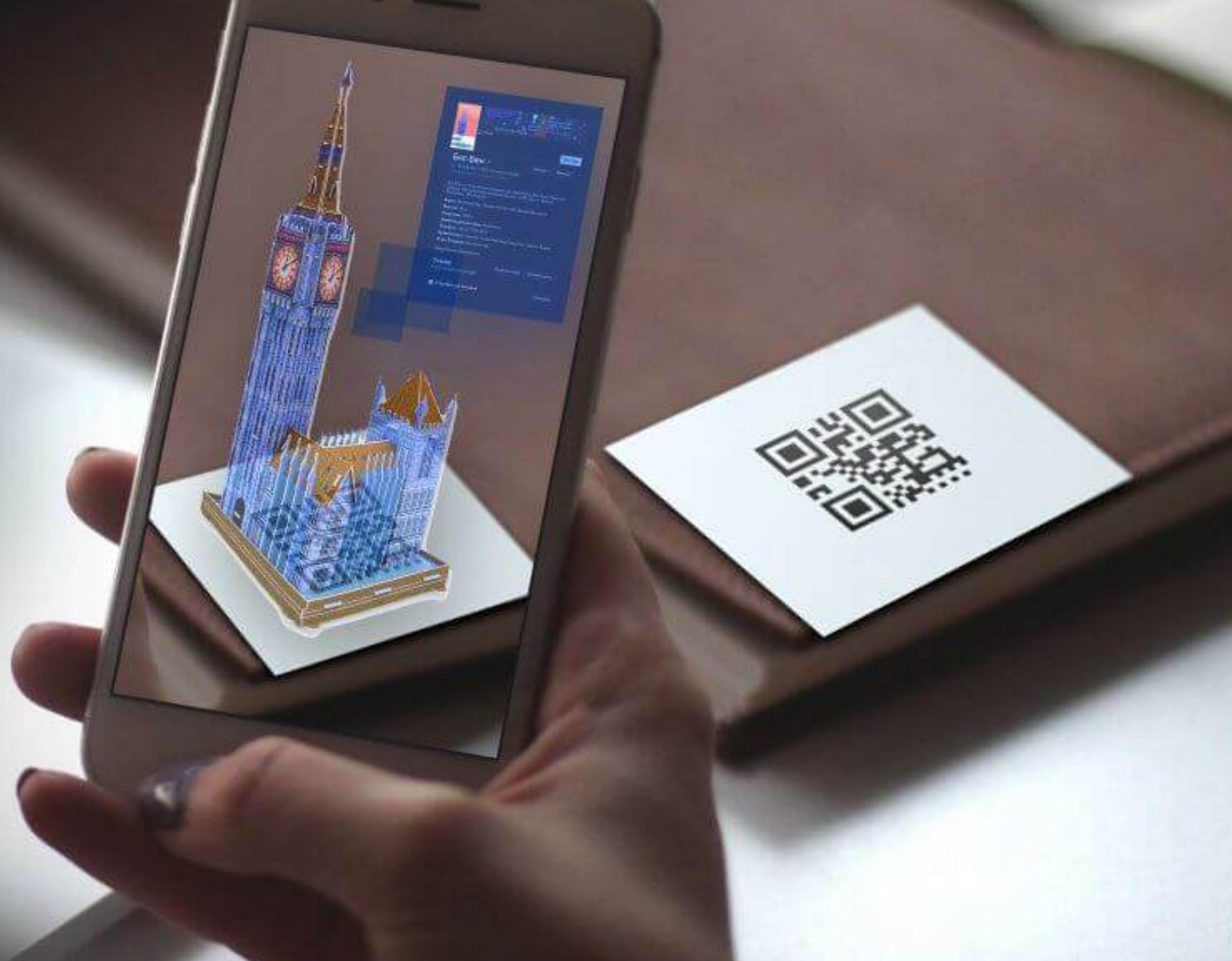


- Not a new technology
- Not an ultimate goal
- Many tries, many fails

- AR on its own is worthless
- AR needs to solve a problem (like any app)



Location-based AR



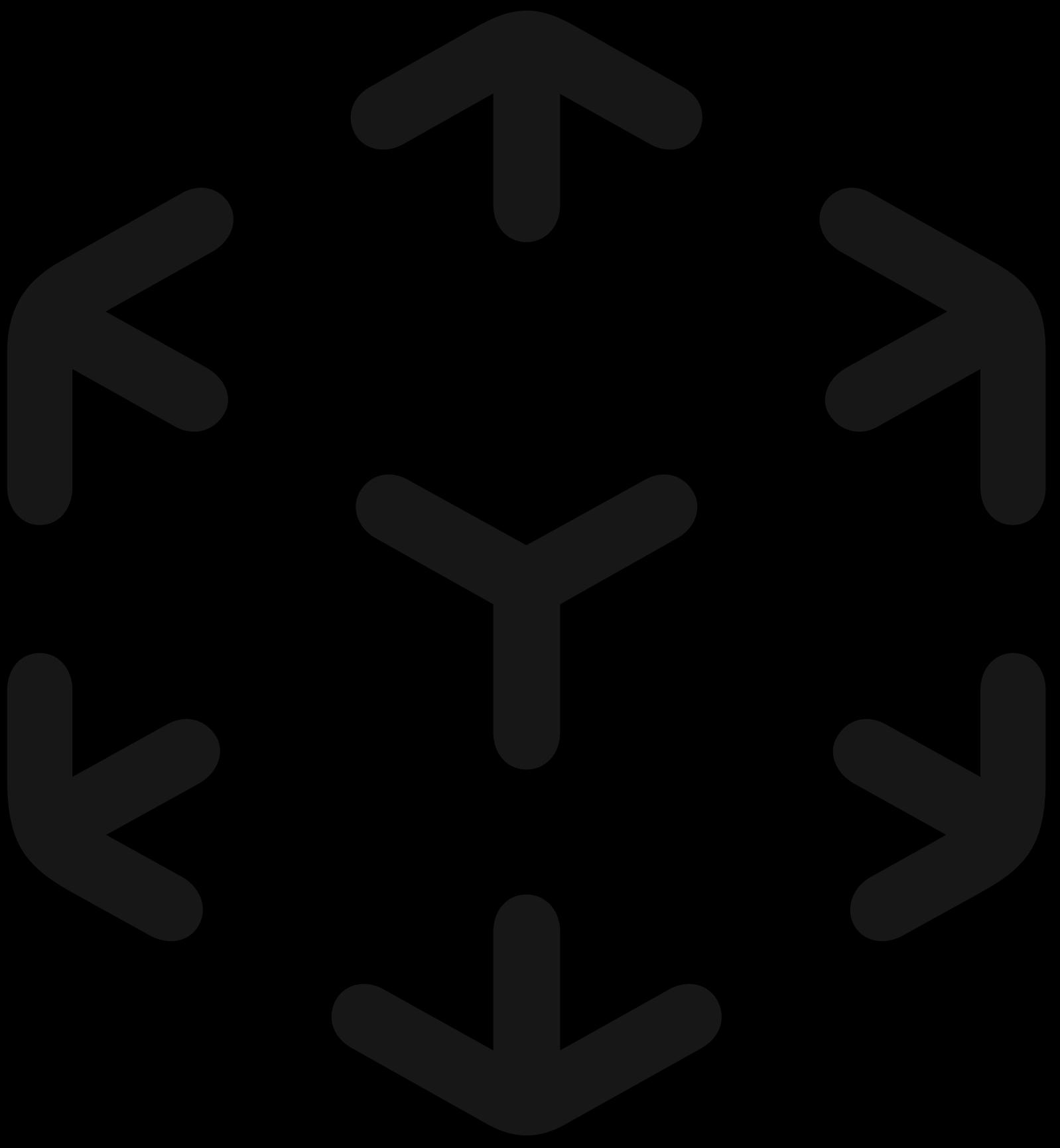
Marker-based AR



Markerless AR

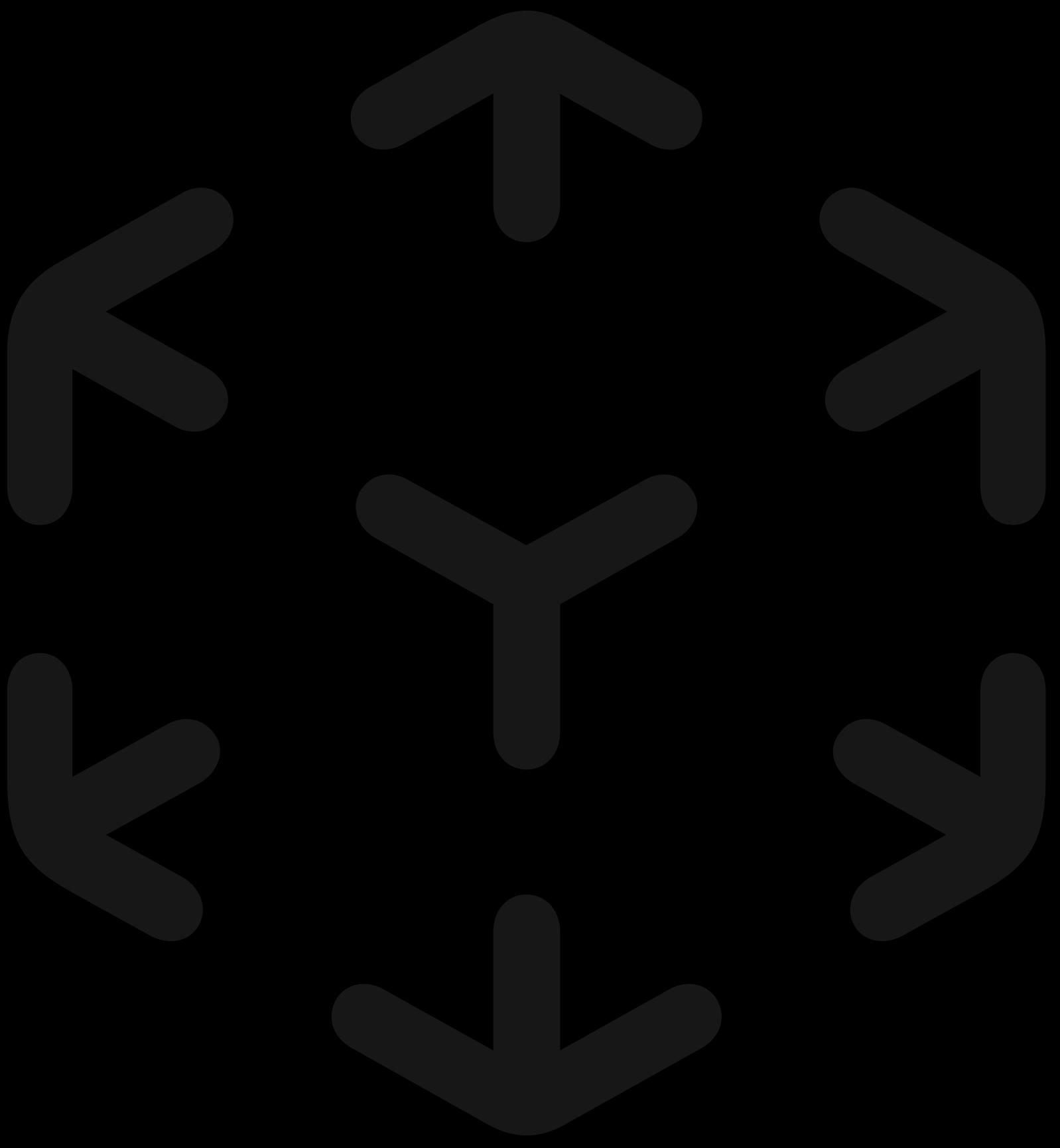
AR on iOS

- What's AR?
- ARKit



AR on iOS

- What's AR?
- ARKit



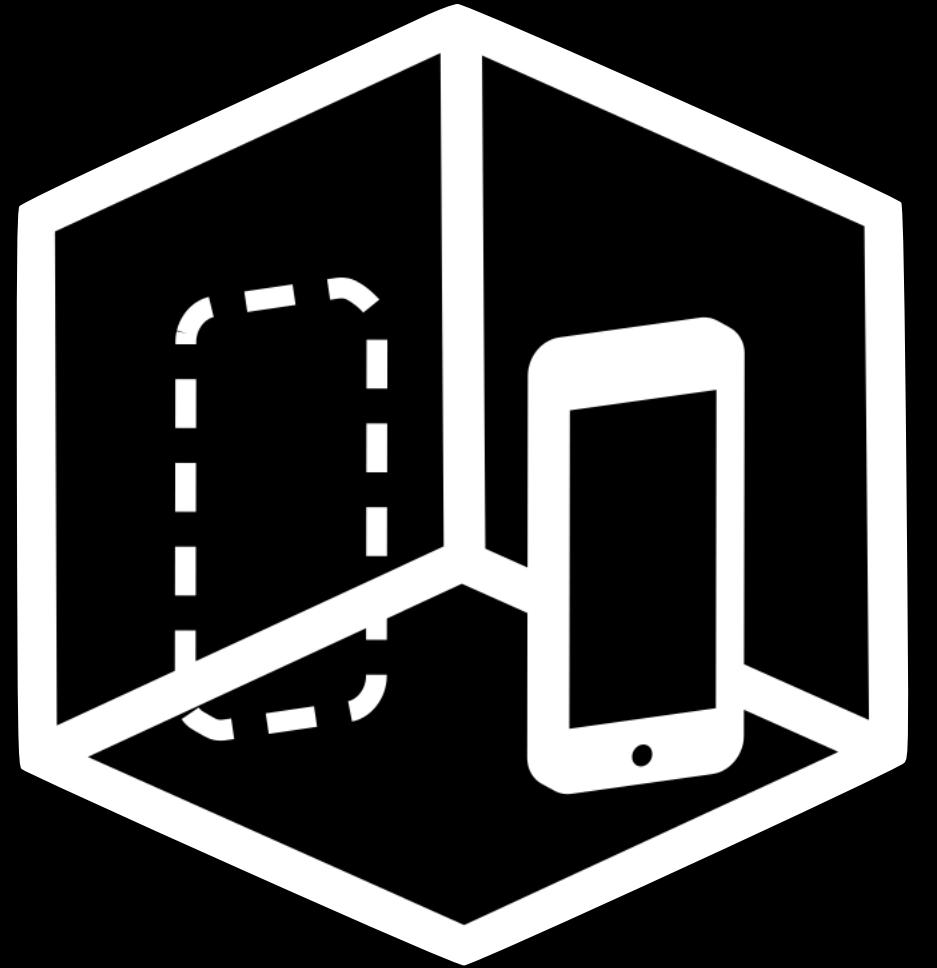
ARKit

ARKit

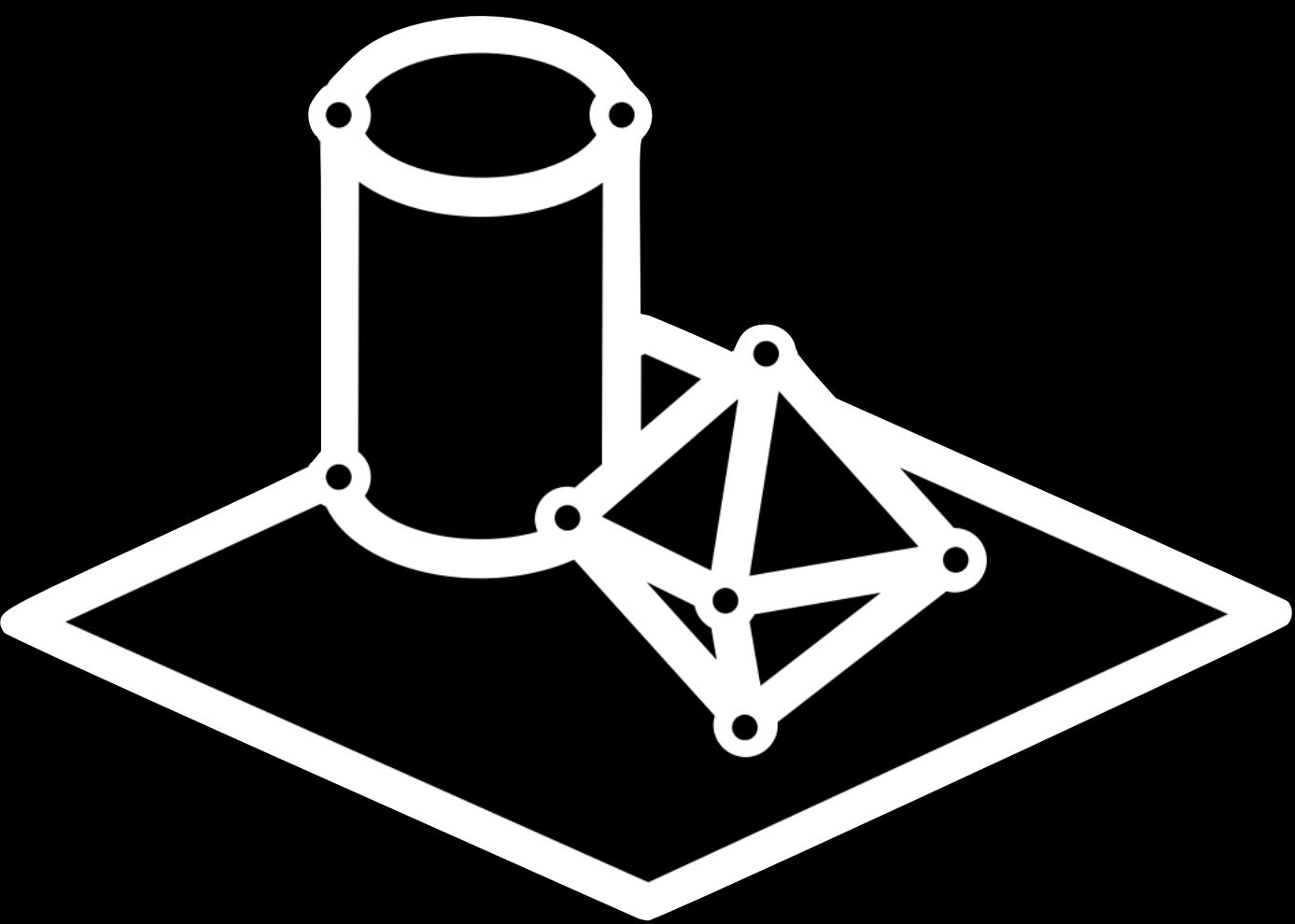
- Mobile AR platform
- High level API
- A9 processor and up
- Some features requires A12

- iPhone 6s
 - iPhone SE
 - iPhone 7
 - iPhone 8
 - iPhone X
 - iPhone XS
 - iPhone XR
 - iPhone 11
- iPad Pro (all)
 - iPad Air (3rd gen)
 - iPad 5th gen
 - iPad 6th gen
 - iPad 7th gen
 - iPad Mini (5th gen)

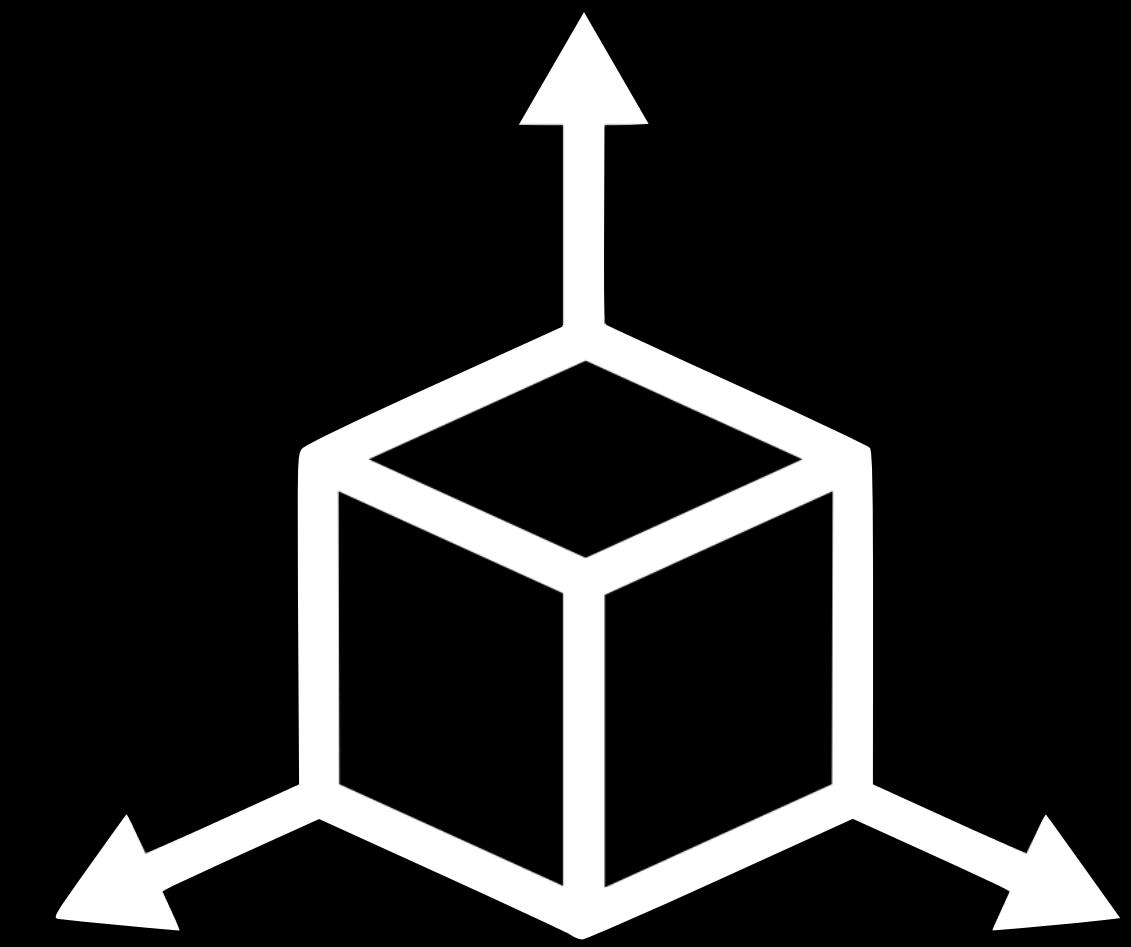
ARKit



Tracking



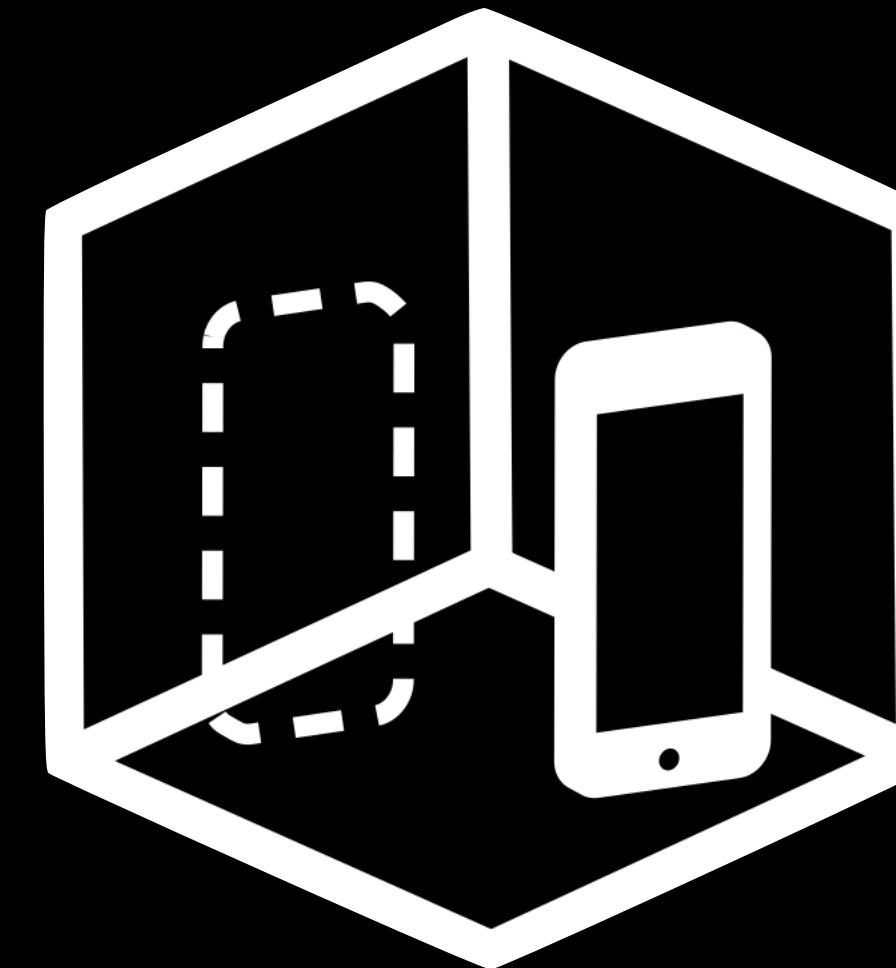
Scene understanding



Rendering

ARKit

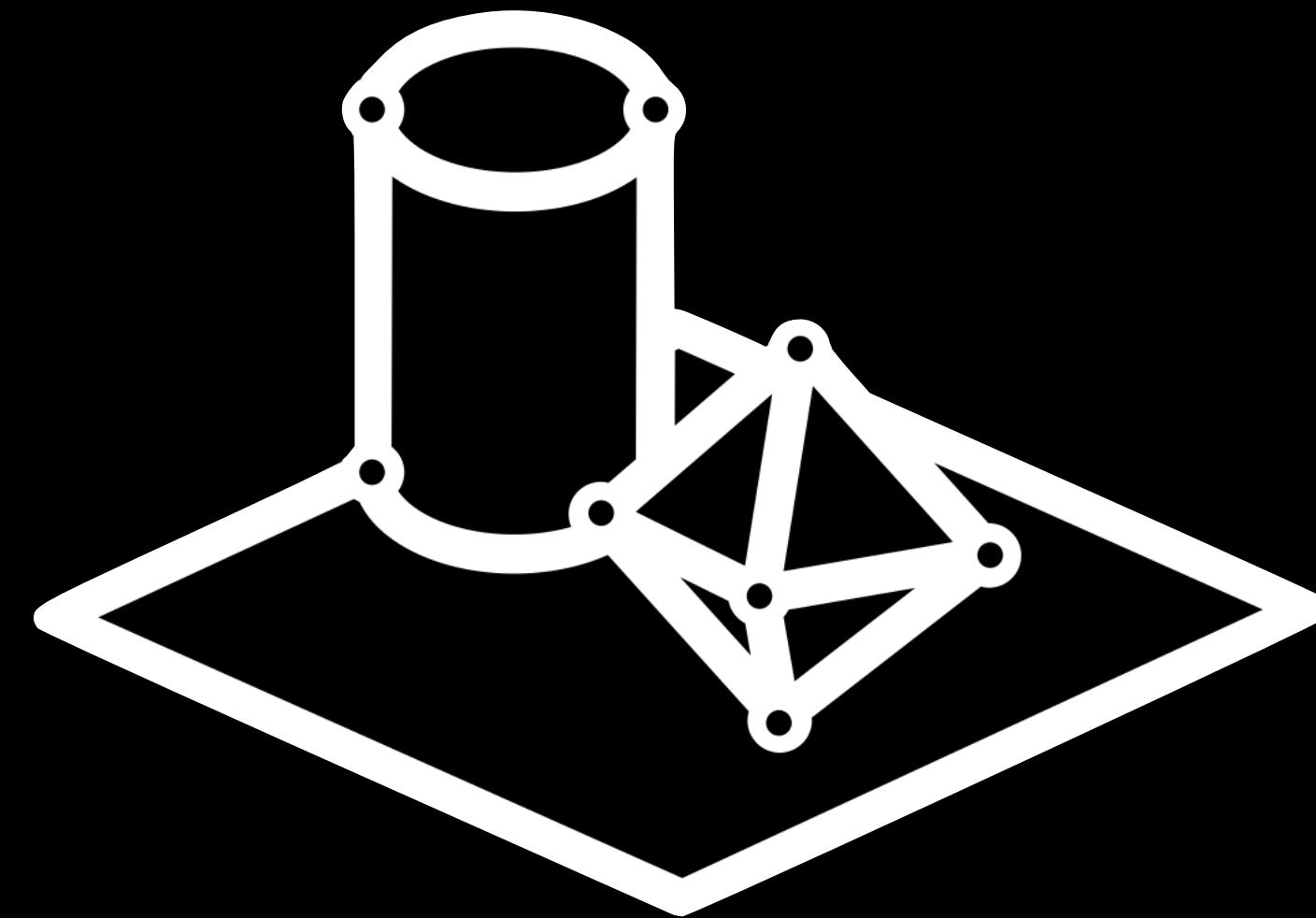
- World tracking
- Visual inertial odometry
- No external setup



Tracking

ARKit

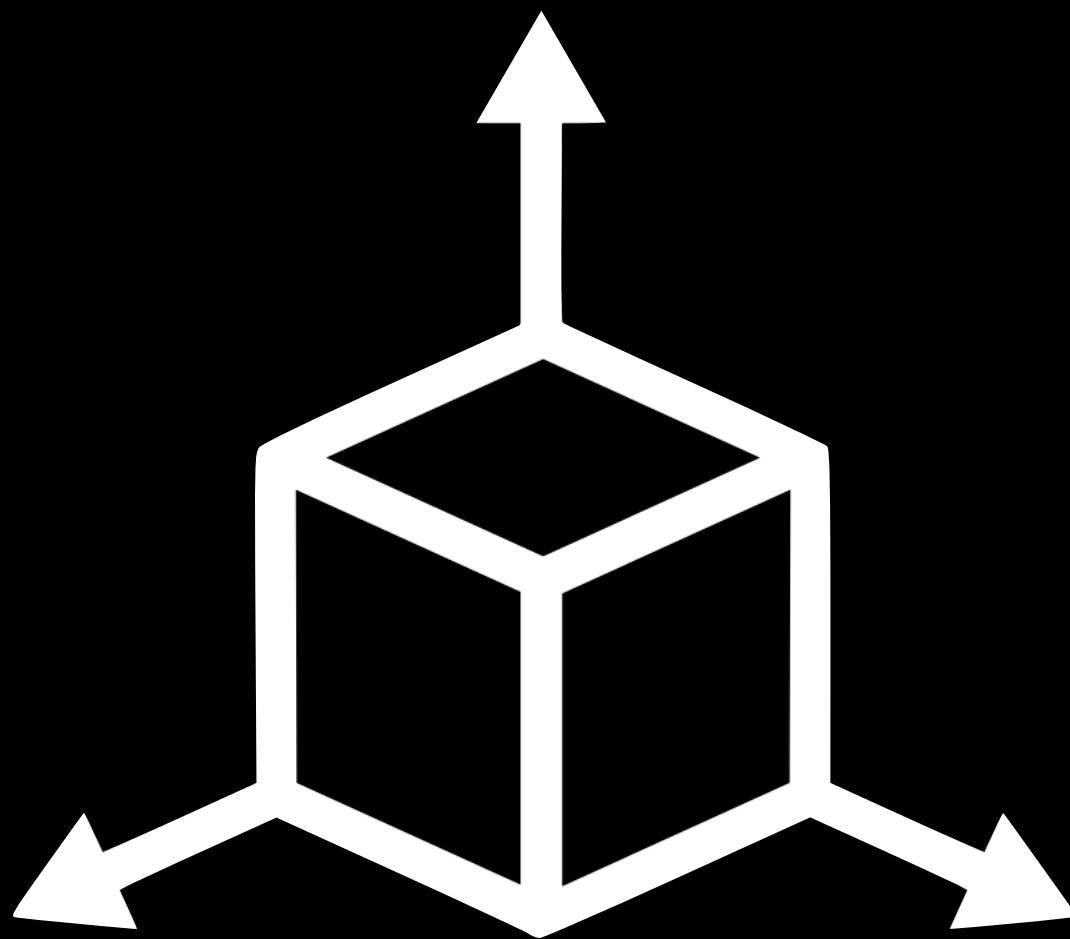
- Plane detection
- Hit testing
- Light estimation



Scene understanding

ARKit

- Easy integration
- Built-in AR Views
- Custom rendering



Rendering



SpriteKit



SceneKit



RealityKit



Metal



SpriteKit



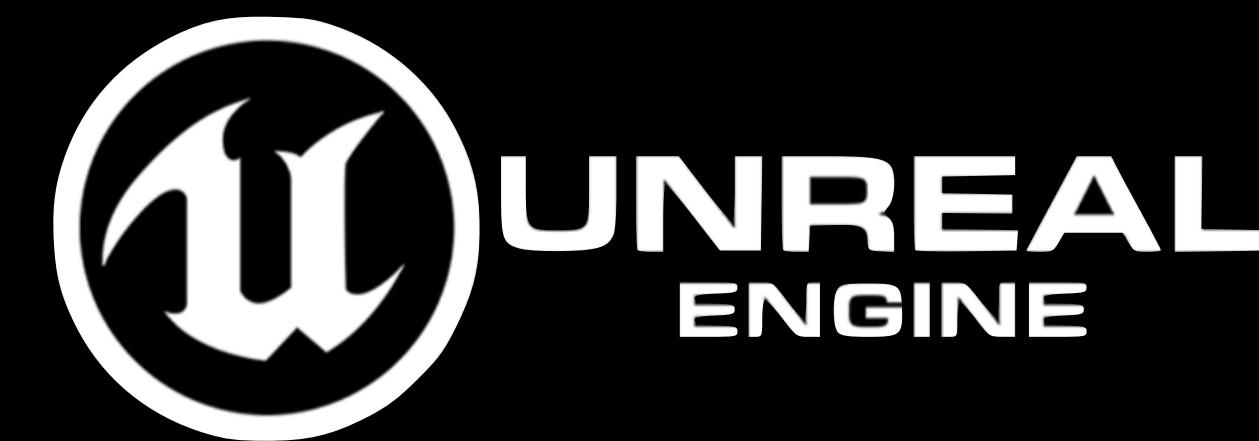
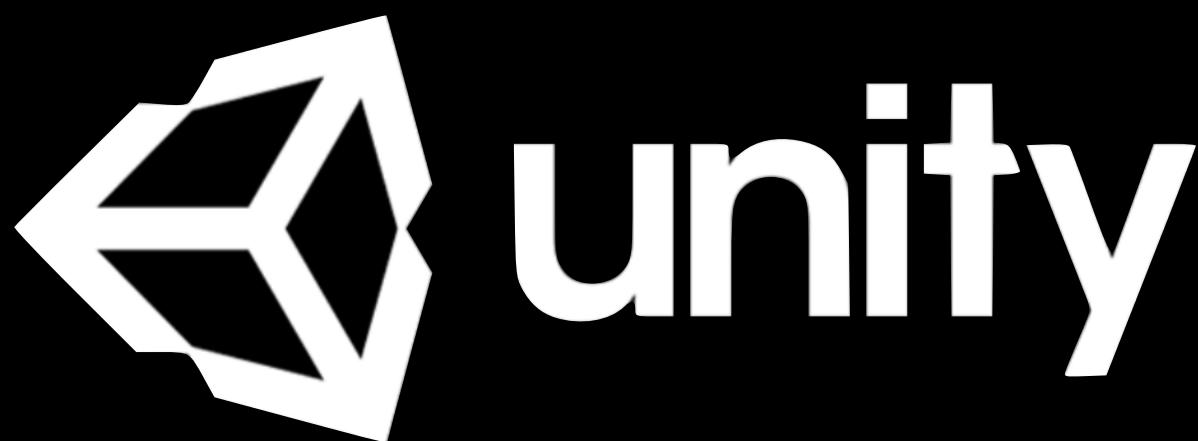
SceneKit



RealityKit



Metal





SpriteKit



SceneKit



RealityKit



Metal

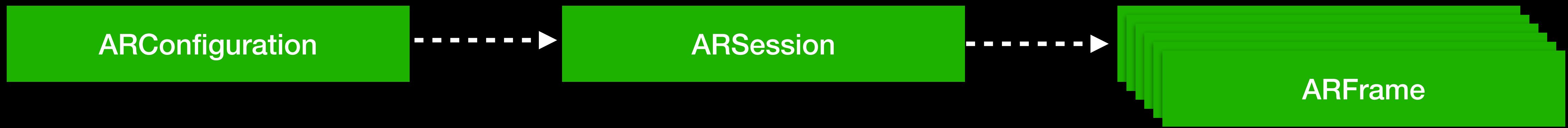
What's that framework?

When to choose it?

Try to modify the sample project

`run(_ configuration: ARConfiguration)`

`currentFrame`



ARConfiguration

- An object that defines the particular ARKit features you enable in your session at a given time.
 - Configuration subclasses
 - Enable/disable features
 - Availability

```
ARFaceTrackingConfiguration()
ARBodyTrackingConfiguration()
ARImageTrackingConfiguration()
ARWorldTrackingConfiguration()
ARPositionalTrackingConfiguration()
AROrientationTrackingConfiguration()
```

```
if ARWorldTrackingConfiguration.isSupported {
    config = ARWorldTrackingConfiguration()
} else {
    config = AROrientationTrackingConfiguration()
}
```

ARSession

- The main object you use to control an AR experience.
 - Manage AR processing
 - Can reset tracking
 - Notifies delegates when updates comes
 - Provide access to current frame

ARFrame

- A video image captured as part of a session with position tracking information.
 - Captured image
 - Tracking information
 - Scene information



ARAnchor

- A position and orientation of something of interest in the physical environment.
 - Real world position and orientation
 - Can be added to the ARSession
 - Contained in ARFrame
 - Can be added automatically to the session