

Harnessing iOS to Create Magic in Your Apps

Session 310

Filip Krsmanovic

Engineering Manager, Mobile Apps

These are confidential sessions—please refrain from streaming, blogging, or taking pictures

Apple Store App





Agenda

An event is coming up...



Spending time at location...

We are here



iOS Technologies We Will Use

iOS Technologies We Will Use

- Calendar Events



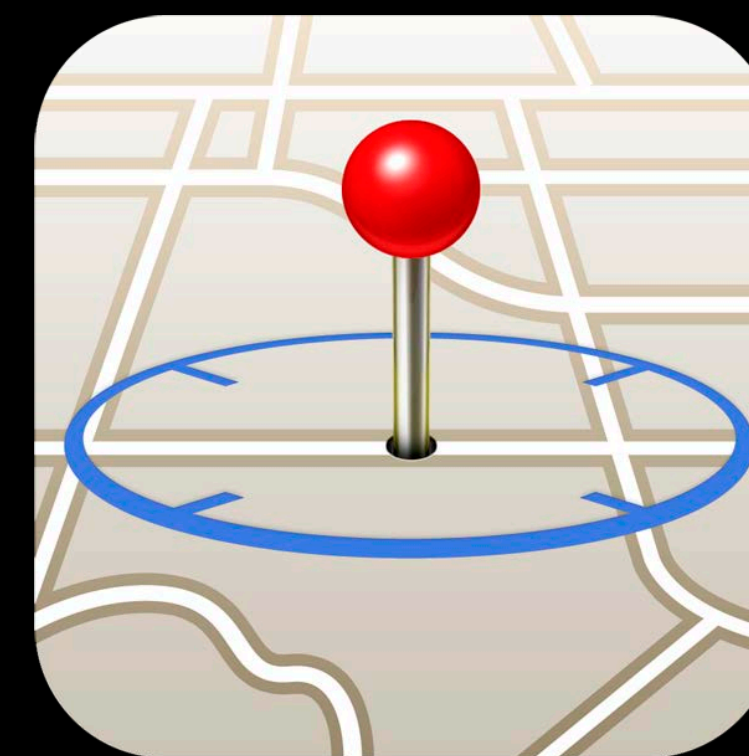
iOS Technologies We Will Use

- Calendar Events
- Push Notification



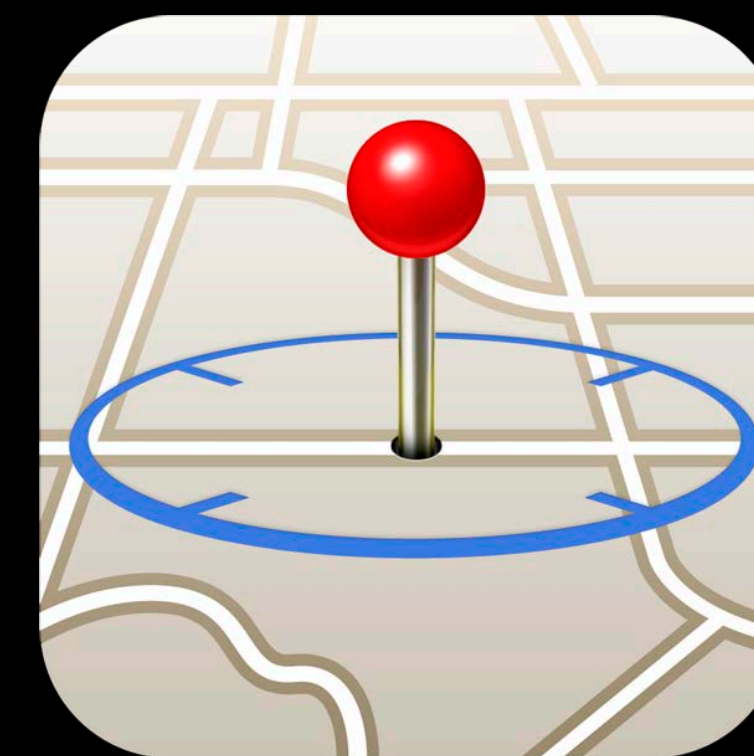
iOS Technologies We Will Use

- Calendar Events
- Push Notification
- Core Location
- Region Monitoring



iOS Technologies We Will Use

- Calendar Events
- Push Notification
- Core Location
- Region Monitoring
- iBeacons



An Event is Coming Up

Tell your users about it

Agenda

An event is coming up...

Event

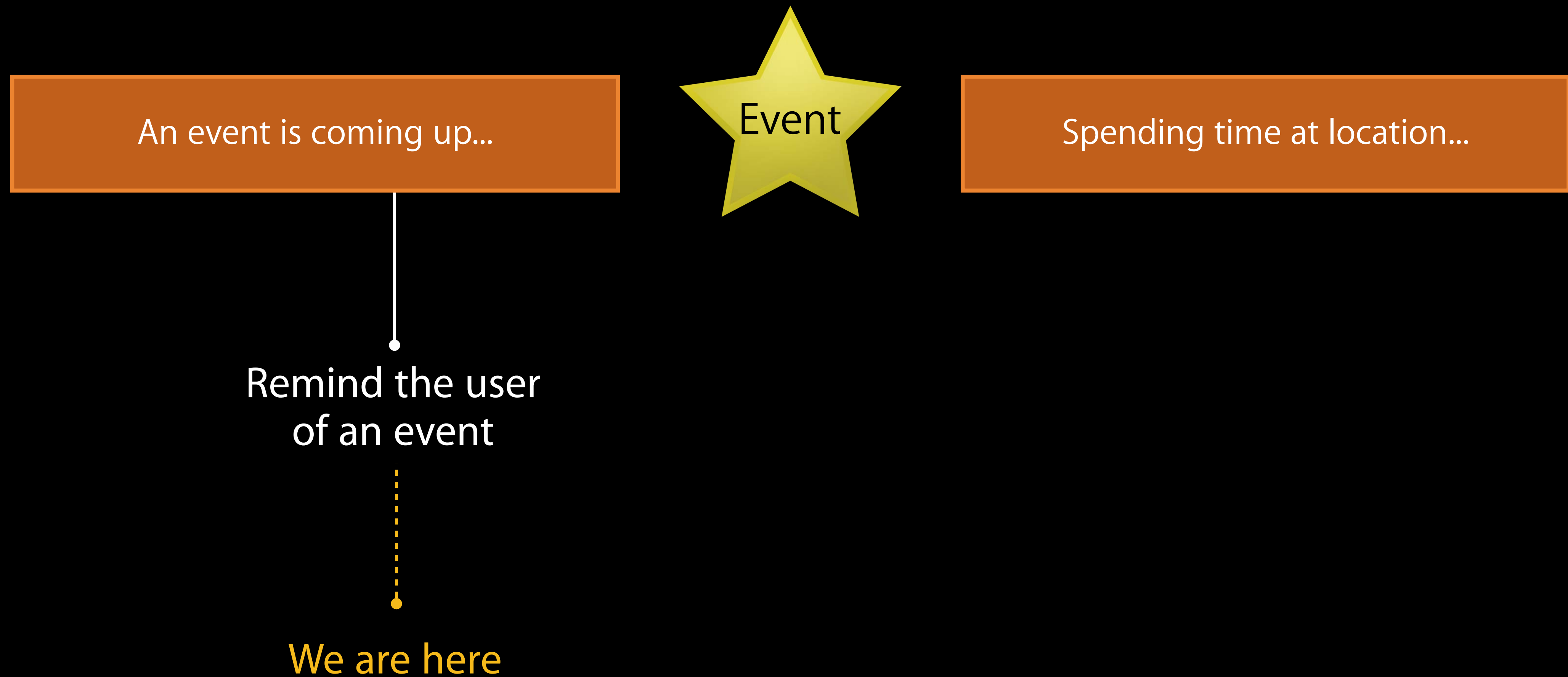
Spending time at location...

Remind the user
of an event

We are here



Agenda



Calendar

SUNDAY

MONDAY

TUESDAY WEDNESDAY THURSDAY

FRIDAY

4

5

12

6

13

20

7

14

21

8

15

9

3

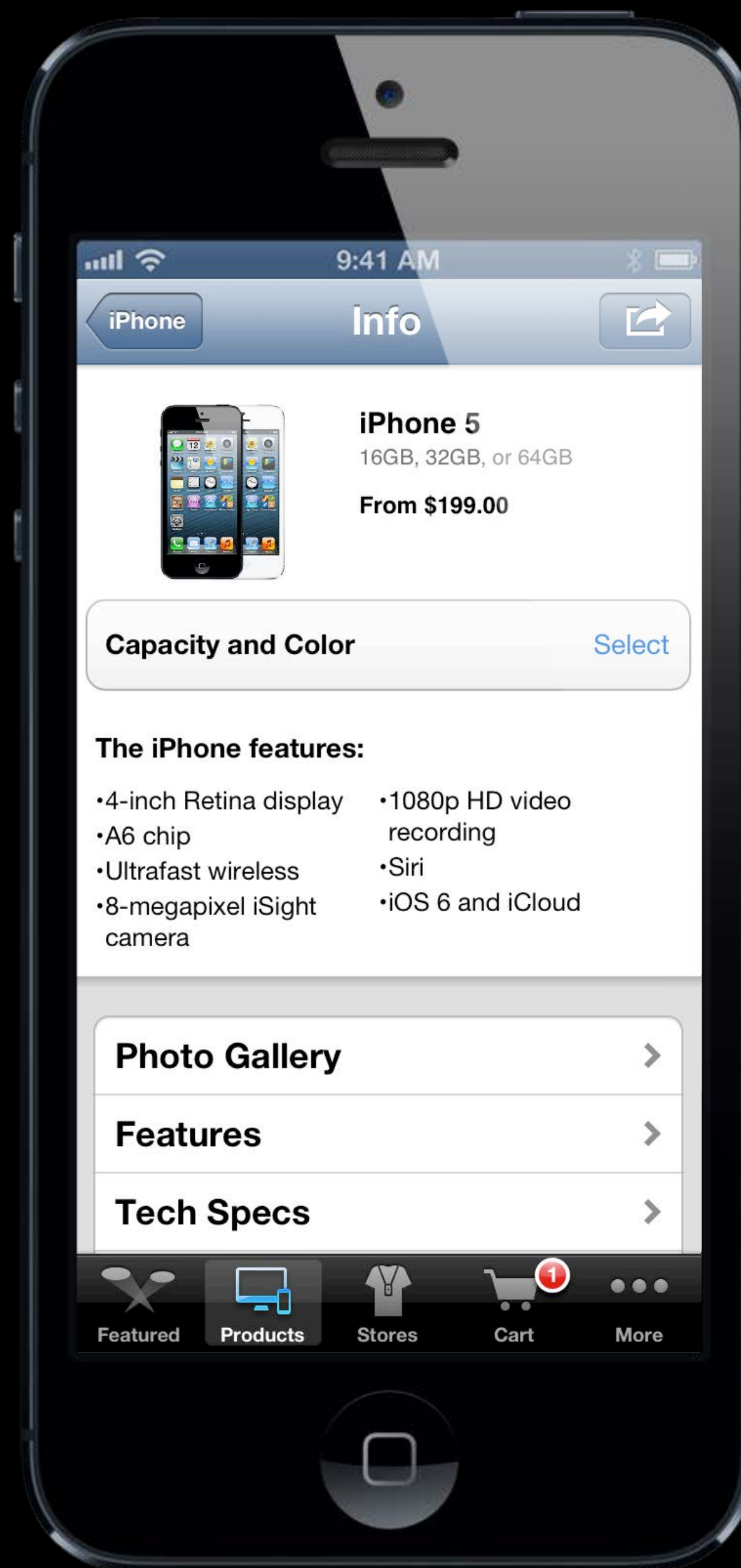
2

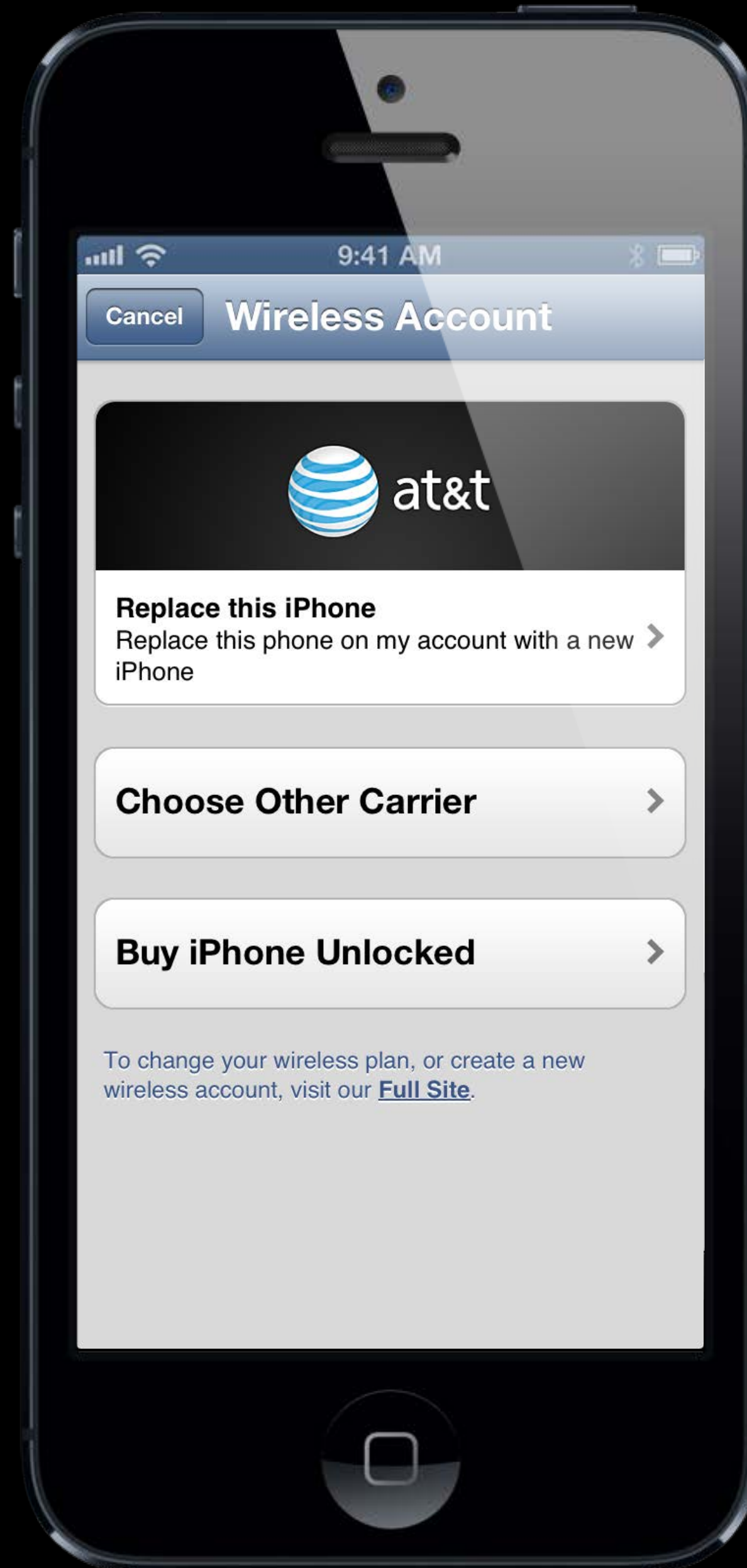
9





iPhone Upgrade Notifications







9:41 AM

Wireless Ac... **AT&T Account** Done

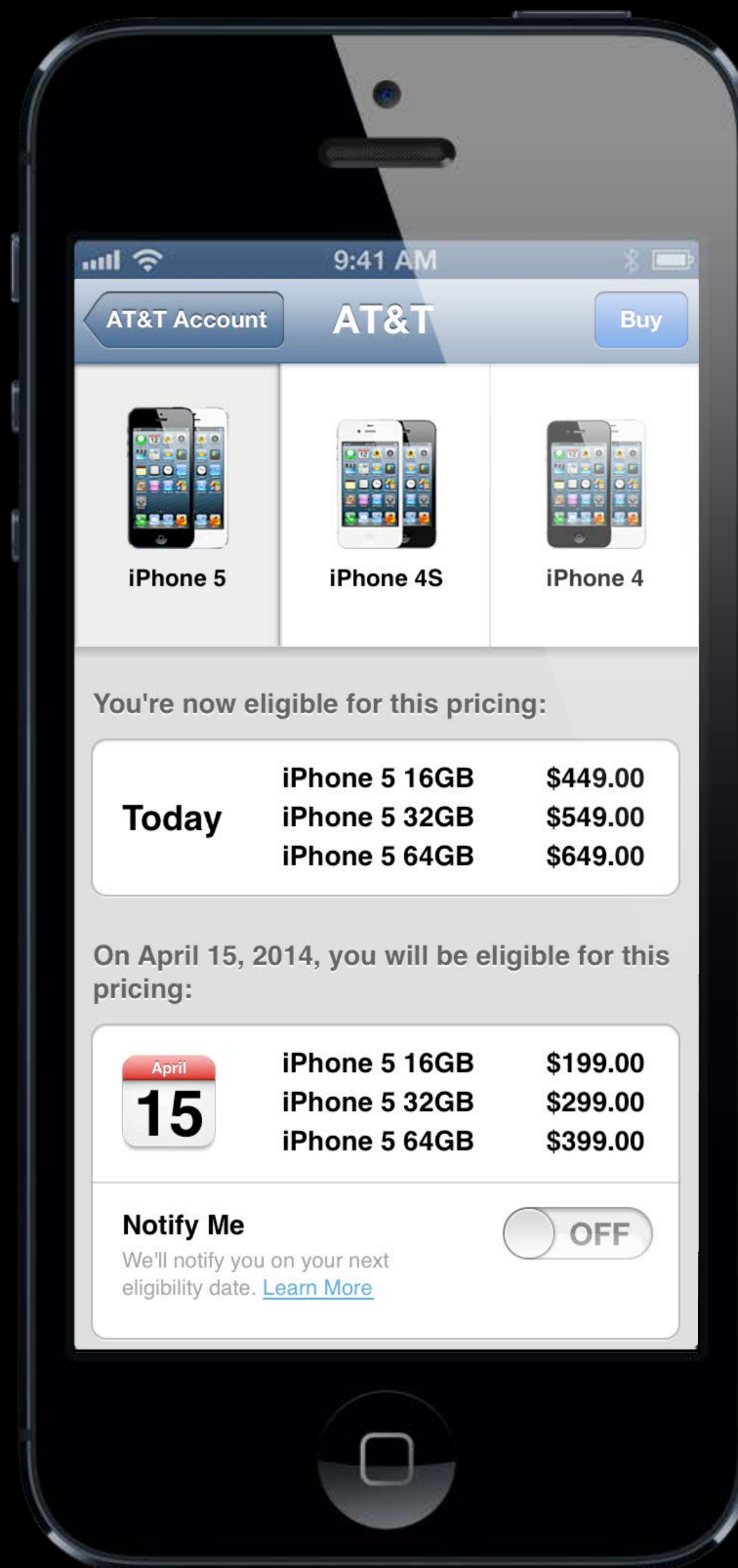
Phone Number 1 (234) 567-8900

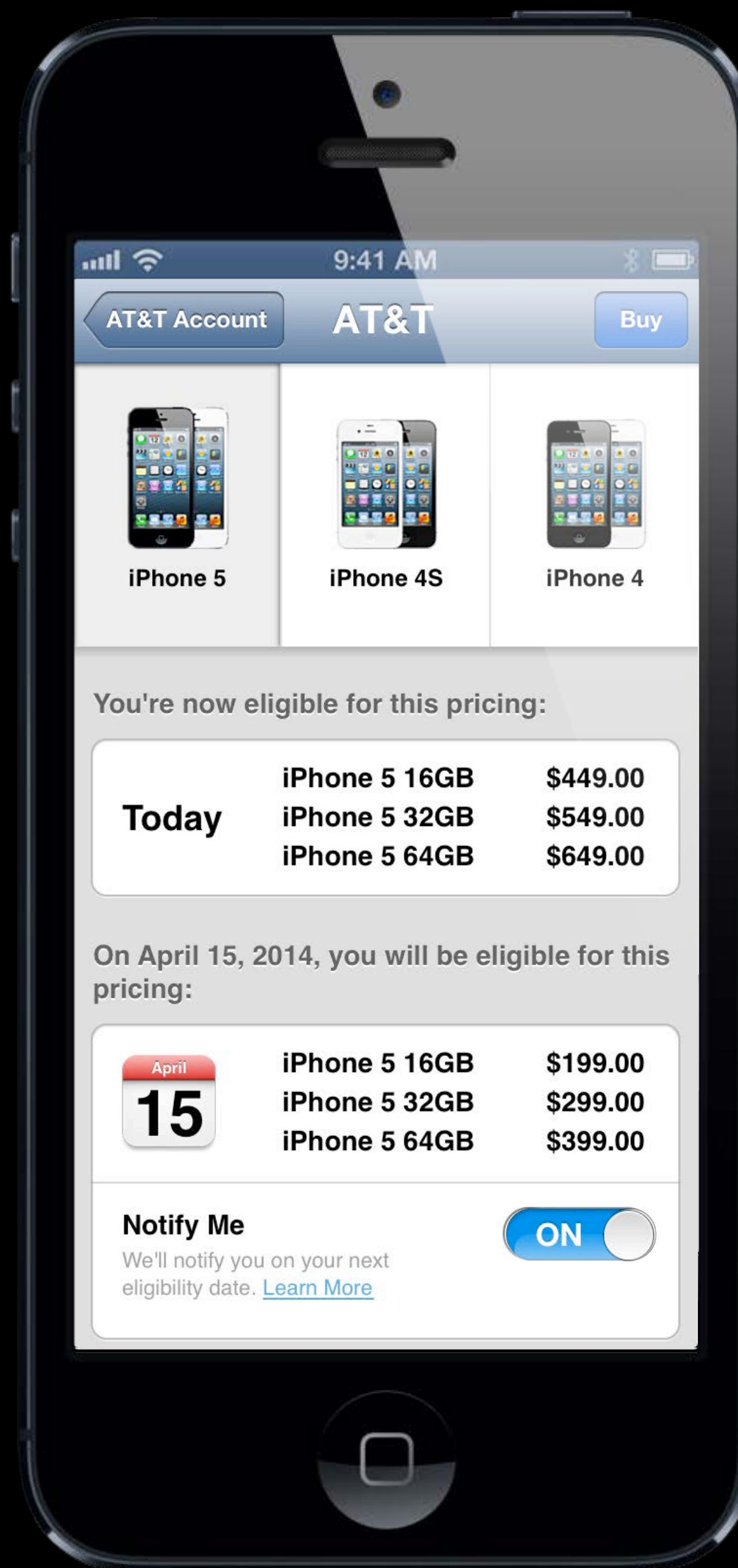
Last Four of Social Security ●●●●

Billing Zip Code 94158

Previous Next Done

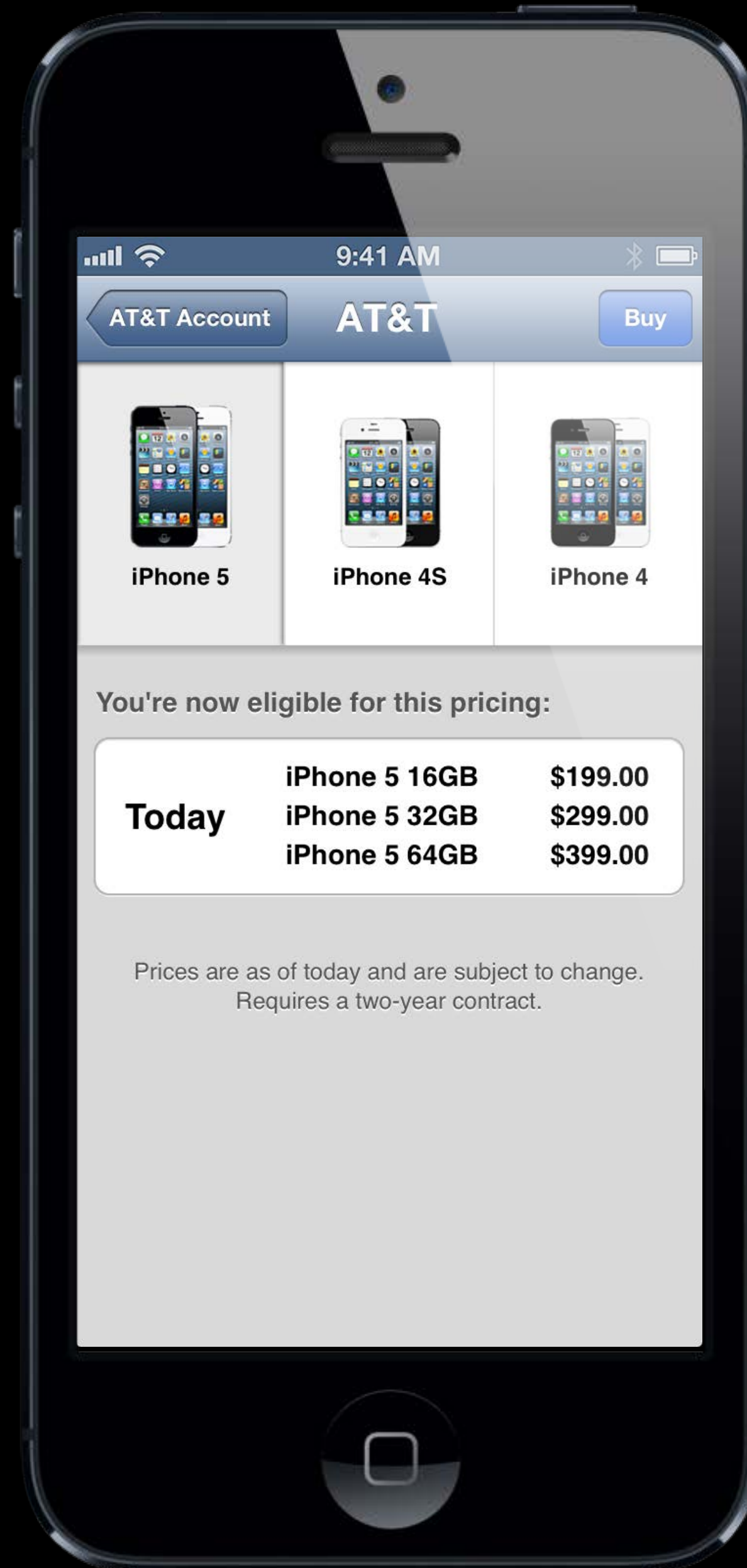
1	2 ABC	3 DEF
4 GHI	5 JKL	6 MNO
7 PQRS	8 TUV	9 WXYZ
	0	✕











Calendar Events



Calendar Events



Calendar Events



- Simple, yet effective

```
[eventStore requestAccessToEntityType:EKEntityTypeEvent
    completion:^(BOOL granted, NSError *error) {

if (granted) {
    if(eventStore.defaultCalendarForNewEvents.allowsCo
        ntentModifications) {

        EKEvent *event = [EKEvent
            eventWithEventStore:eventStore];

        event.title = @"Check iPhone Eligibility";

        [eventStore saveEvent:event
            span:EKSpanThisEvent commit:YES error:...];

    } else { //Handle rejection }
    }];
```



Push Notifications



Push Notifications



Push Notifications



- Rich, dynamic event notification



Push Notifications



- Rich, dynamic event notification
- Register push with
 - [UIApplication
registerForRemoteNotificationTypes:]



Push Notifications



- Rich, dynamic event notification
- Register push with
 - [UIApplication
registerForRemoteNotificationTypes:]
- Receive token from
 - application:
didRegisterForRemoteNotificationsWithDeviceToken:



Push Notifications



- Rich, dynamic event notification
- Register push with
 - [UIApplication registerForRemoteNotificationTypes:]
- Receive token from
 - application:
didRegisterForRemoteNotificationsWithDeviceToken:
- Store token on your server. When it's time, send the push to APNS with token



Push Notifications



- Rich, dynamic event notification
- Register push with
 - [UIApplication registerForRemoteNotificationTypes:]
- Receive token from
 - application:
didRegisterForRemoteNotificationsWithDeviceToken:
- Store token on your server. When it's time, send the push to APNS with token
- Your app may be launched via callback
 - application:didReceiveRemoteNotification:

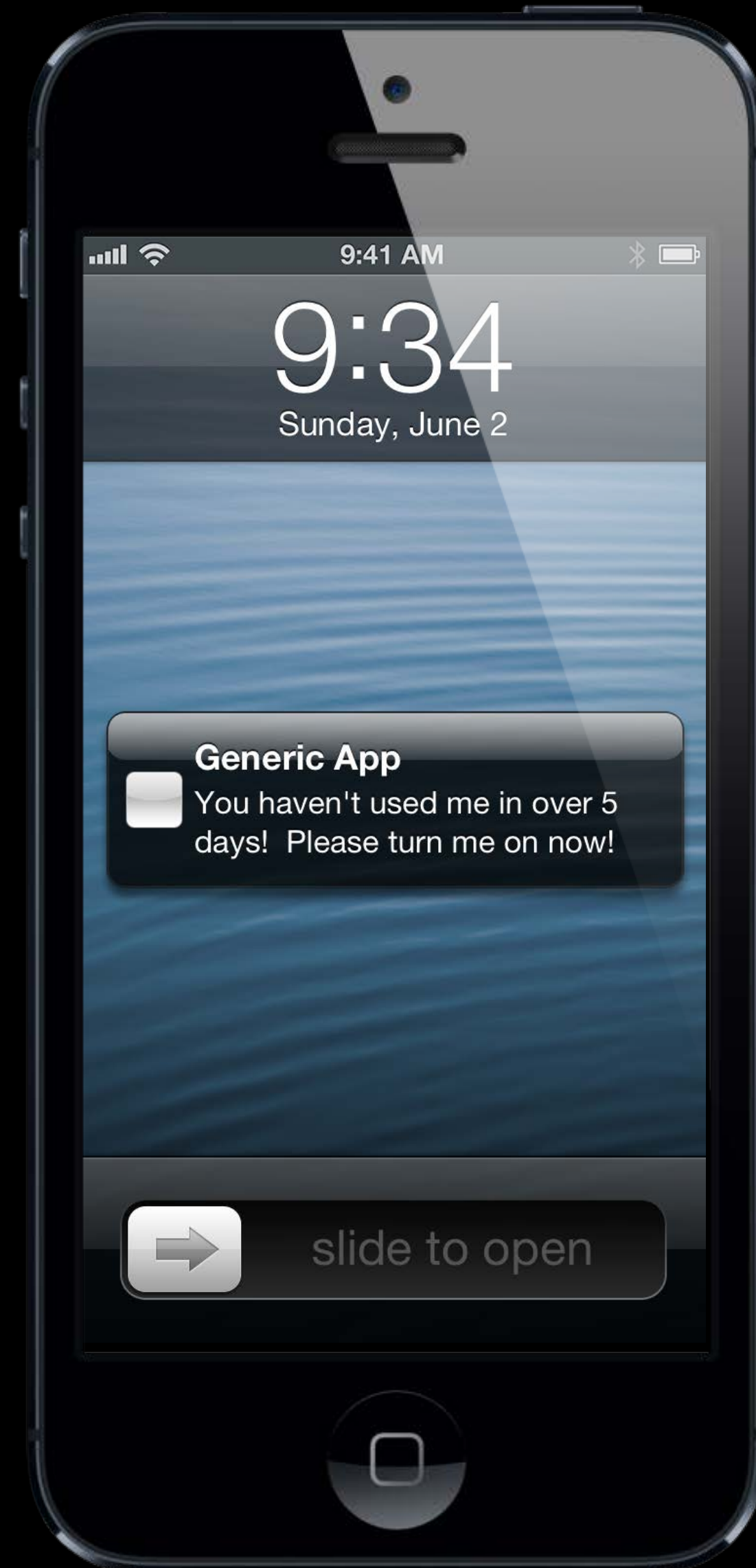


Tips, Tricks And Best Practices

Thou Shalt Not Spam



Thou Shalt Not Spam



Thou Shalt Not Spam

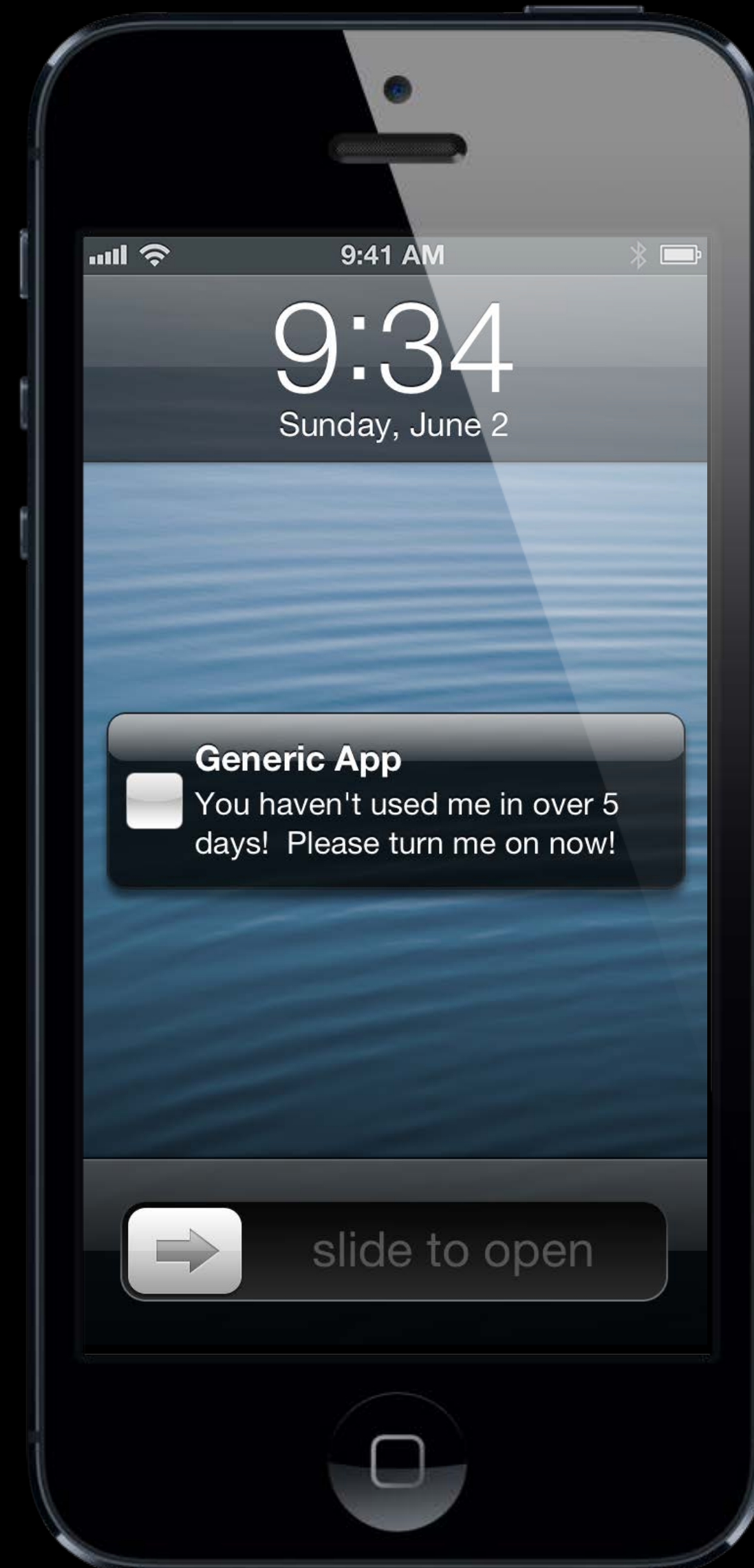
- Notify users of events they care about



Thou Shalt Not Spam



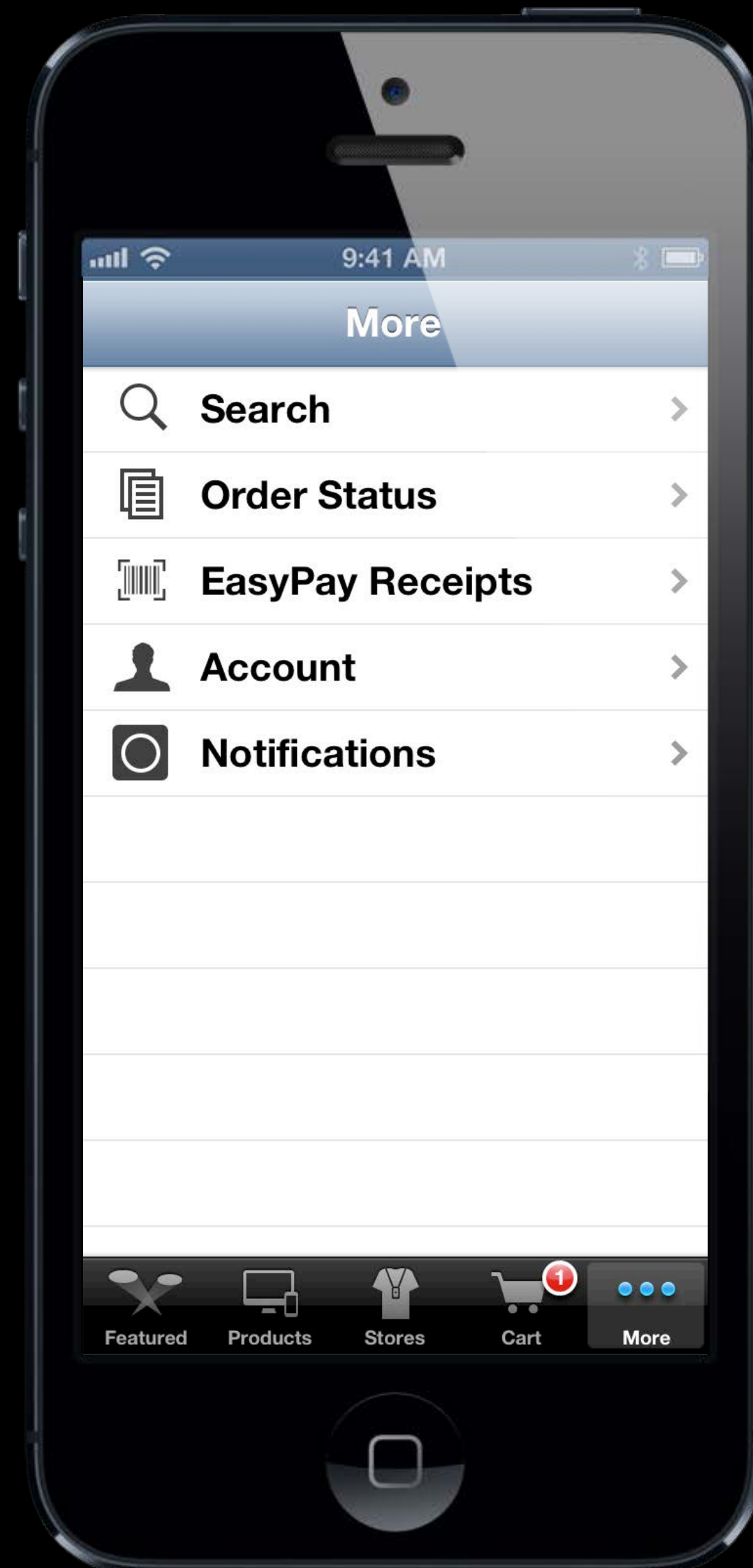
- Notify users of events they care about
- Provide an opt-in method
 - At correct moment in a flow
 - In in-app settings



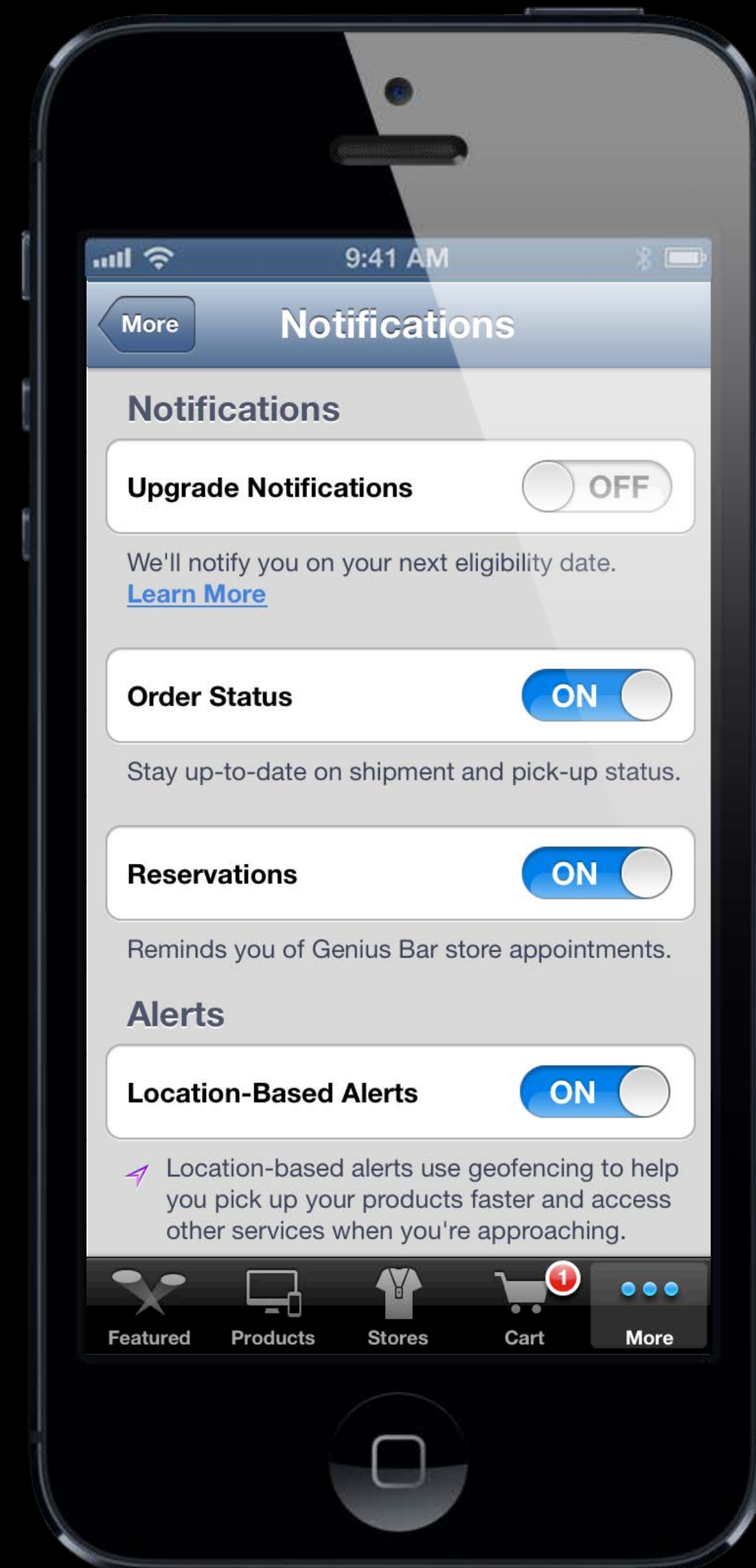
Granular In-App Notification Settings



Granular In-App Notification Settings



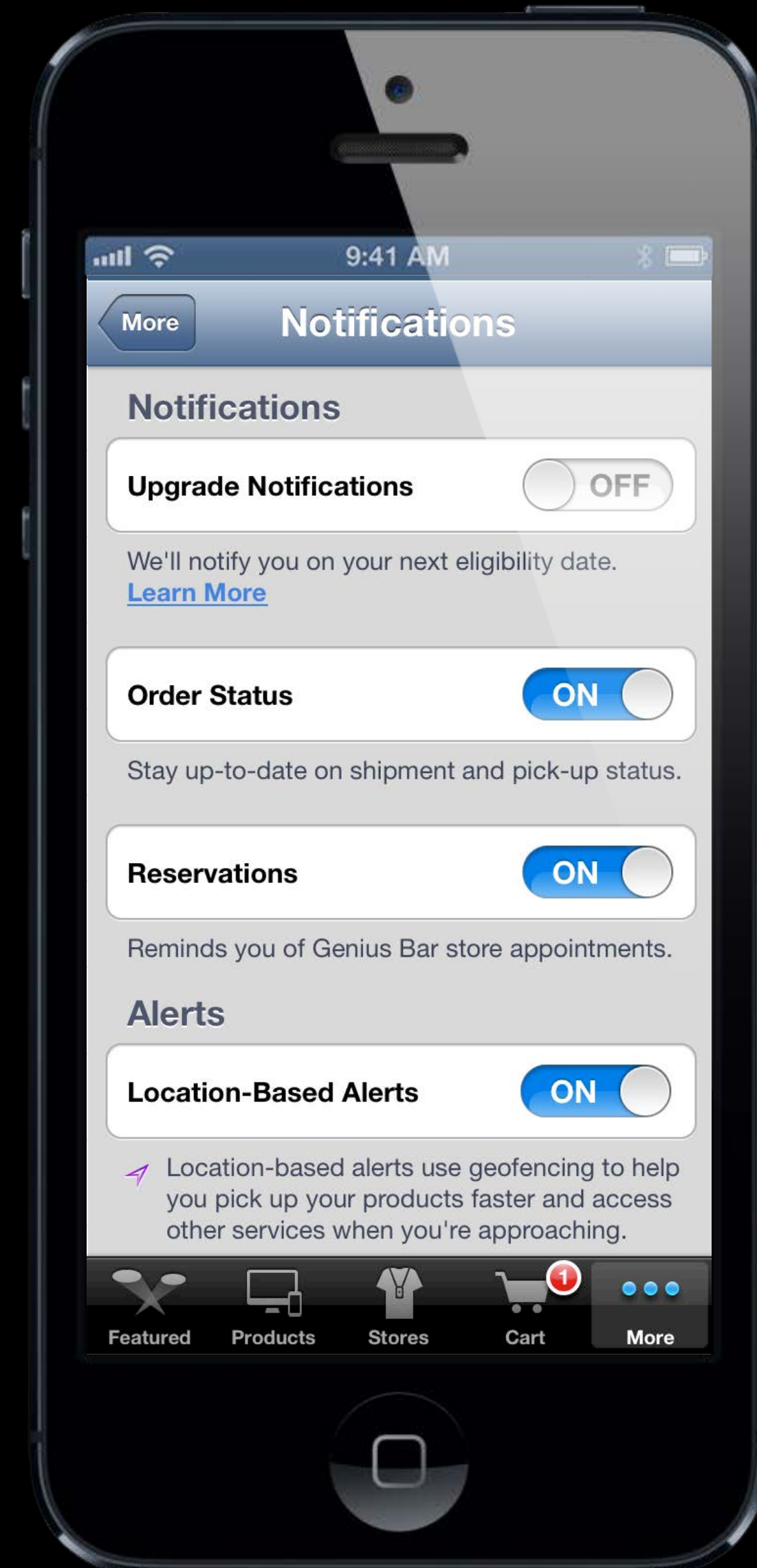
Granular In-App Notification Settings



Granular In-App Notification Settings



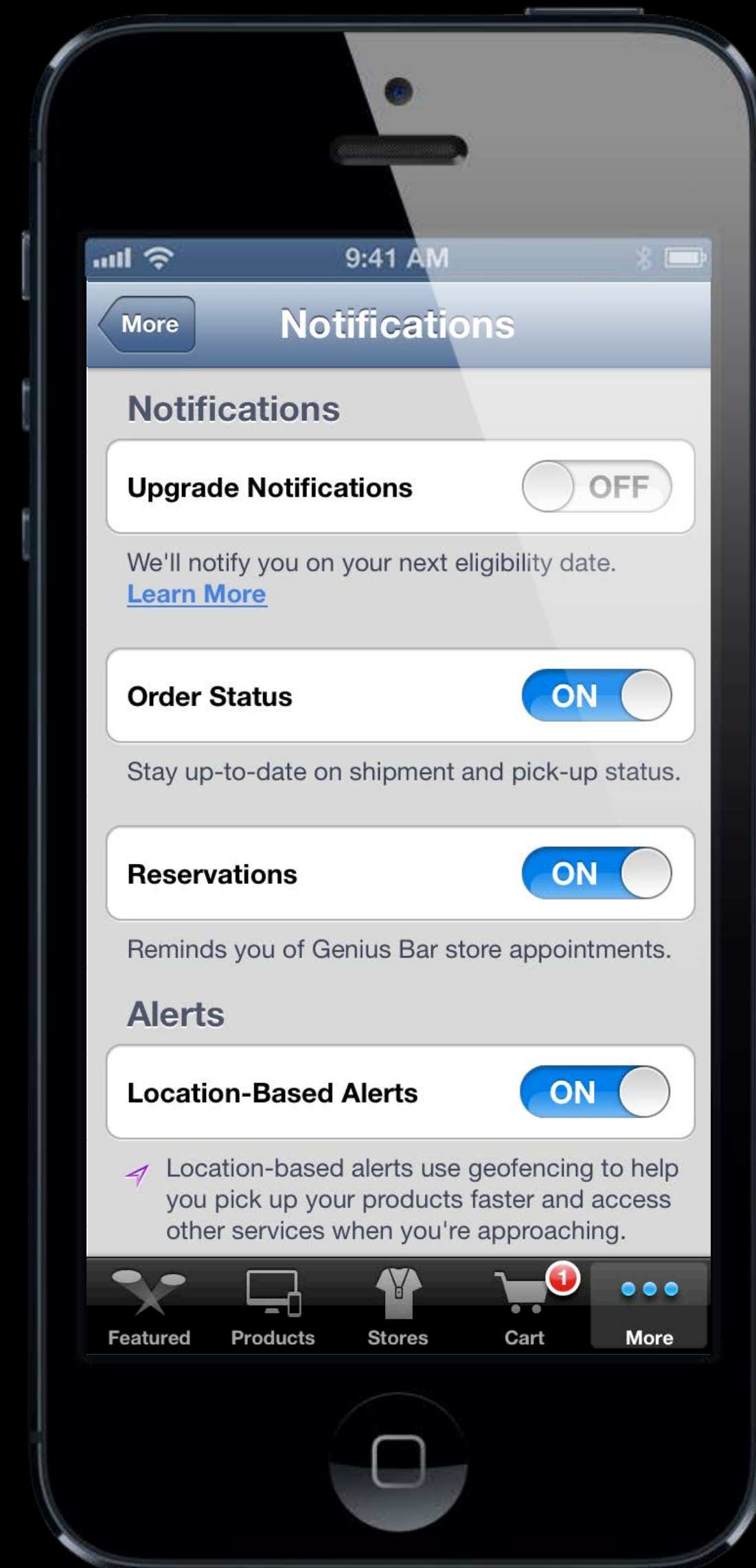
- For multiple push notification types



Granular In-App Notification Settings



- For multiple push notification types
- Reduce chance of user completely turning off app pushes



Consider the Time of Day



Consider the Time of Day



Consider the Time of Day



- Be polite
 - Find best time range to send push
 - Consider time zones



Consider the Time of Day



- Be polite
 - Find best time range to send push
 - Consider time zones
- Create a “Do Not Disturb” time window for safety
 - Do not depend on user’s DND settings
 - Set your own DND window in your push engine and use queuing



Clean Up “Dead” Tokens



Clean Up “Dead” Tokens



Clean Up “Dead” Tokens



- Query the Apple Push Notification feedback service
 - `feedback.push.apple.com:2196`



Clean Up “Dead” Tokens



- Query the Apple Push Notification feedback service
 - `feedback.push.apple.com:2196`
- Read the list of invalid push tokens
 - The list is cleared when you read it



Clean Up “Dead” Tokens



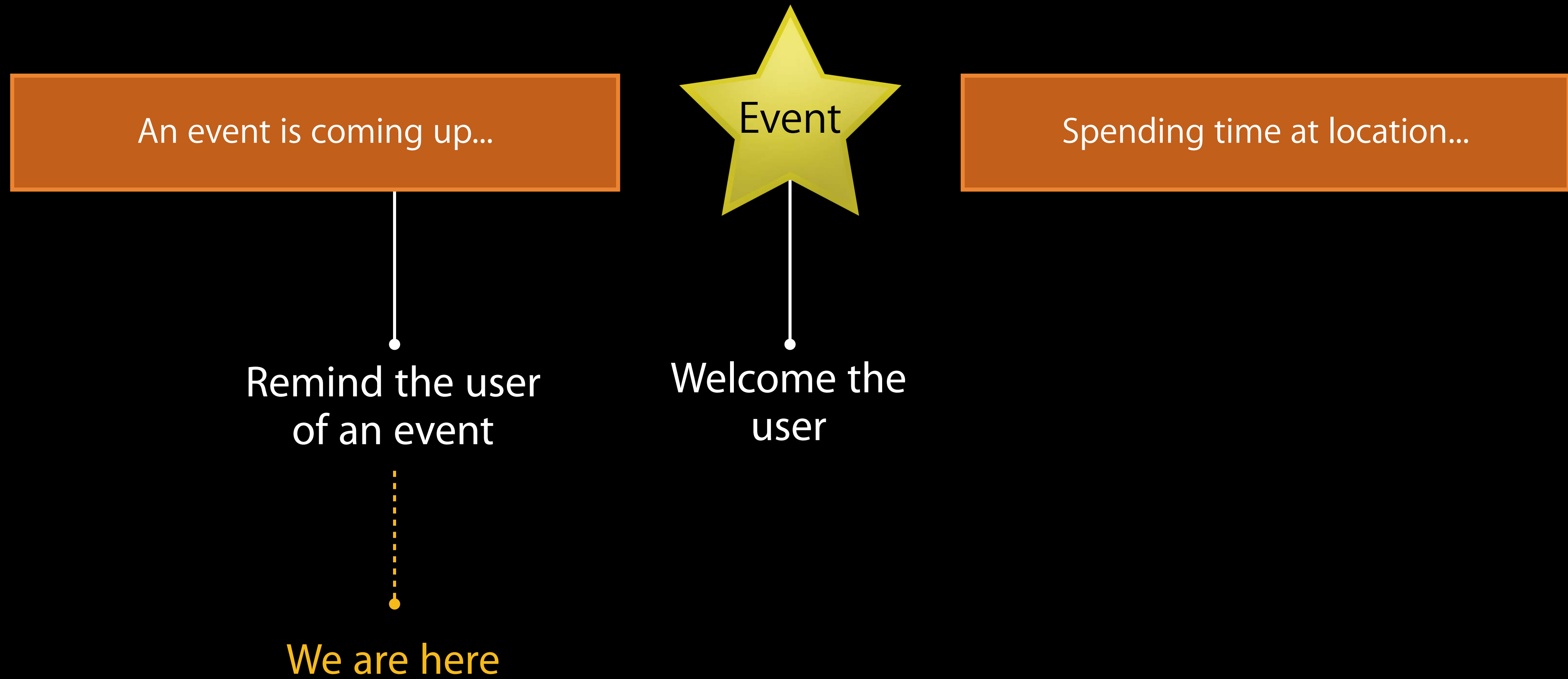
- Query the Apple Push Notification feedback service
 - `feedback.push.apple.com:2196`
- Read the list of invalid push tokens
 - The list is cleared when you read it
- Stop using these tokens



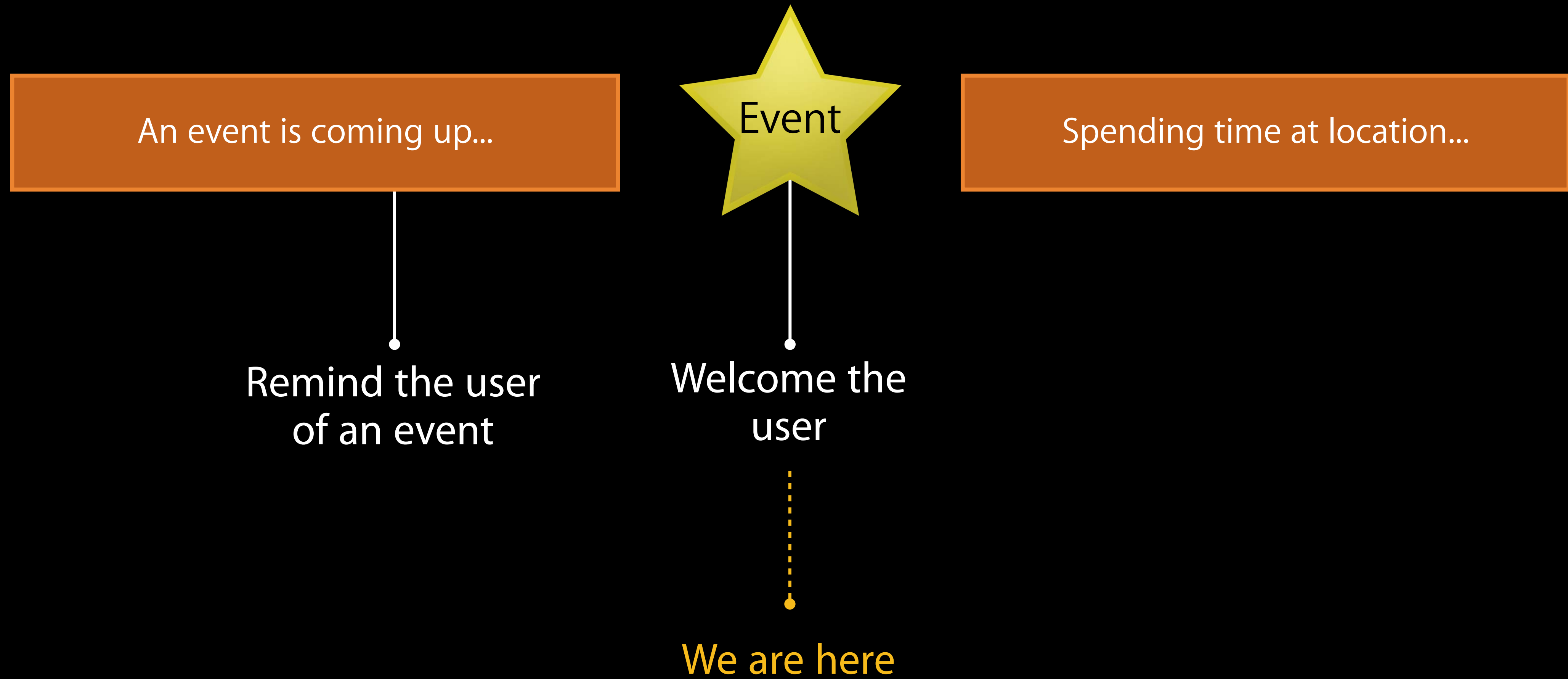
Arriving at Your Event

Welcome your users

Agenda



Agenda

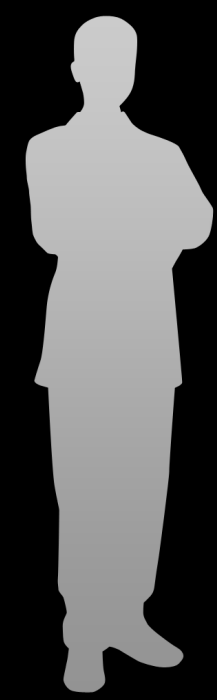








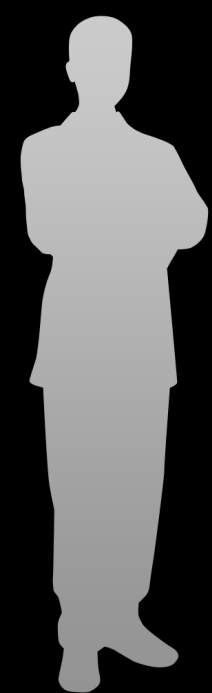
Storefront Pickup



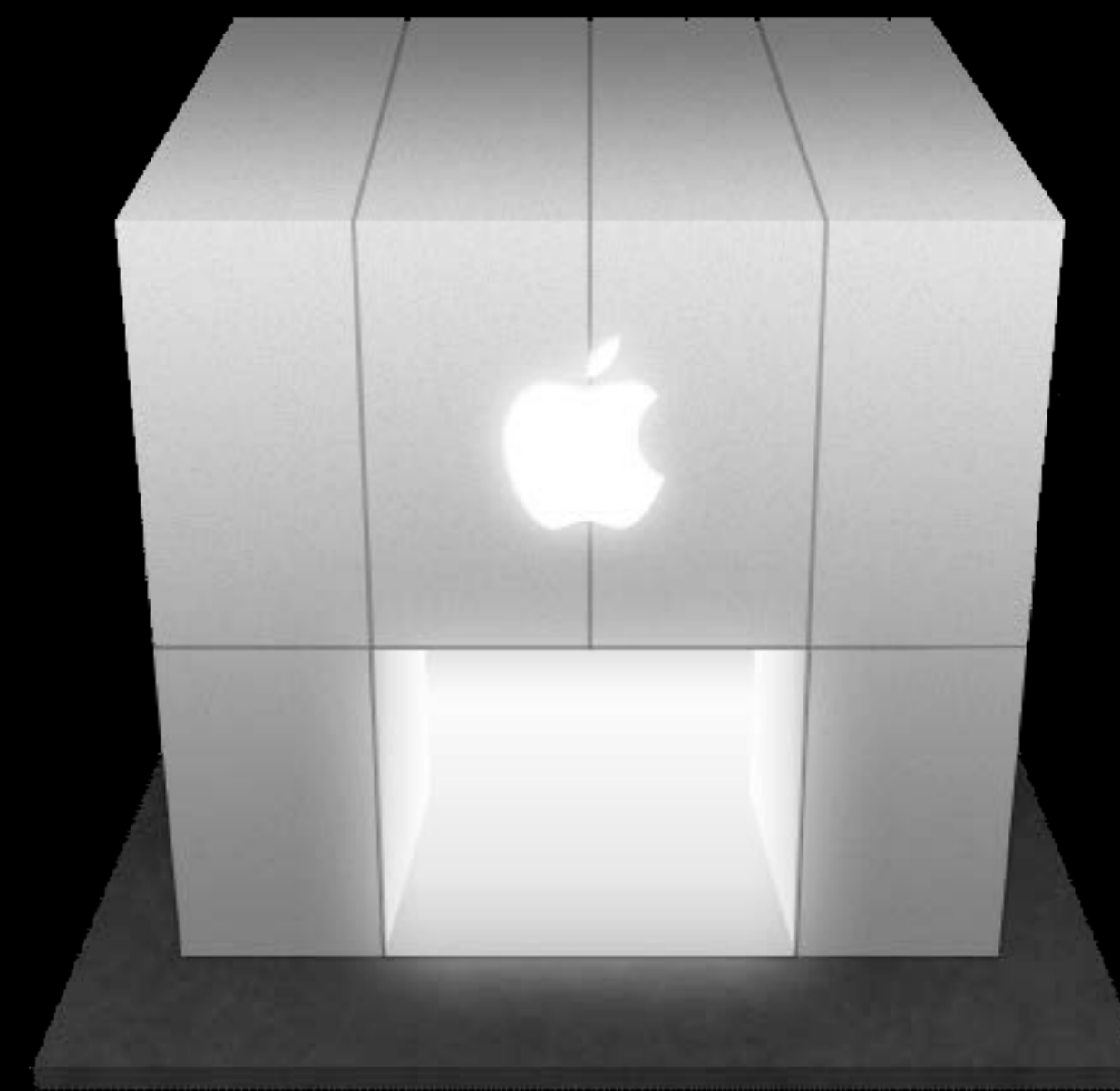
John



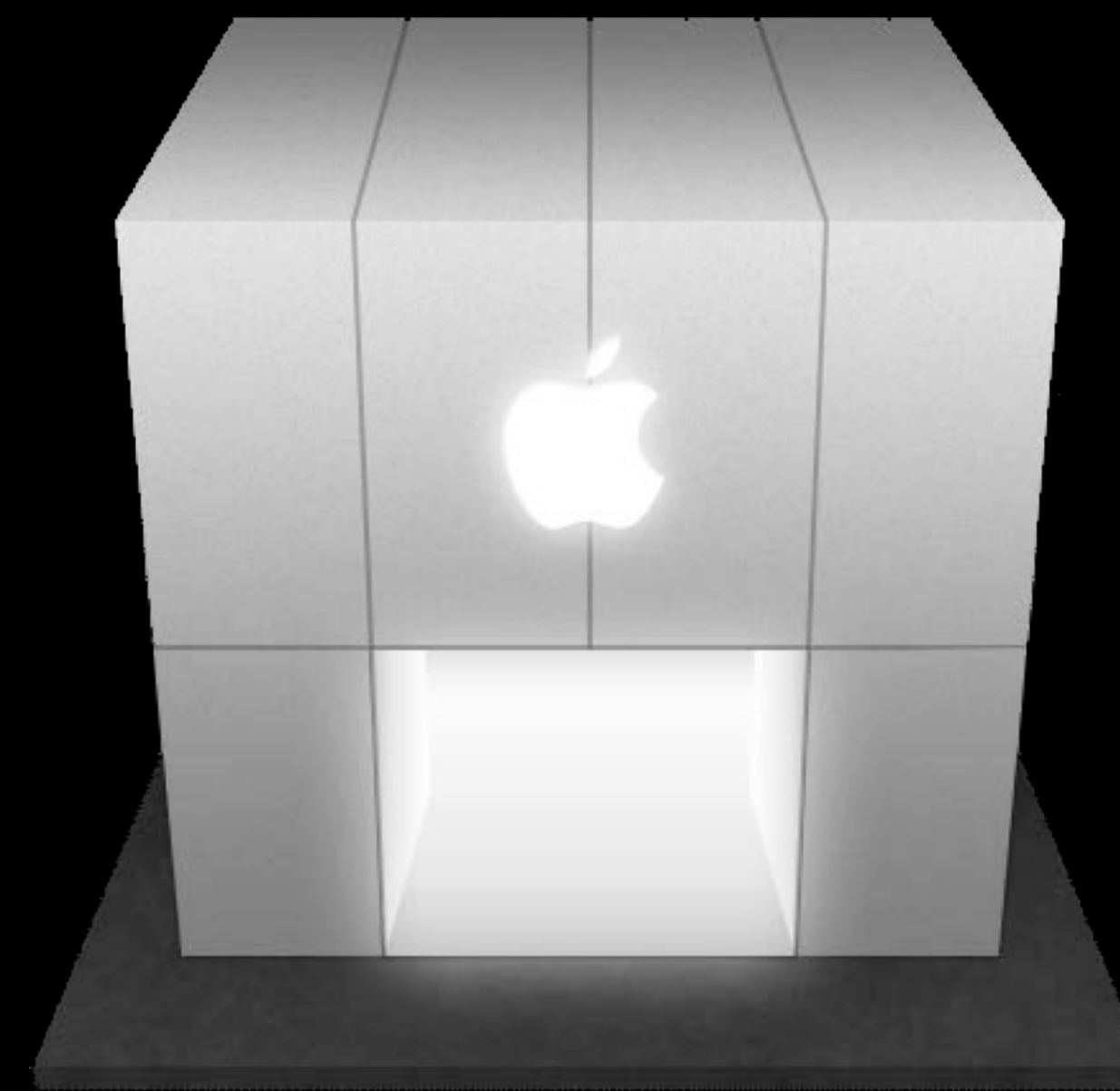
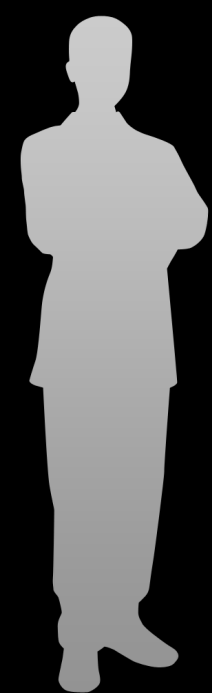
Upper West Side

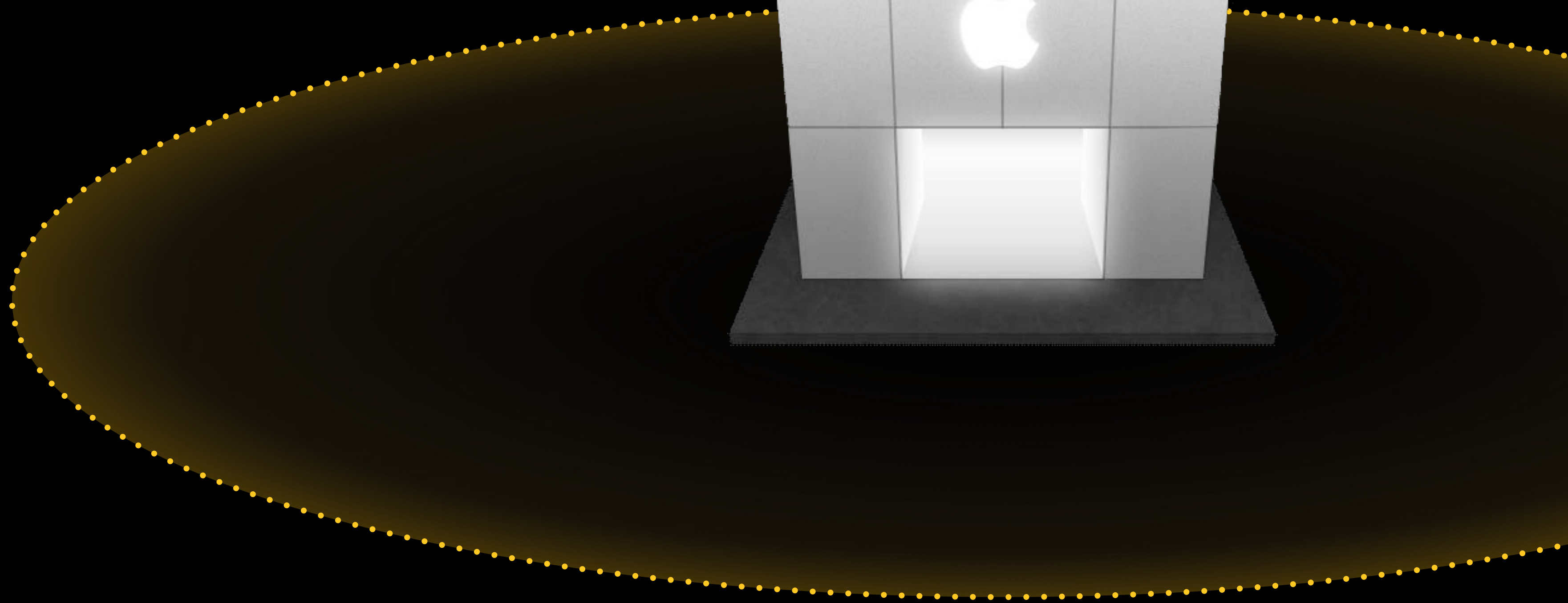
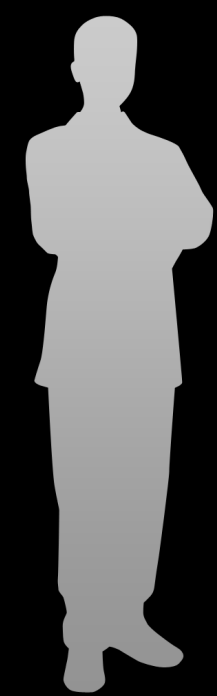


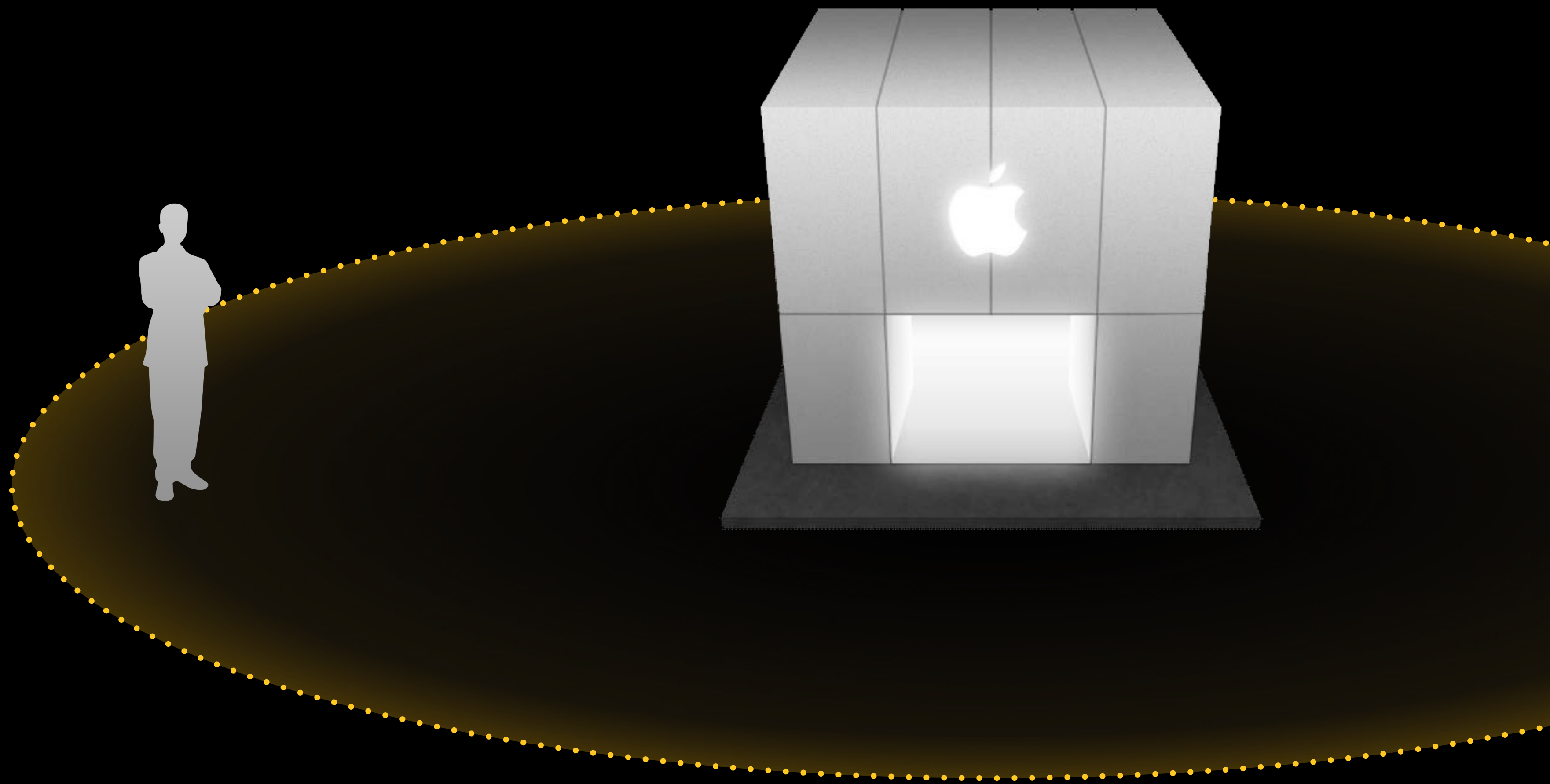
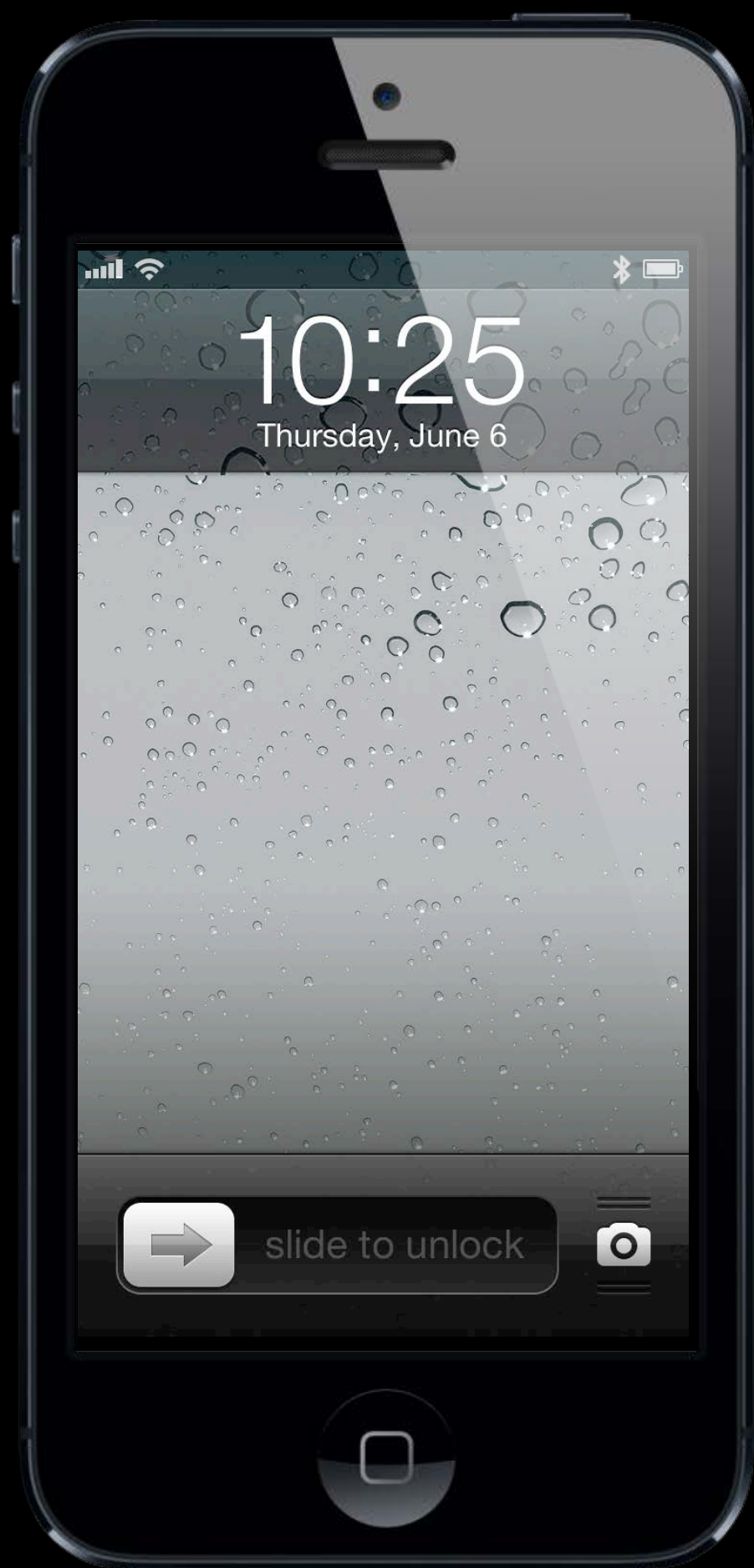
John has an order ready for pickup
at Upper West Side

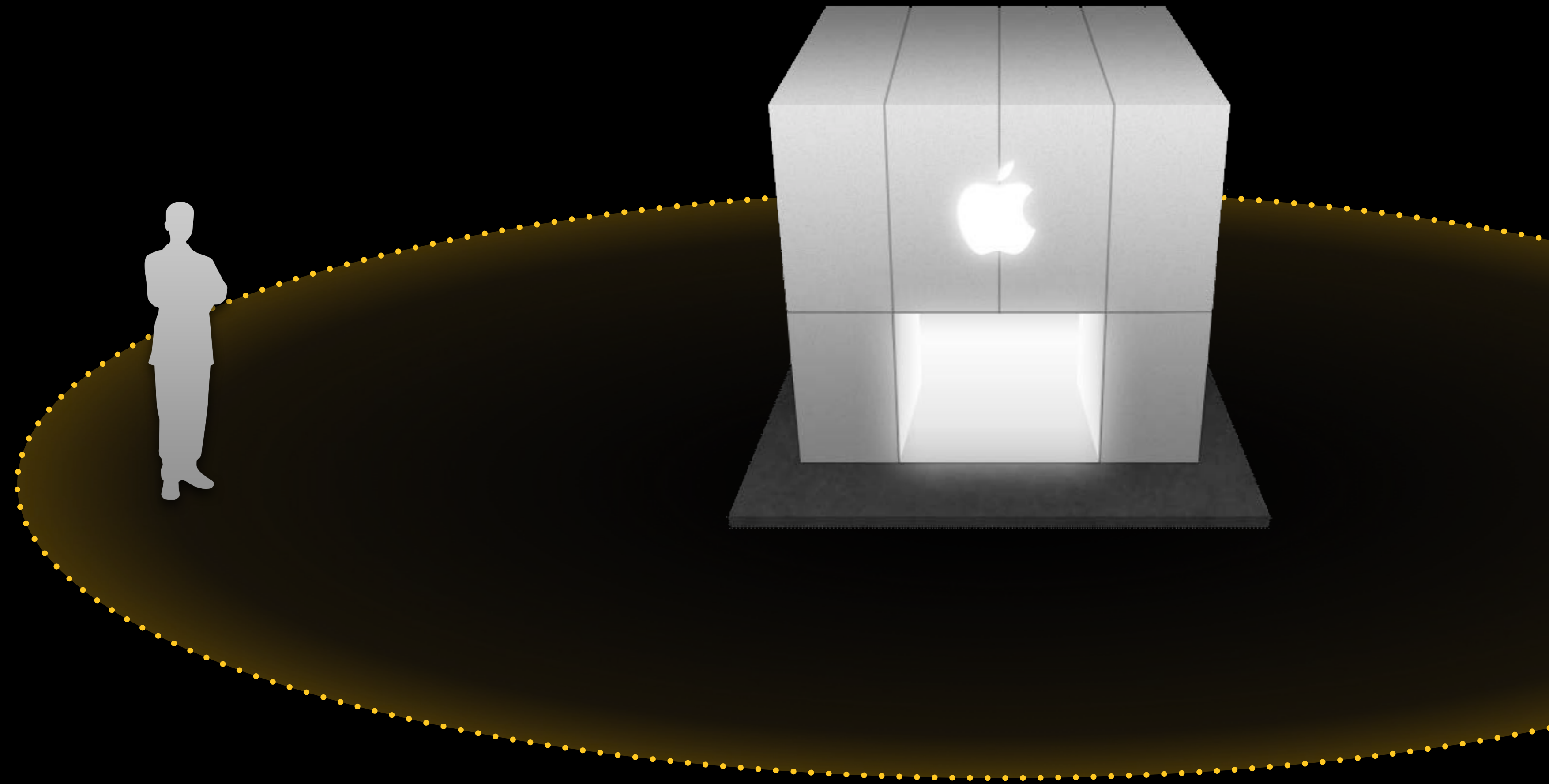


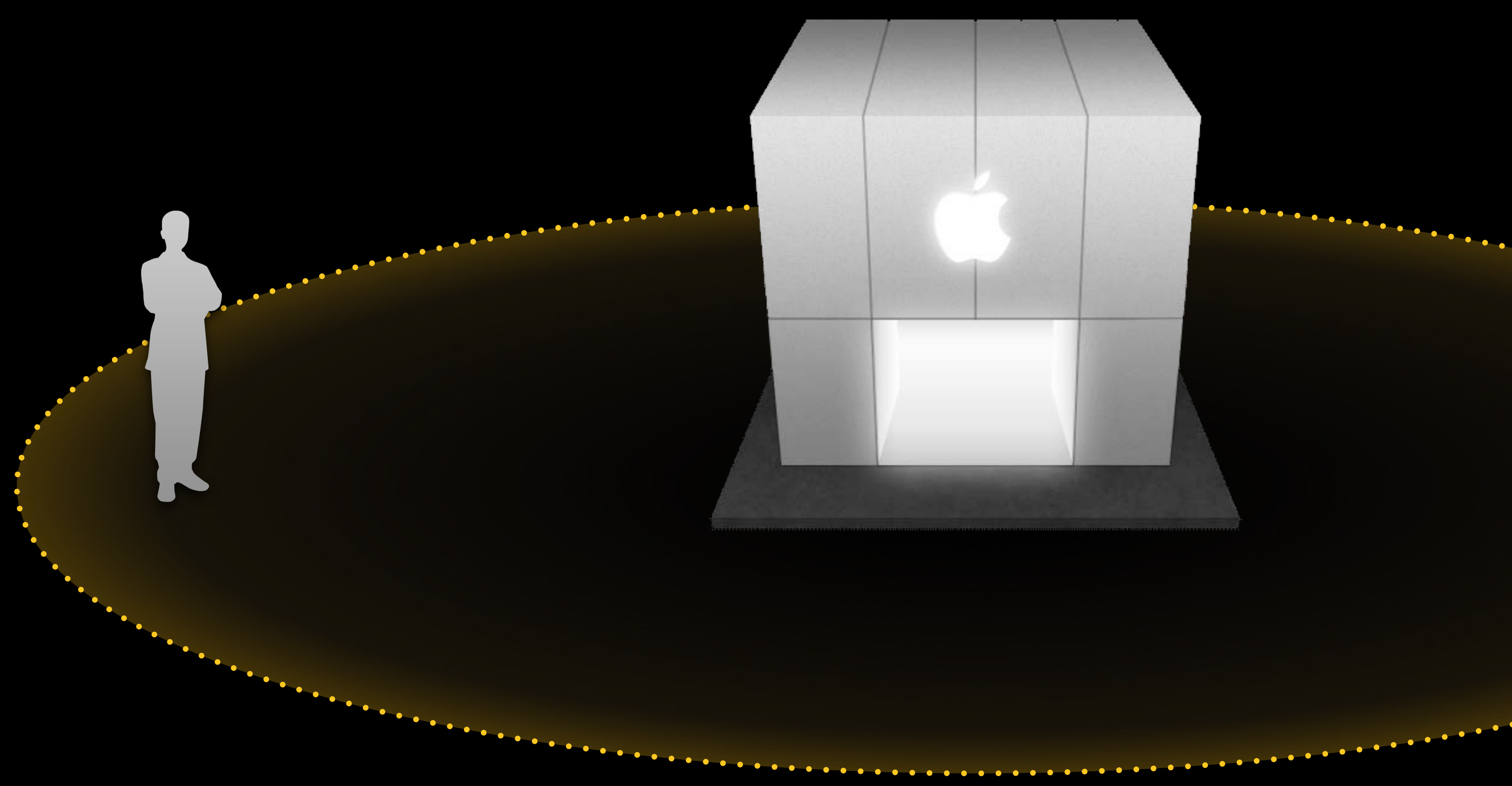
Upper West Side

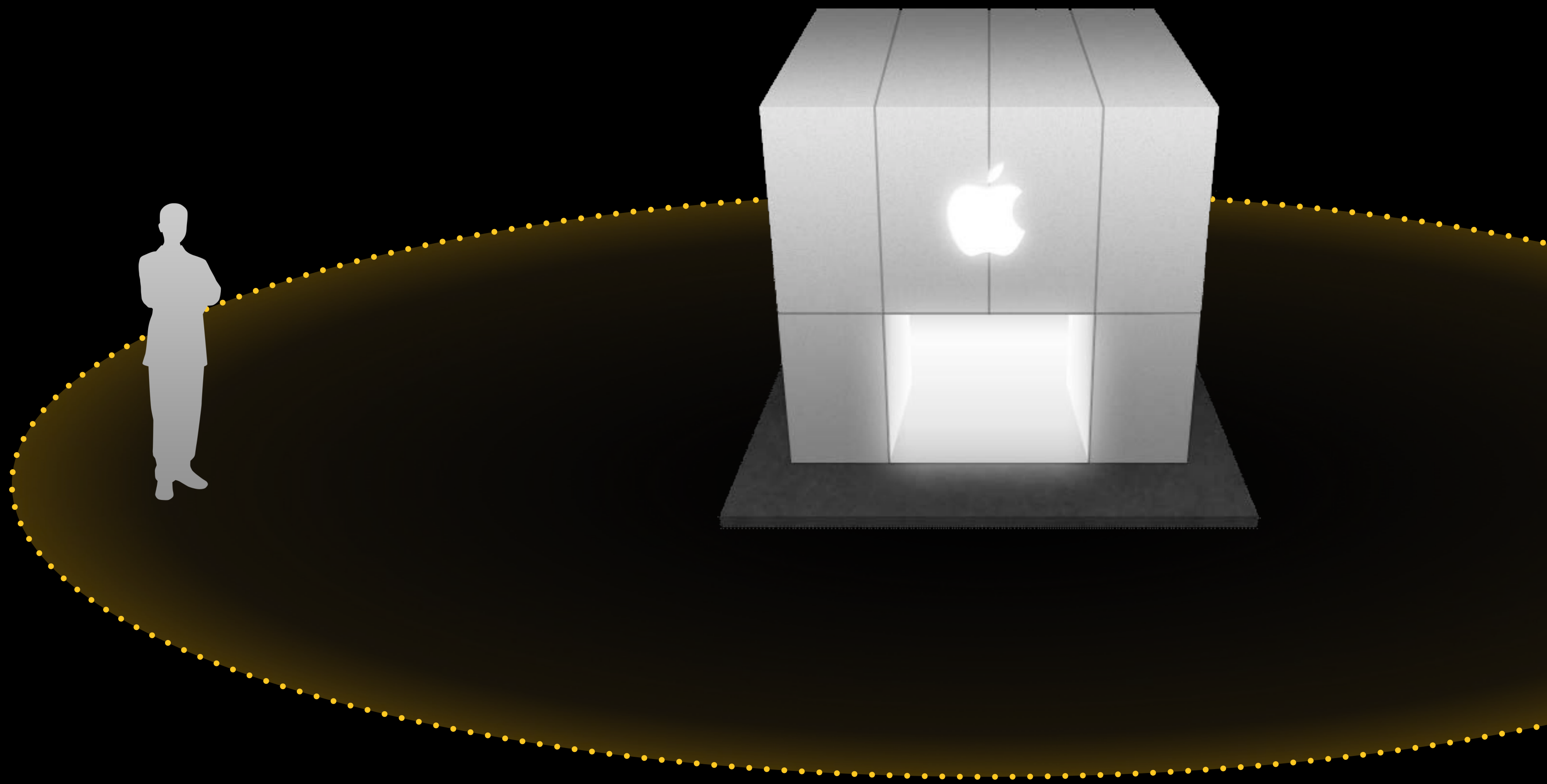
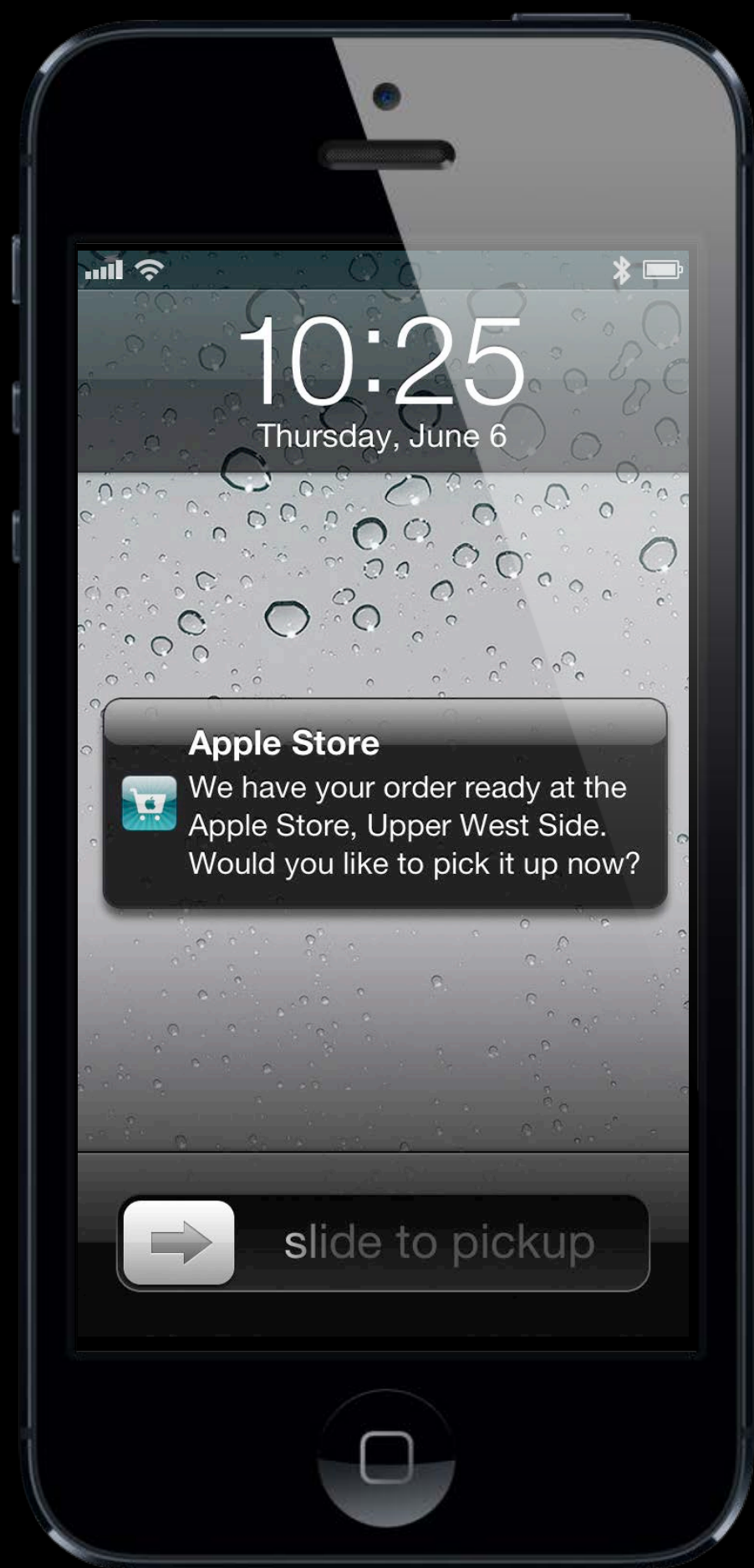


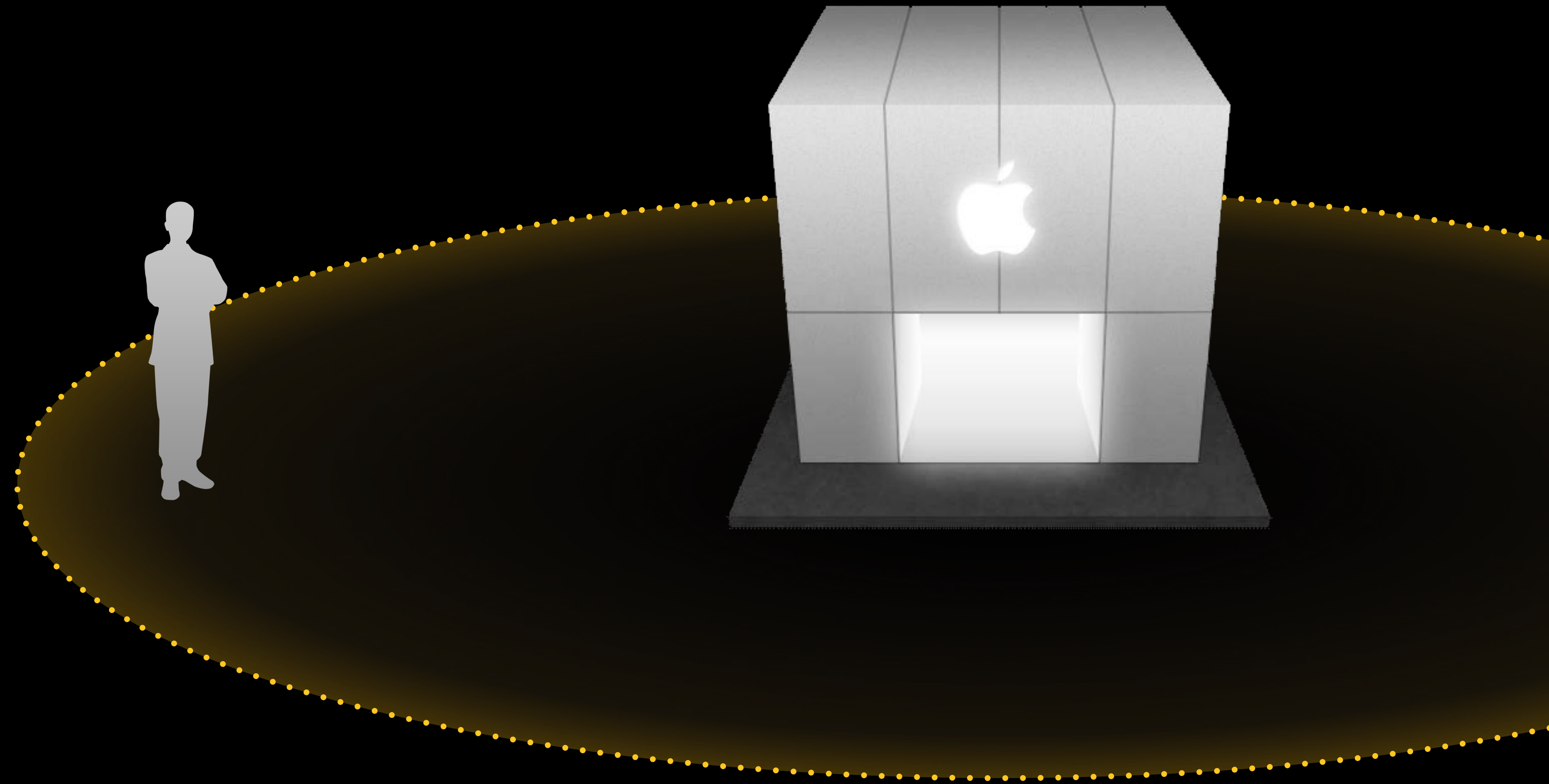
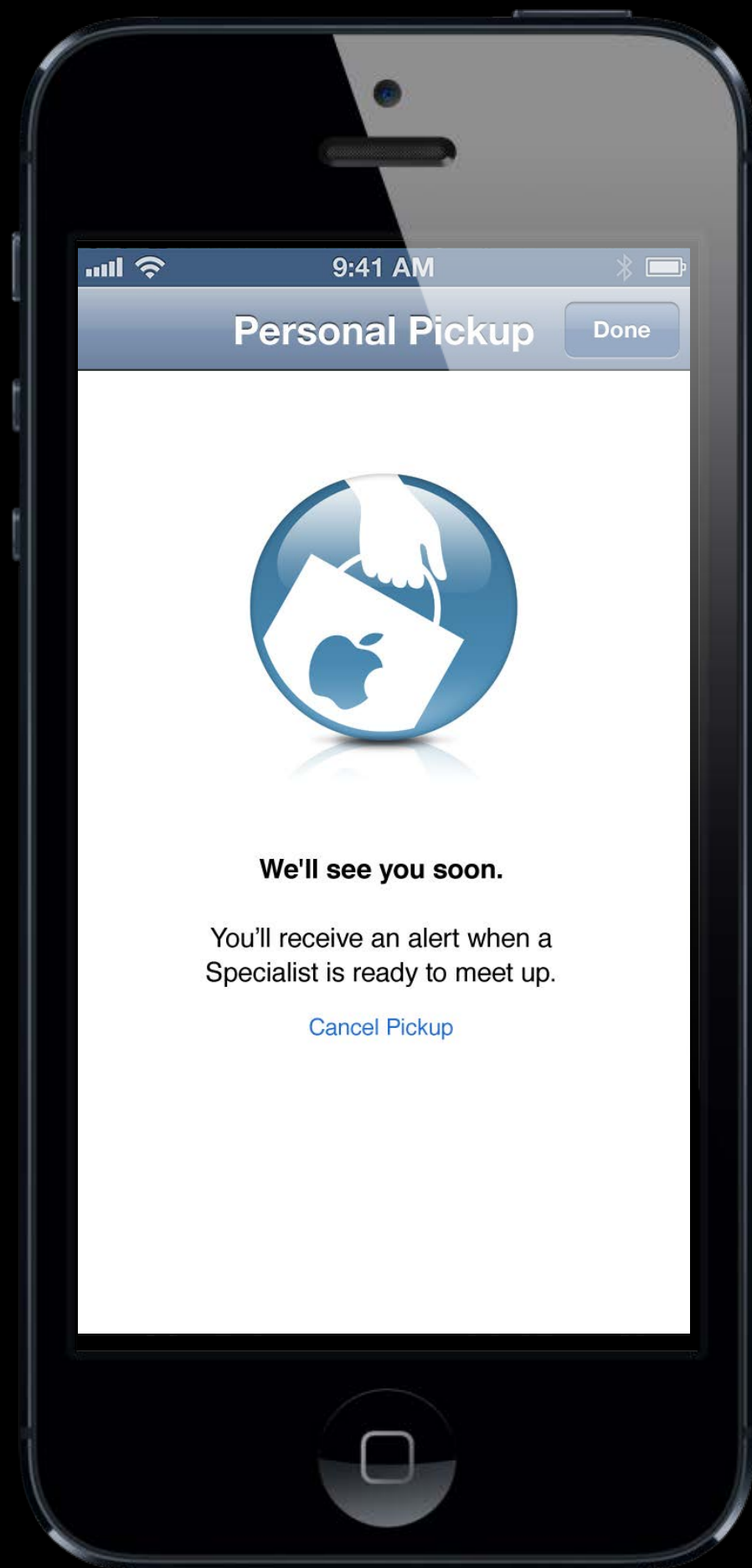


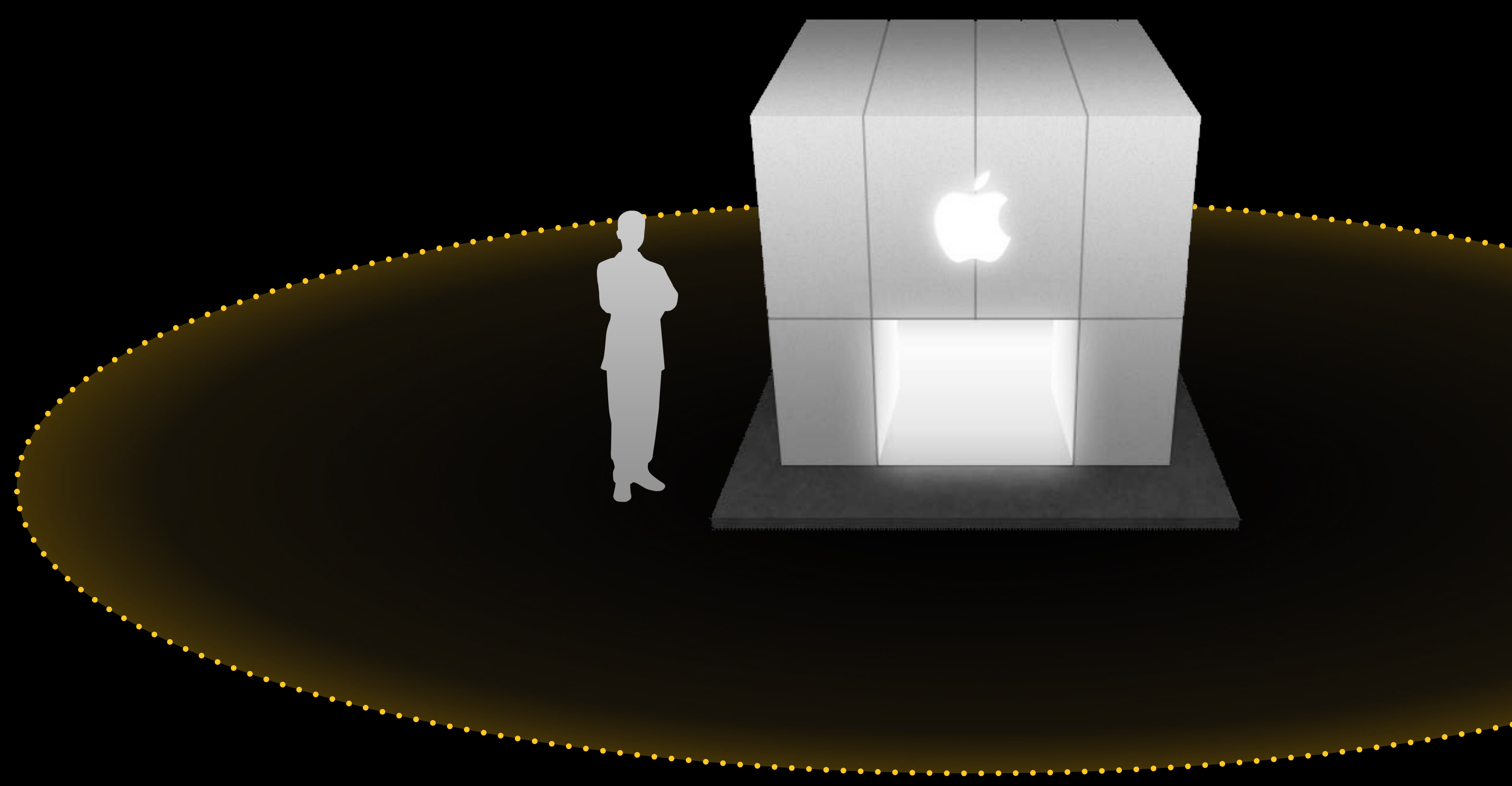


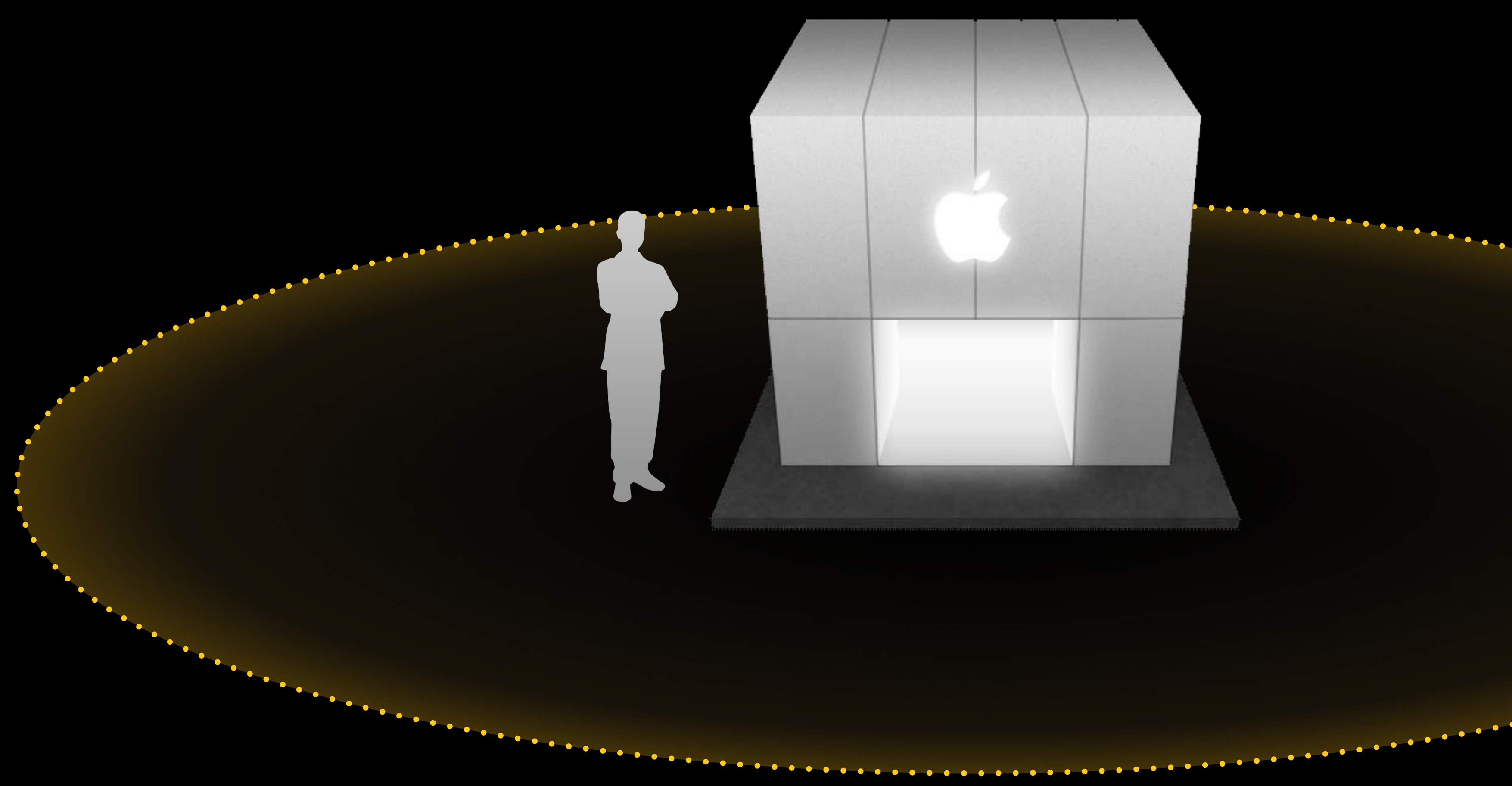
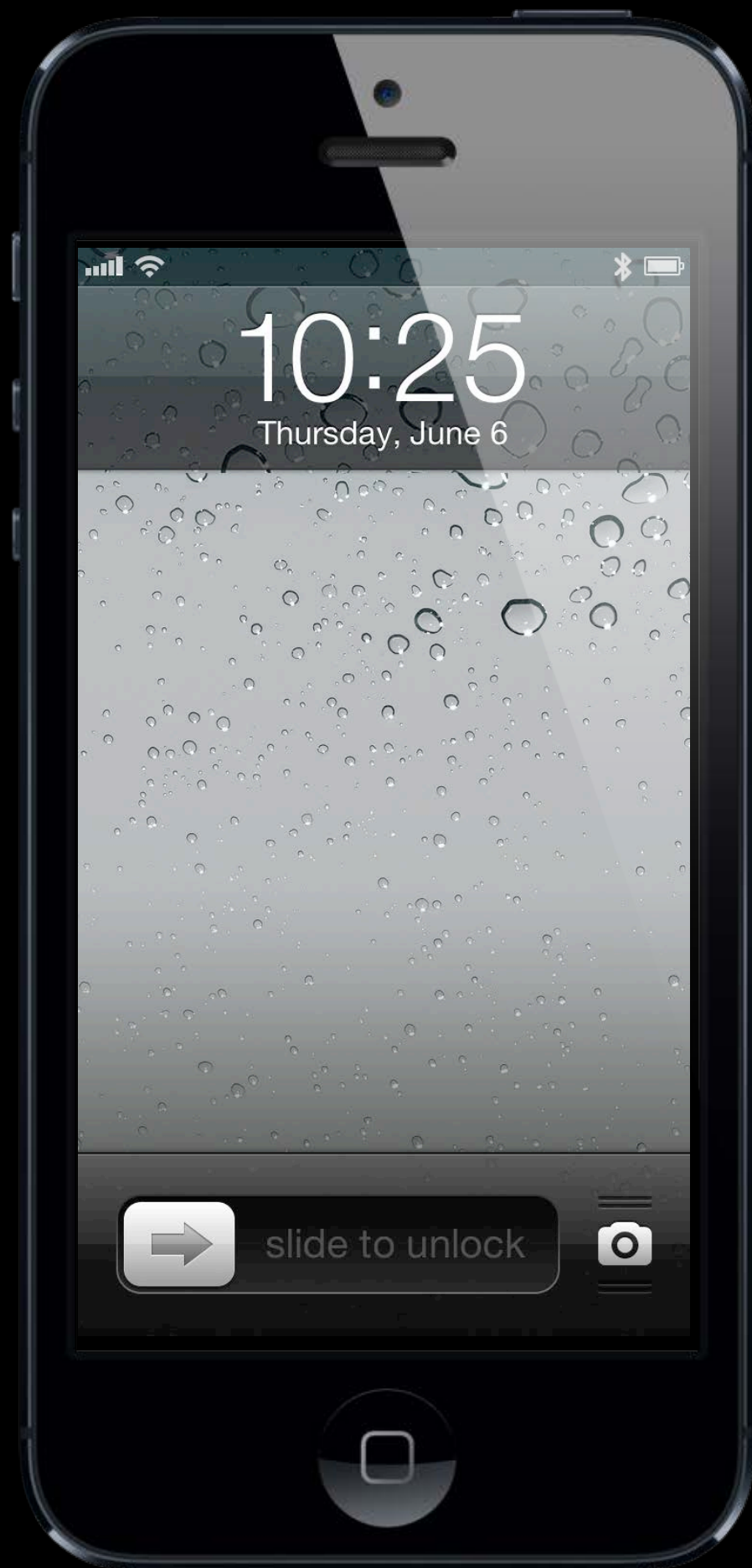


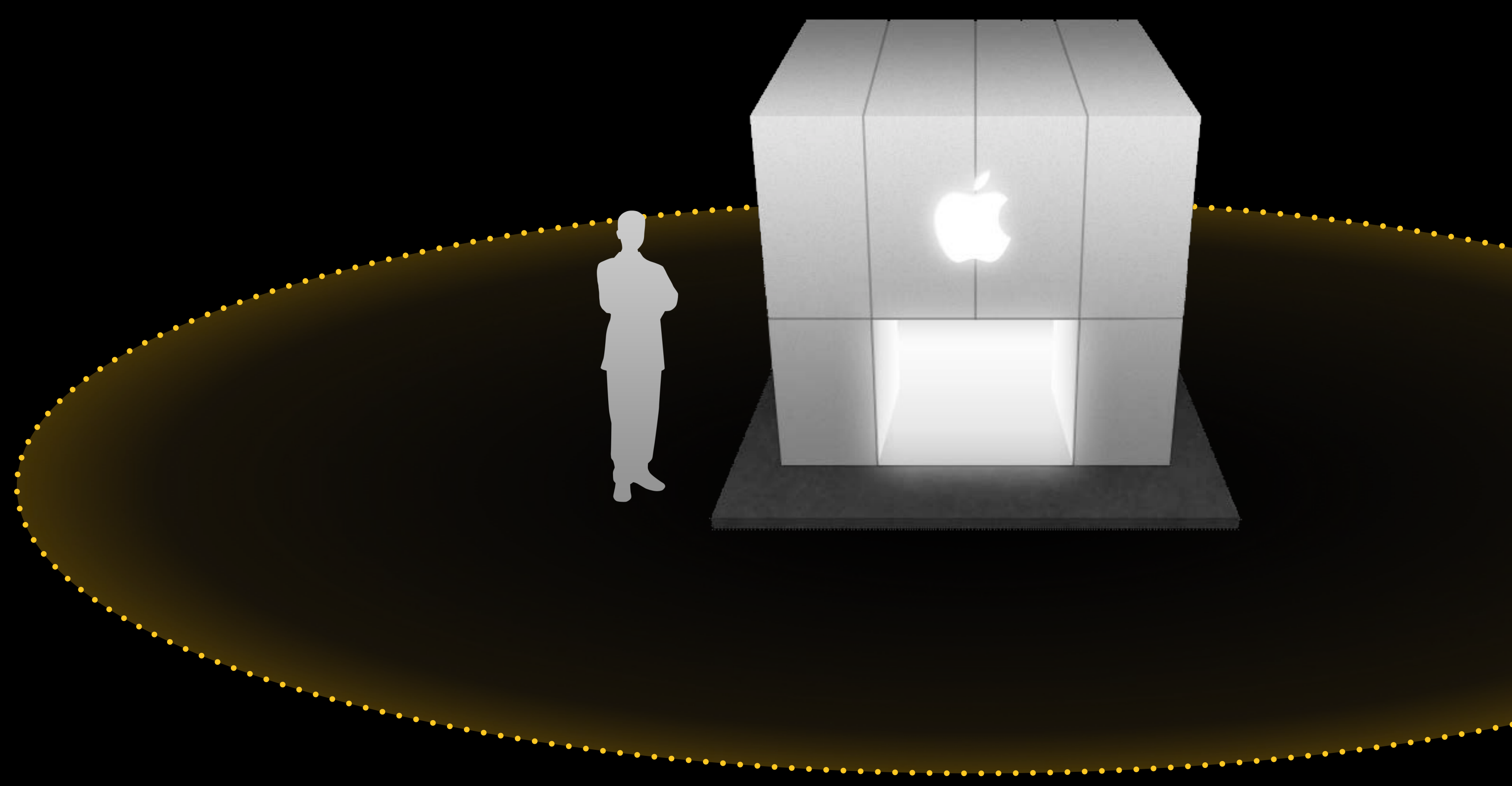


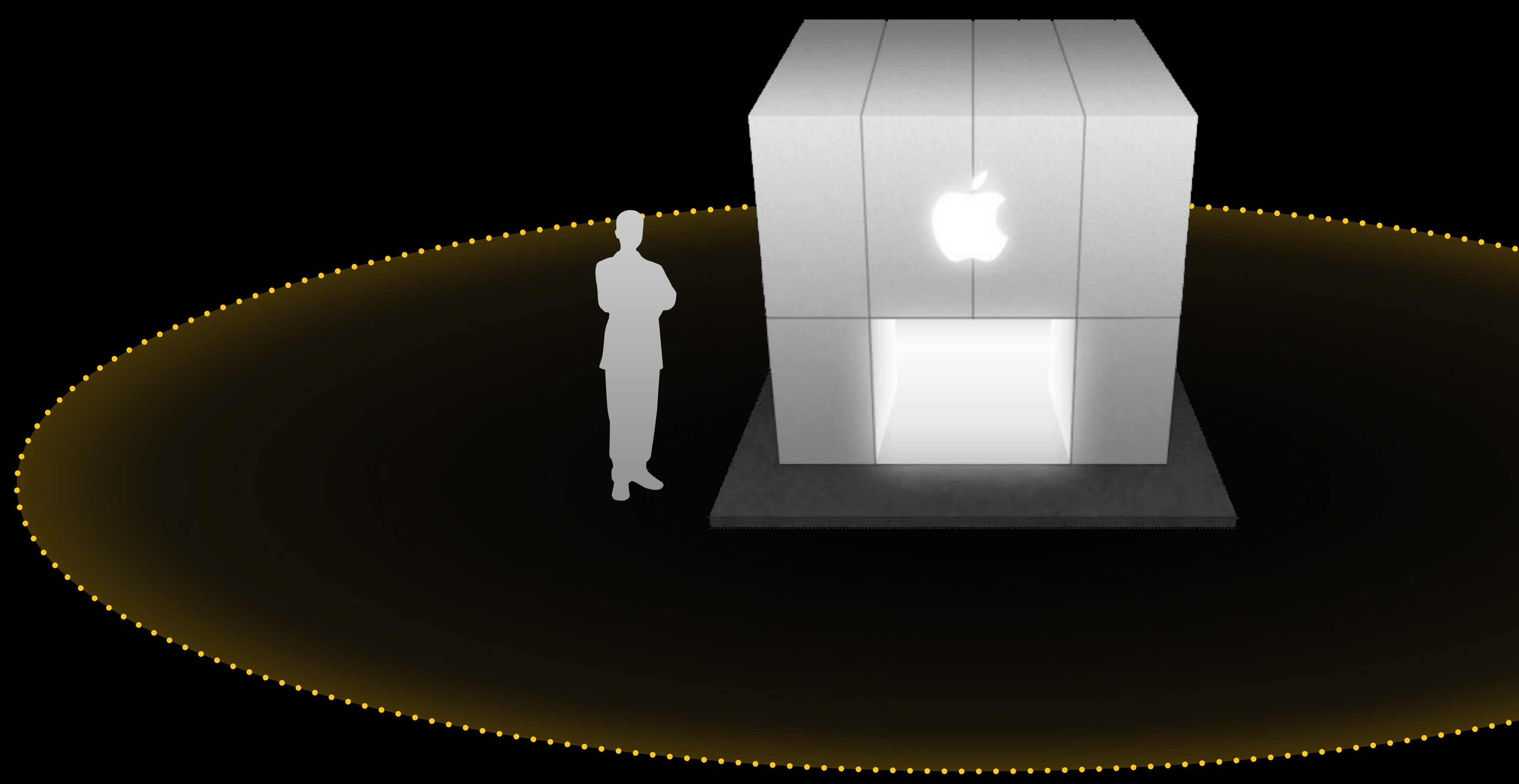
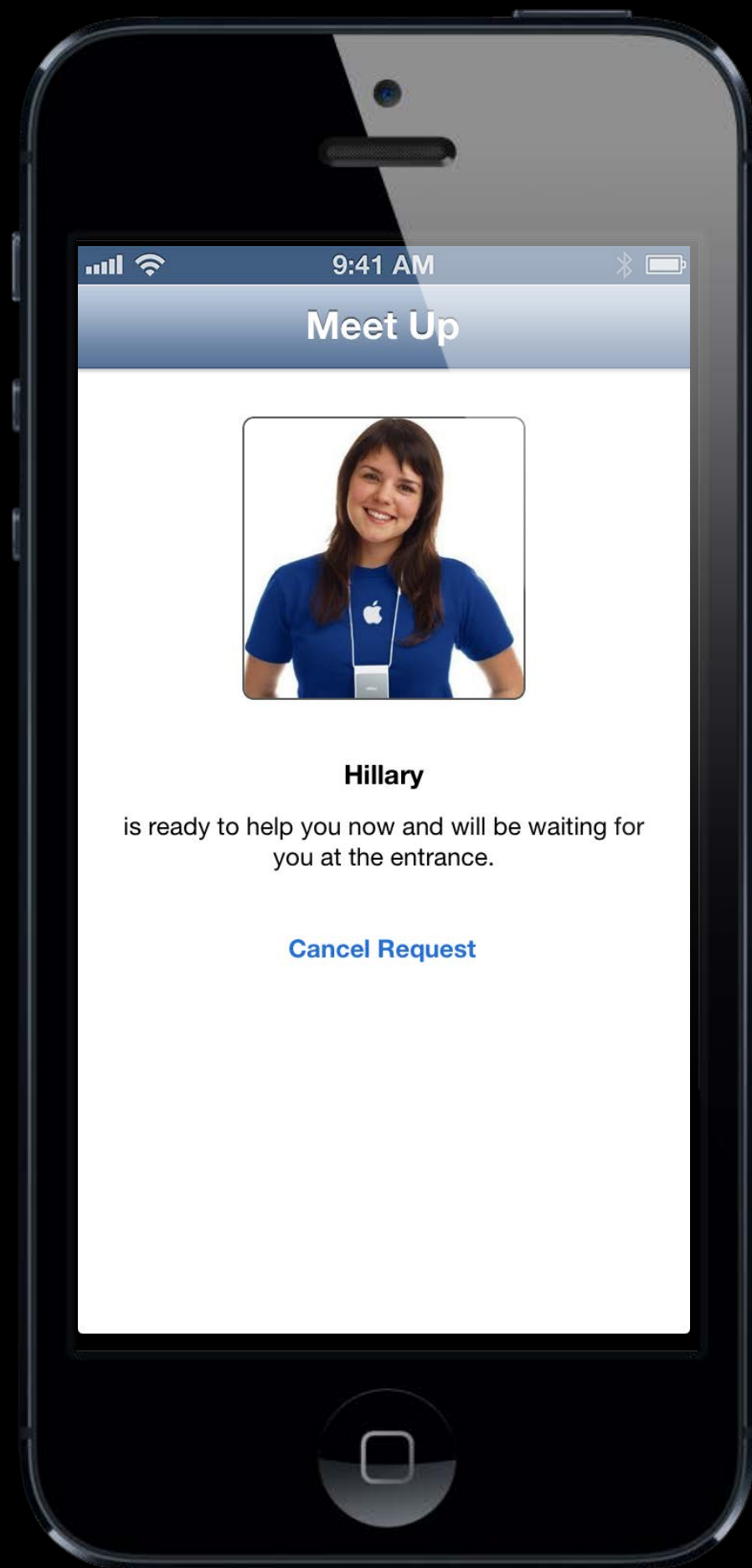


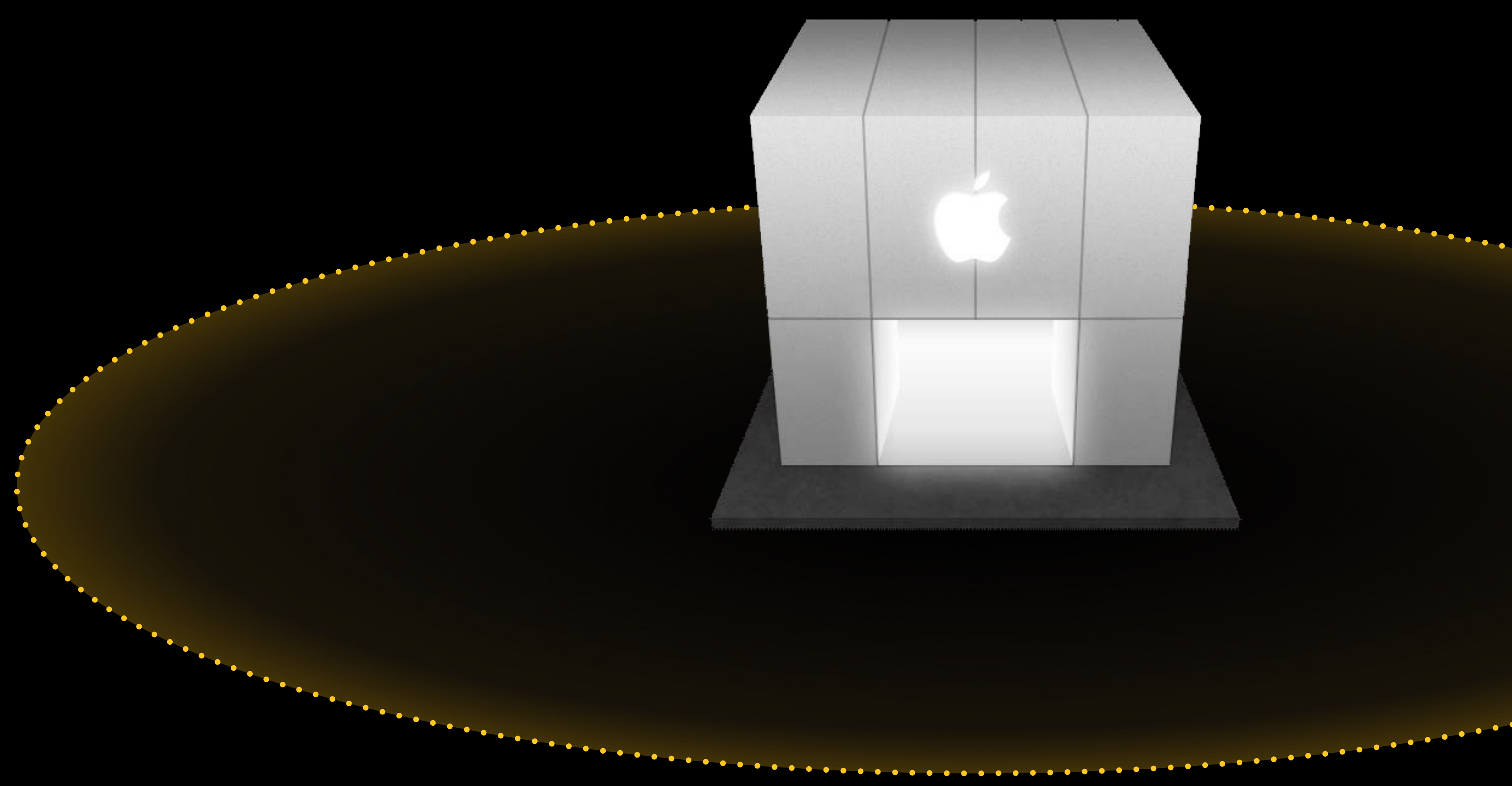
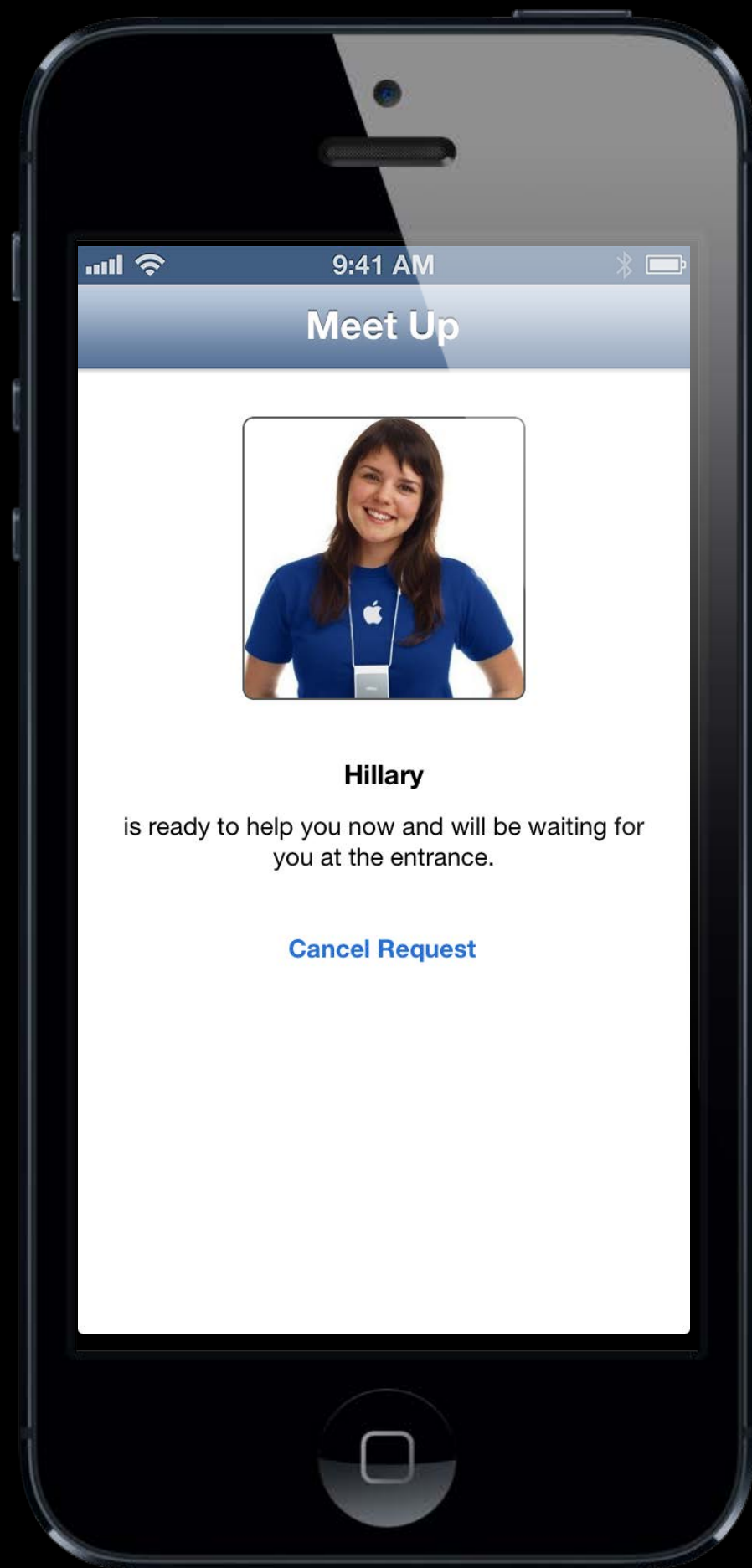


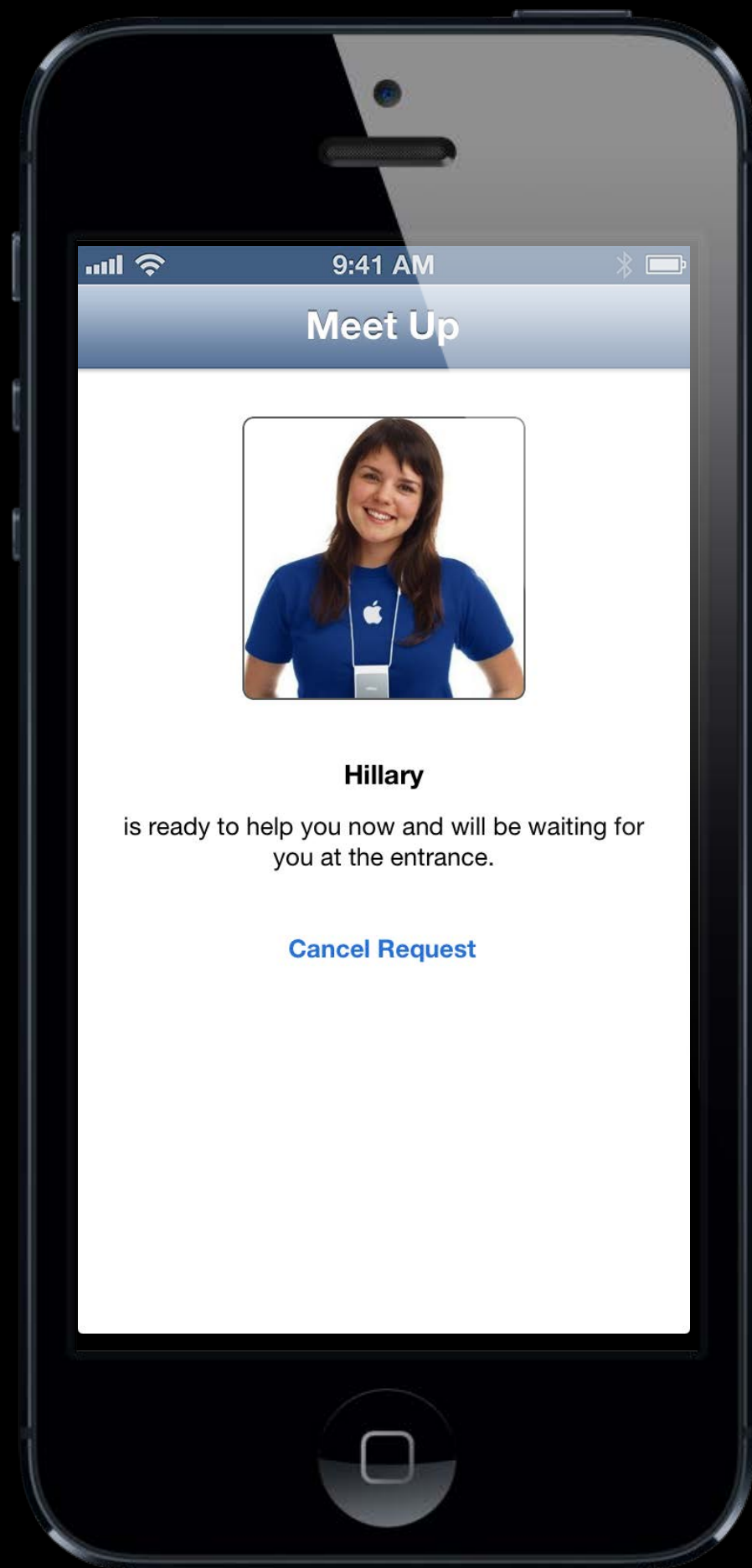












9:41 AM

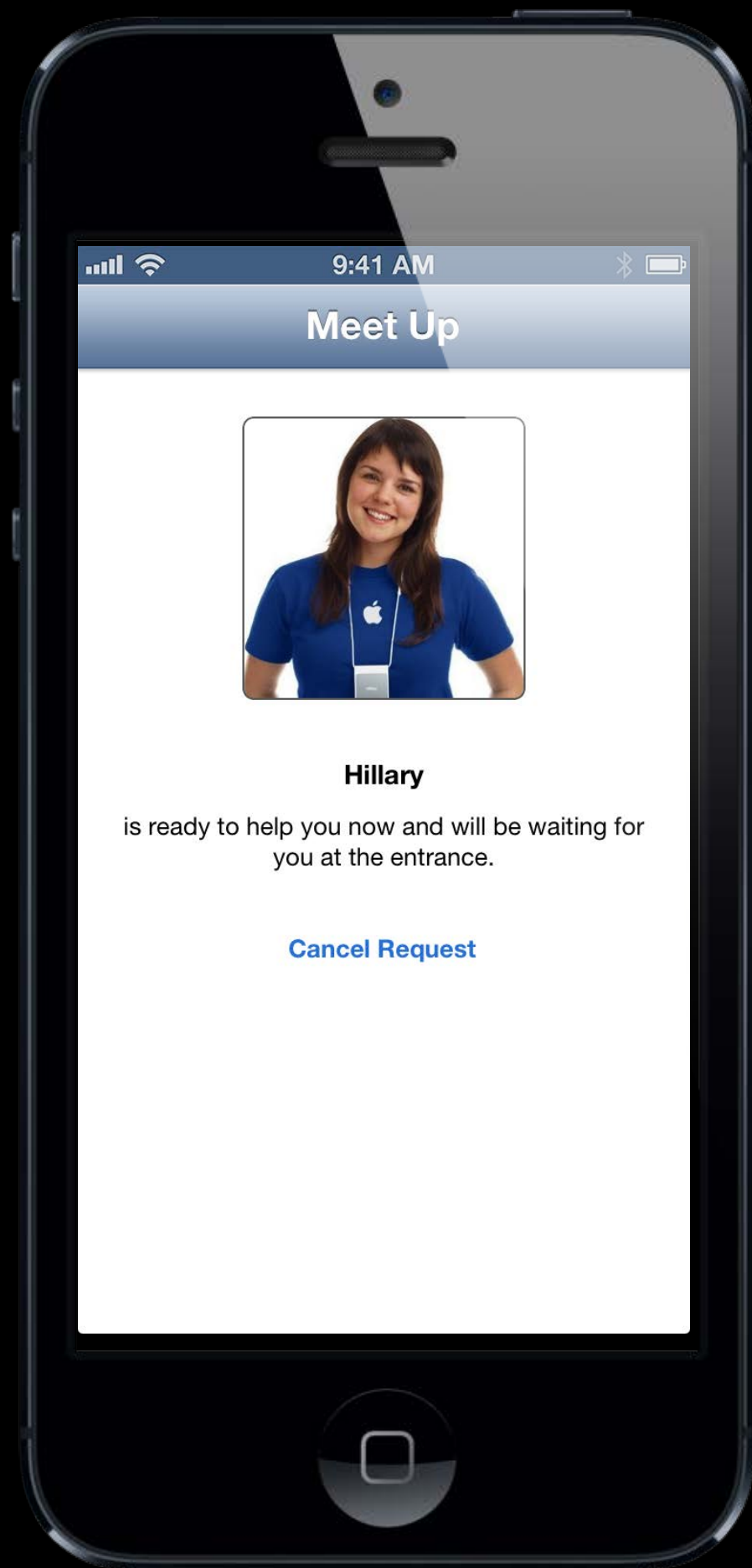
Meet Up



Hillary

is ready to help you now and will be waiting for you at the entrance.

[Cancel Request](#)



Region Monitoring



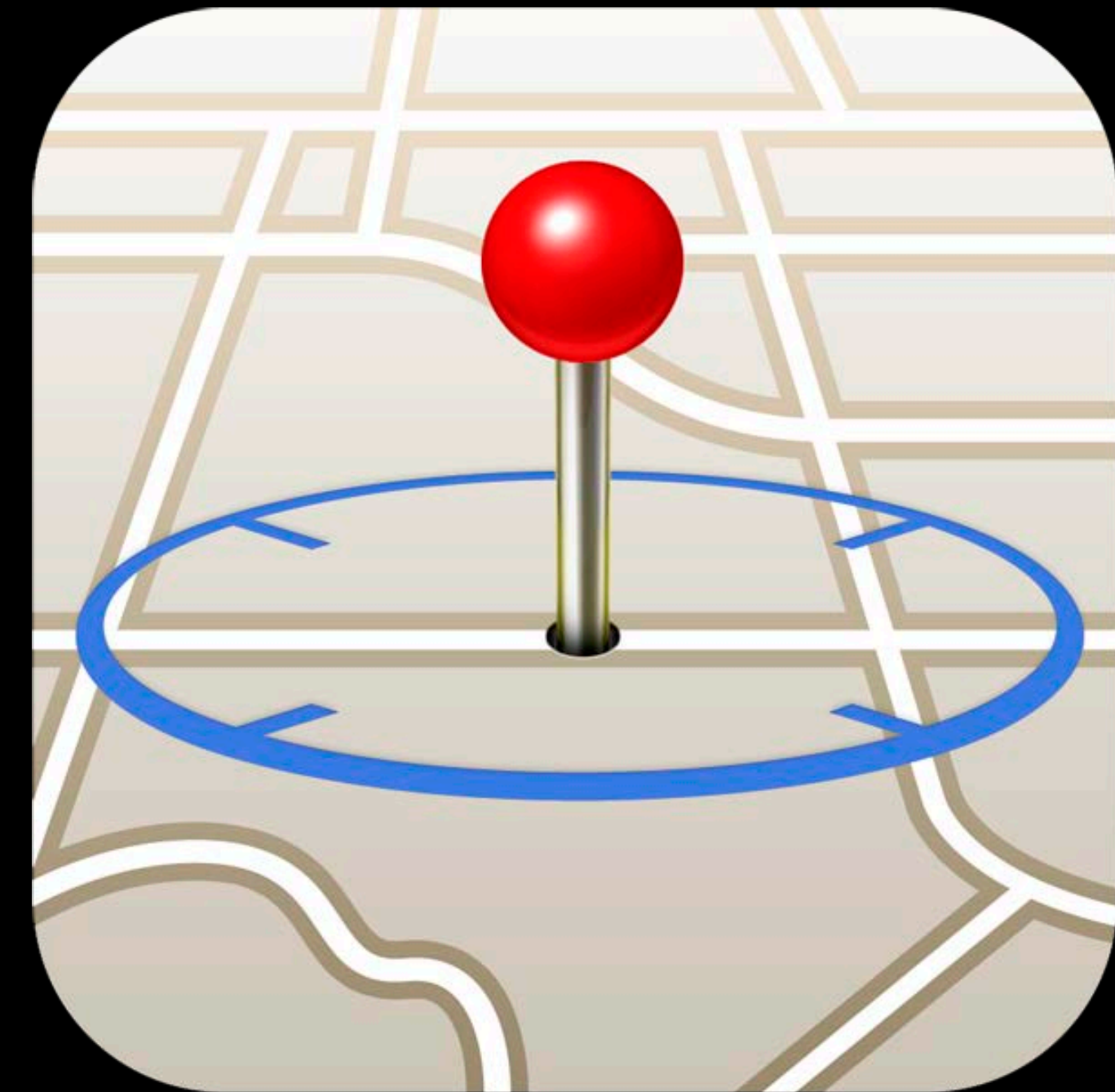
Region Monitoring



Region Monitoring



- Register with Core Location to monitor regions of interest
 - [CLLocationManager startMonitoringForRegion:]



Region Monitoring



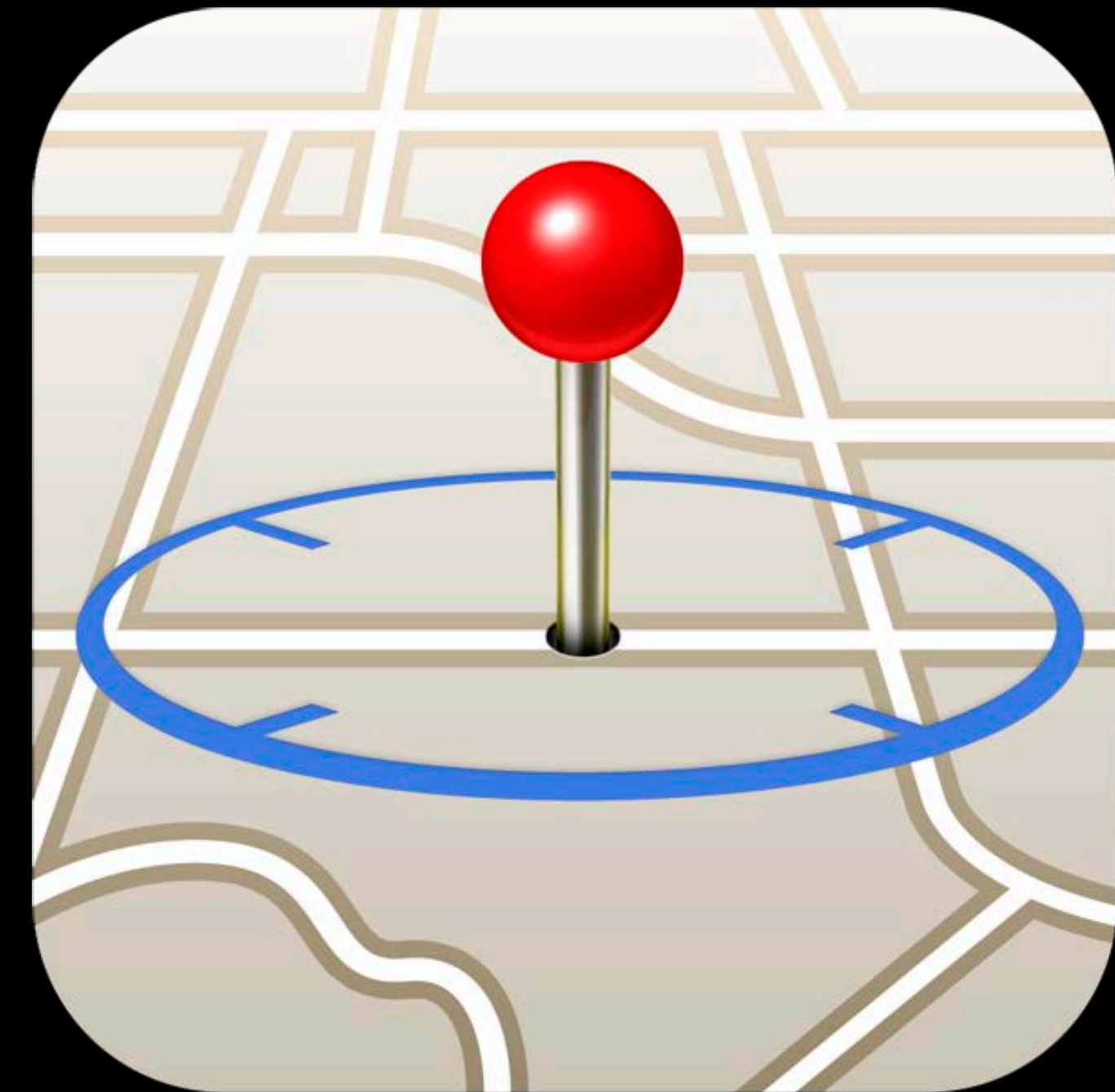
- Register with Core Location to monitor regions of interest
 - `[CLLocationManager startMonitoringForRegion:]`
- Core Location wakes your app and notifies delegates
 - `locationManager:didEnterRegion:`
 - `locationManager:didDetermineState:forRegion:`



Region Monitoring



- Register with Core Location to monitor regions of interest
 - `[CLLocationManager startMonitoringForRegion:]`
- Core Location wakes your app and notifies delegates
 - `locationManager:didEnterRegion:`
 - `locationManager:didDetermineState:forRegion:`
- Post local notification if appropriate
 - `[UIApplication scheduleLocalNotification:]`
 - `[UIApplication presentLocalNotificationNow:]`



Tips, Tricks And Best Practices

Minimize Battery Drain



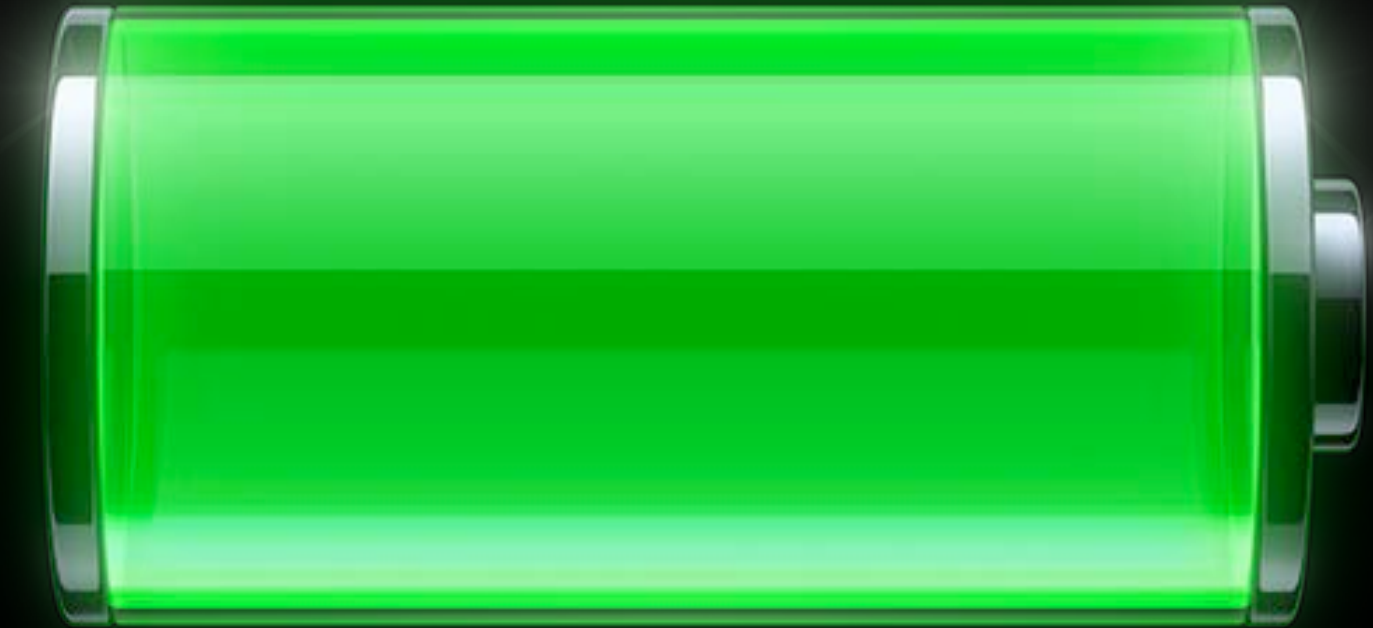
Minimize Battery Drain



Minimize Battery Drain



- Background code and server calls use up power



Minimize Battery Drain



- Background code and server calls use up power
- Minimize background code on wake
 - Employ safety checks—cache server data, use time stamps, etc.



Minimize Battery Drain



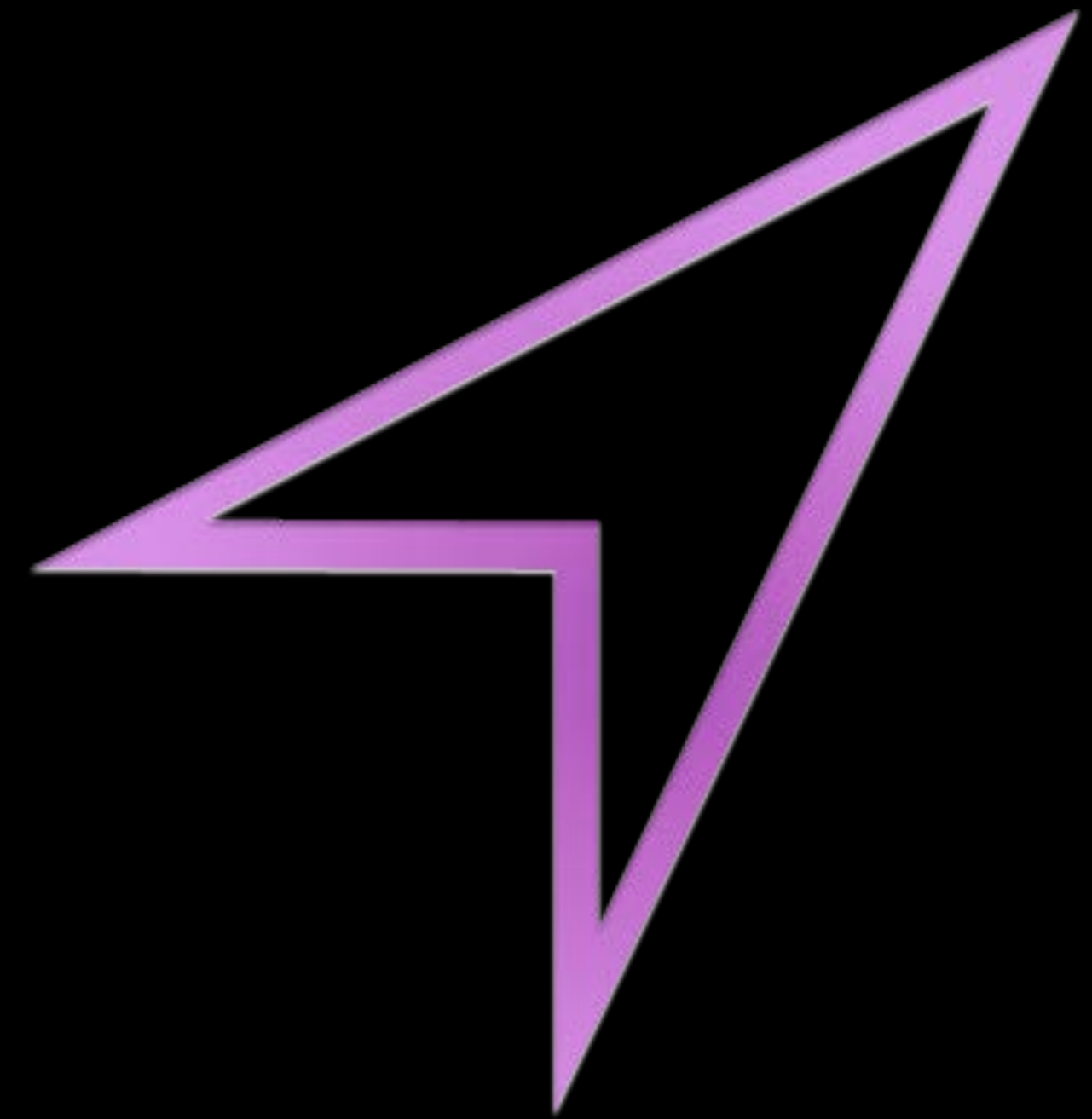
- Background code and server calls use up power
- Minimize background code on wake
 - Employ safety checks—cache server data, use time stamps, etc.
- Significant testing required
 - Both in Instruments and real life



Consider Privacy

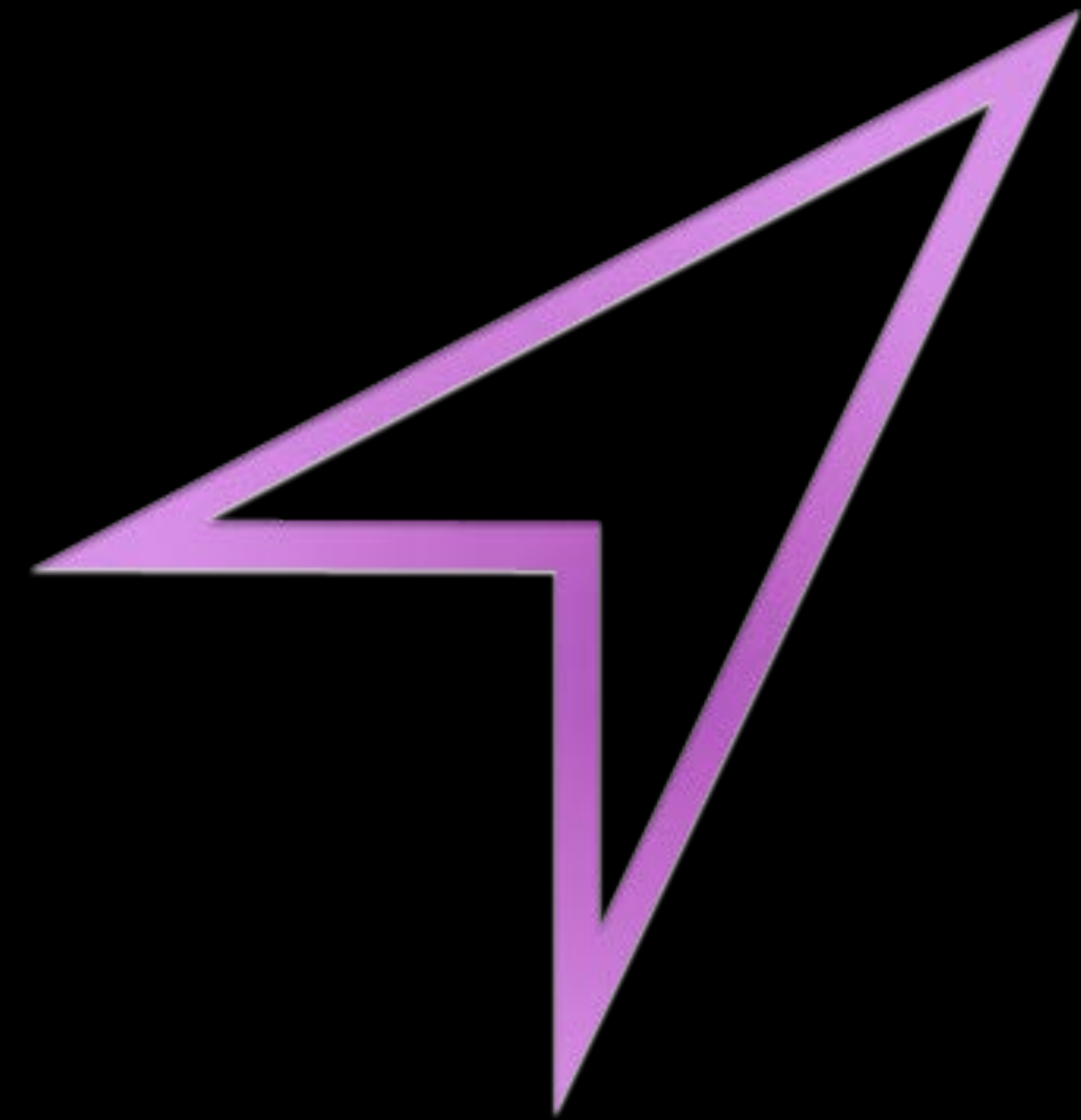


Consider Privacy



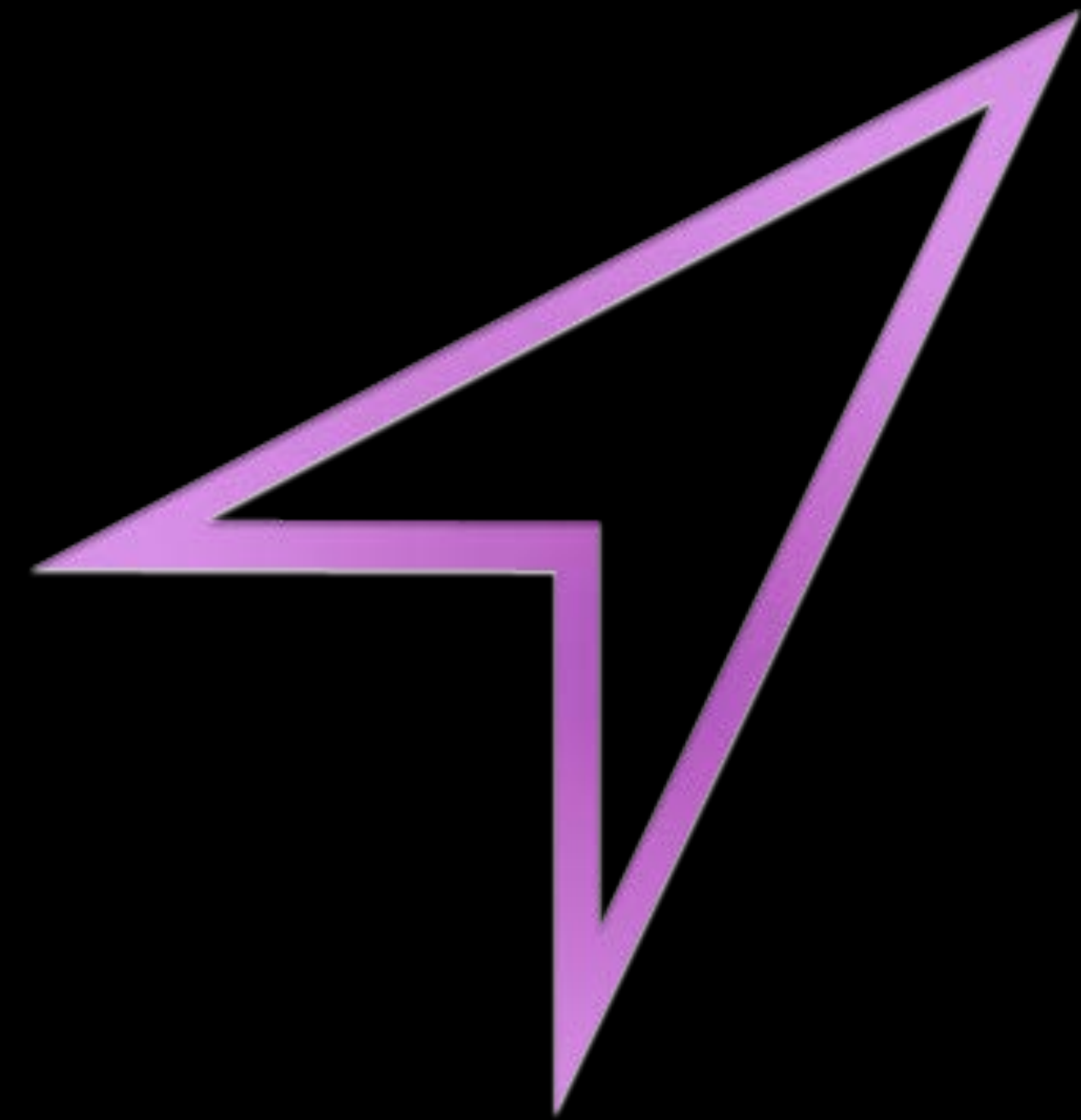
Consider Privacy

- User perception of location arrow
 - “You know where I am”
 - “You are draining my battery”



Consider Privacy

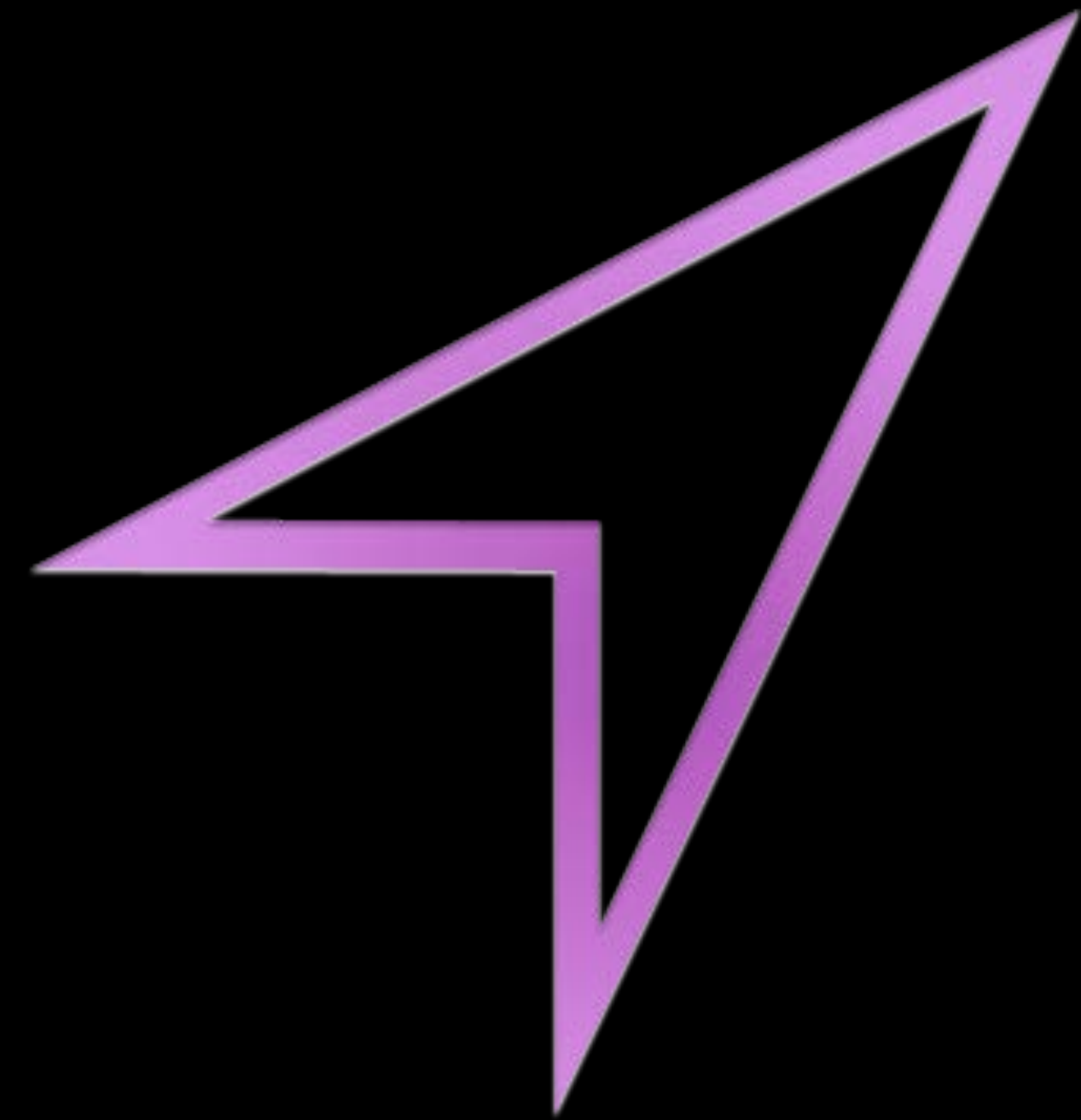
- User perception of location arrow
 - “You know where I am”
 - “You are draining my battery”
- Be upfront with your users



Consider Privacy



- User perception of location arrow
 - “You know where I am”
 - “You are draining my battery”
- Be upfront with your users
- Monitor location only as needed
 - Minimize the arrow



Handle Multiple Regions



Handle Multiple Regions



Handle Multiple Regions



- iOS allows you 20 regions to monitor



Handle Multiple Regions



- iOS allows you 20 regions to monitor
- To start monitoring
 - Use user's current location and register nearby locations
 - Allow ZIP code option in case of user traveling



Handle Multiple Regions



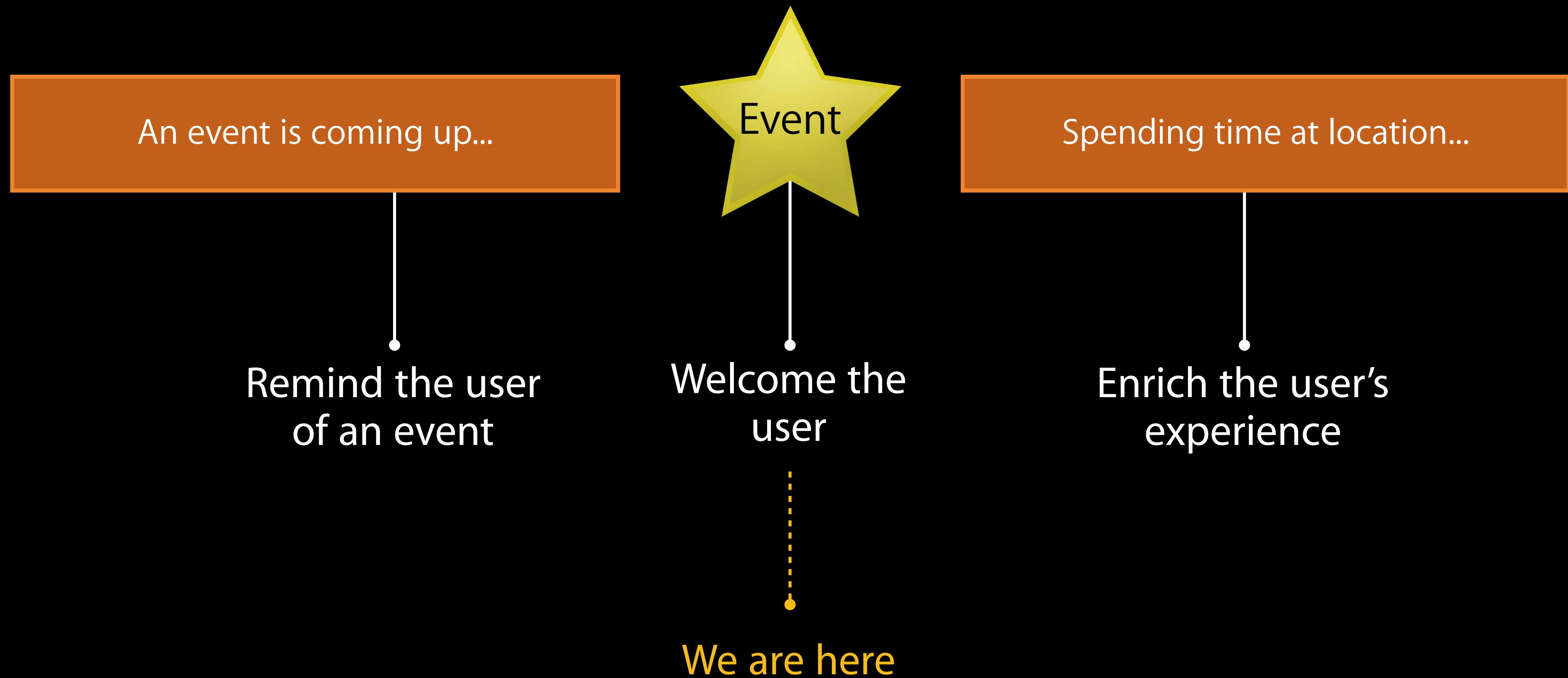
- iOS allows you 20 regions to monitor
- To start monitoring
 - Use user's current location and register nearby locations
 - Allow ZIP code option in case of user traveling
- To update regions
 - Perform when app is awake
 - Use Significant Location Change when app is in background



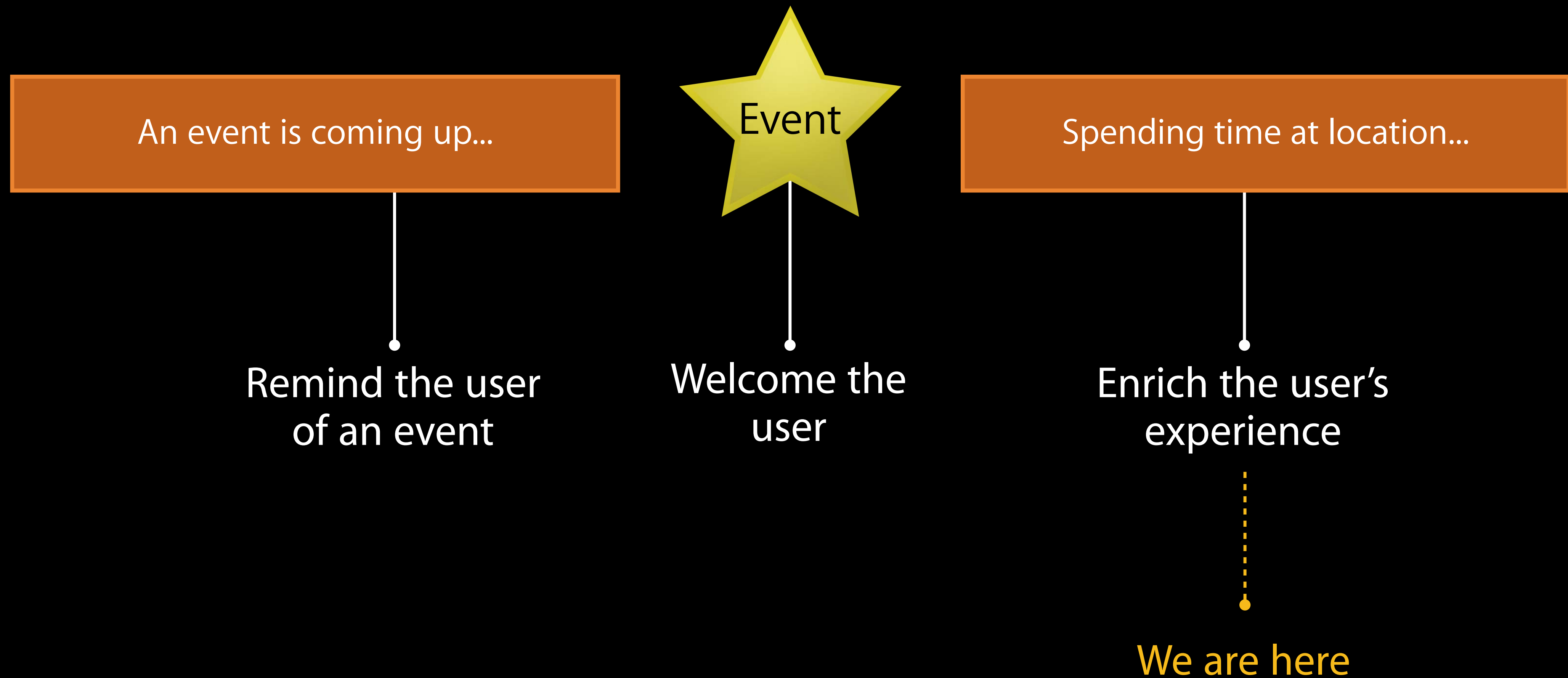
Spending Time at Your Location

Enrich the user experience

Agenda



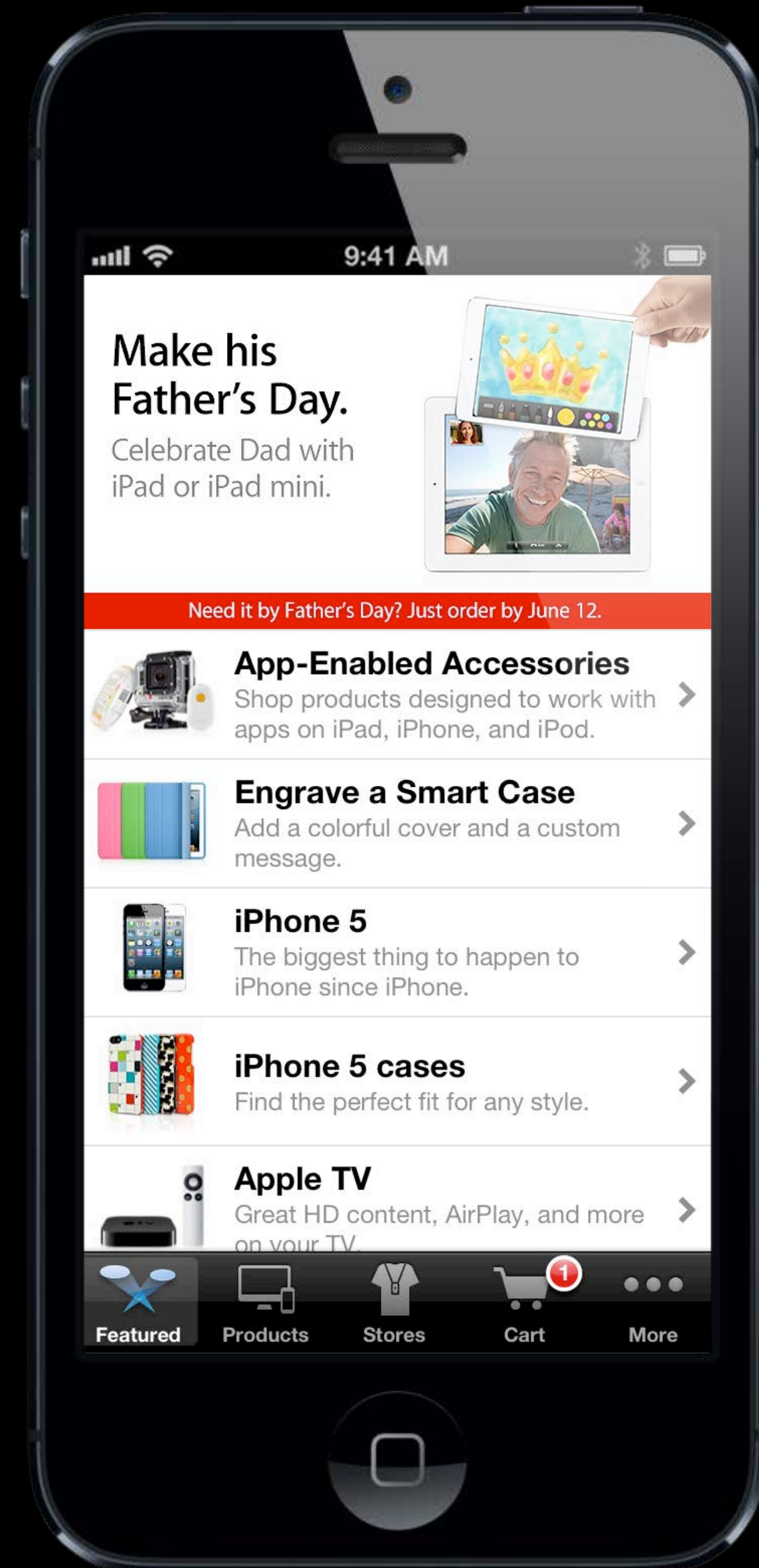
Agenda

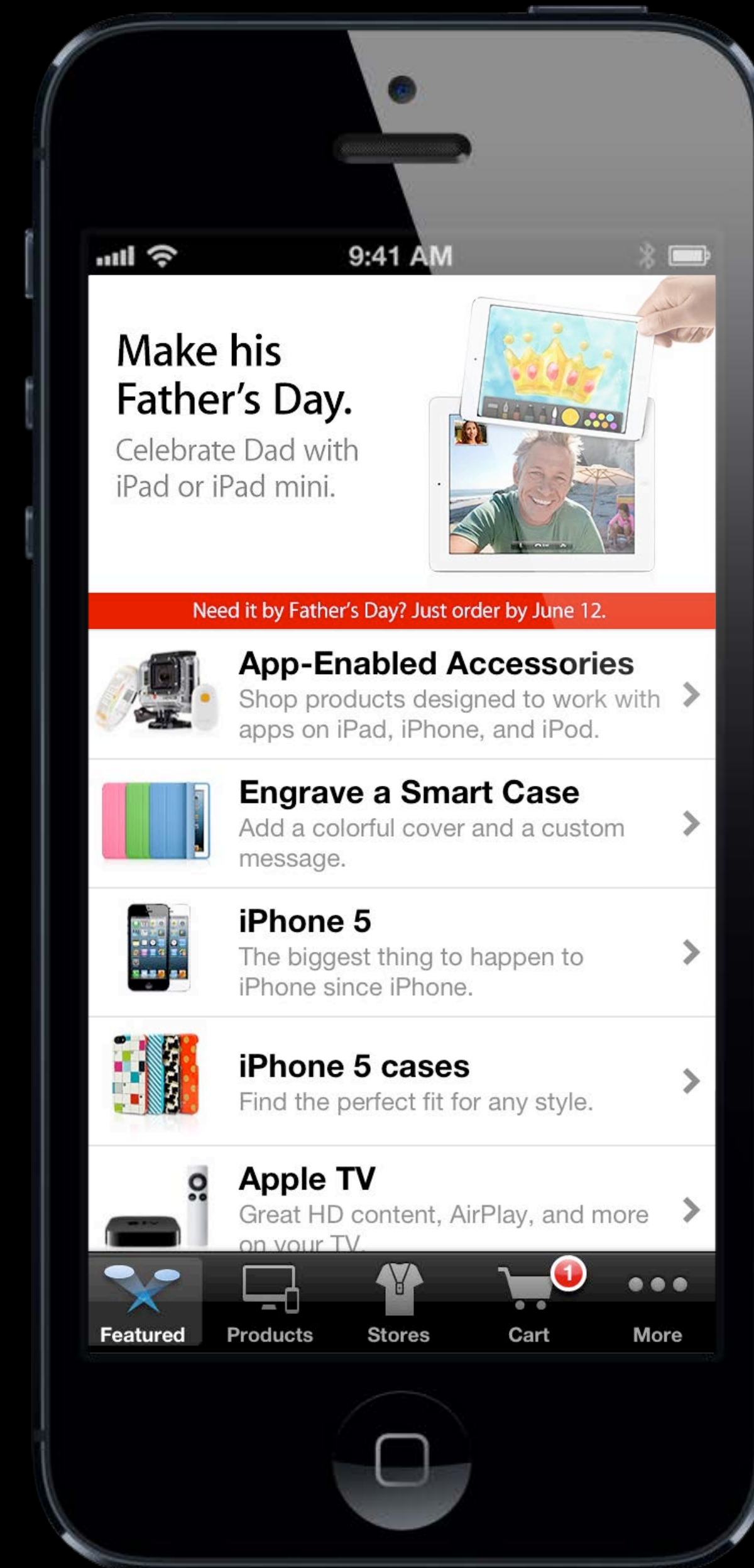


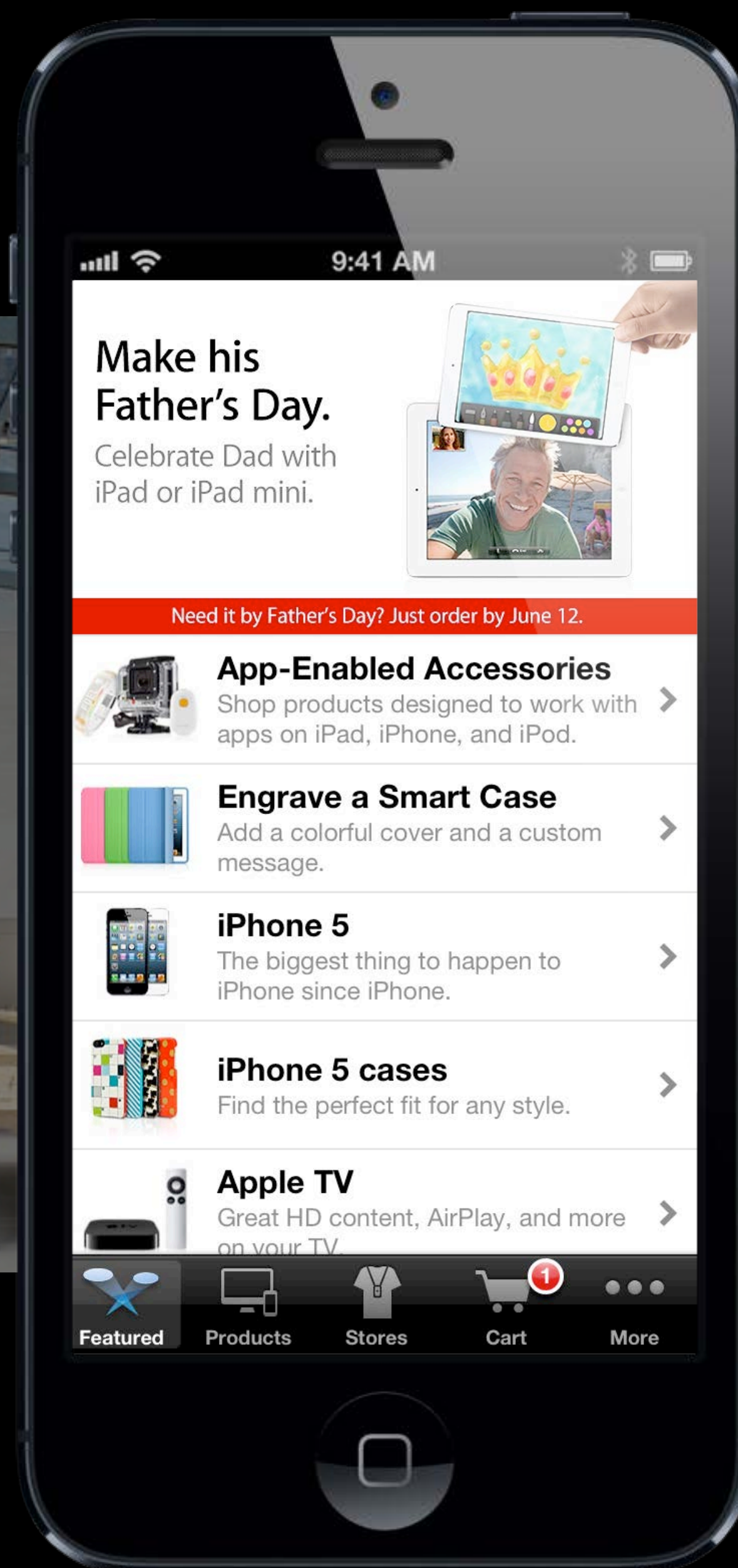


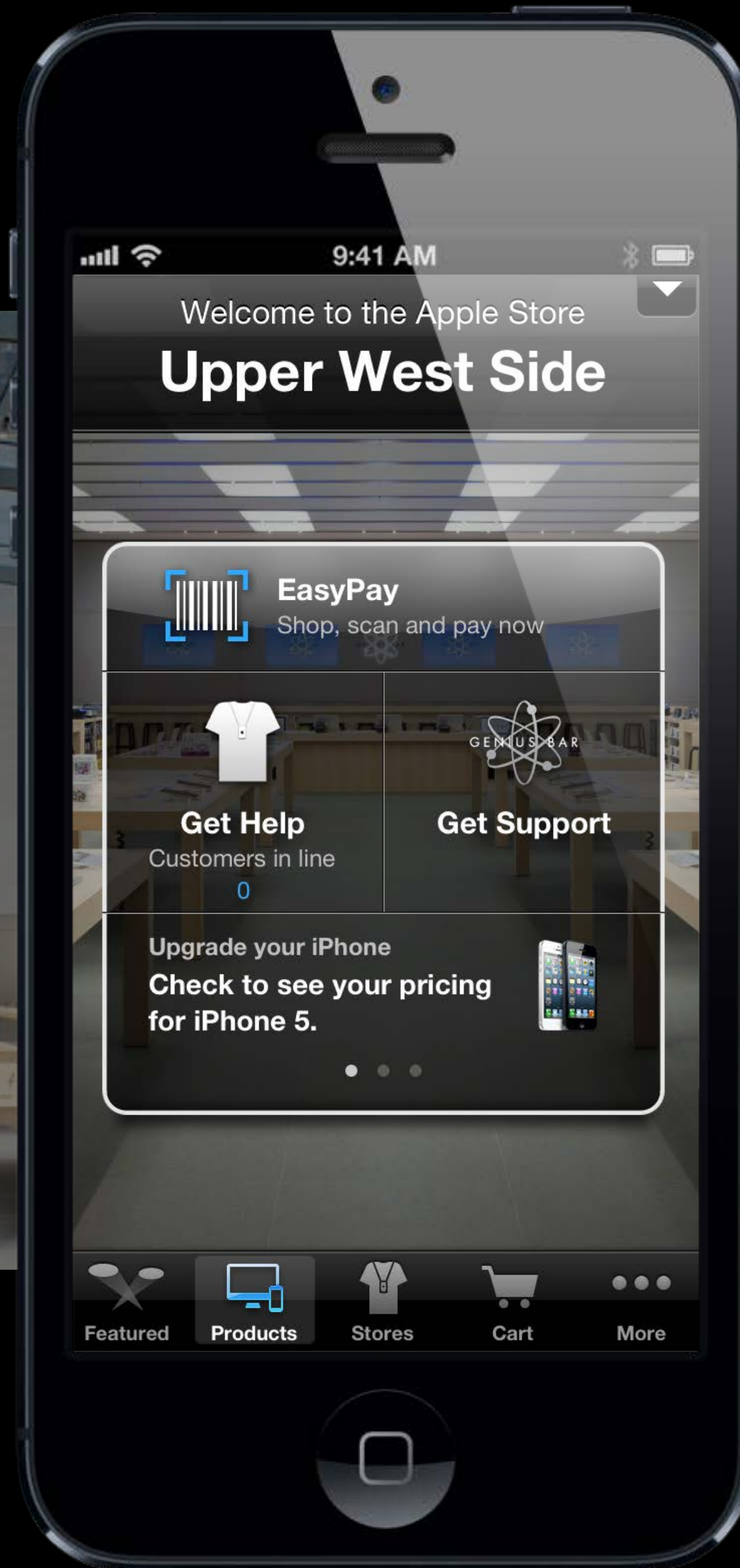


In-Store Mode









In-Location Mode



In-Location Mode



In-Location Mode



- Use Core Location APIs to obtain current user location
 - [CLLocationManager startUpdatingLocation]
 - locationManager:didUpdateLocations:



In-Location Mode



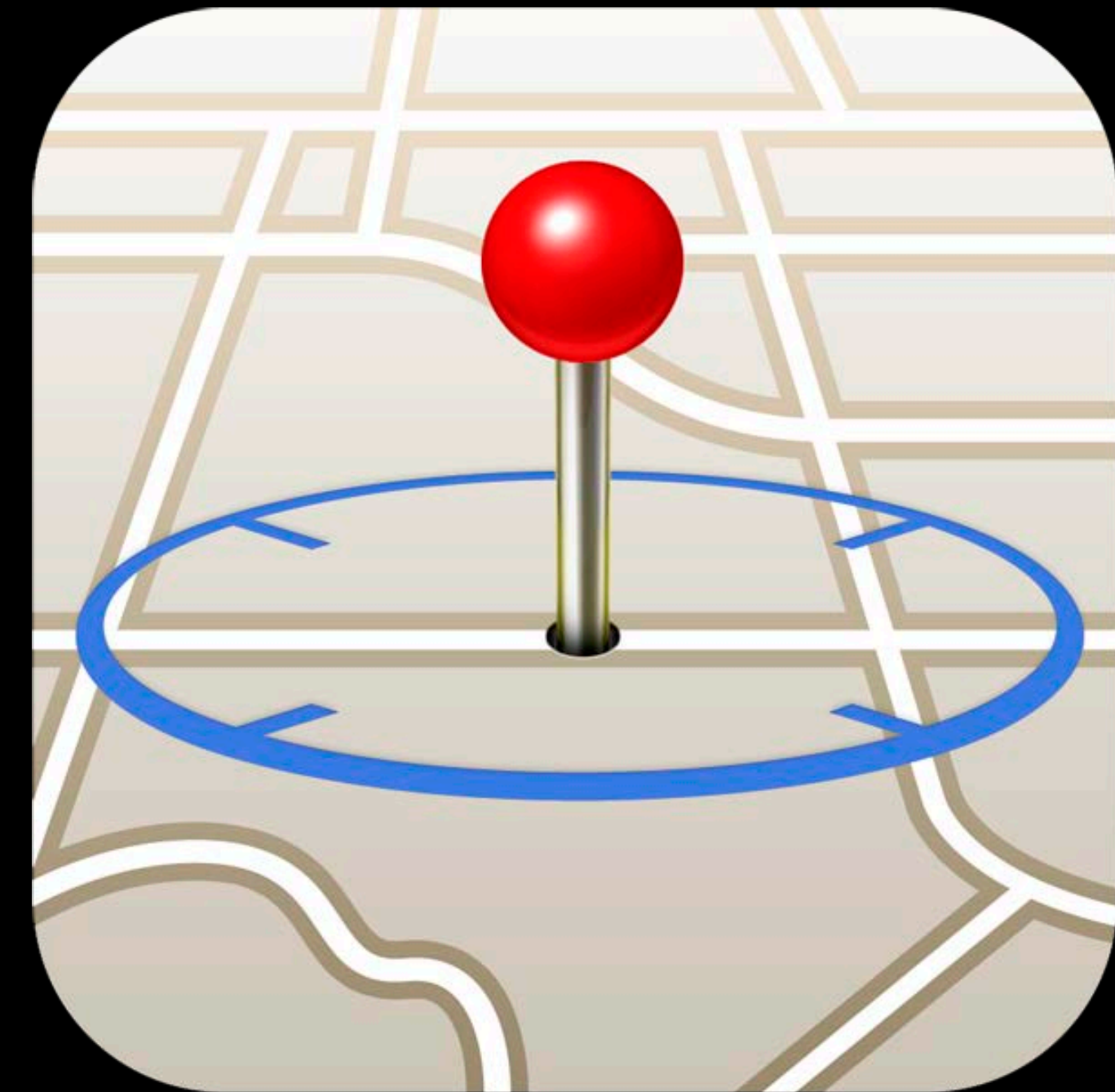
- Use Core Location APIs to obtain current user location
 - [CLLocationManager startUpdatingLocation]
 - locationManager:didUpdateLocations:
- Check distance between the user and the location of interest



In-Location Mode



- Use Core Location APIs to obtain current user location
 - [CLLocationManager startUpdatingLocation]
 - locationManager:didUpdateLocations:
- Check distance between the user and the location of interest
- If within threshold, consider the user in the location and expose in-location UI



In-Location Mode



- Use Core Location APIs to obtain current user location
 - [CLLocationManager startUpdatingLocation]
 - locationManager:didUpdateLocations:
- Check distance between the user and the location of interest
- If within threshold, consider the user in the location and expose in-location UI
- Adjust your desired accuracy according to distance
 - [CLLocationManager setDesiredAccuracy:]



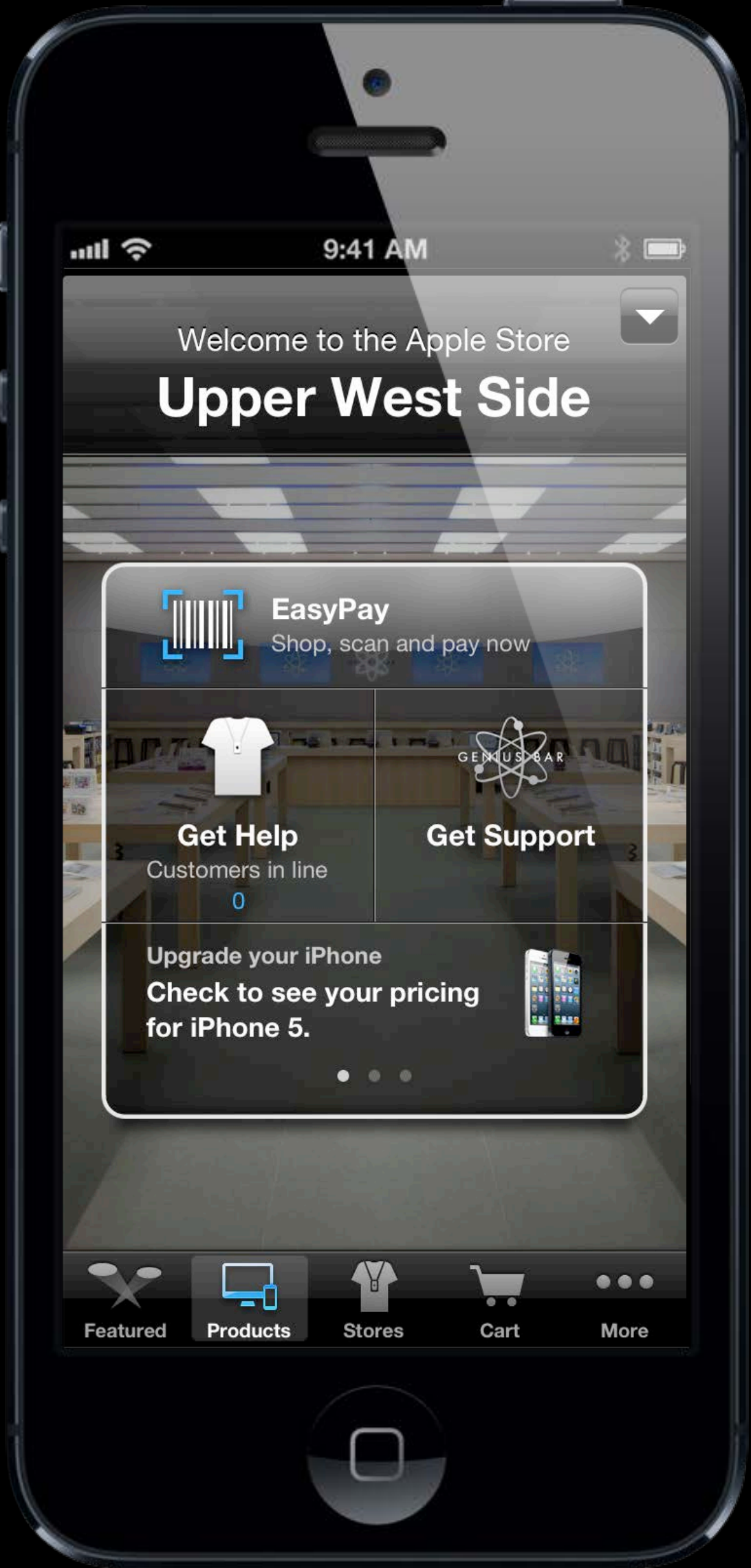
Tips, Tricks

And best practices

UI Guidelines



UI Guidelines



UI Guidelines



- Be distinctive and discernible



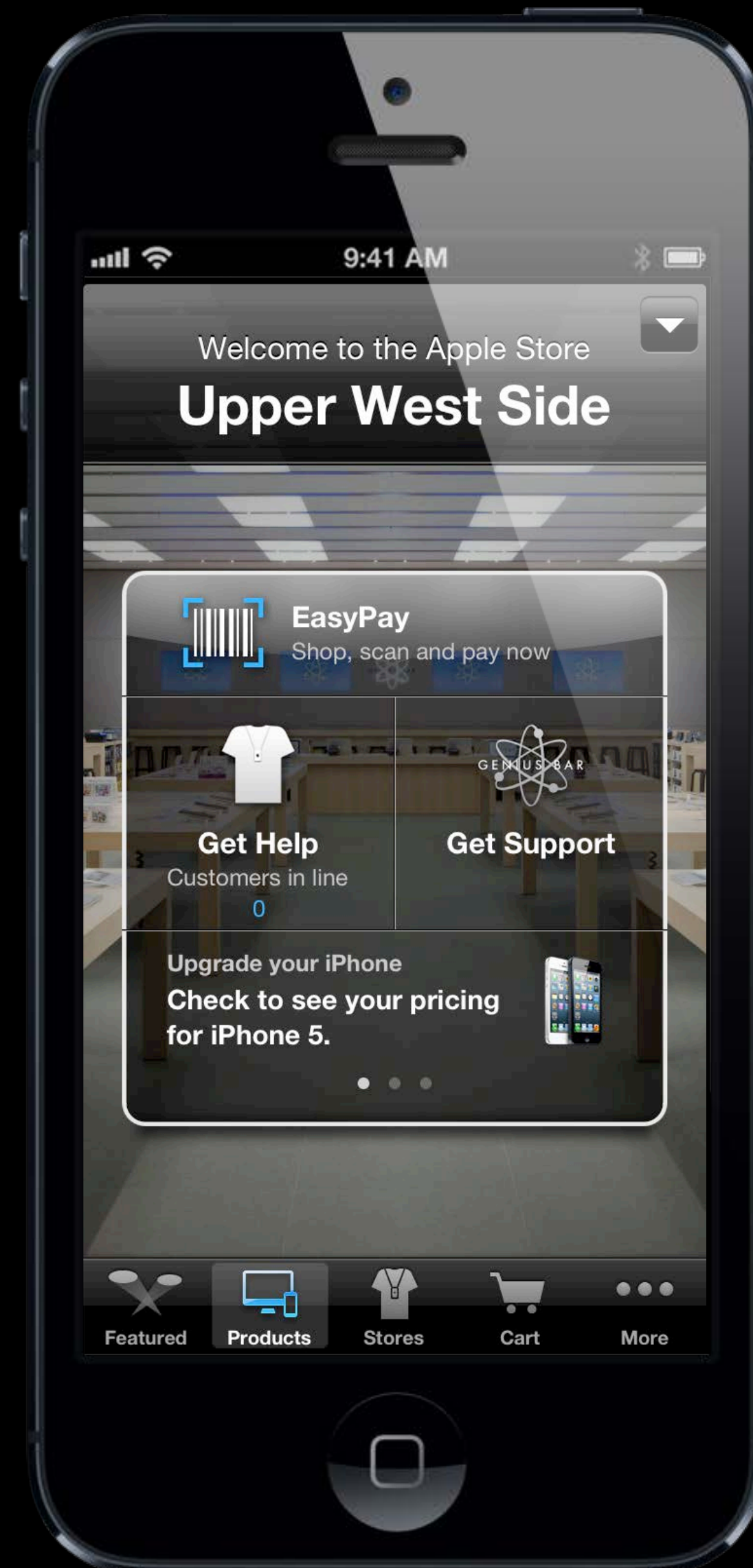
UI Guidelines

- Be distinctive and discernible
- Focus the user



UI Guidelines

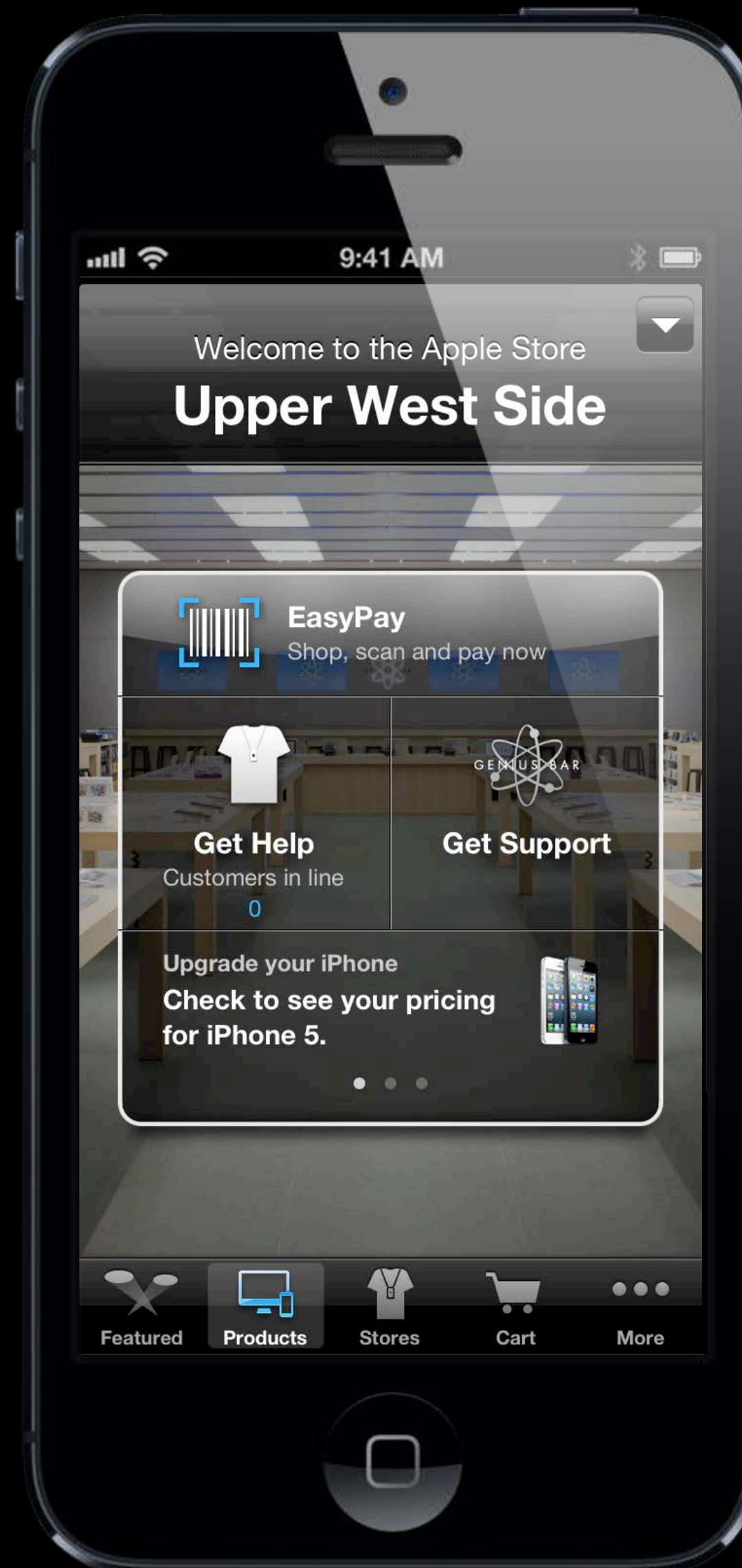
- Be distinctive and discernible
- Focus the user
- Be easily dismissed



UI Guidelines



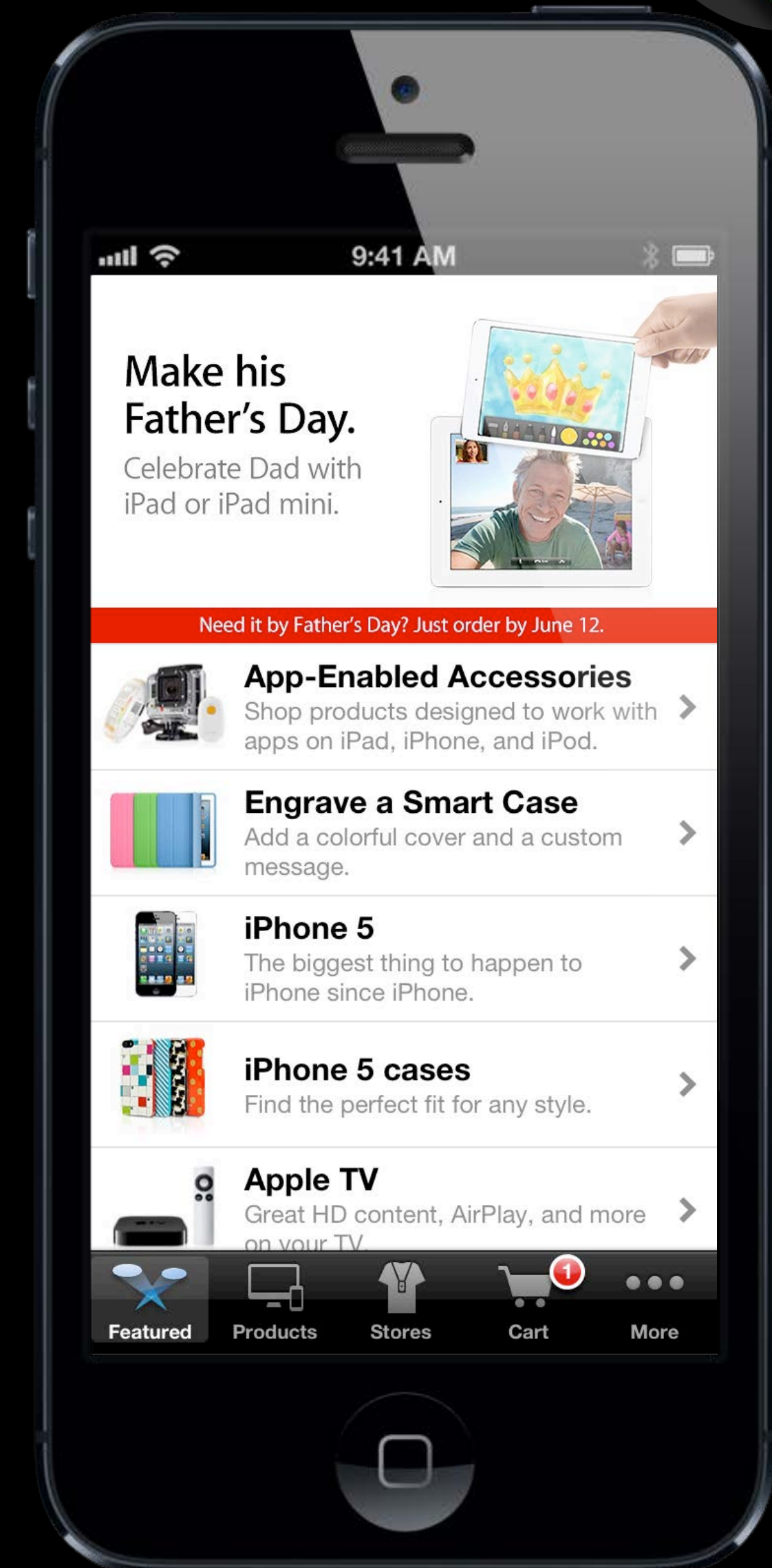
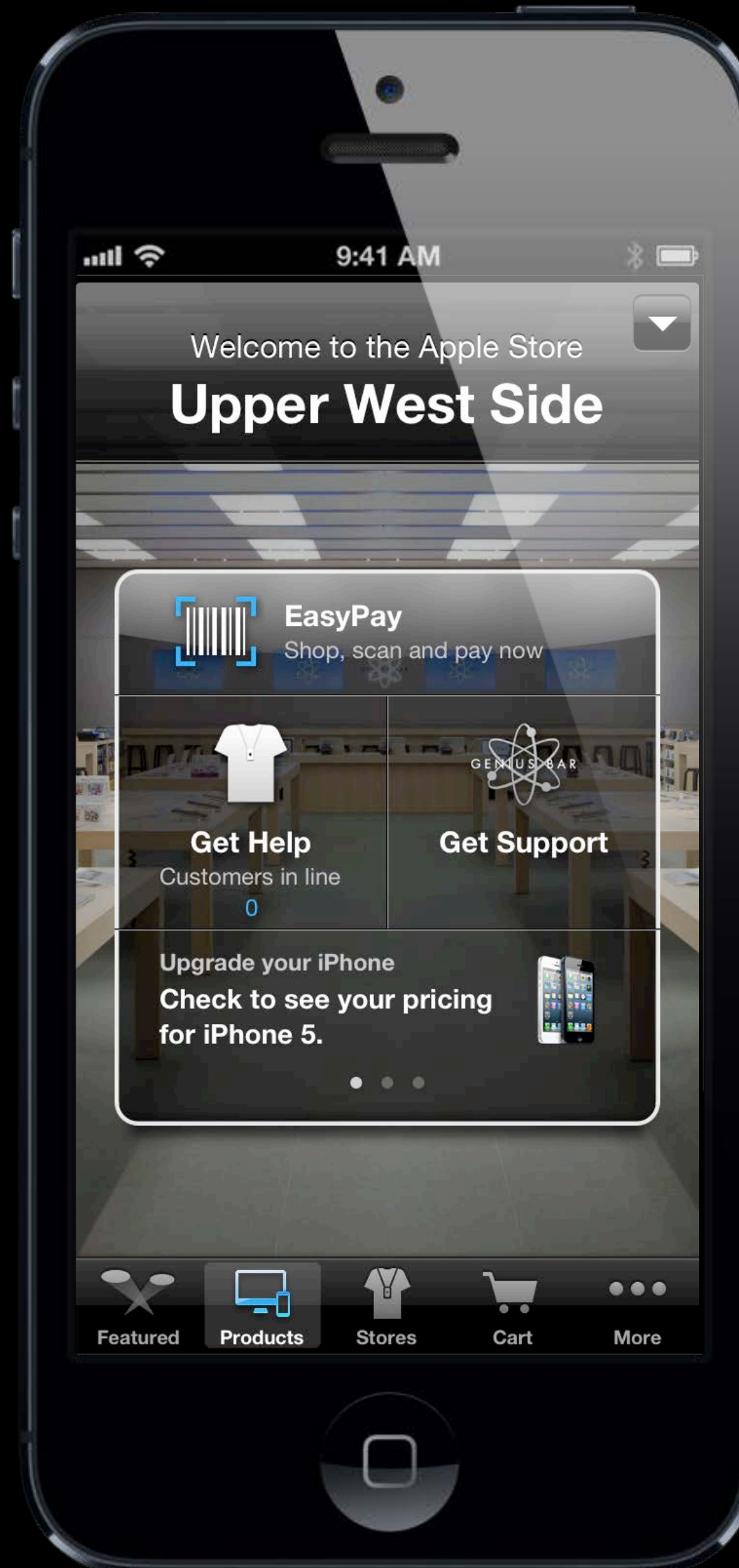
- Be distinctive and discernible
- Focus the user
- Be easily dismissed



UI Guidelines



- Be distinctive and discernible
- Focus the user
- Be easily dismissed



In-Location UI Relevant Only In Location



In-Location UI Relevant Only In Location



In-Location UI Relevant Only In Location



- Detect if user has left location
 - Use CL to listen for exit events
 - Check user location on startup



In-Location UI Relevant Only In Location



- Detect if user has left location
 - Use CL to listen for exit events
 - Check user location on startup
- Handle location boundary conditions
 - Increase in-location thresholds



Richer Experiences with iOS 7

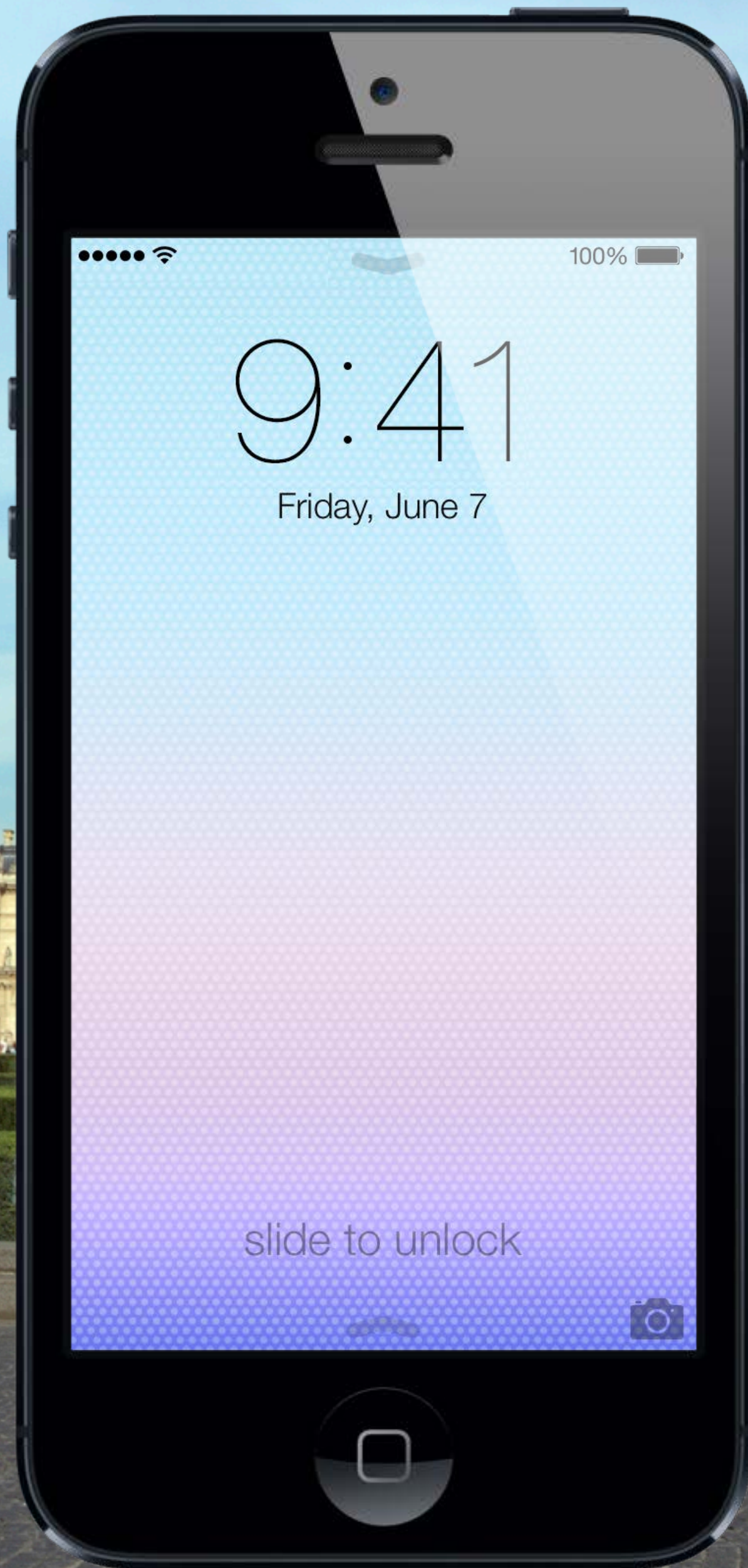
Use iBeacons to unlock new potential

iBeacons

Region monitoring













100% 

9:41

Friday, June 7

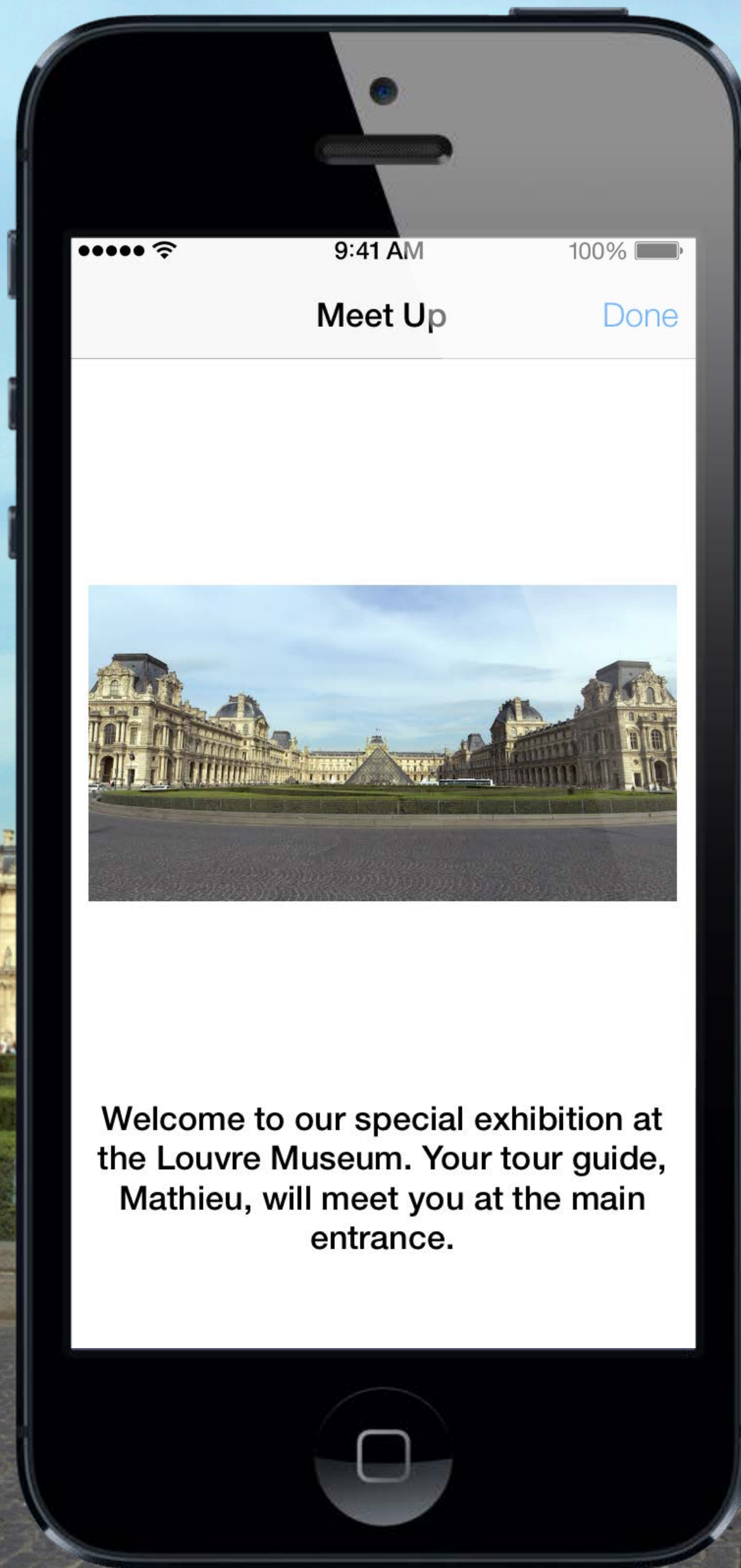


Louvre Museum now

Welcome to the Louvre Museum.
Your tour guide is ready to meet you.

slide to unlock





Meet Up

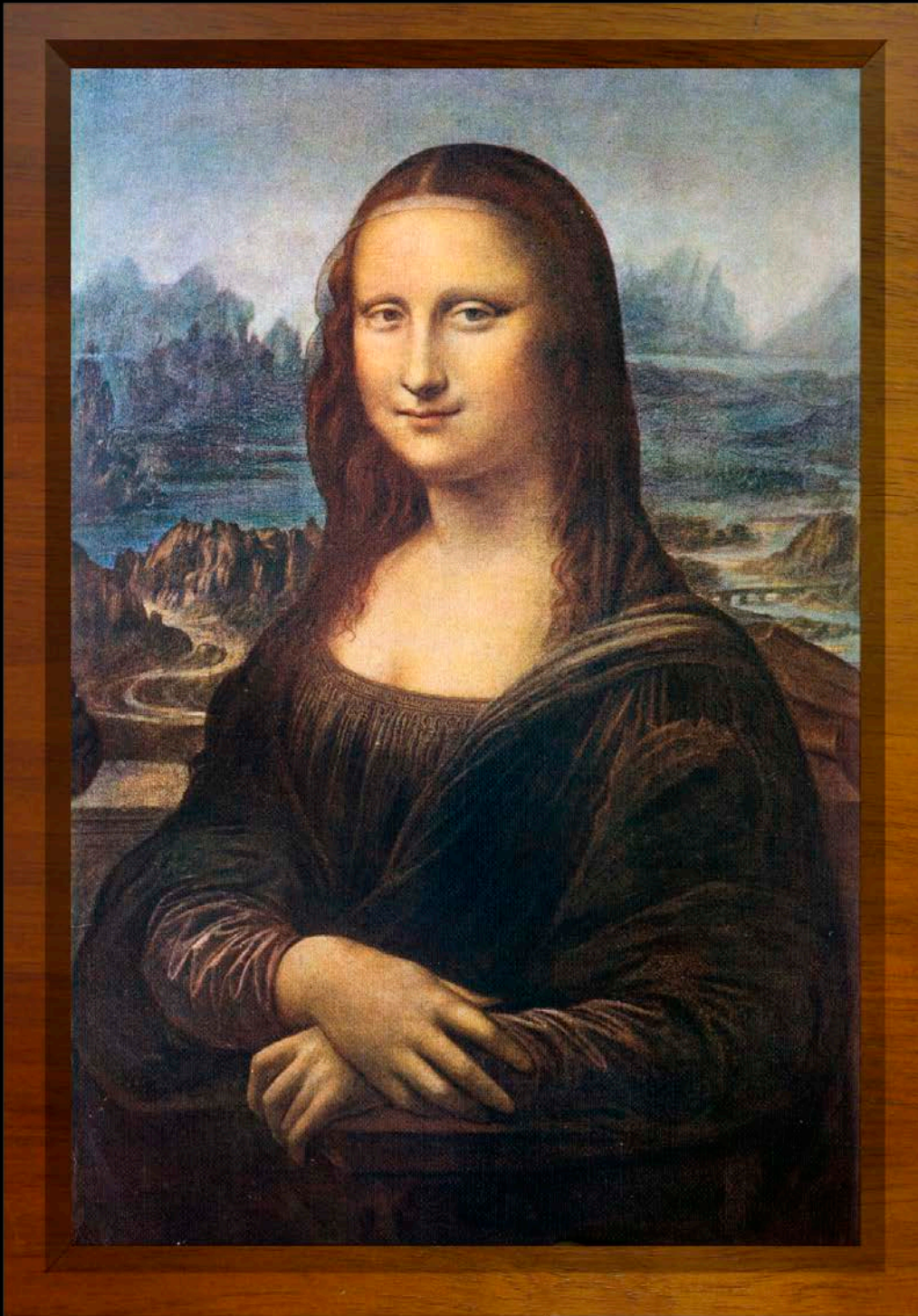
Done

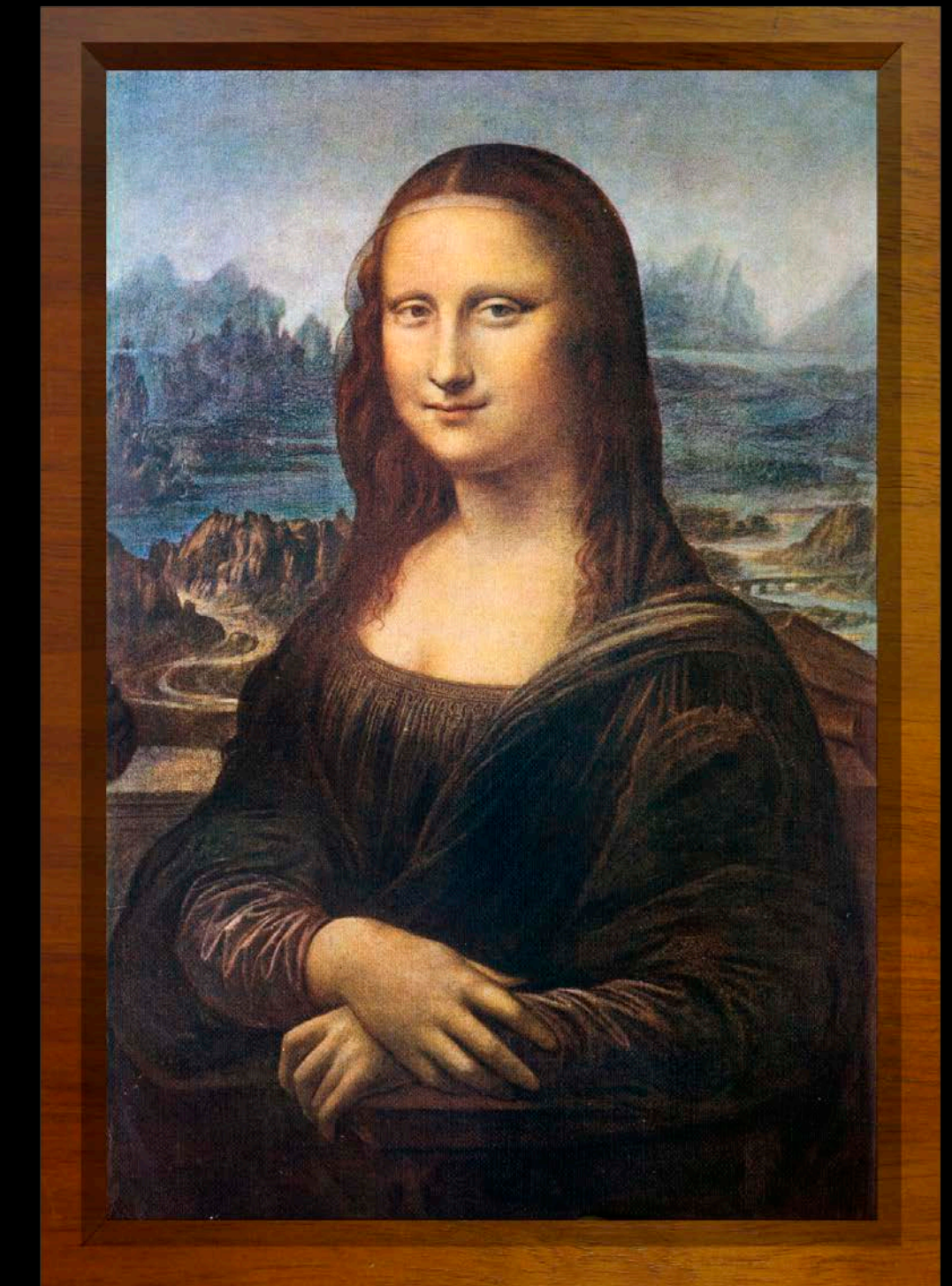


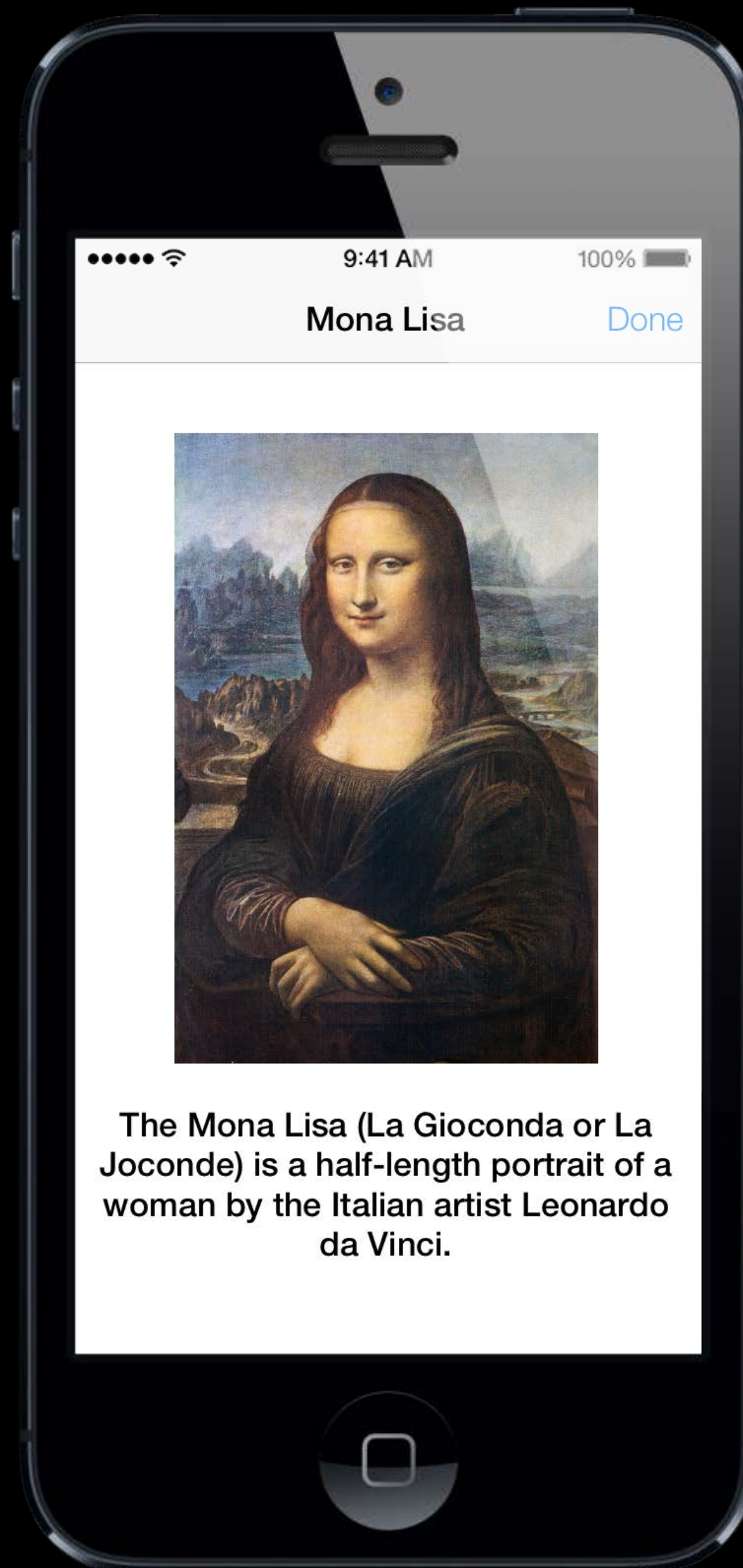
Welcome to our special exhibition at the Louvre Museum. Your tour guide, Mathieu, will meet you at the main entrance.

iBeacons

Ranging and micro-locations





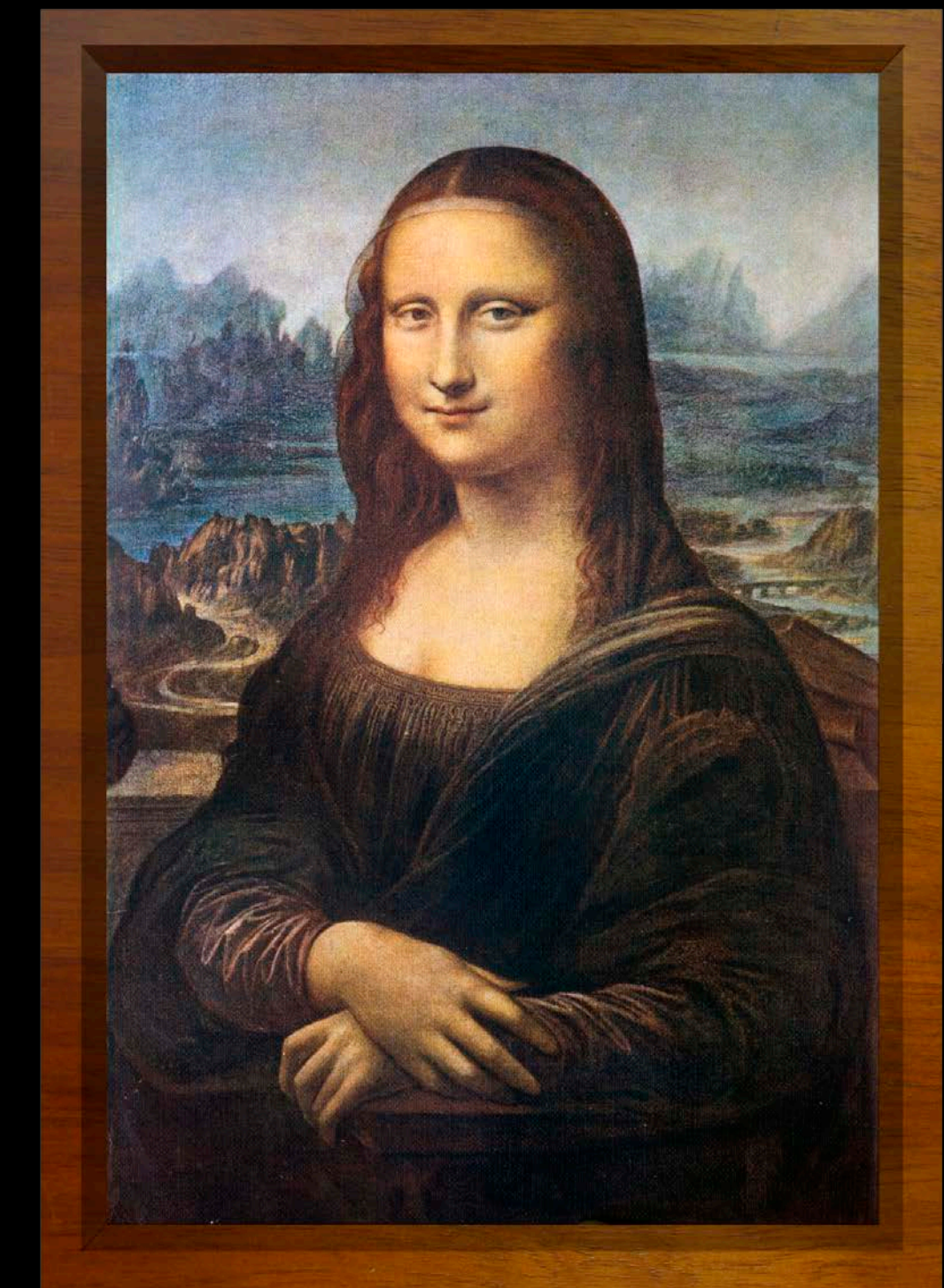


Mona Lisa

Done



The Mona Lisa (La Gioconda or La Joconde) is a half-length portrait of a woman by the Italian artist Leonardo da Vinci.









iBeacons



iBeacons



iBeacons



- Core Location monitors Bluetooth LE beacon signals



iBeacons



- Core Location monitors Bluetooth LE beacon signals
- Various hardware can be a beacon
 - Third-party Bluetooth LE emitters
 - iOS devices



iBeacons



- Core Location monitors Bluetooth LE beacon signals
- Various hardware can be a beacon
 - Third-party Bluetooth LE emitters
 - iOS devices
- Advantages
 - Accuracy and range awareness
 - One beacon ID can cover multiple locations



Demo

iBeacons region monitoring and ranging in practice

Yingfeng Su
Engineering Manager

Mathieu Roig
Engineer

Summary

- Key iOS technologies form the basis of great experiences in your apps



Summary

- Key iOS technologies form the basis of great experiences in your apps



- Use these technologies wisely and appropriately

Summary

- Key iOS technologies form the basis of great experiences in your apps



- Use these technologies wisely and appropriately
- Download the Apple Store App and follow along



More Information

Paul Marcos

App Services Evangelist
pmarcos@apple.com




Reference iOS App

Apple Store App
<http://itunes.apple.com/app/apple-store/id375380948>

Apple Developer Forums

<http://devforums.apple.com>

Related Sessions

What's New with Multitasking	Presidio Tuesday 2:00PM	
Integrating Passbook into your Ecosystem	Pacific Heights Wednesday 3:15PM	
What's New in Core Location	Presidio Thursday 11:30AM	

 WWDC2013