

Comcast Research Readout

Field Service Reimagined
(research, design, build support)

2015-2018+





E L I M I N A T I N G T H E F R U S T R A T I O N





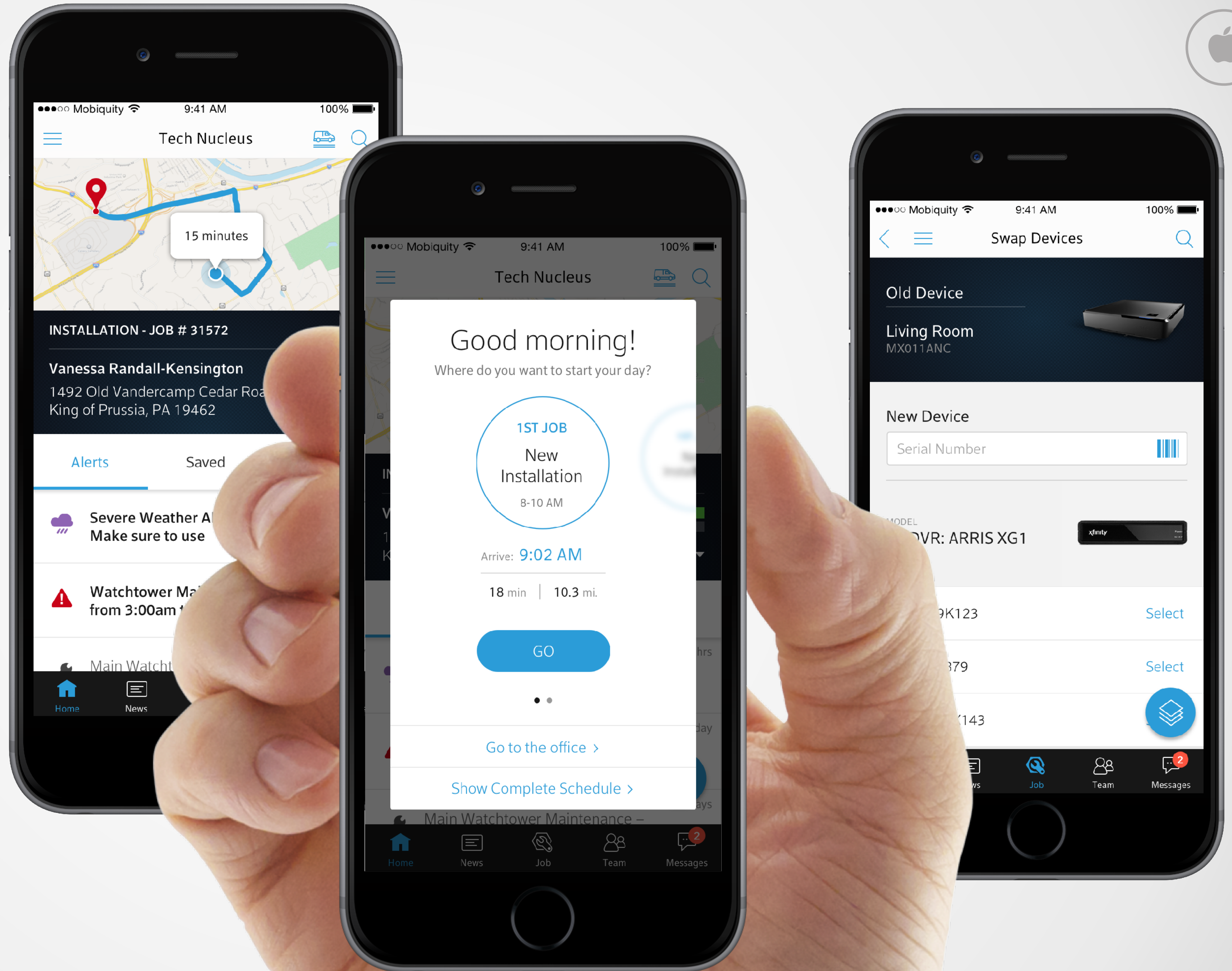
The Driver

Field Technician Experience

- ▶ Eliminate distractions
- ▶ Provide freedom to focus on customer issues
- ▶ Identify process changes

Solution Offerings Used

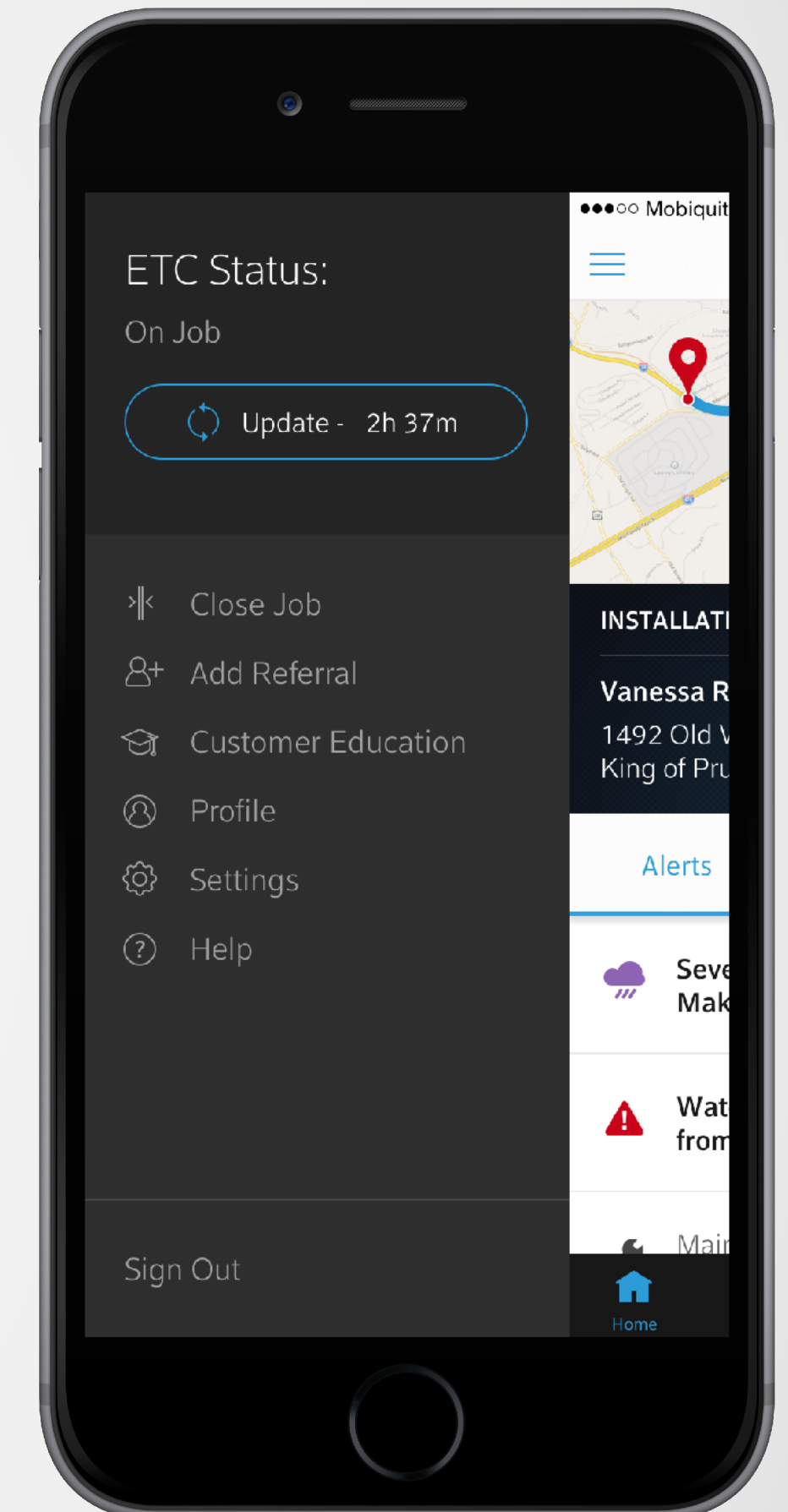
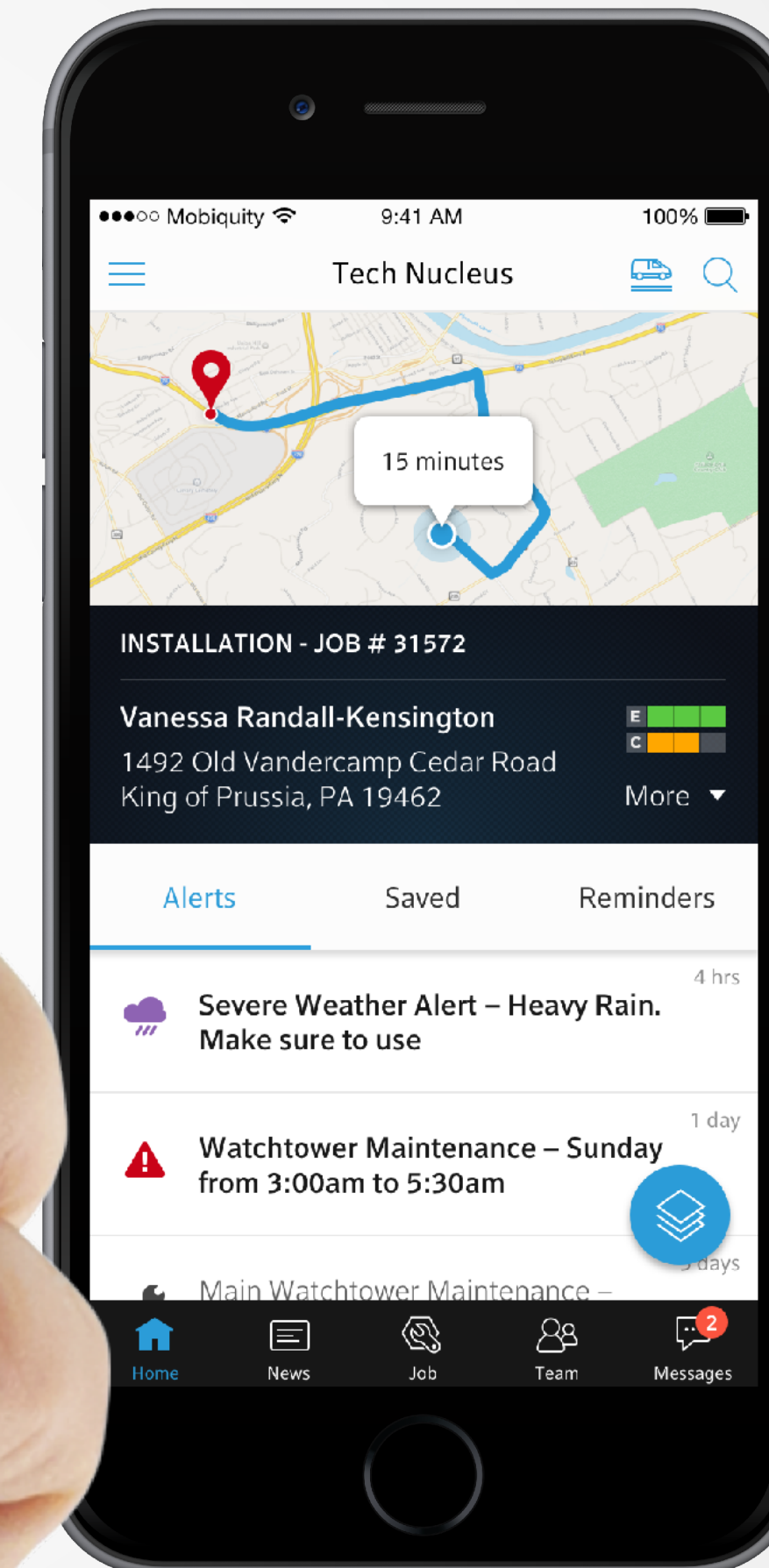
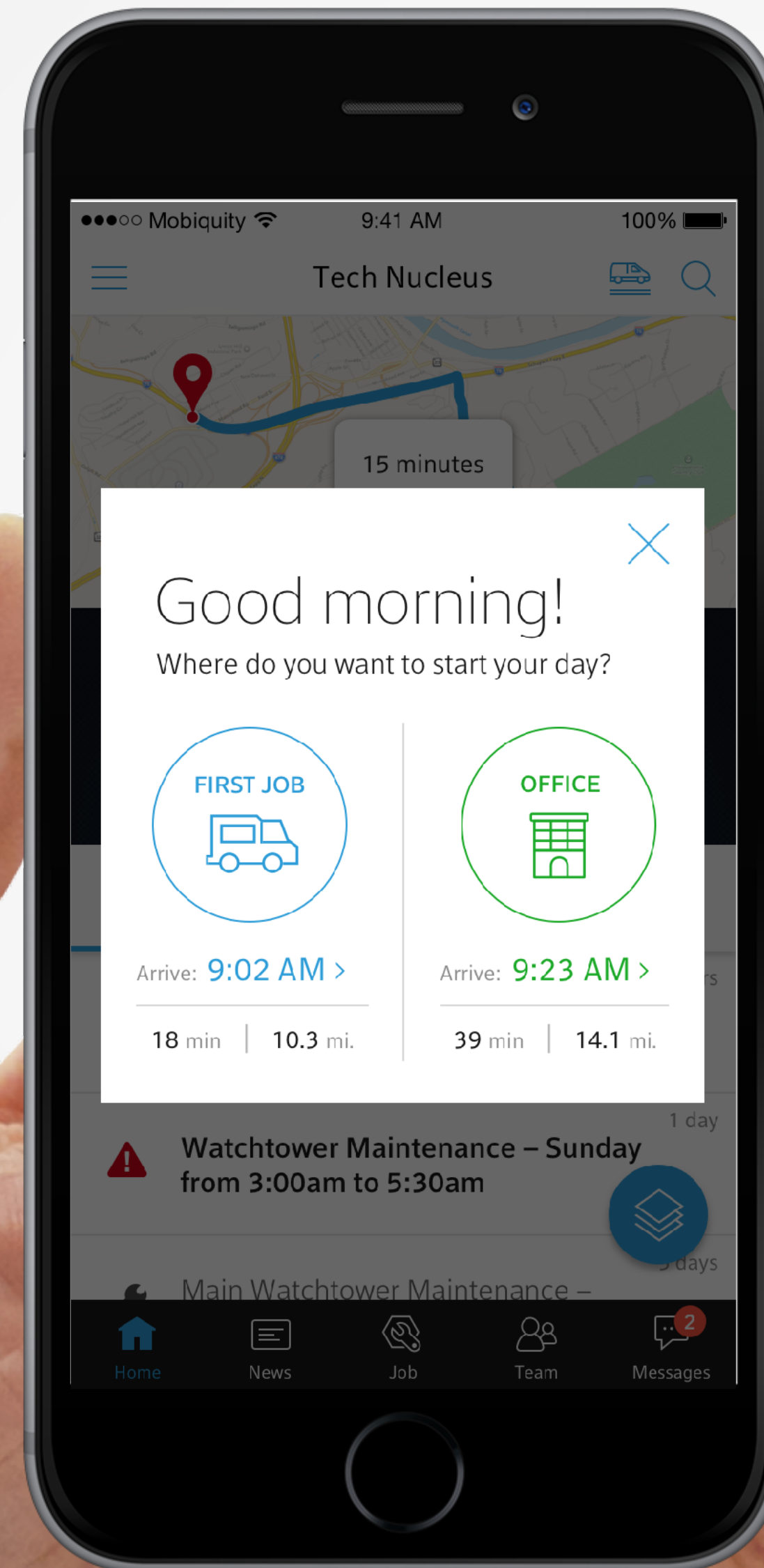
- ▶ Box 0
- ▶ Design & Build
- ▶ DBi
- ▶ Support
- ▶ Delta iQ



The Schedule

Optimized for Technicians

- ▶ Eliminate unnecessary technician interactions
- ▶ Provide clear turn-by-turn directions
- ▶ Improved job completion estimates lead to more accurate scheduling

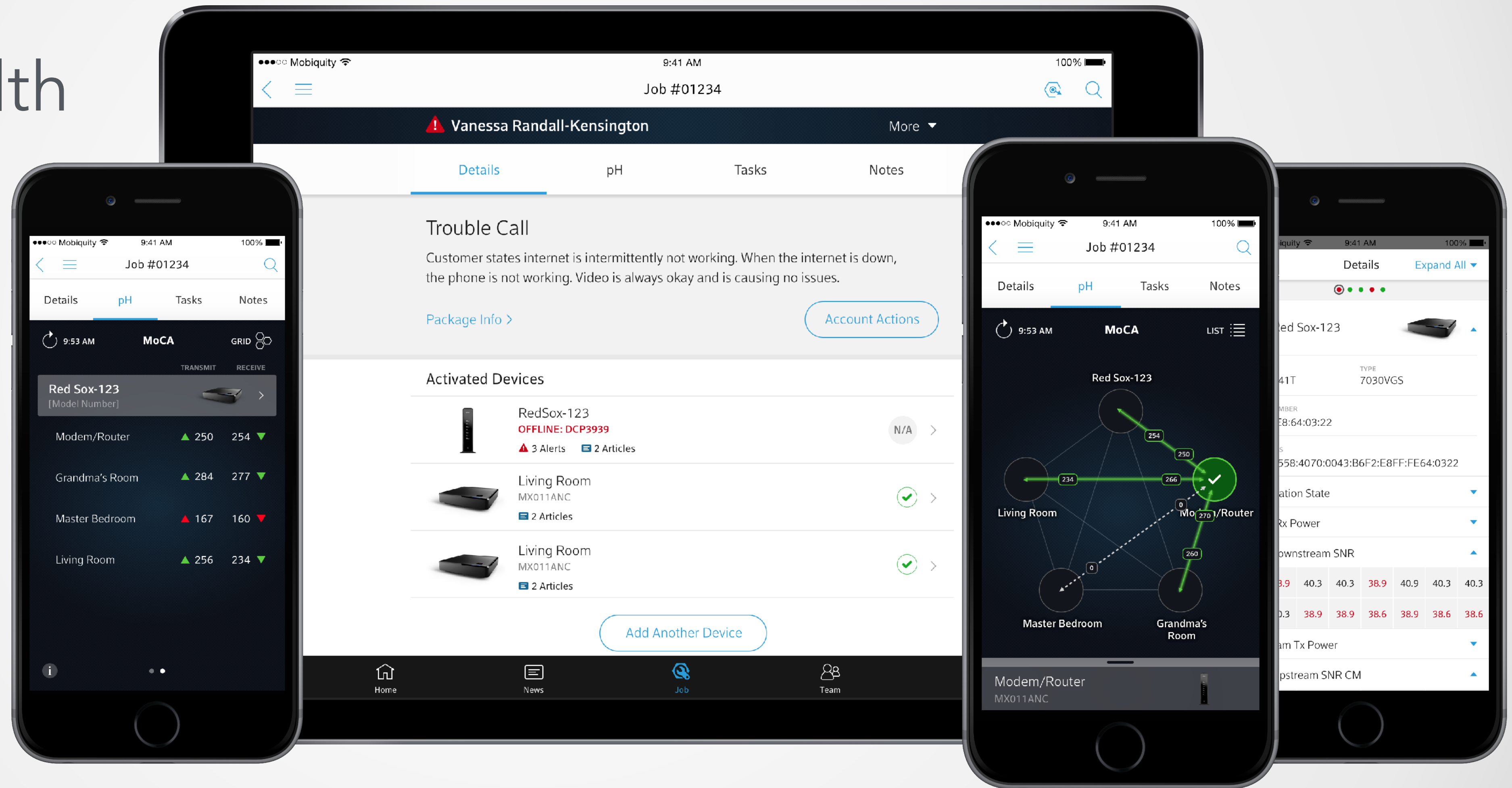




Network Health

Homes & Businesses

- ▶ High-level awareness
- ▶ Quickly tap to drill-down into details
- ▶ Integrated for device-level actions (restart, refresh, send hit, etc.)

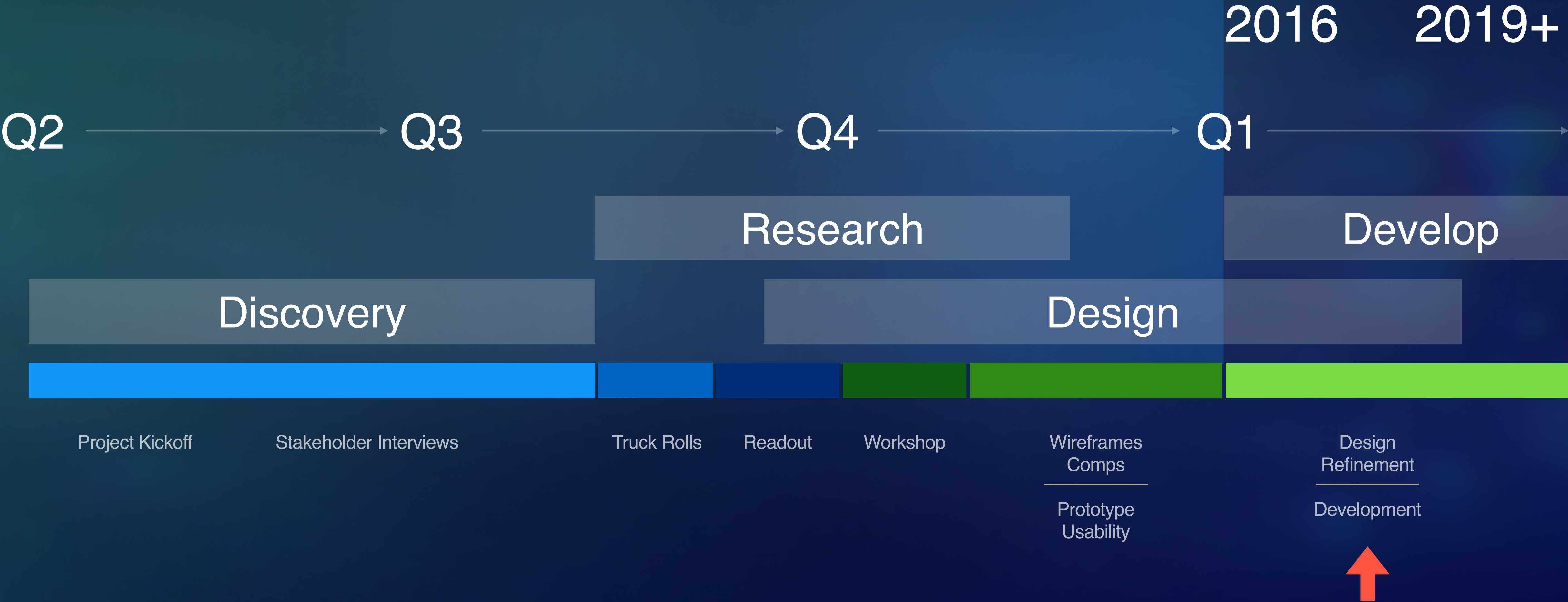




Tech Nucleus

Research and User Experience Design

TIMELINE



THE WHAT: PRODUCT OVERVIEW

	WFA	Premise Health	Triage	Analytics & Content
MVP	<ul style="list-style-type: none">• Job Statuses• Customer Details• GeoFencing• Job Allotment• Task Messaging• EPC Product Mapping• Inventory Management• GPS Routing• ETA	<ul style="list-style-type: none">• DOCSIS/ Rolling History• MoCA• Node/WatchTower• Alerts• Outages• Visualization	<ul style="list-style-type: none">• Device Hits/Queues• Firmware Update – X1• Notes (read)• Customer History / Timeline• Task Tracking• Wrap-Up• Customer Ed/G’Bye	<ul style="list-style-type: none">• Product Content Authoring• Alerts & News• Logging• Security/Identity• User Roles• NT Login mapping• Supervisor View• Production Support
Future	<ul style="list-style-type: none">• Change Pending Order• Up-sell• Tech-to-Tech Inventory Swap• XH DocuSign• Activation (CHSI/CDV)• Activation - XH• Proactive Device Swap/EOL	<ul style="list-style-type: none">• XH Device Diagnostics• Wifi Analyzer• COAM Device Wifi Health• X1 Known Issue• PowerCloud• Spectra	<ul style="list-style-type: none">• LOB Repair• Business Services Repair• Drop Bury• RTM• Notes – Write• Audible Customer History• FTTP Support	<ul style="list-style-type: none">• Time In Motion• XH License Access• Maintenance View• Tech Forum

WHY WE'RE DOING THIS...

Stakeholder Interviews

Stakeholder Interviews

10

visits to Comcast
corporate

1

visit to
call center

+19_{HRS}

of audio and
video

8

in-person
interviews

17

phone
interviews

4

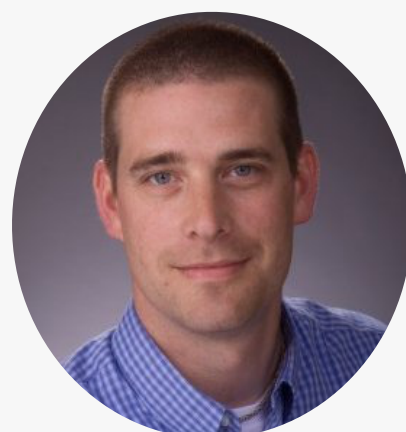
follow-up
interviews

6

demos &
showcases

31

Events

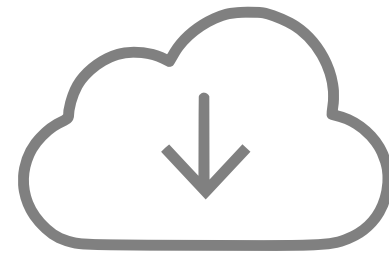


Work Orders: Issues



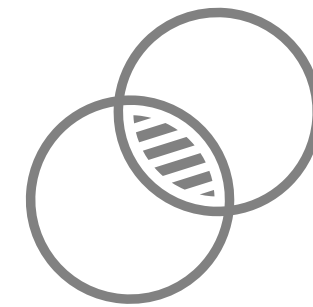
Job Overview

Disorganized details
Cryptic rate codes
Inaccuracy



Cloud Notes

Lack of context
No historical
perspective



Biller Details

No transparency
Lack of integration
Uneducated customer



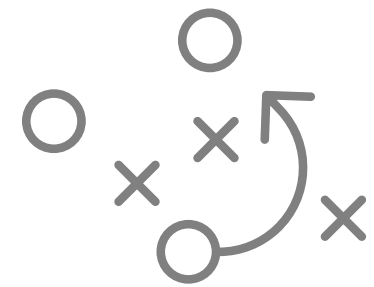
Support Calls

Frequent need to call
for assistance
Techs not empowered



Chad Carloss
on unified notes

Work Orders: Ideas



Front Line
Offense/Defense

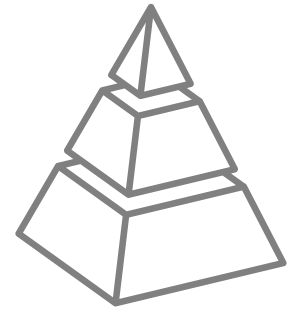
First impressions
Confidence
Accurate inventory



Measure

Better estimates
Improved ETAs
Optimized schedule

Communications: Issues



Lack of Structure

Communications lack categorization
Information priority



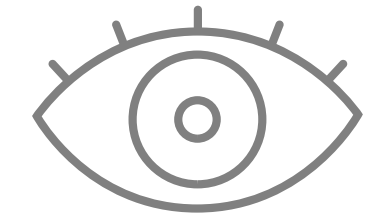
Improper Cadence

Too frequent
Too Many
Irrelevant



No Context

Article discoverability
Un-targeted communications
Unreliable results



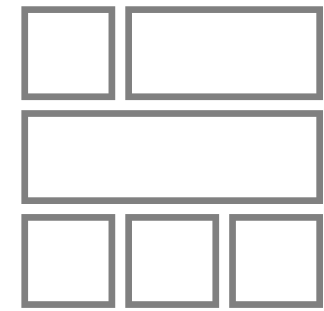
Consumption

Medium doesn't match audience
Lots of content / Little time
No accountability



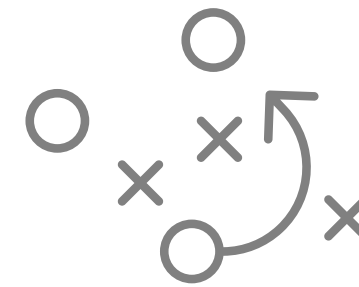
Bruce Byorkman
on Tech Talk cadence

Communications: Ideas



Smart Content

Contextual
Organization
Classification
Crowd-sourcing
Media



Front Line
Offense/Defense

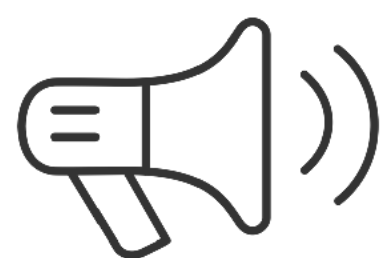
Less screen time
Informed assessment



Measure

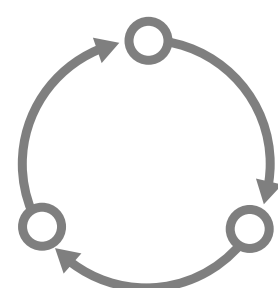
Auditing
Compliance

Transparency: Issues



Awareness

Arrival
Techs near me
Job/tech status
Inventory availability



Continuity

Job information
Problem-solving
Process



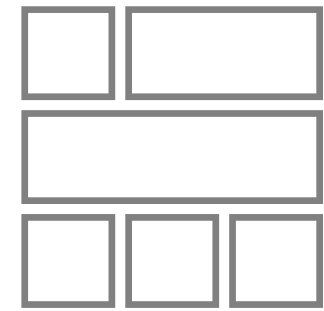
Summary

What was done
Sign off
Education



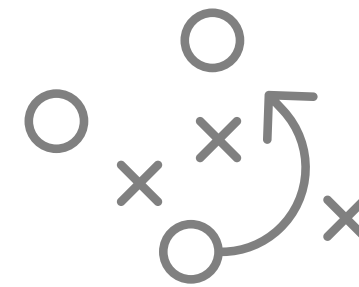
Heather McLay
on inventory issues

Transparency: Ideas



Smart Content

Article ratings
Proximity-based
inventory
Tech map
Smarter dispatch



Front Line Offense/Defense

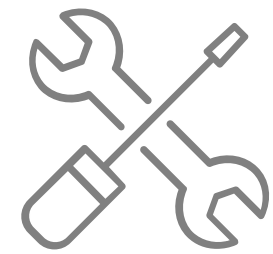
Complete Notes
Customer temp
Triggers
Leveraging sat. scores
Burnout mitigation



Lift

Leaderboards
Yearly roll-ups
Badges
Awards

Education: Issues



Tech

Classroom training
Message cadence
Localized
Organization/search



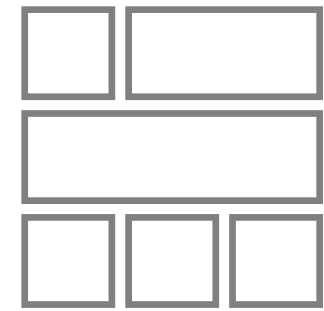
Customer

Too generalized
Self-directed
Feature-set awareness



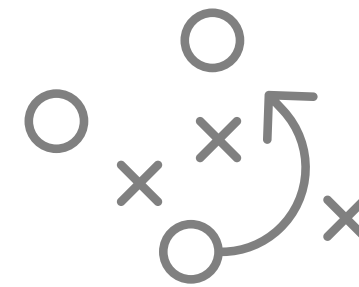
Chad Carloss
on customer education

Education: Ideas



Smart Content

Contextual scripts
Relevant articles
Intra-day training



Front Line Offense/Defense

Push, not pull
Multi-channel
Personalized



Measure

Triggers
Auditing
Compliance

Truck Rolls

By the Numbers

84
Truck Rolls

3
Divisions

70+
Hours of Video

8
Researchers

8
Regions

1000's
of Notes

20
Man Days

9
Locations

100's
of Photos

Context Matters





CUSTOMER CALL

Request for Service

A customer calls into Comcast to report trouble with a subscribed service. After an unsuccessful attempt at resolution.

SCHEDULE

Receiving a Job

The technician will receive a new job notification through their mobile device using the "TechNet" application. Upon receiving, the tech will accept the job, reply with an ETA and then head out to the customer address.



STARTING THE DAY

Most technicians will begin their day by rolling out to headquarters to touch base with a supervisor, attend meetings and/or to restock their service vehicle with all needed equipment to complete repairs and make installations.



RESEARCH JOB



TECH AT HOME

Prepping for the Day

Technicians spend time organizing, cleaning and maintaining service vehicles for the day ahead. During this time the tech may also review educational materials, read emails about SOP and receive their initial work assignments for the day.

DIAGNOSTICS

Network Inspection

After concluding initial customer communications, technician thoroughly inspects the job site making note of any obvious errors and/or hazards contained within. Technician then begins testing hardware signal strengths.



RESOLVE ISSUE

Doing the Job

The tech will test signal from the tap, double check wiring integrity and configuration for best usage protocols. Tech will replace any old or faulty equipment/connections and upon completion run additional tests to ensure optimum performance.



FOLLOW UP

How Did We Do?

When the job is closed an automated call is placed to the customer prompting them to partake in a brief customer survey to rate satisfaction. The user gives the technician and Comcast high marks and hang up.

NEXT JOB

On the Road Again

Having received a new work assignment, the technician will accept the work, sent an ETA and will then head out to the next job.



CLOSE JOB

Mission Accomplished

Tech returns to their service vehicle, records any items of interest about the completed work order and then confidently close the assigned job. This action will queue up the tech's next assignment job assignment.

WRAP UP

Ensuring Customer Satisfaction

With the service issues successfully resolved the tech would now take time to perform any needed customer education; this could include customer walkthroughs on equipment usage and/or best practices for care.



Observations & Pain Points

SCHEDULE

- ★ There is uncertainty in a tech's schedule (install/trouble, un/assign)
- ★ Tech requests changes via DOJ (no shows, unprepared, timing)
- ★ Schedule visibility varies by region (little as 30 mins prior)
- ★ Pressure pool, unaccounted for jobs, create anxiety
- ★ Location-based assignment of jobs is inconsistent by dispatch
- ★ Skill-based assignment of jobs is inconsistent by dispatch
- ★ Proximity to first job does not account for morning routine
- ★ Ripple effects of poor ETA guesses affects all schedules
- ★ Responsiveness inconsistent in ETA interface (observed elsewhere)

Managing Stress

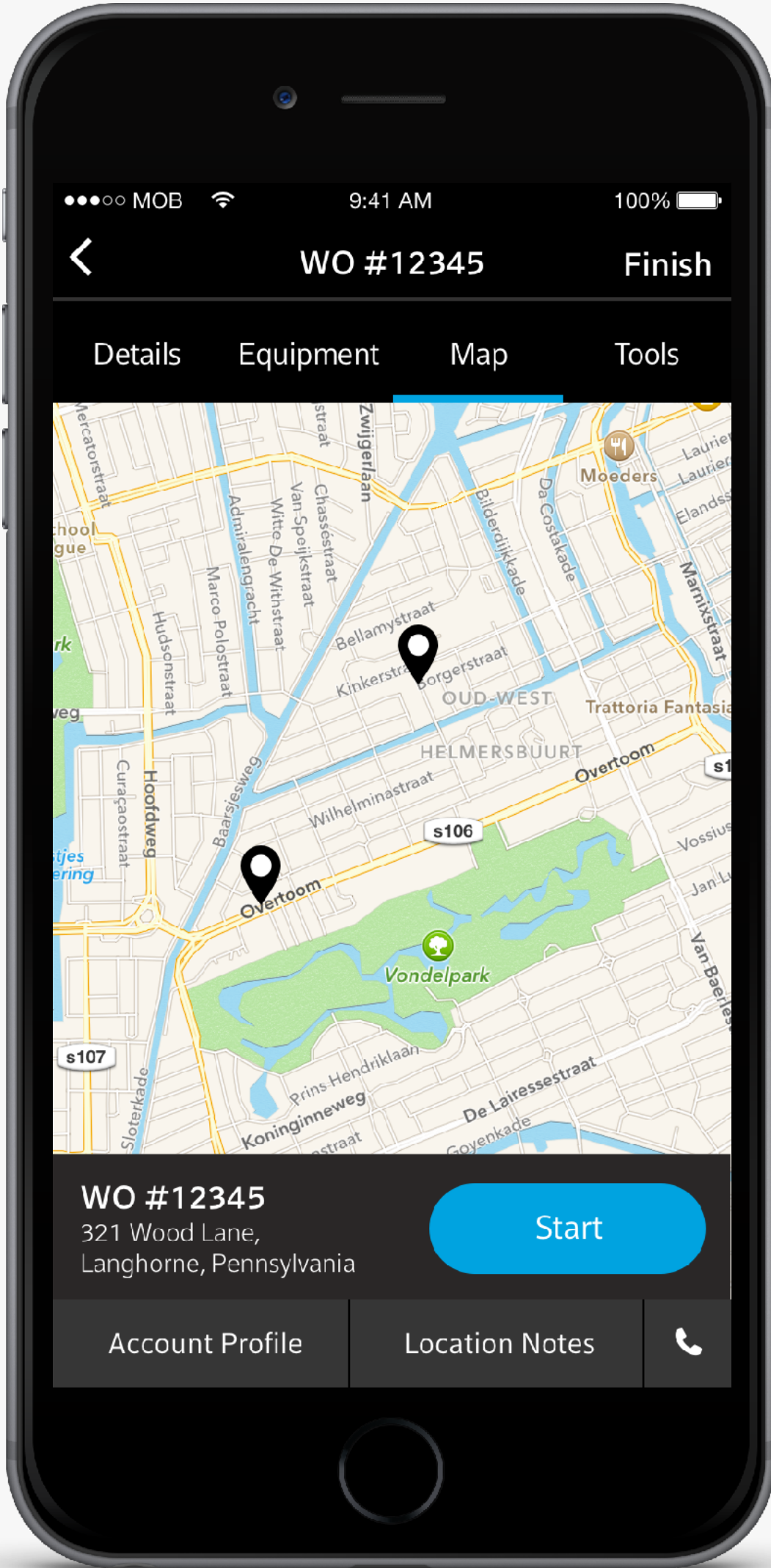
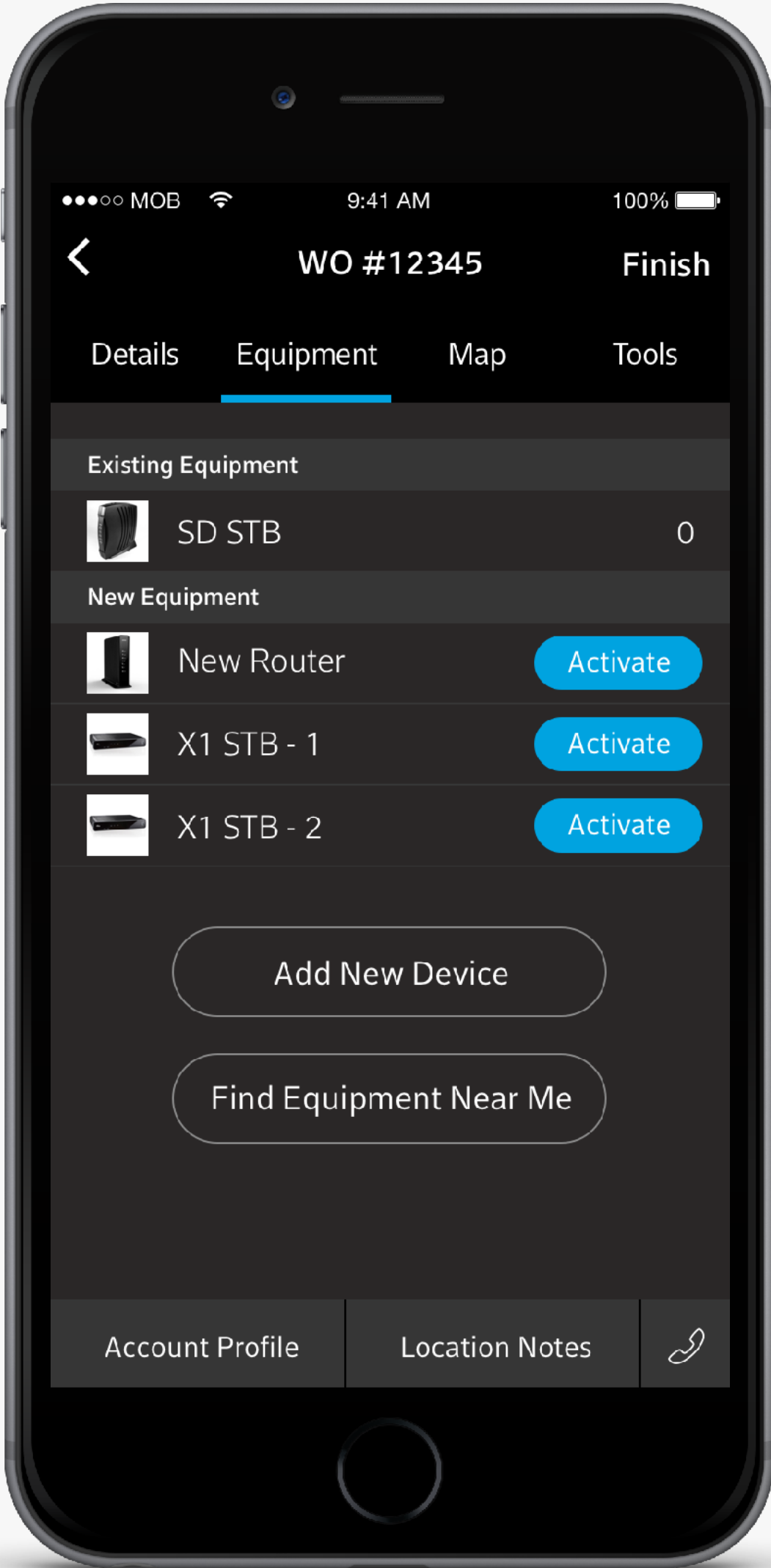
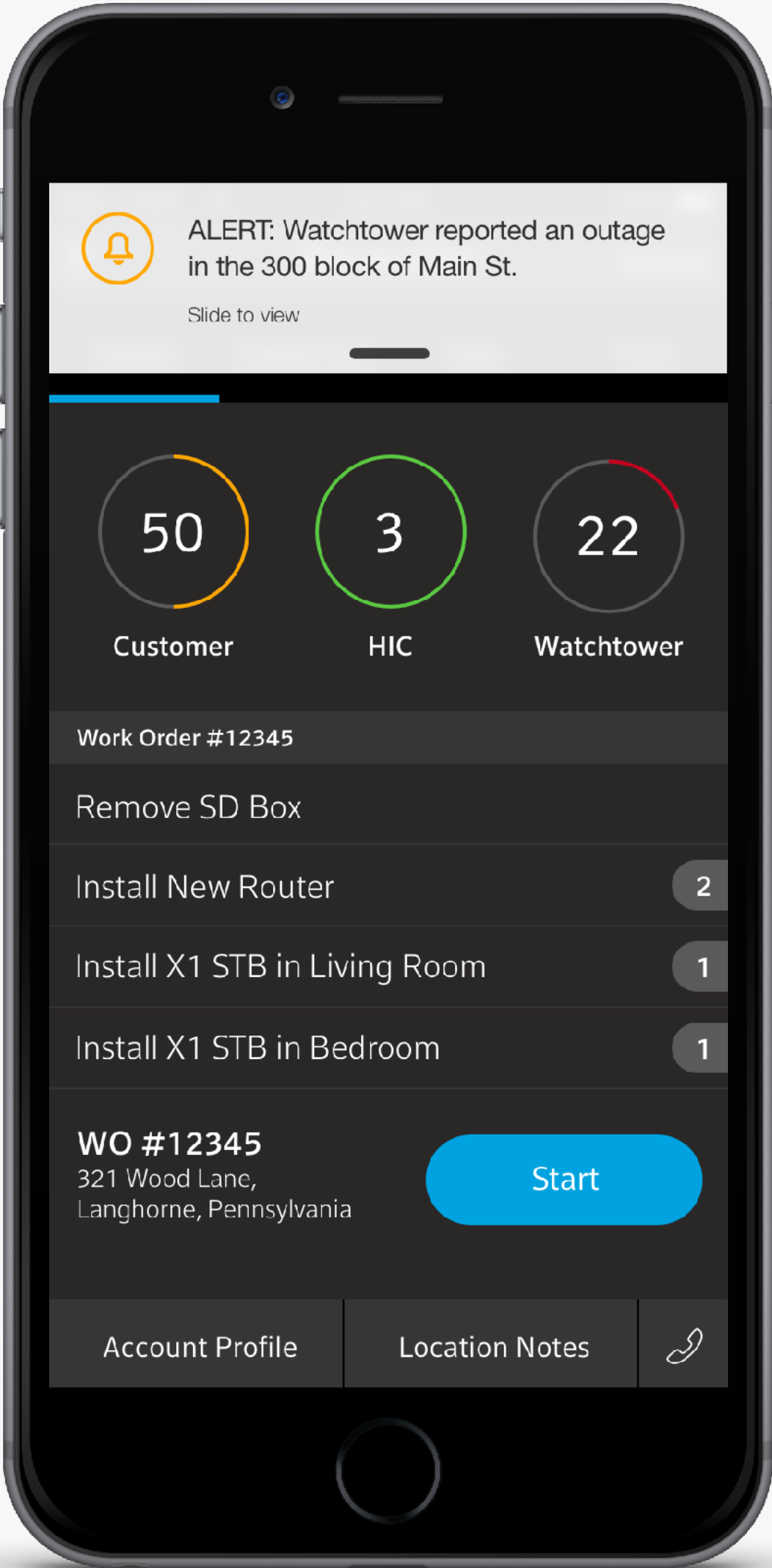
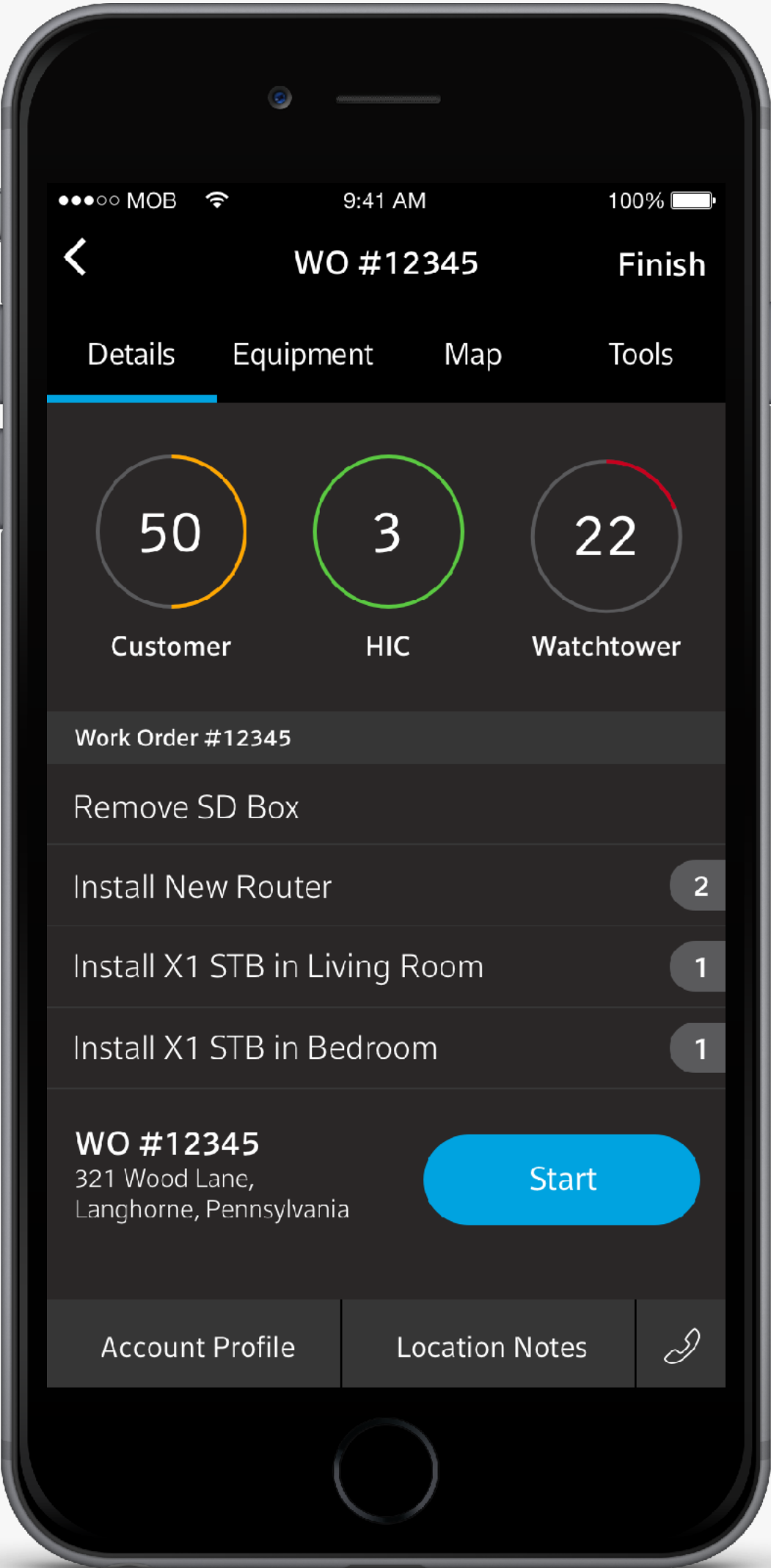
SCHEDULE



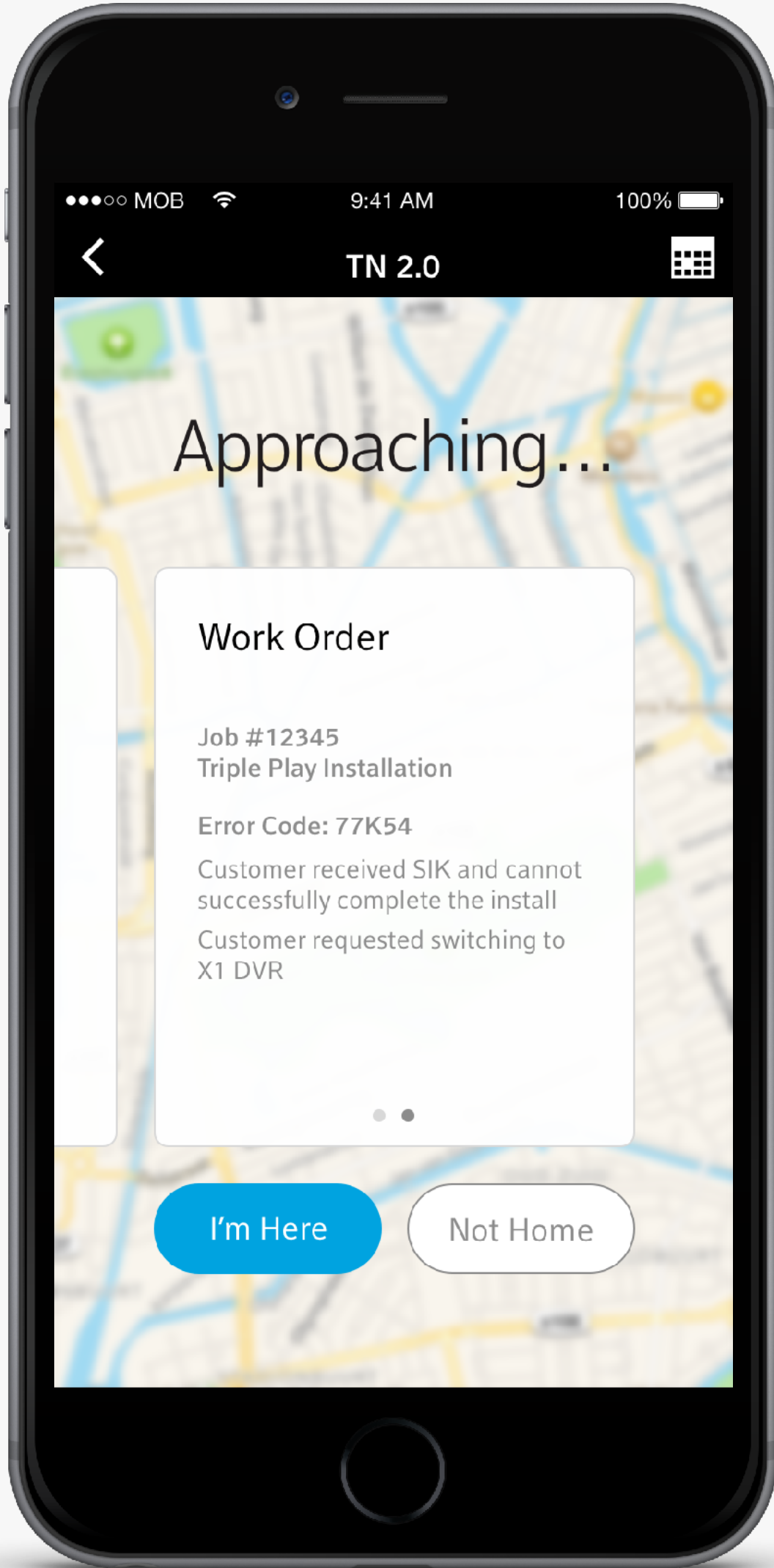
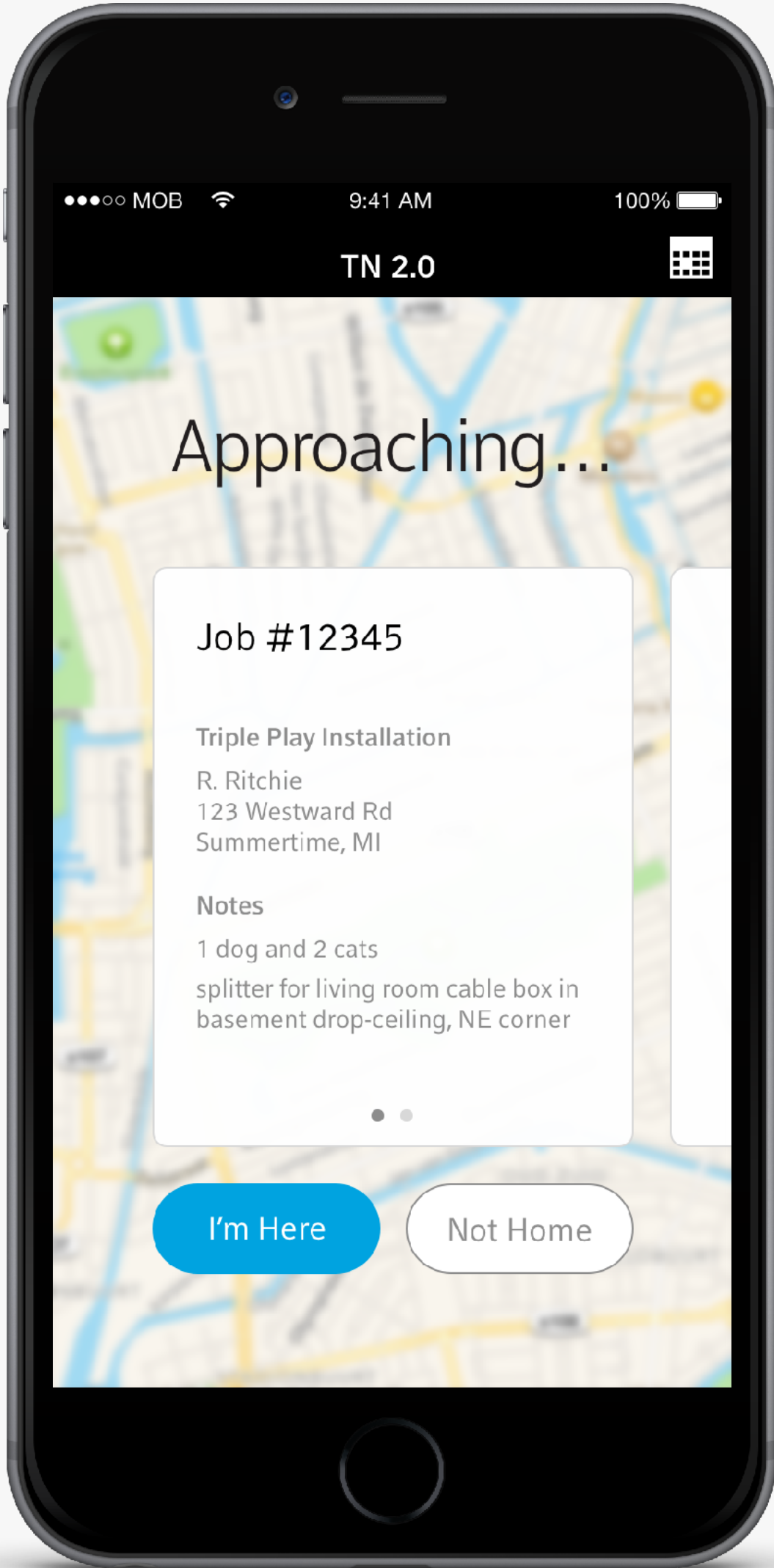
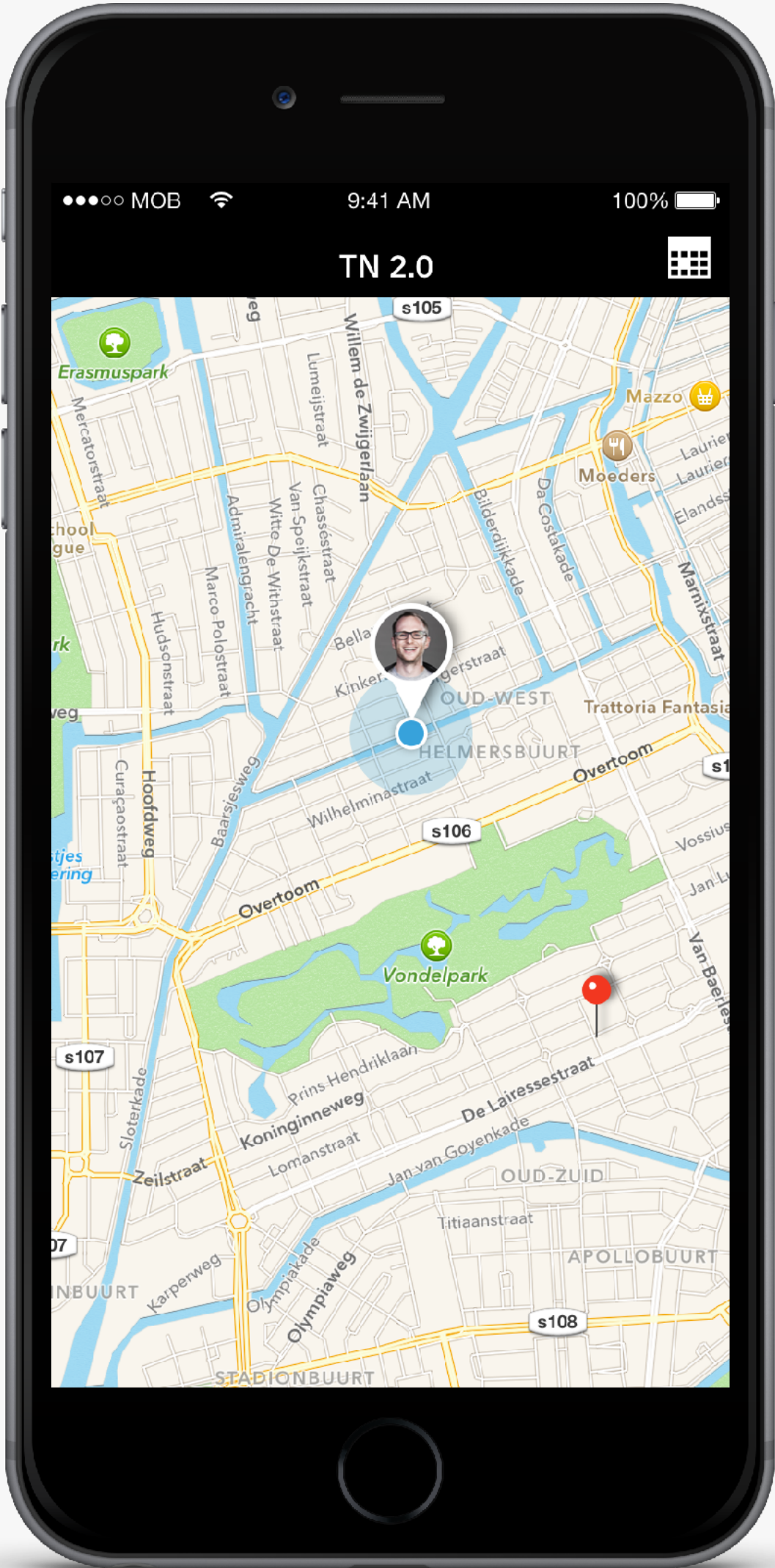
1:57

Concepts

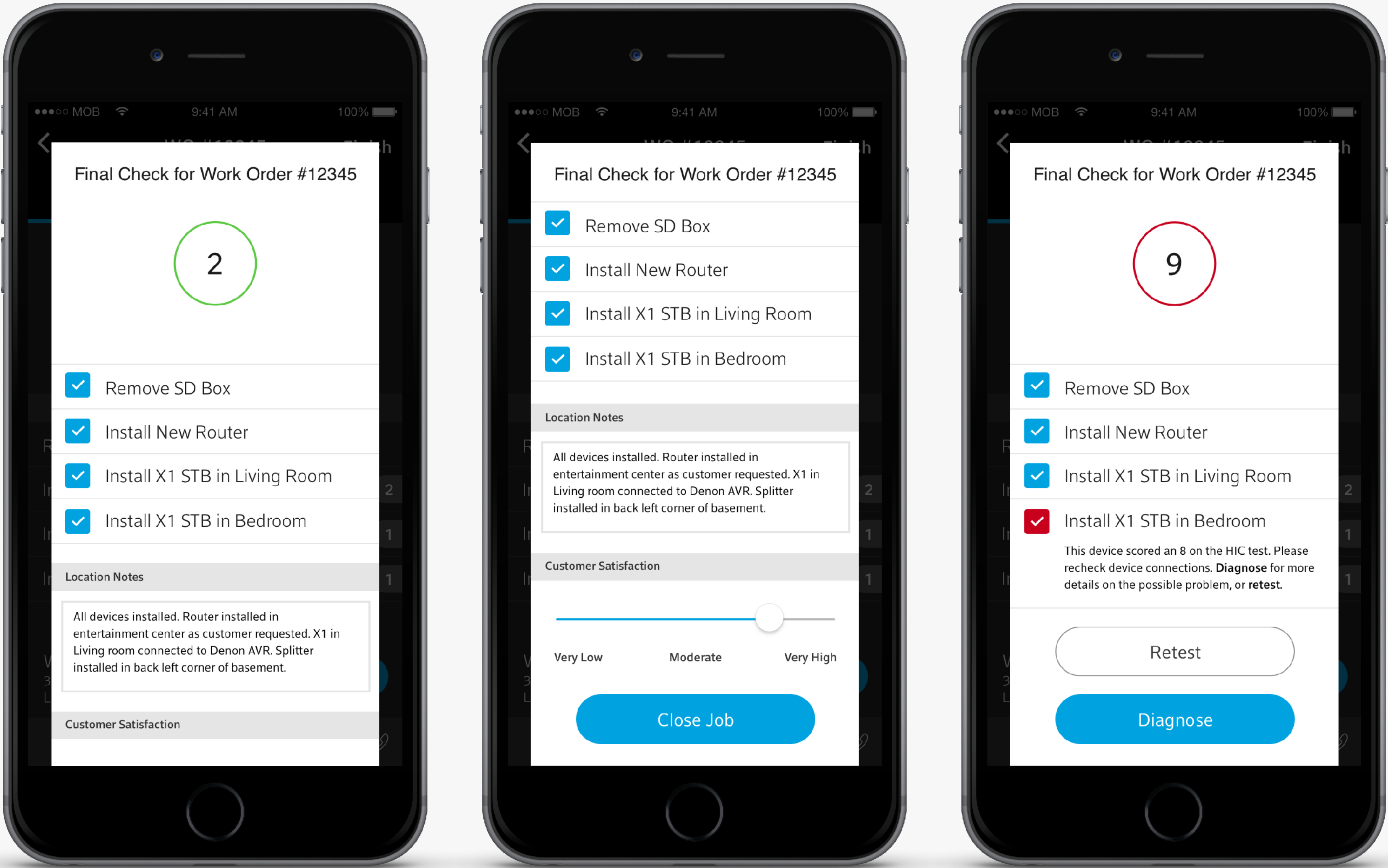
Early Comps: Work Orders



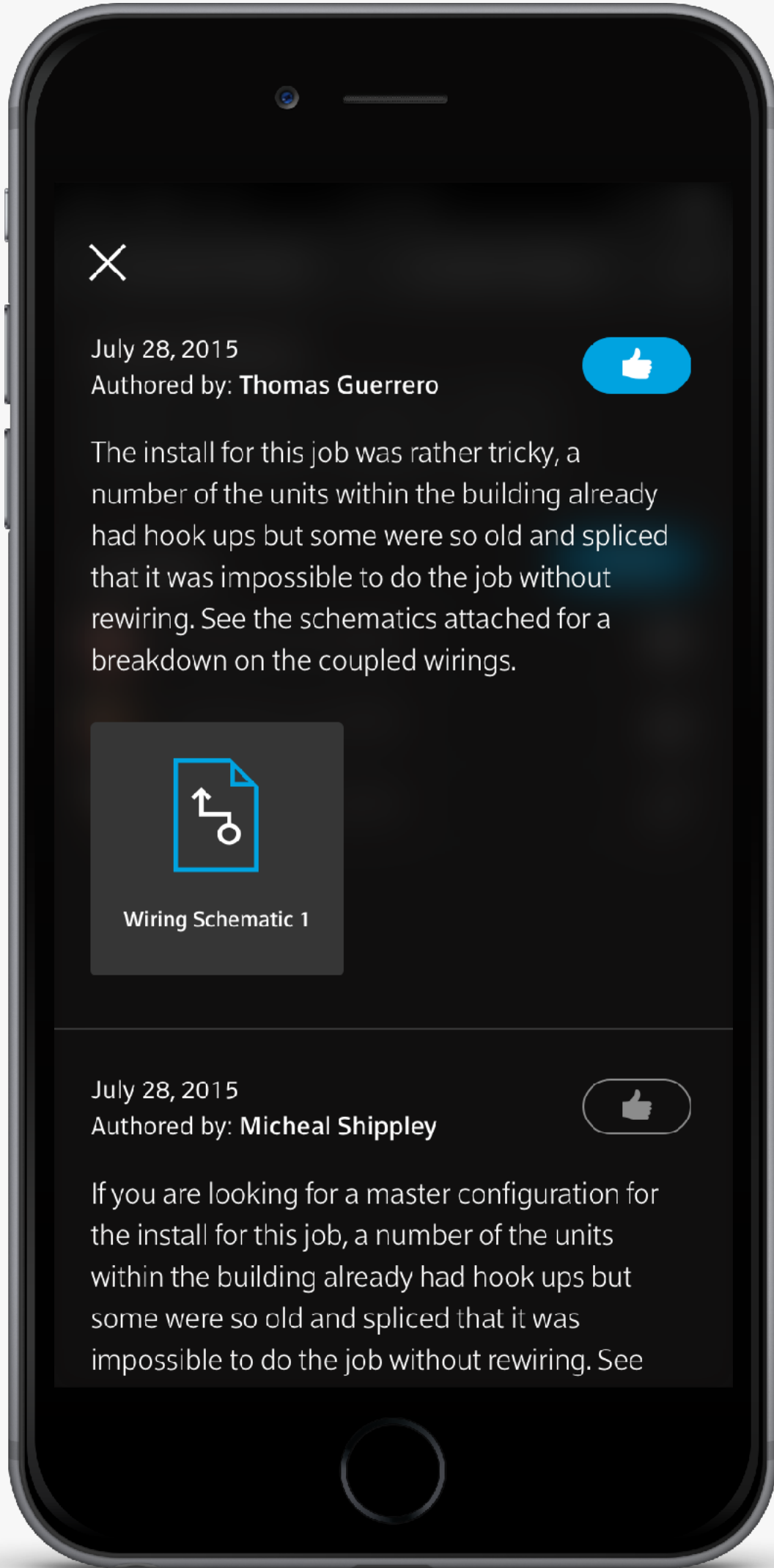
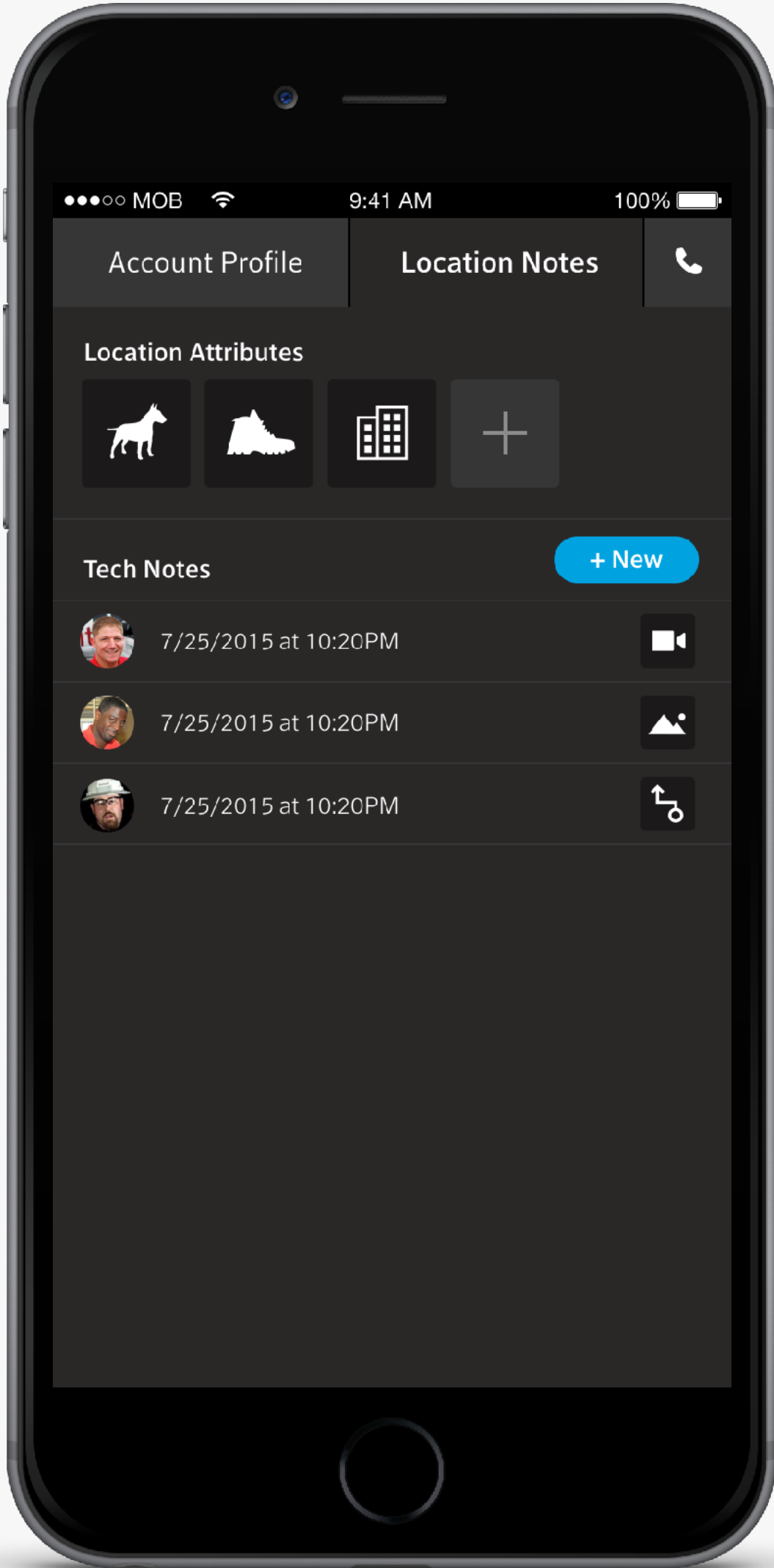
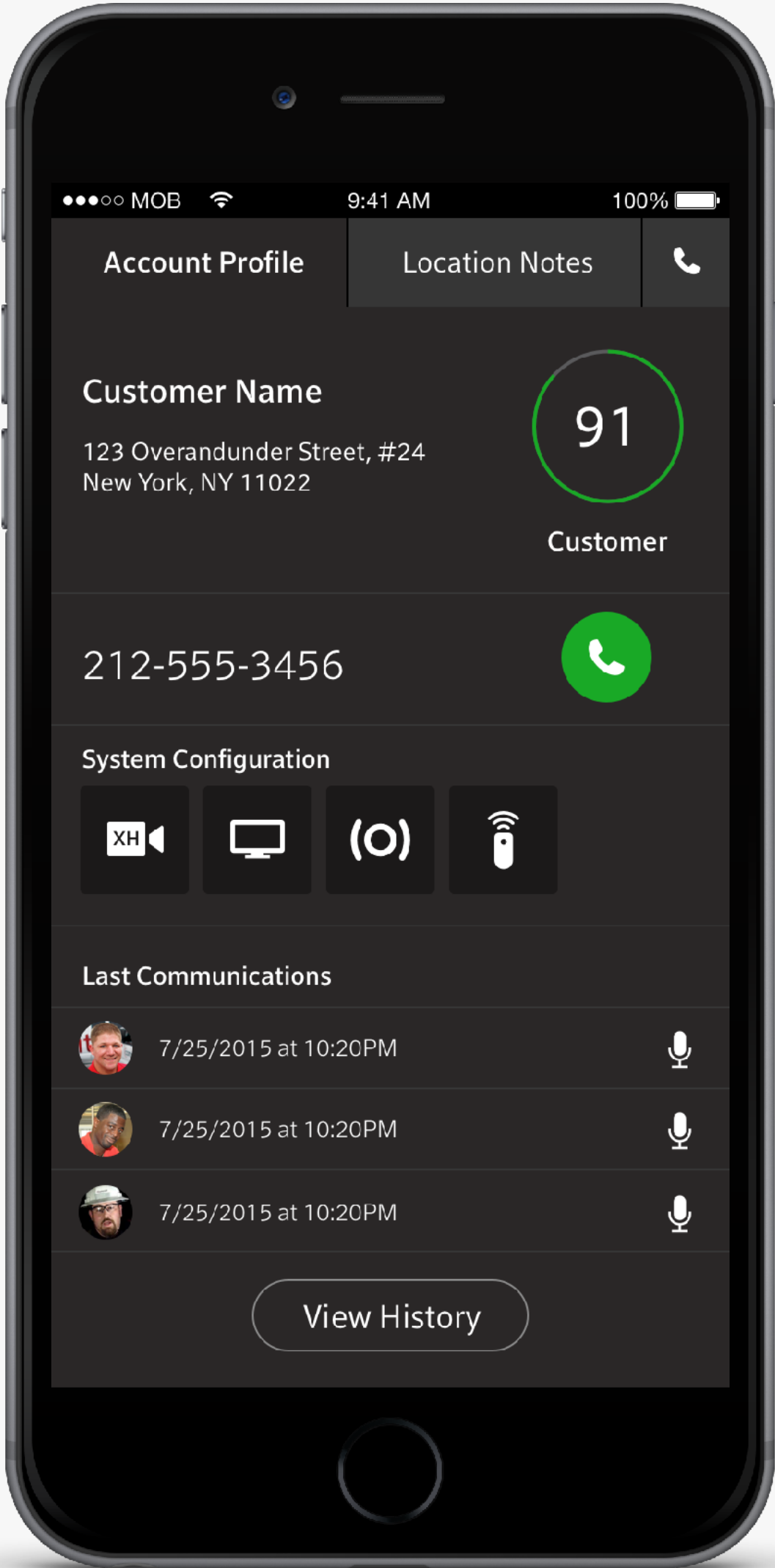
Early Comps: Arrival



Early Comps: Wrap-up



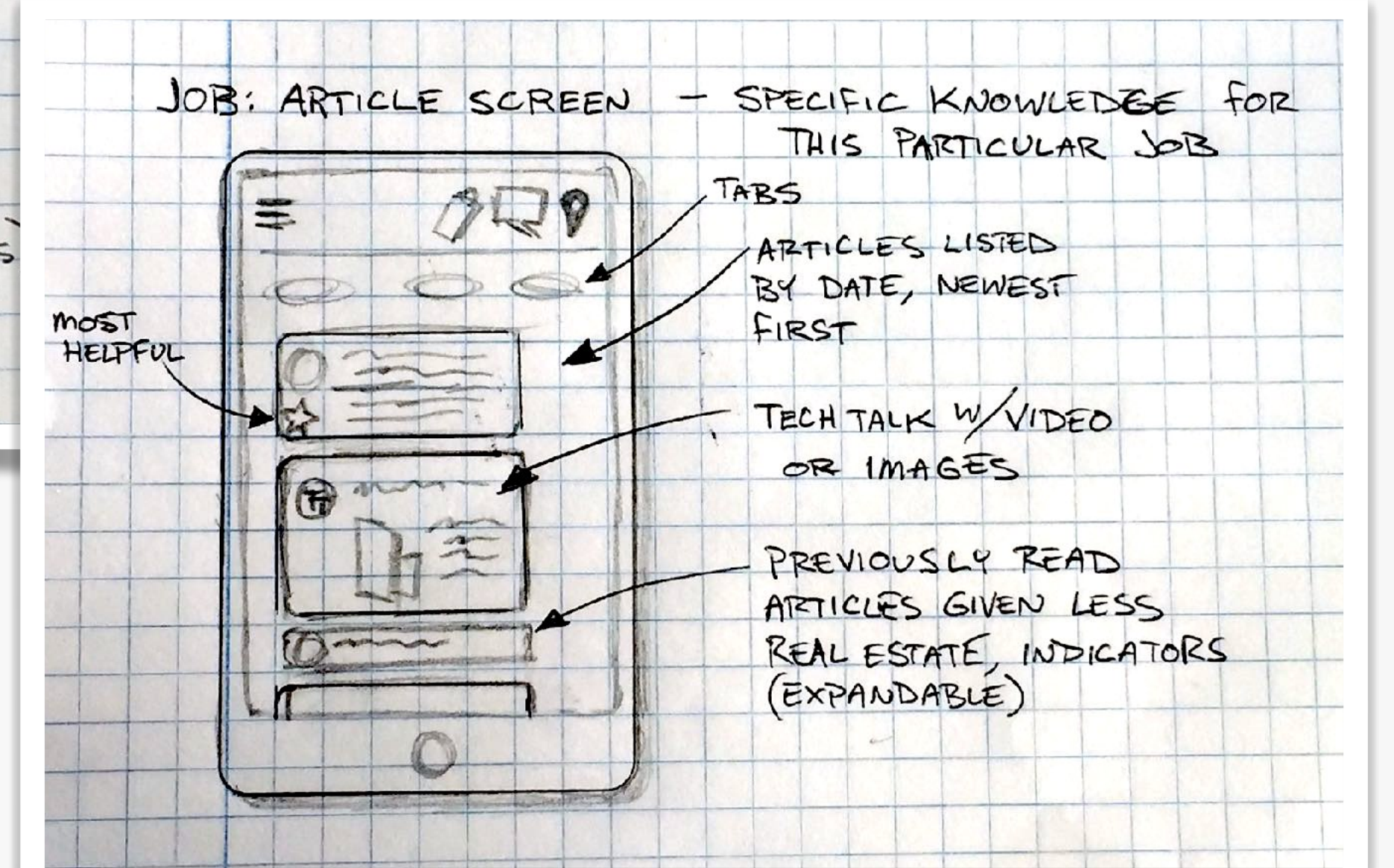
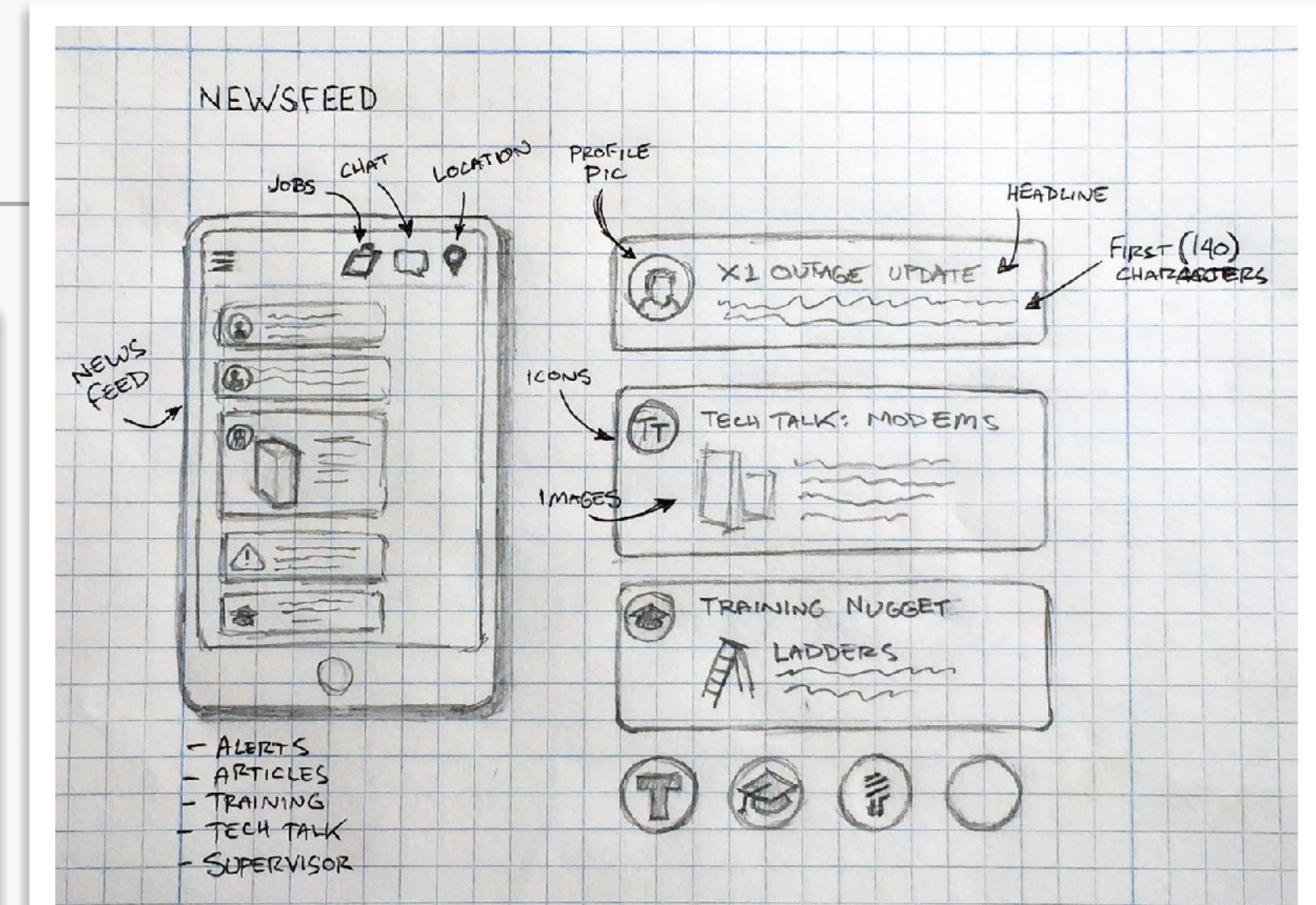
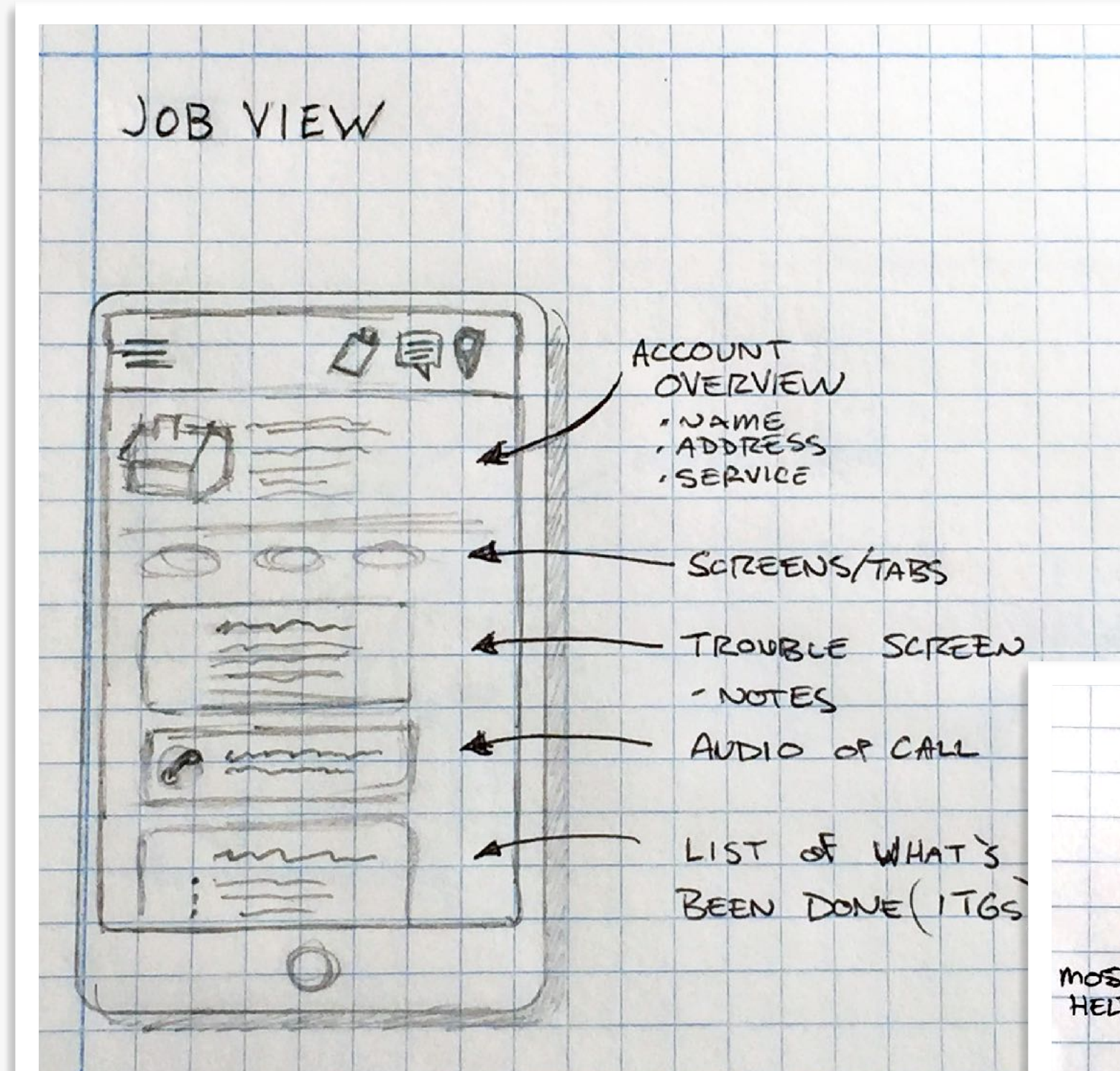
Early Comps: Notes



Smart Communications

COMMUNICATION IN CONTEXT

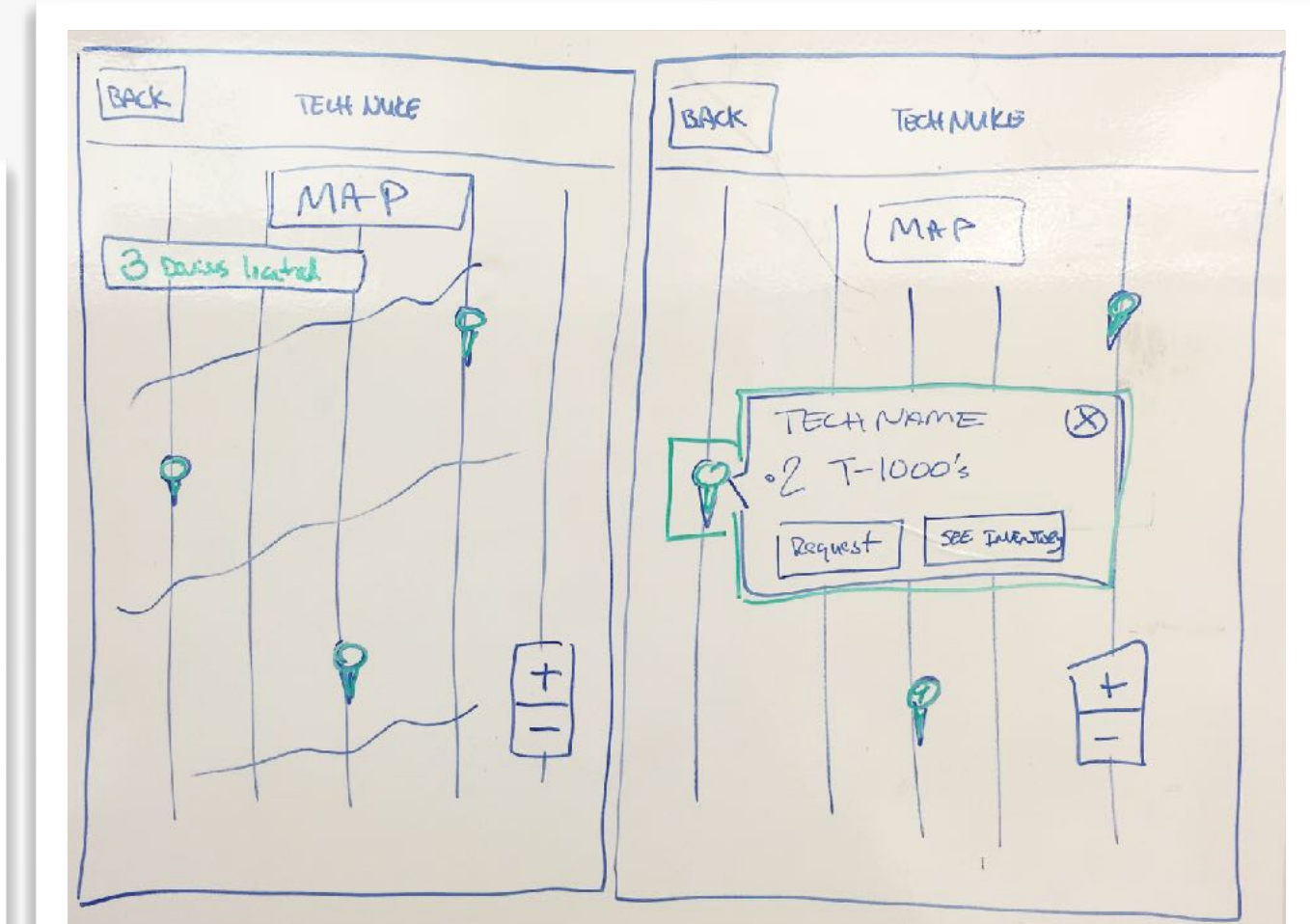
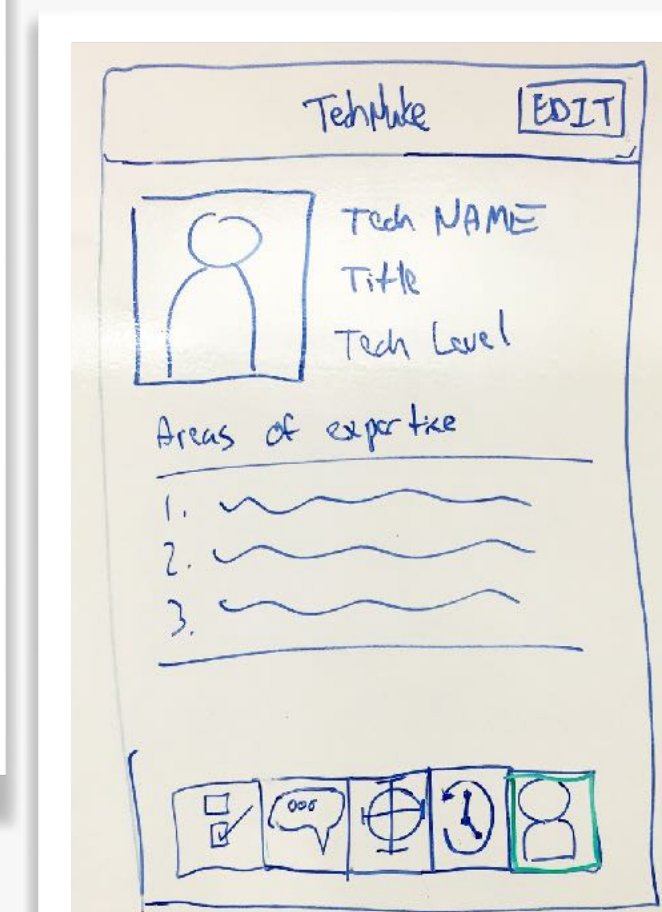
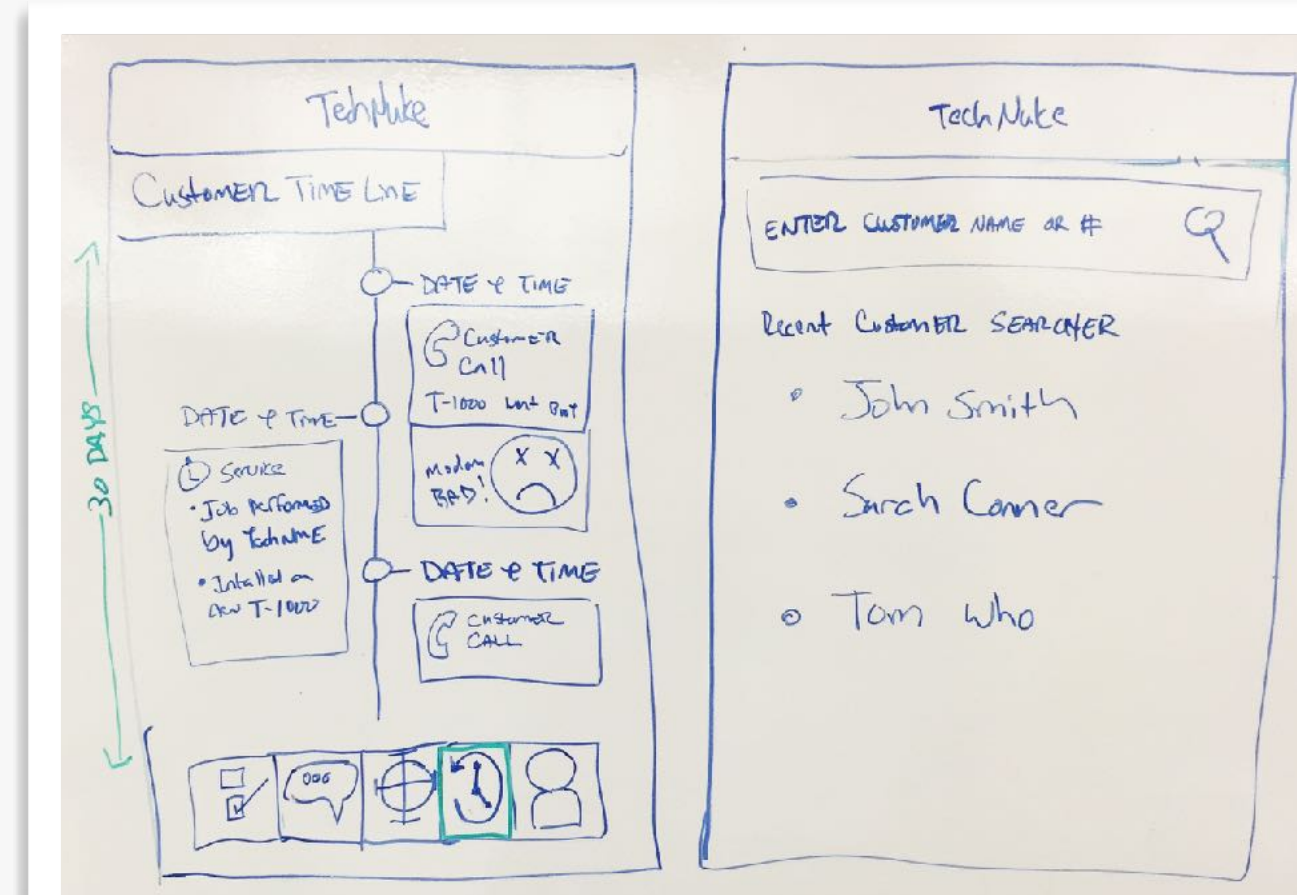
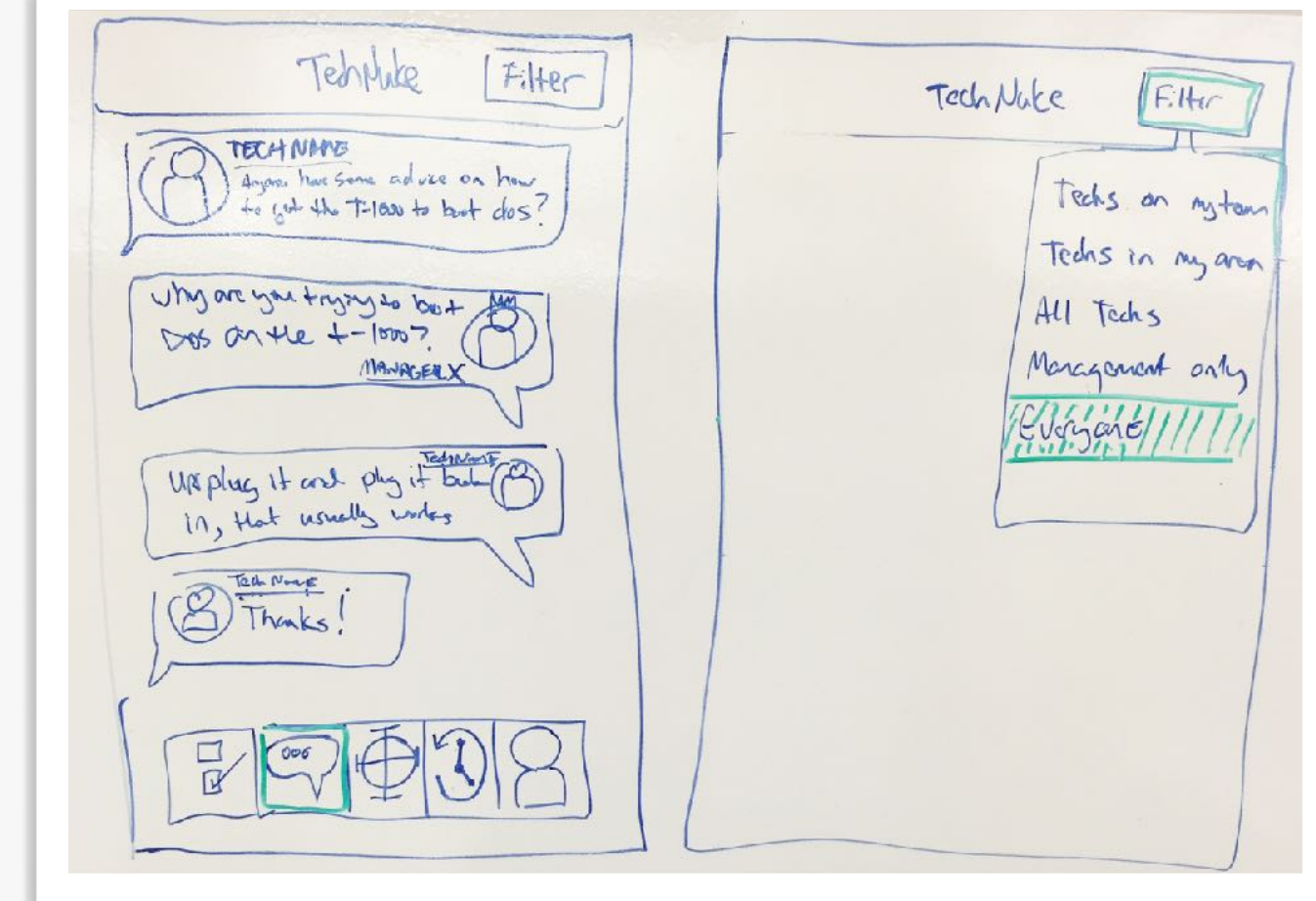
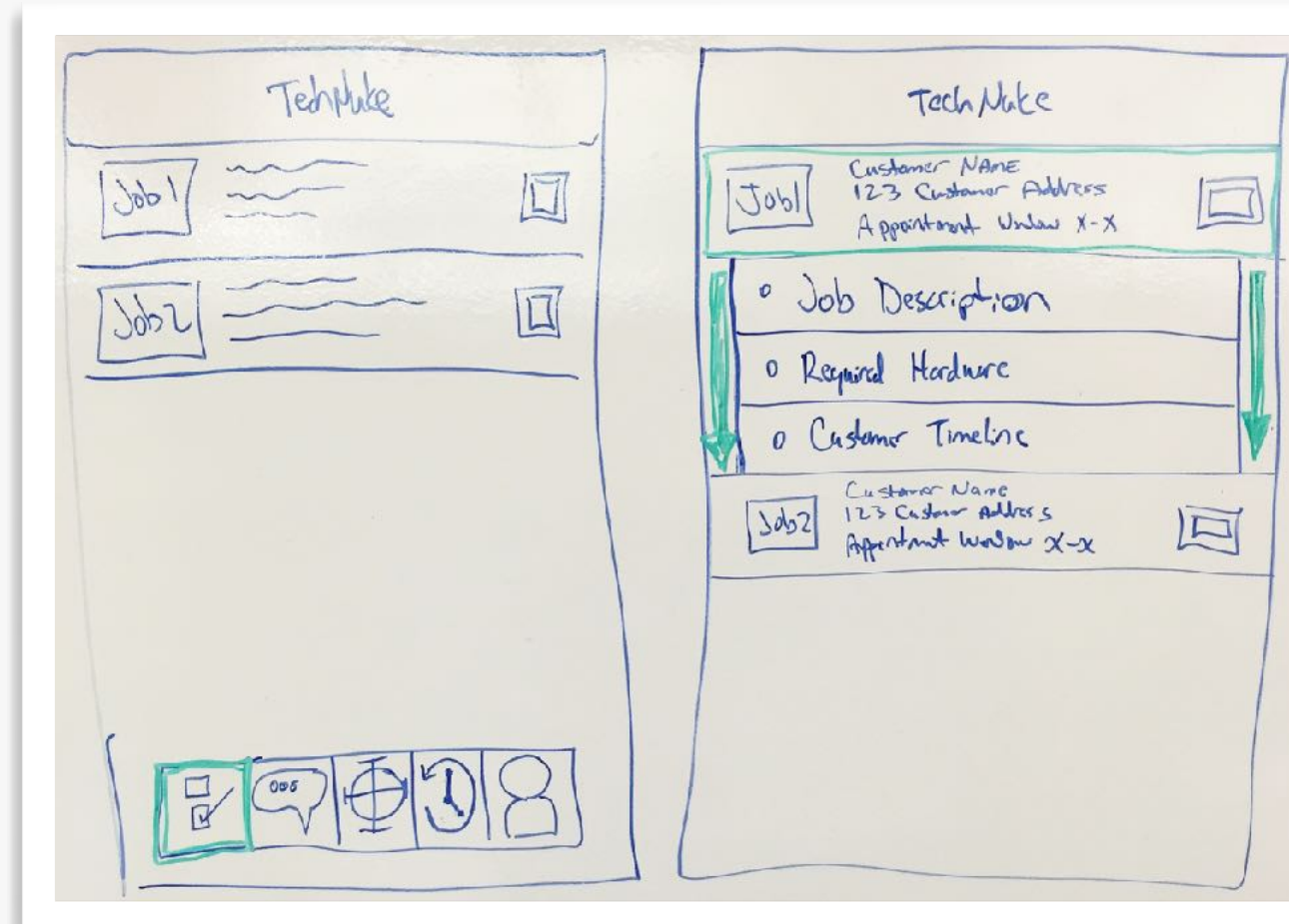
- Newsfeed organized by date, type, importance
- Unique item presentation types
- Unread/Read states
- Bylines and Avatars
- Crowd-sourced feedback
- Embedded video



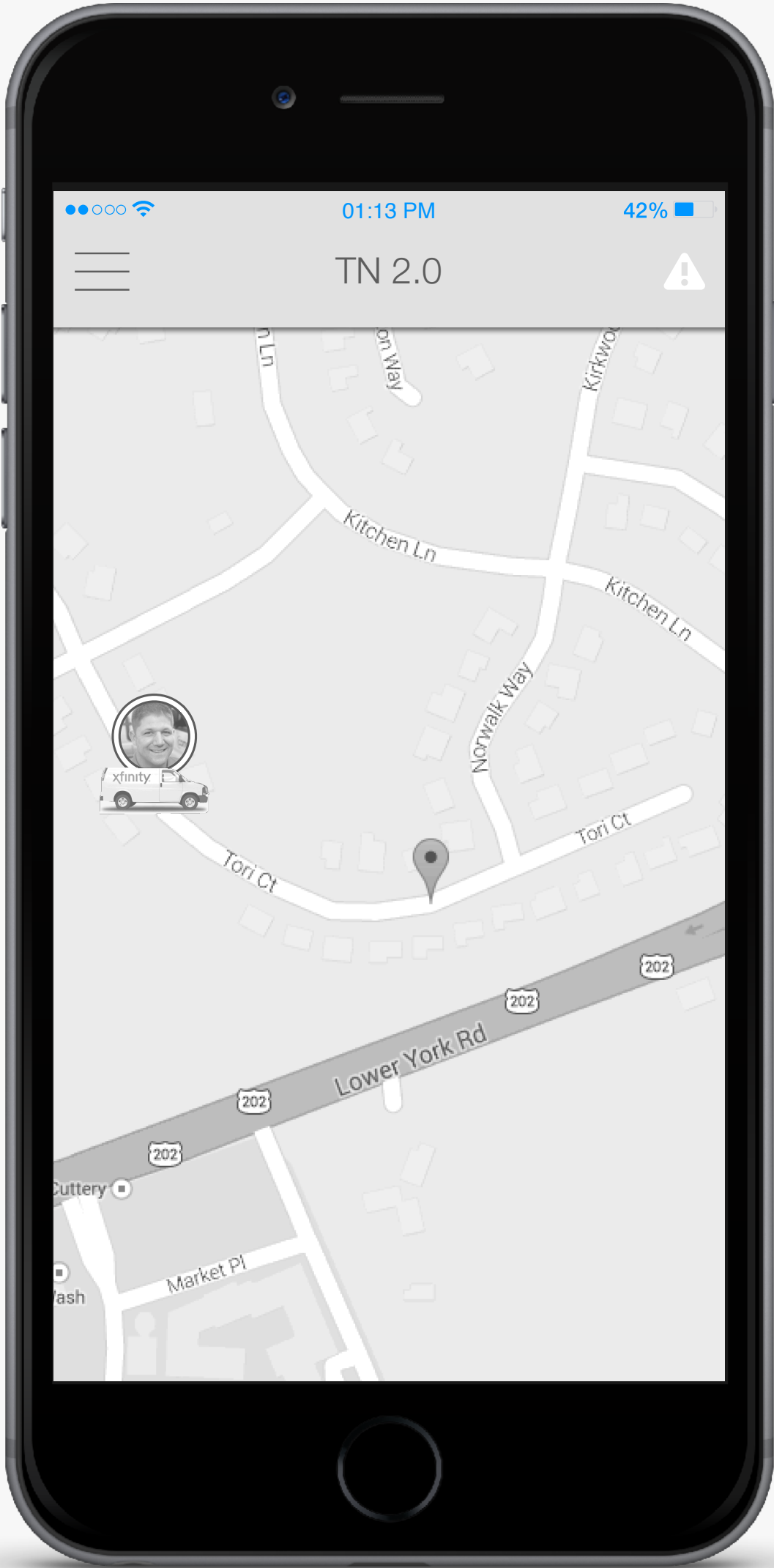
Framework

WITHIN THUMB'S REACH

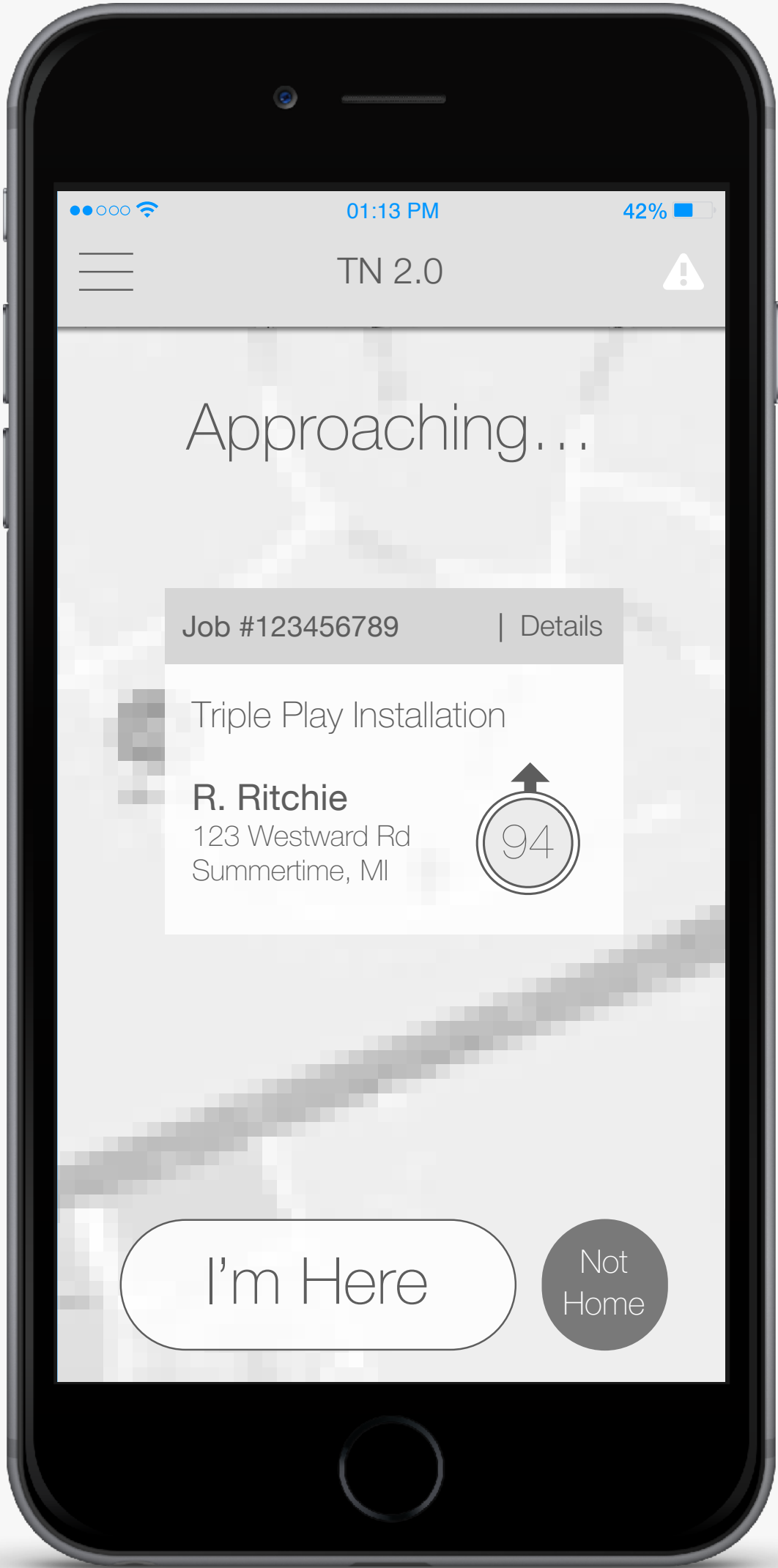
- Customer timeline
- Cloud Notes
- Tech Profile
- Tech GPS
- Tech Chat
- Job List



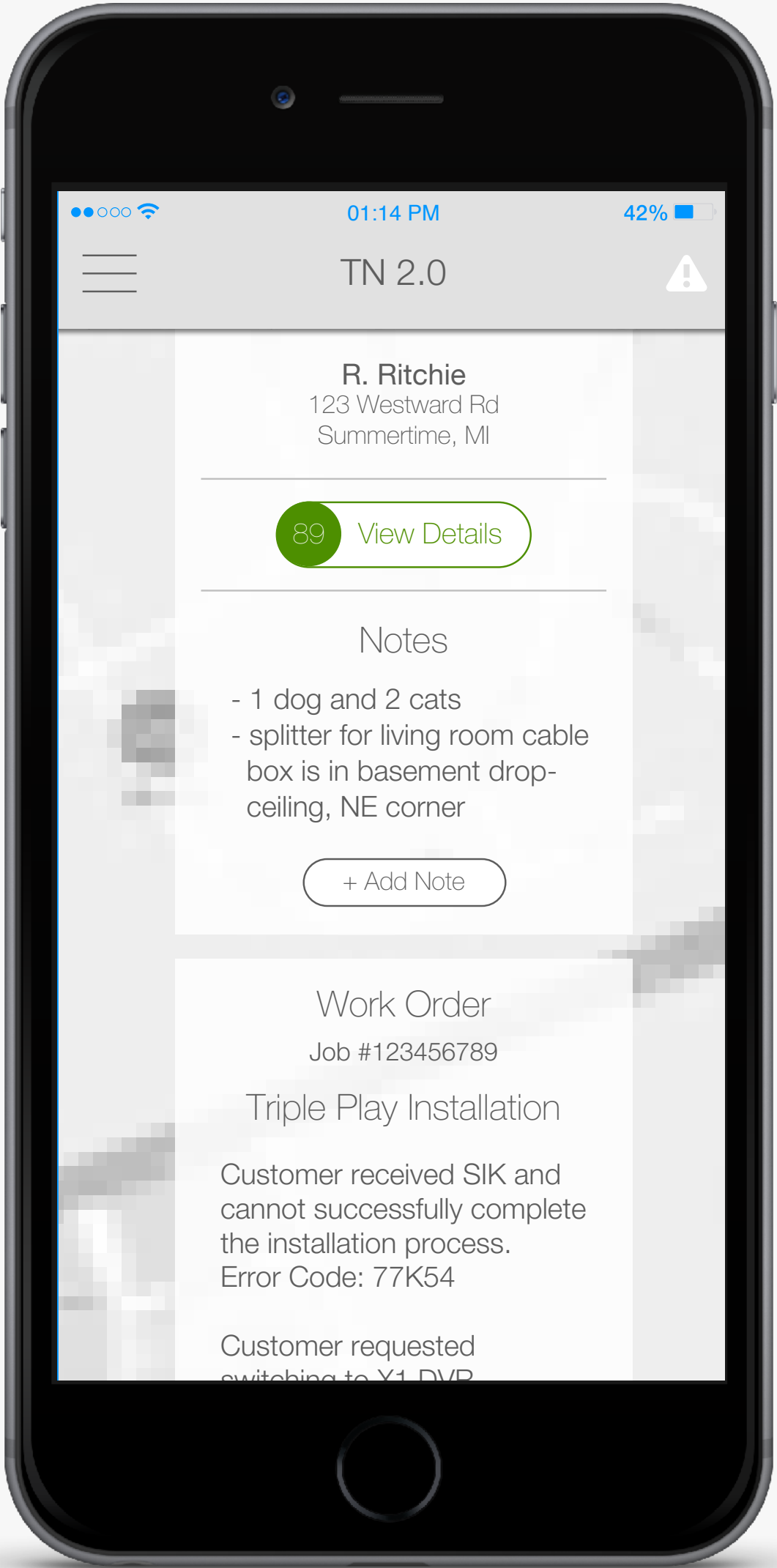
Arriving at the Job



Mapping

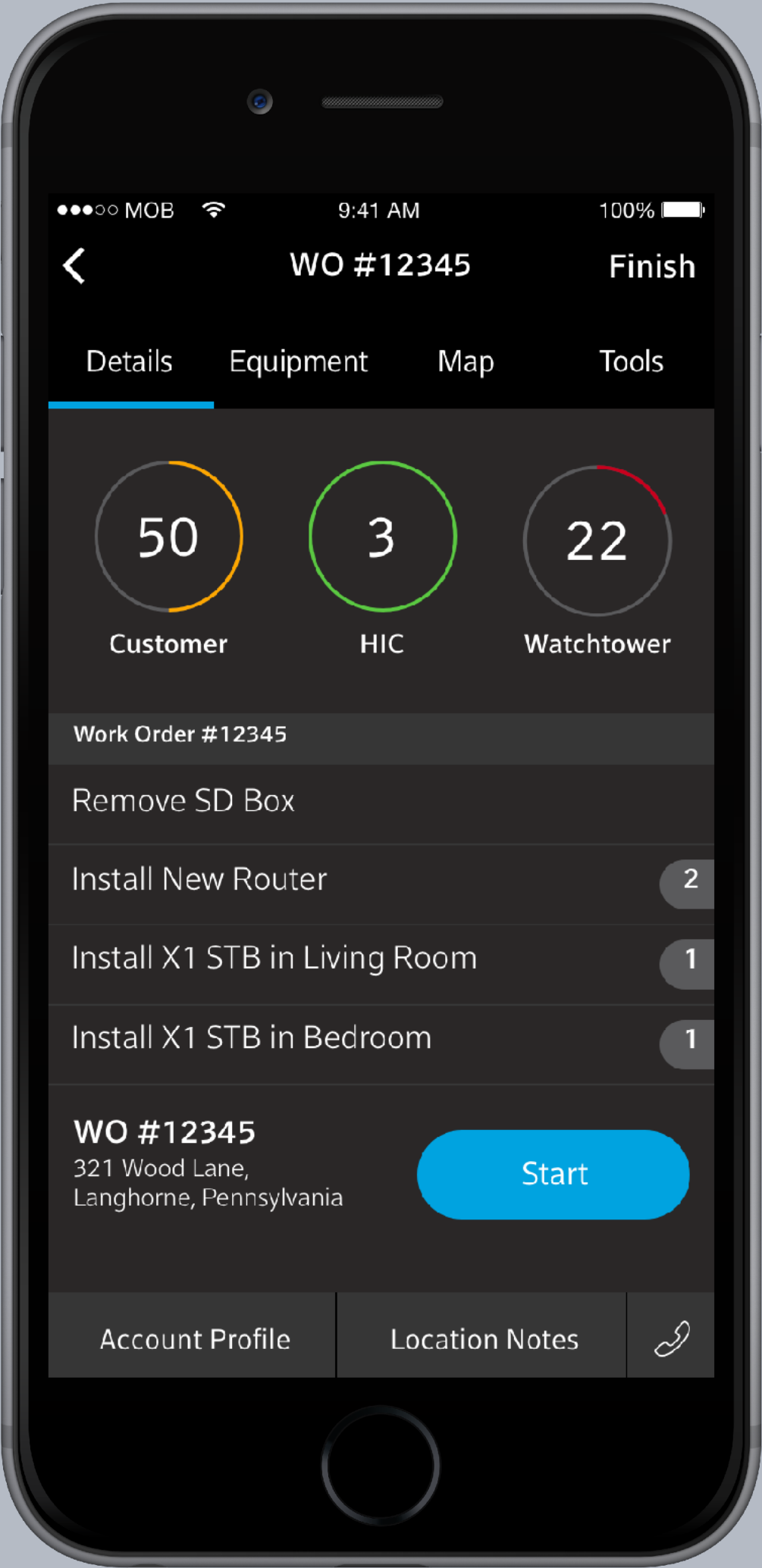
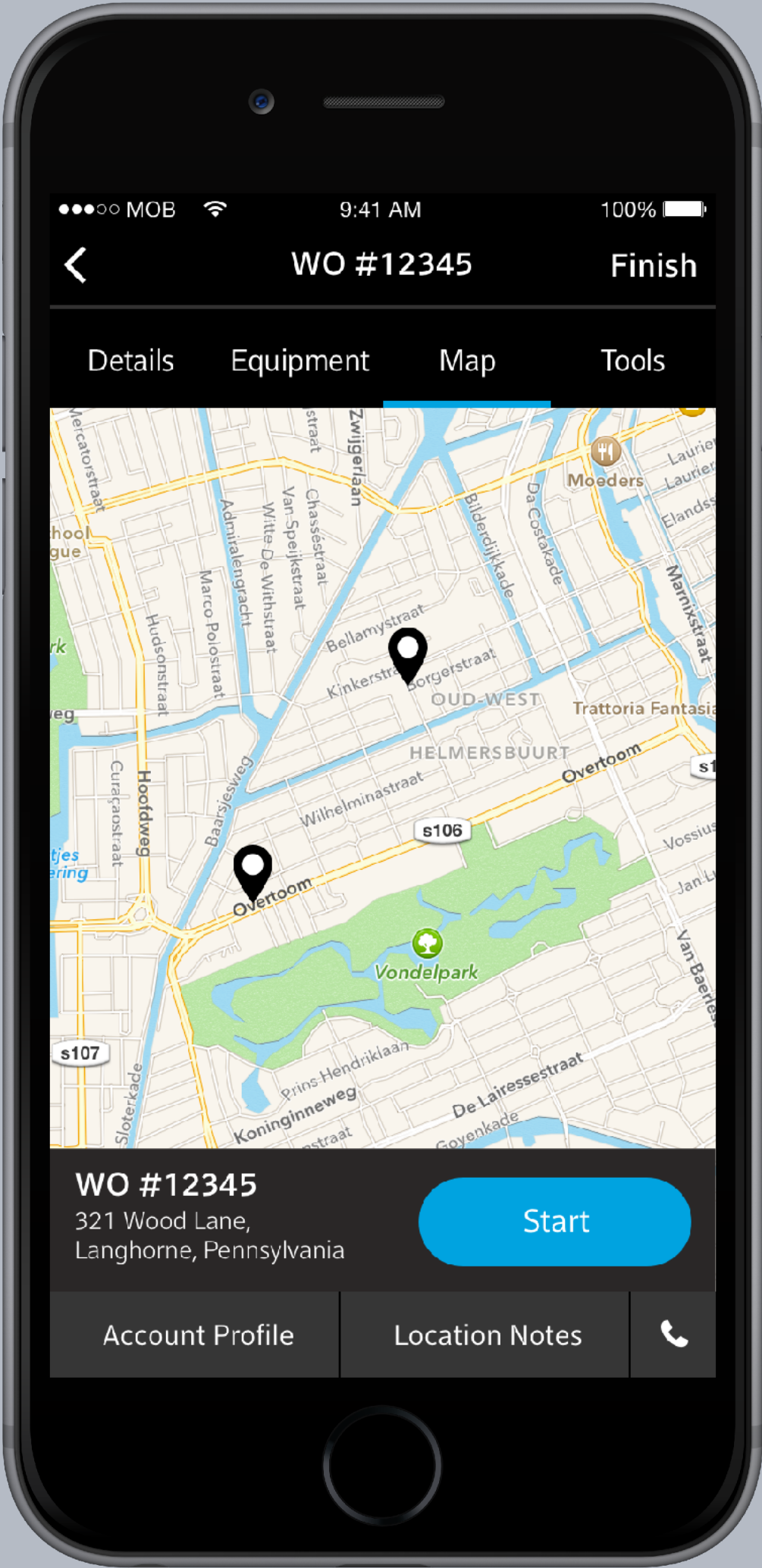
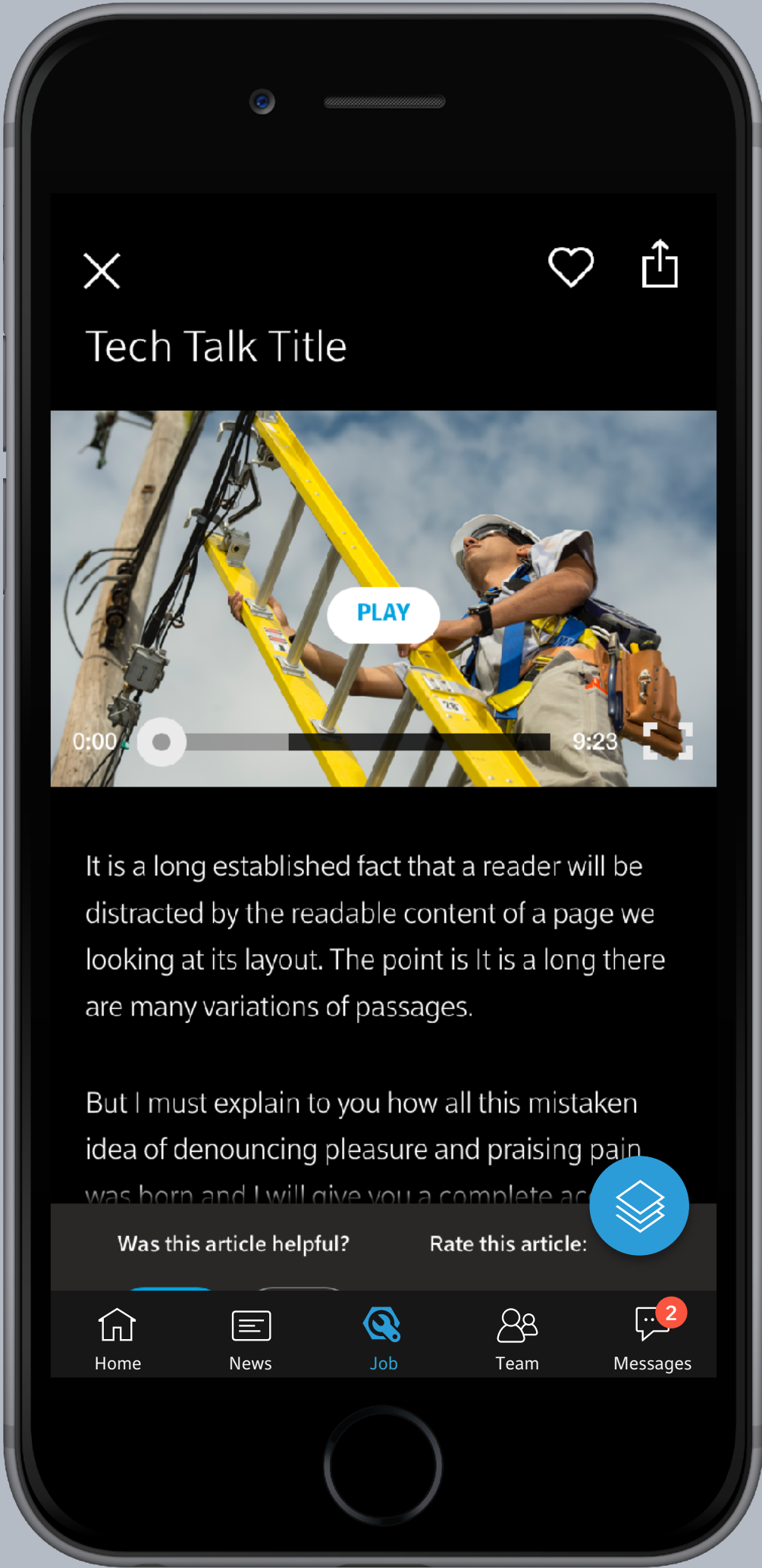
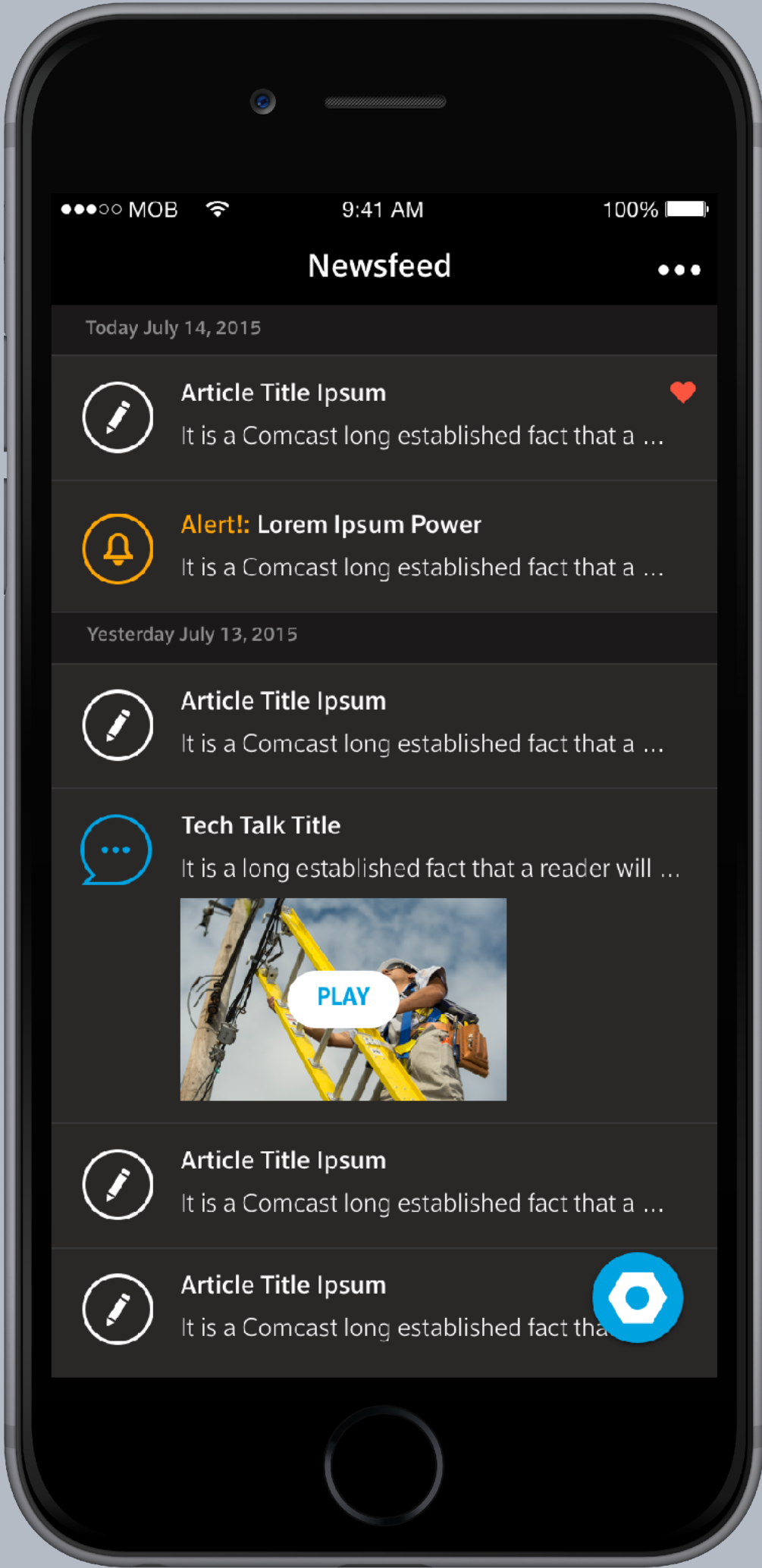


Approaching

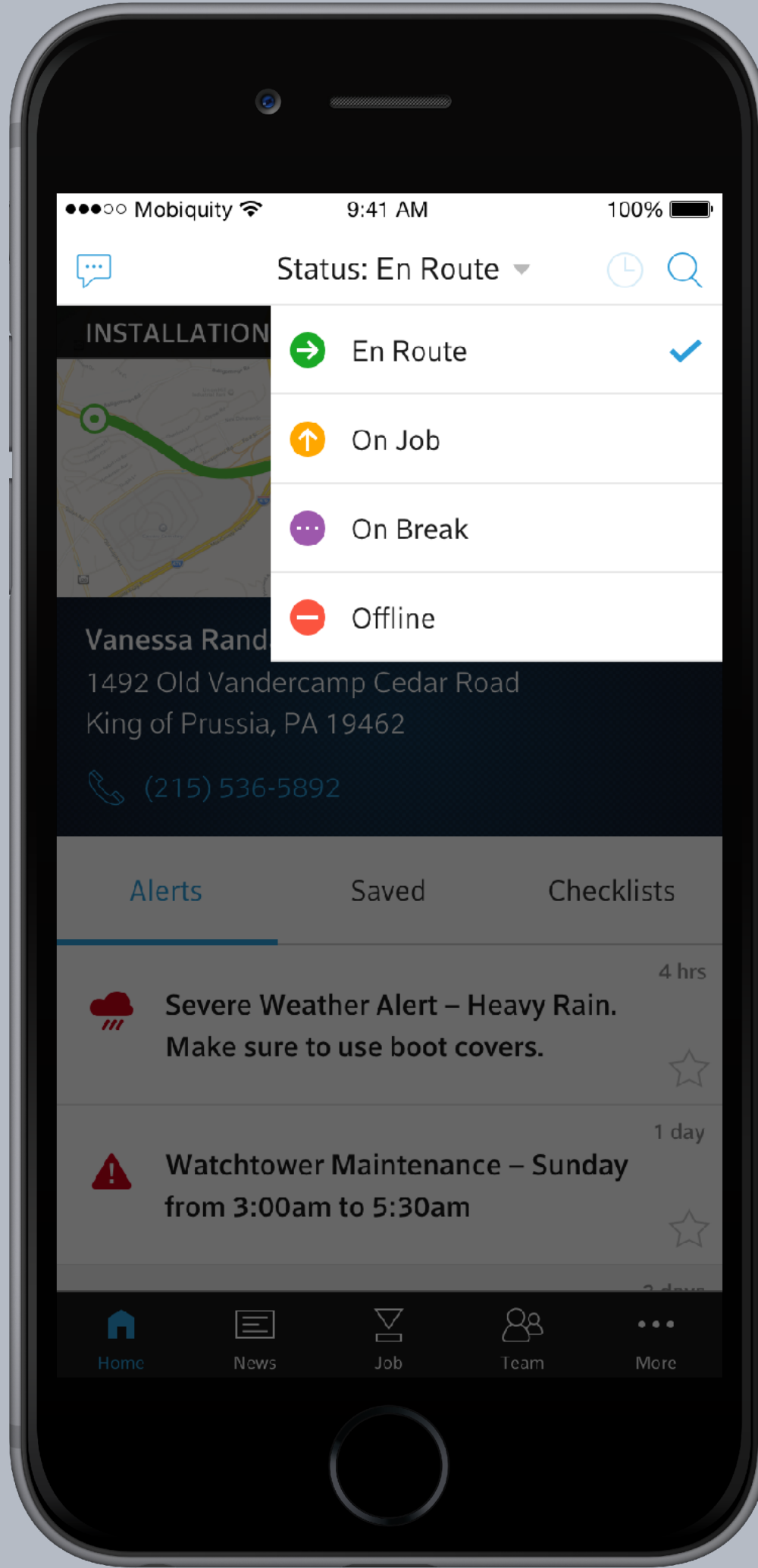
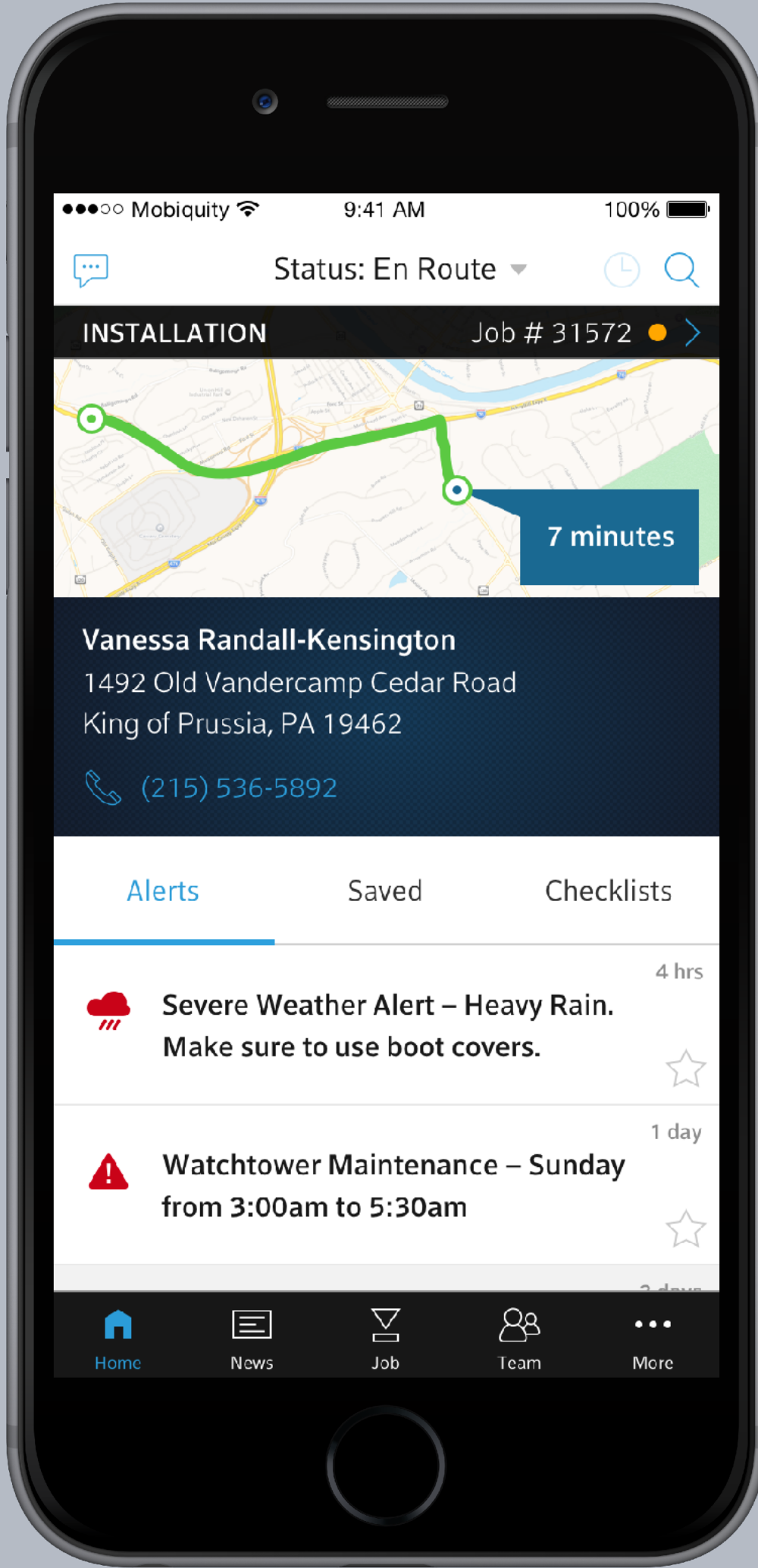
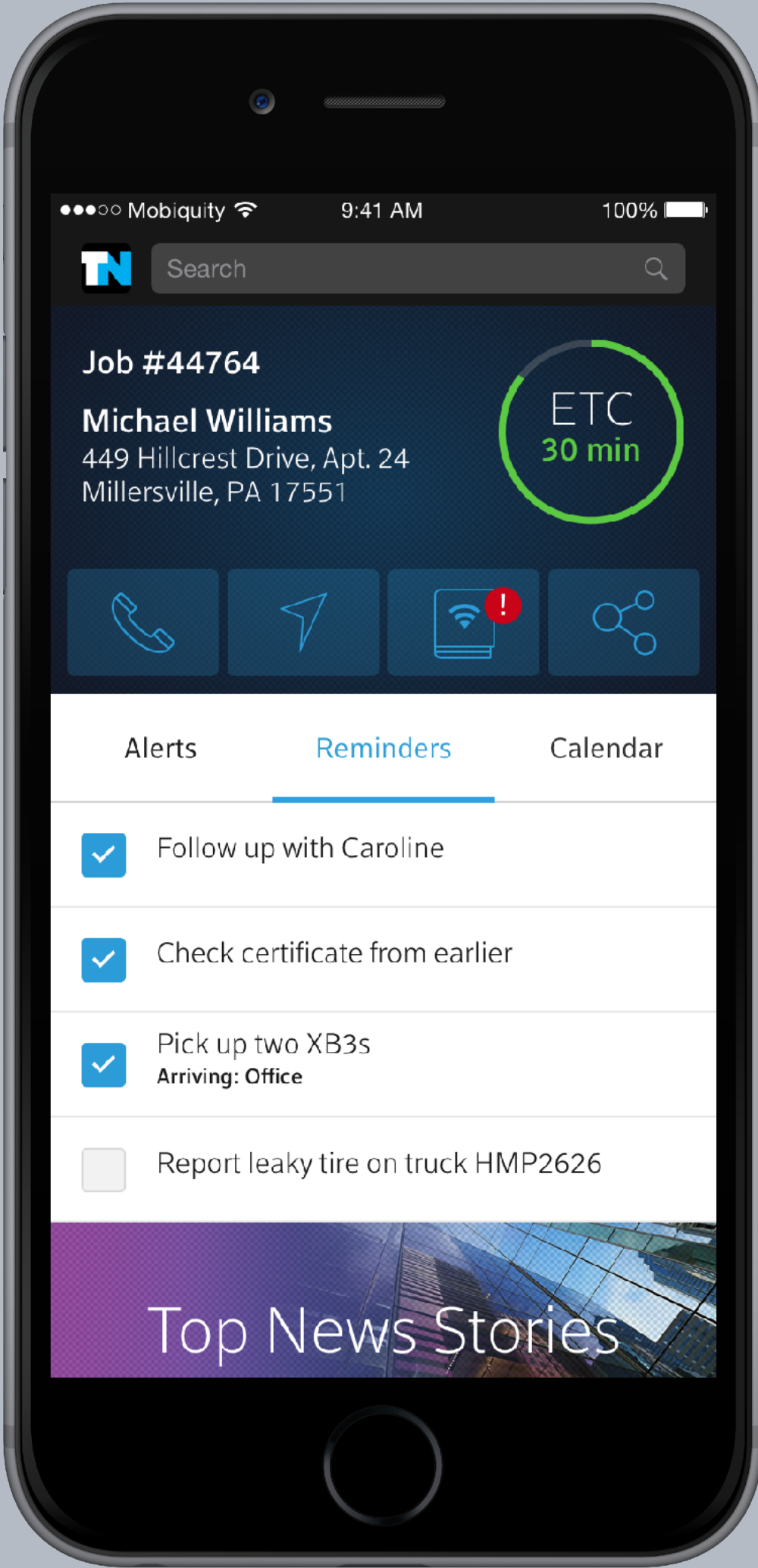
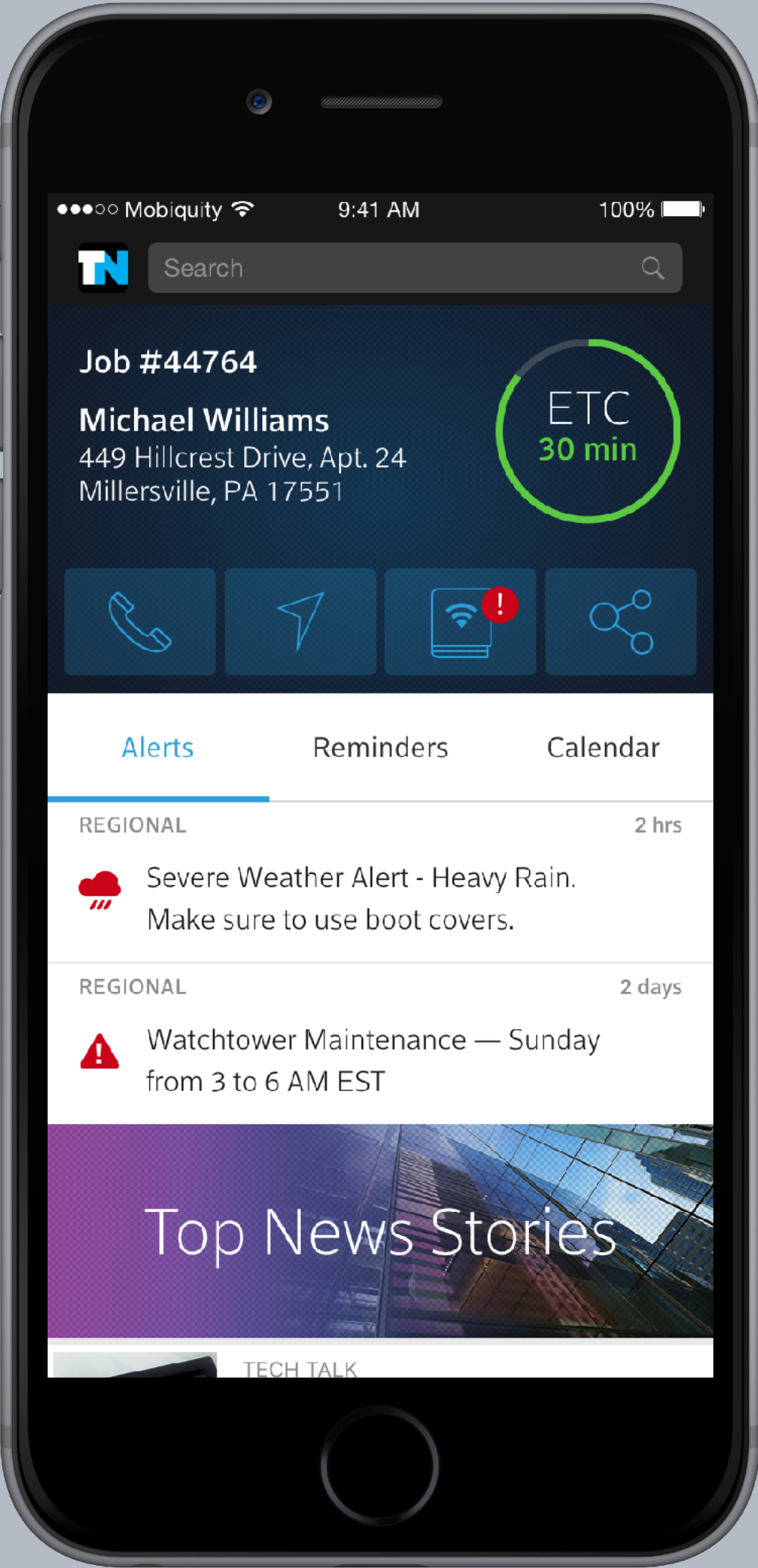


Job Notes

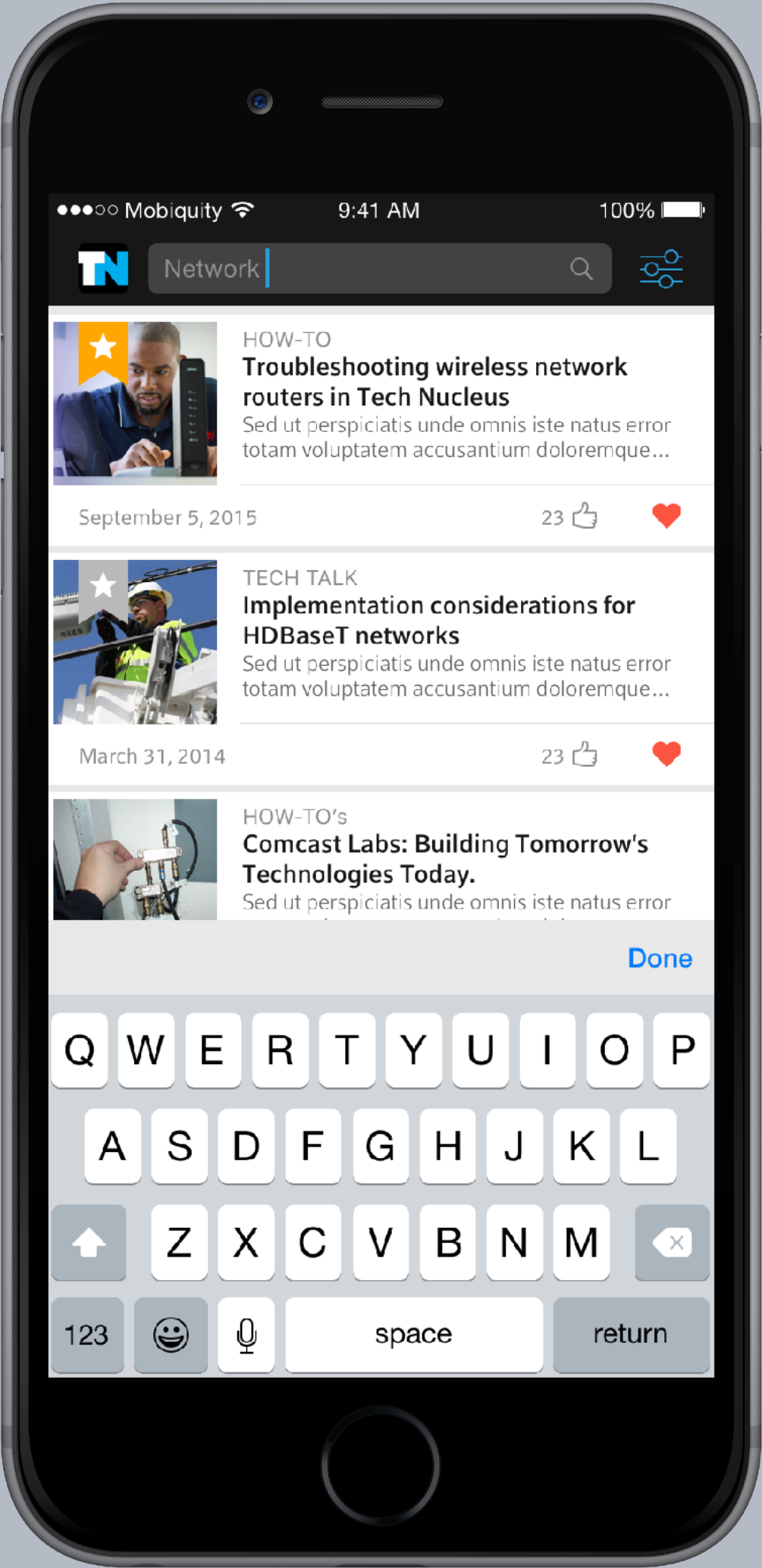
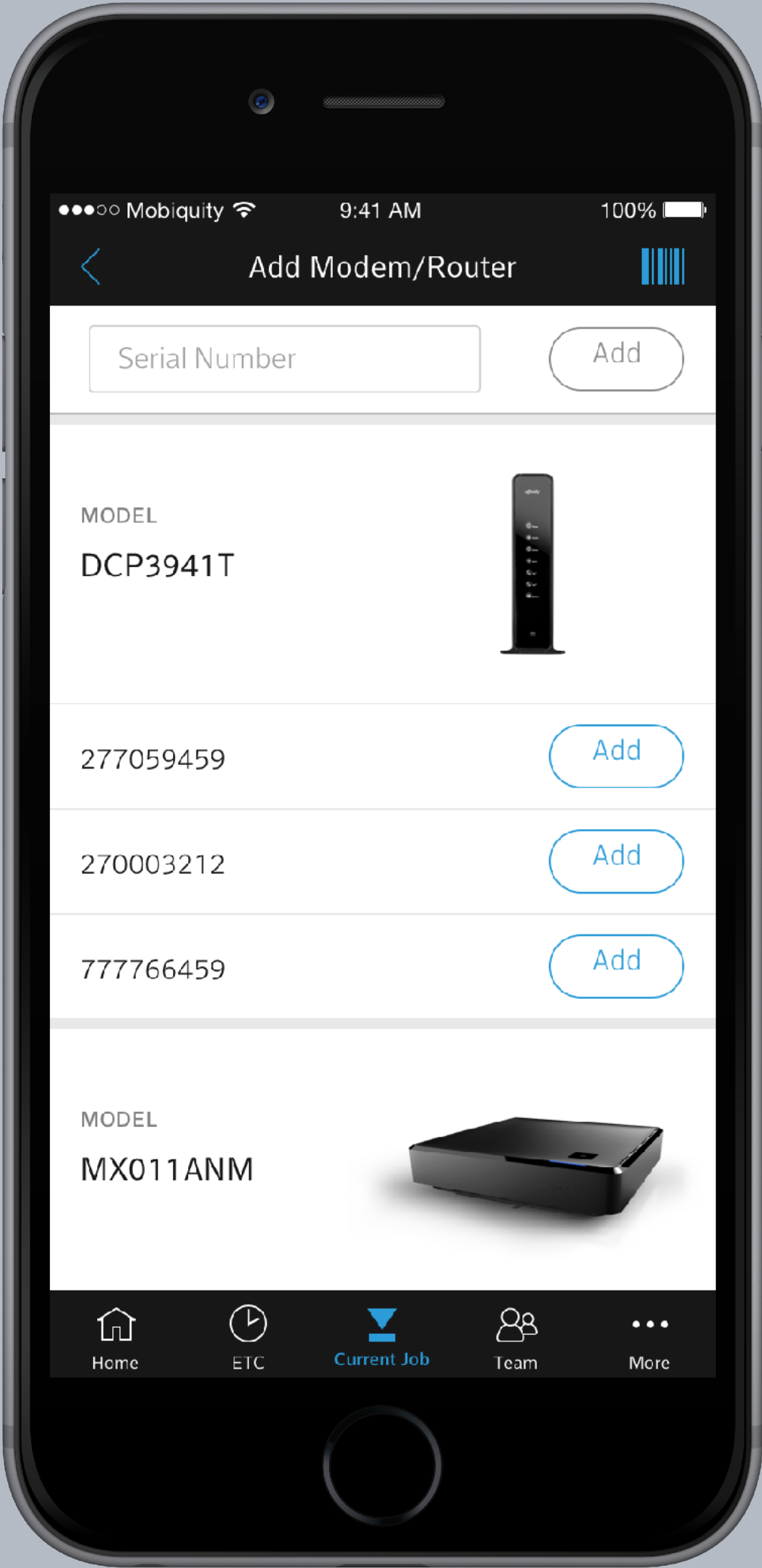
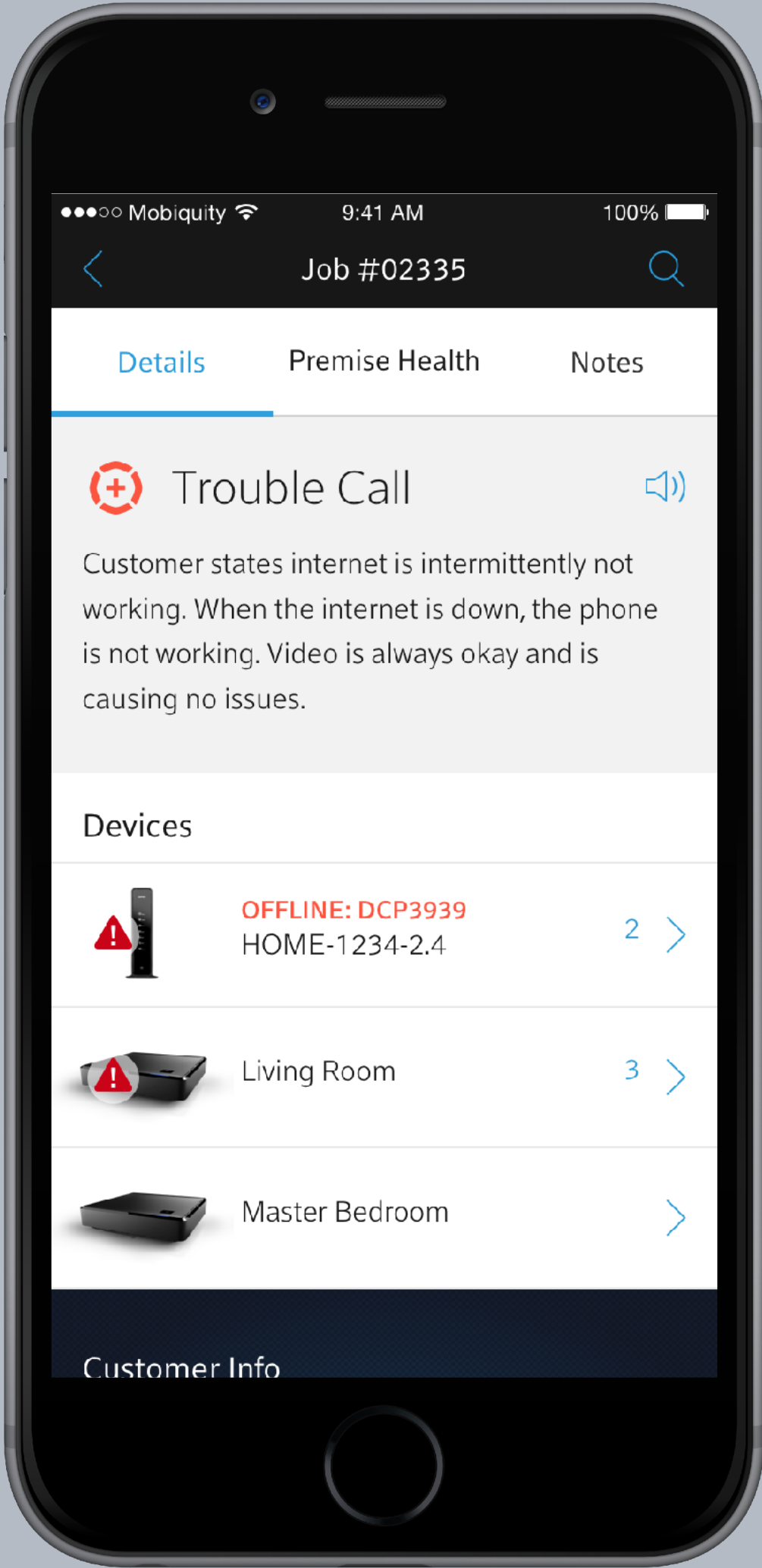
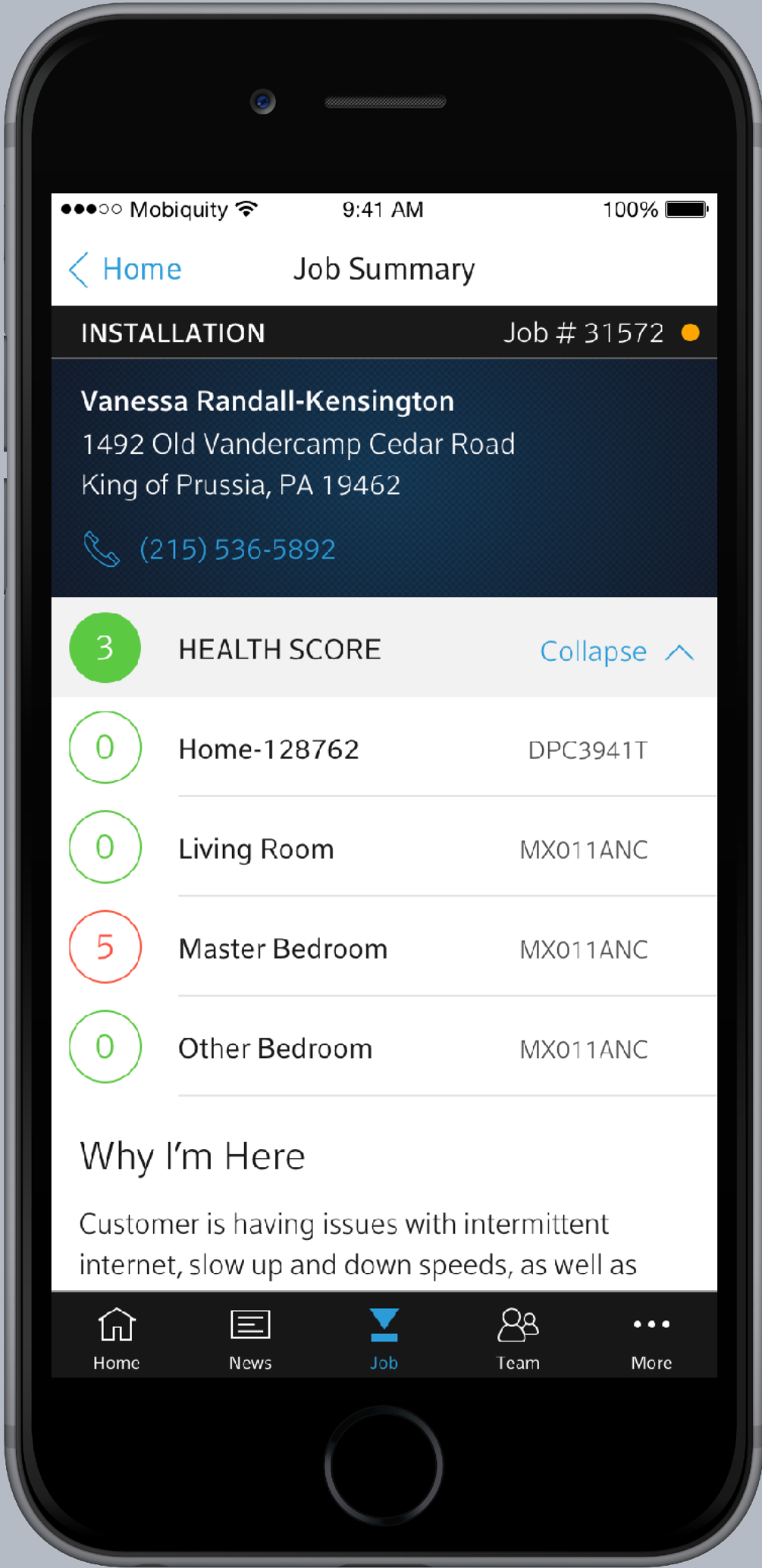
Concepts



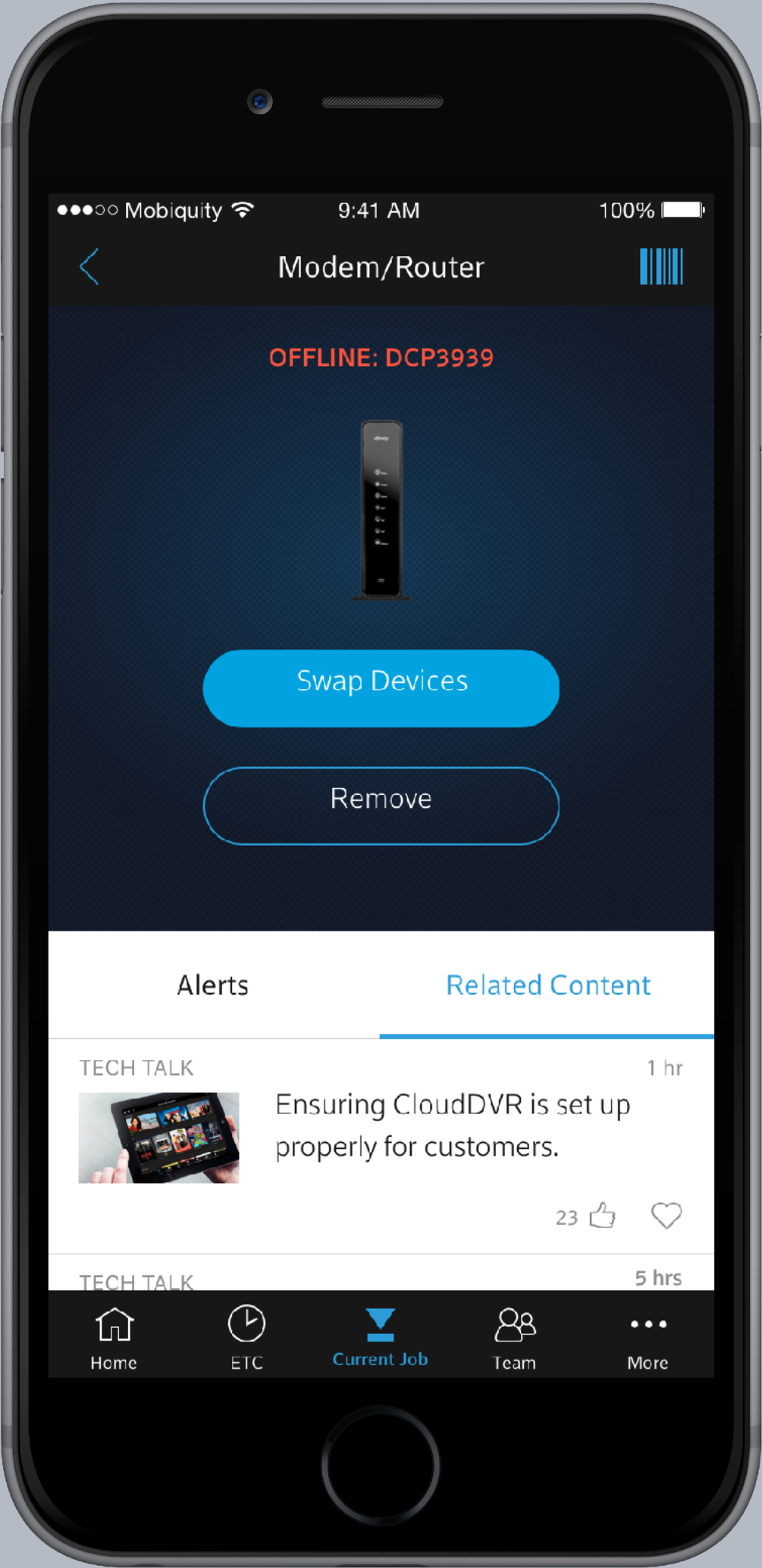
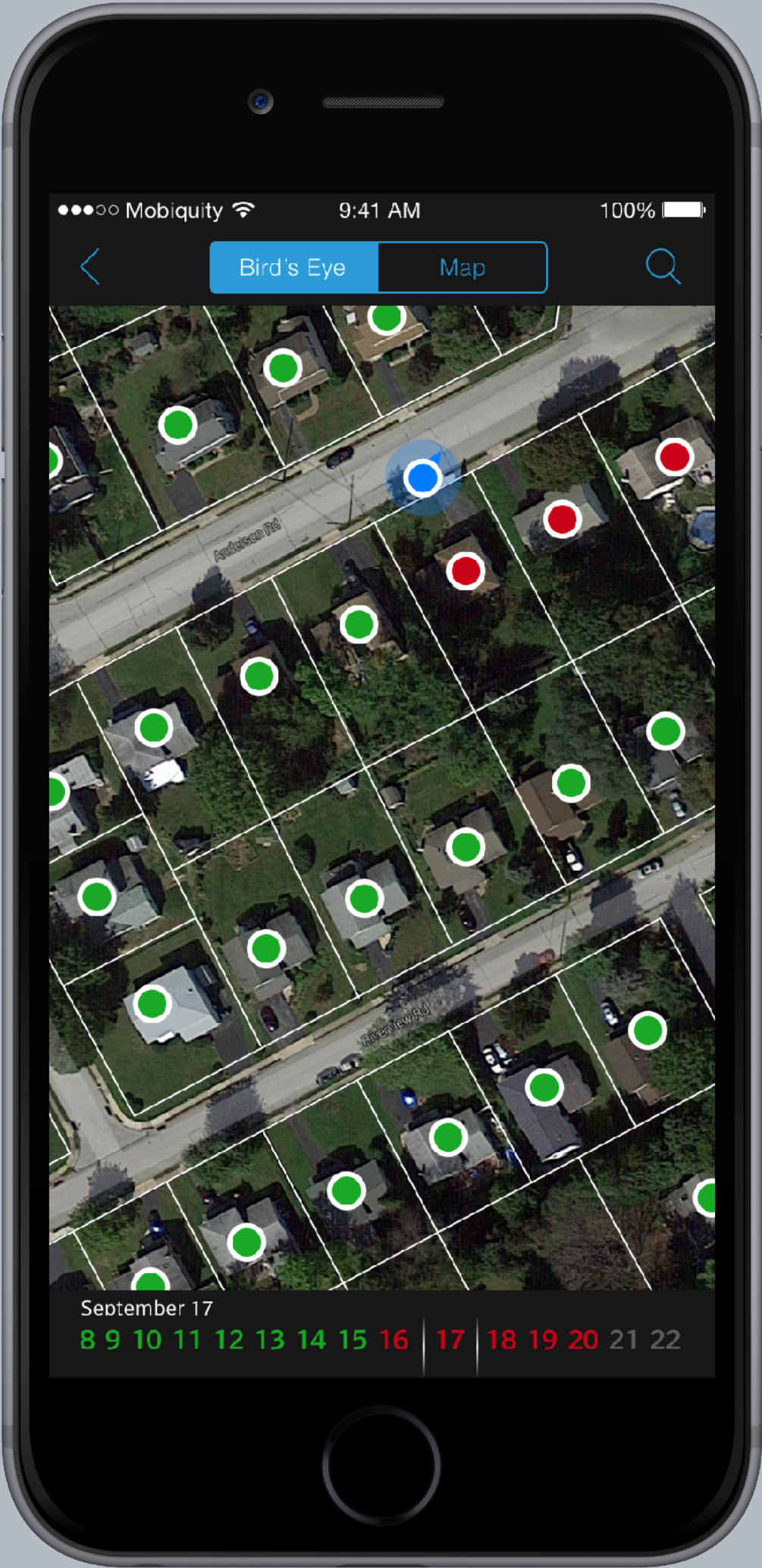
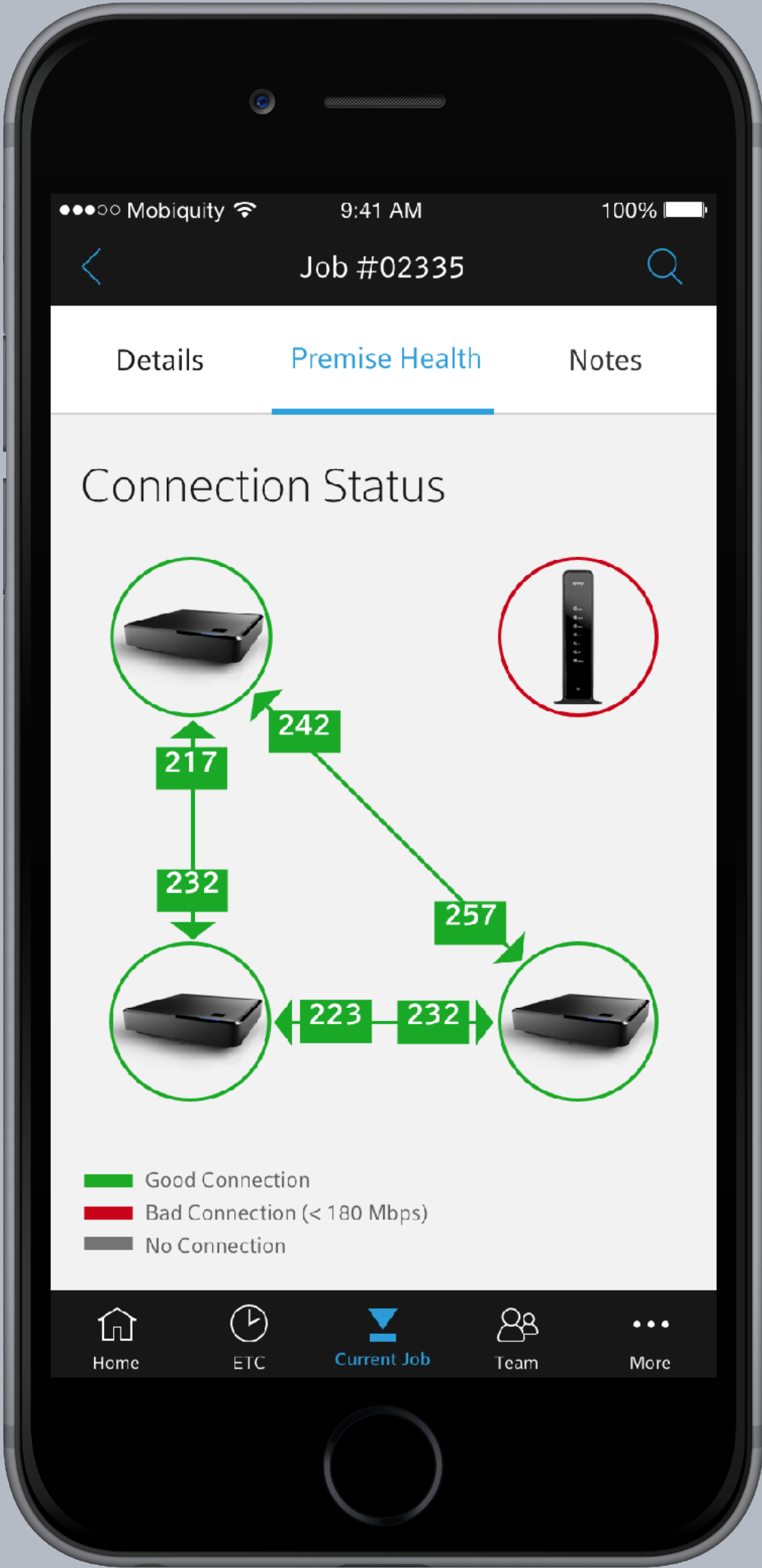
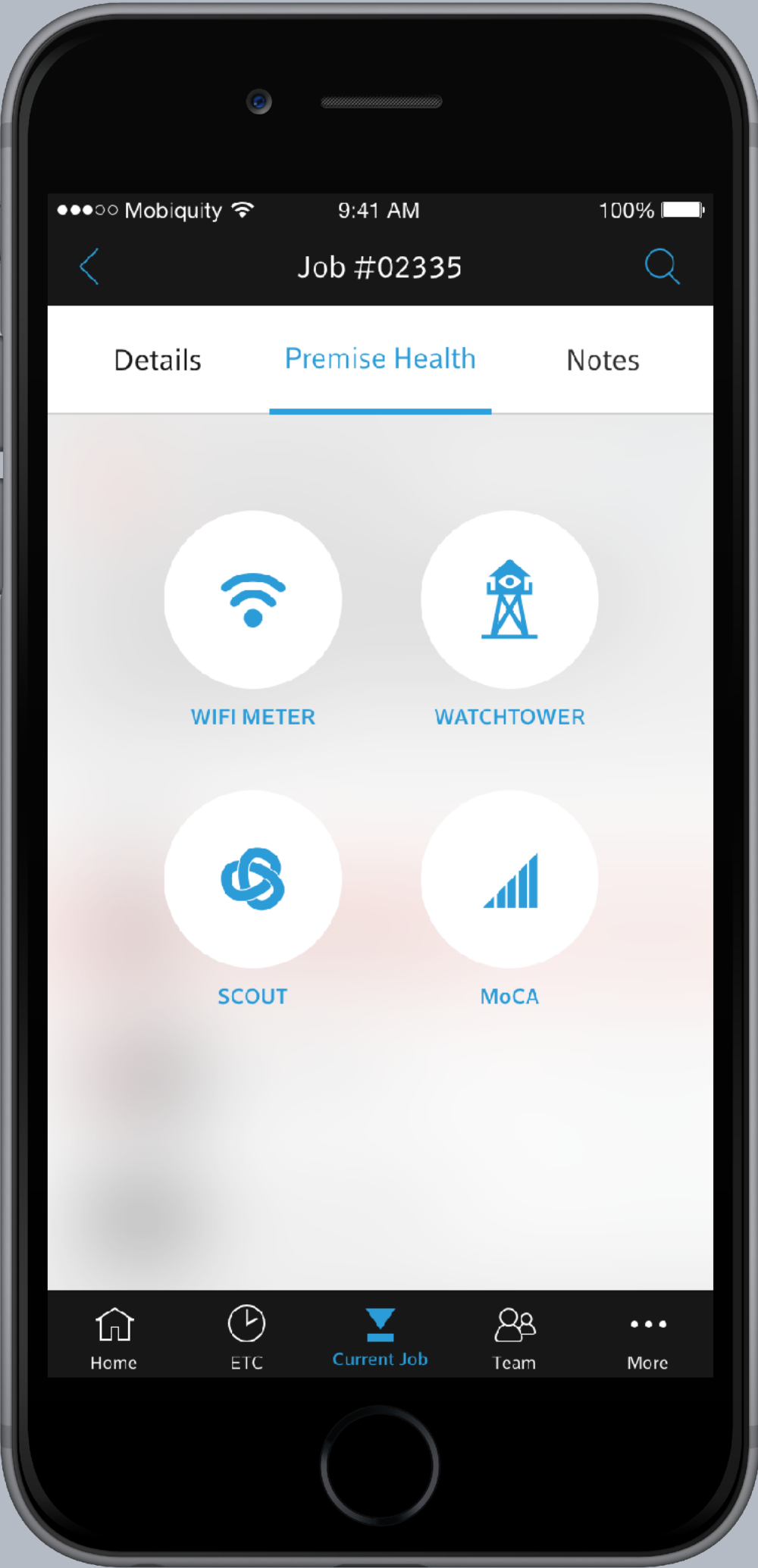
Concepts



Concepts

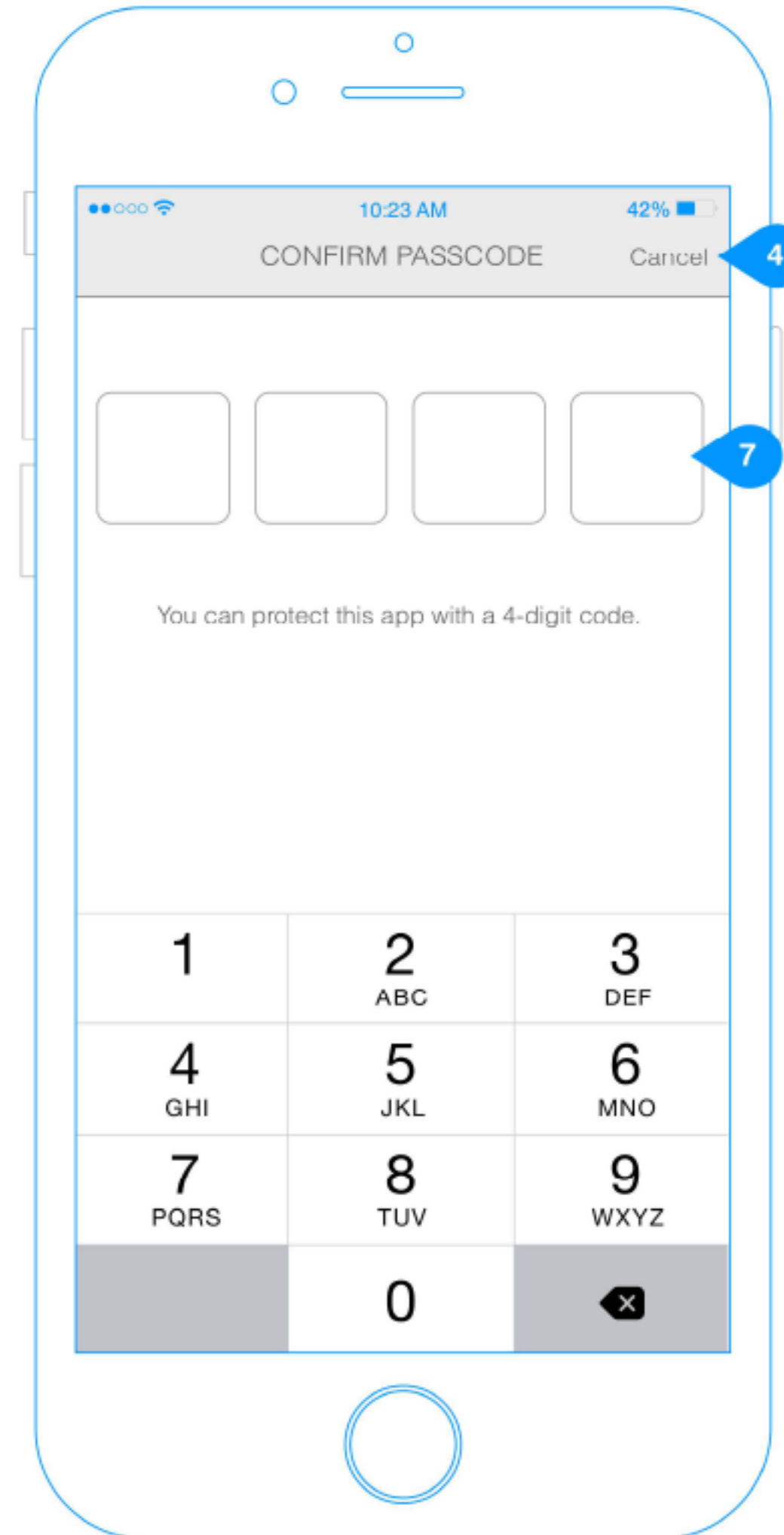
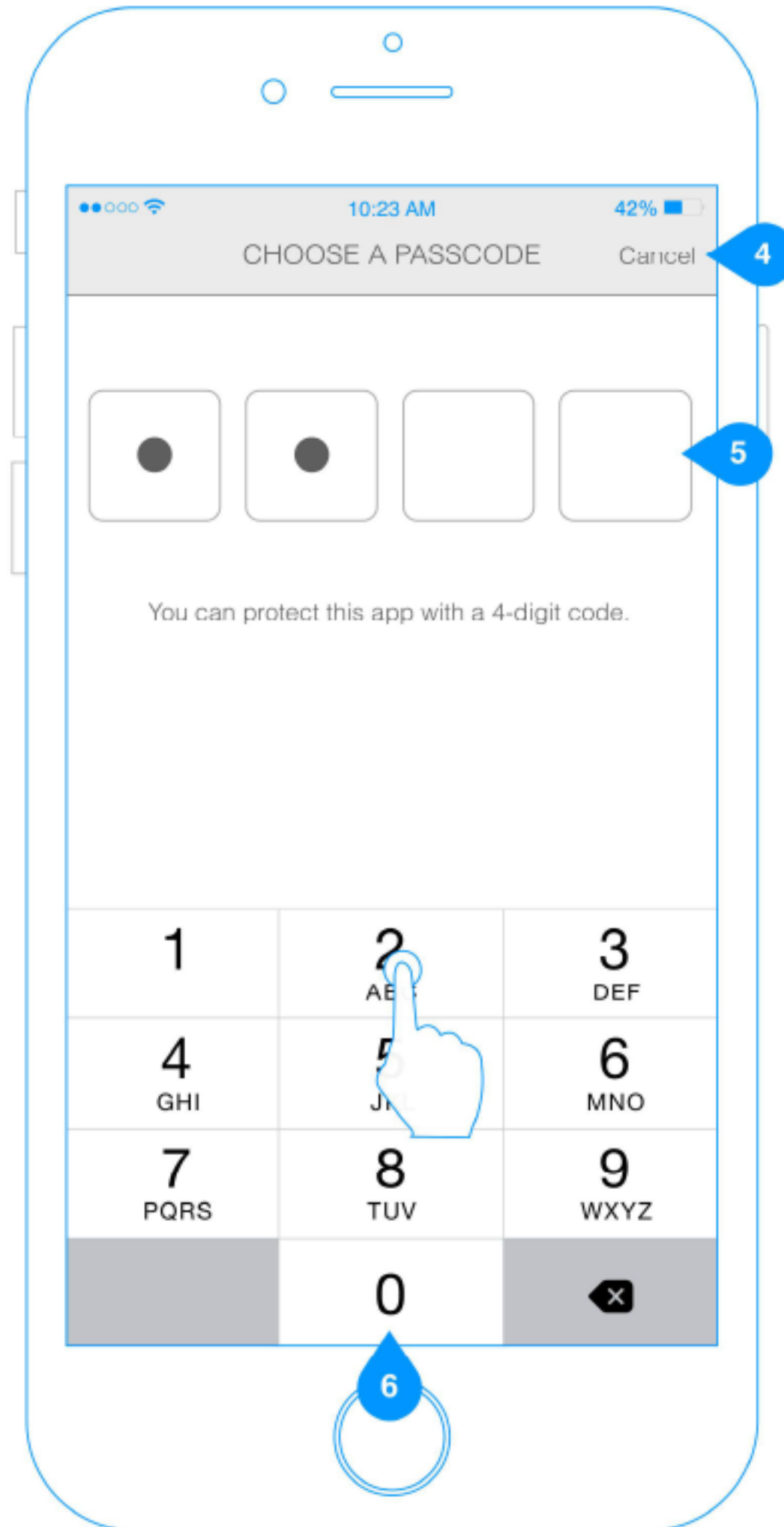
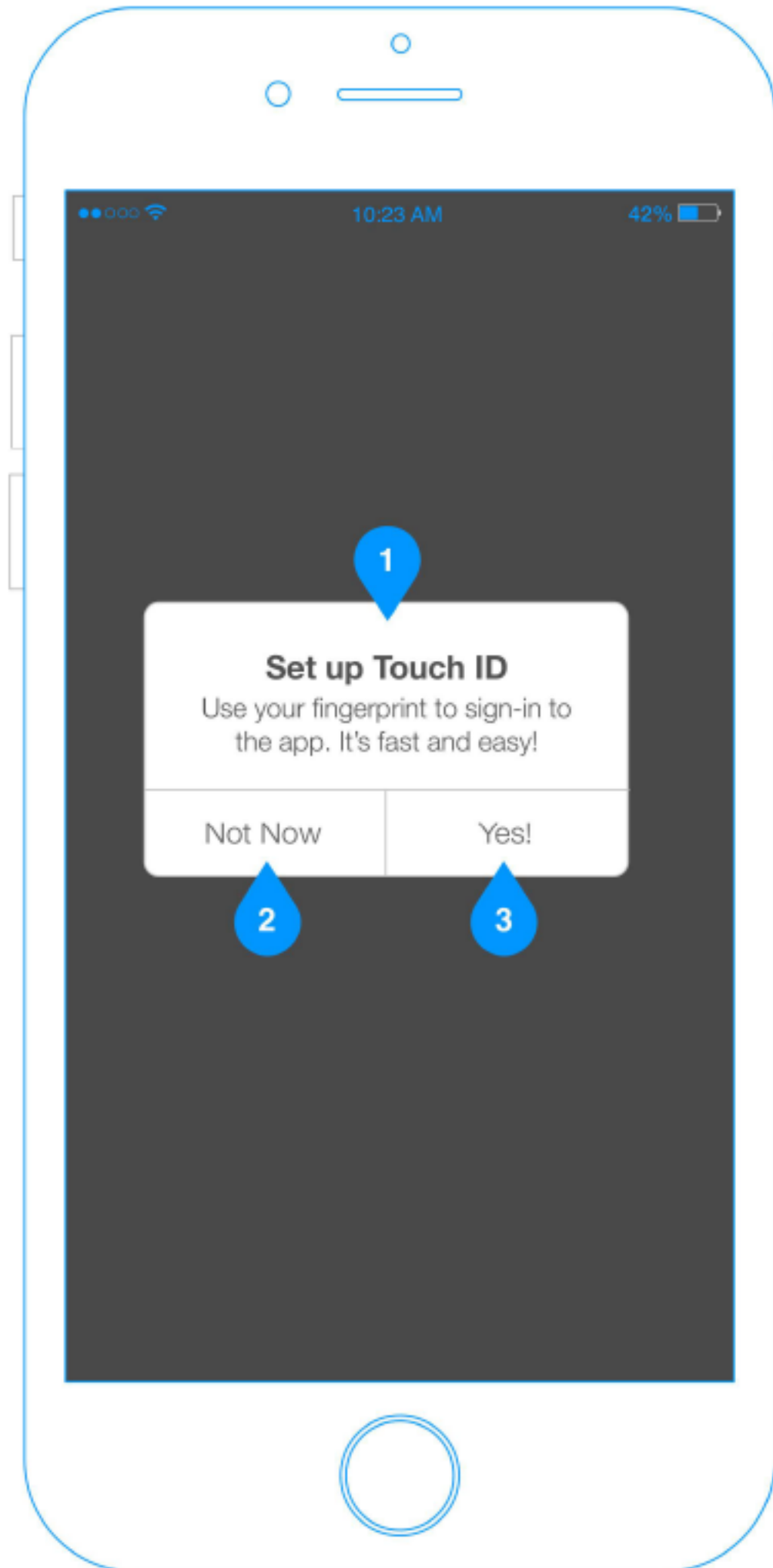


Concepts



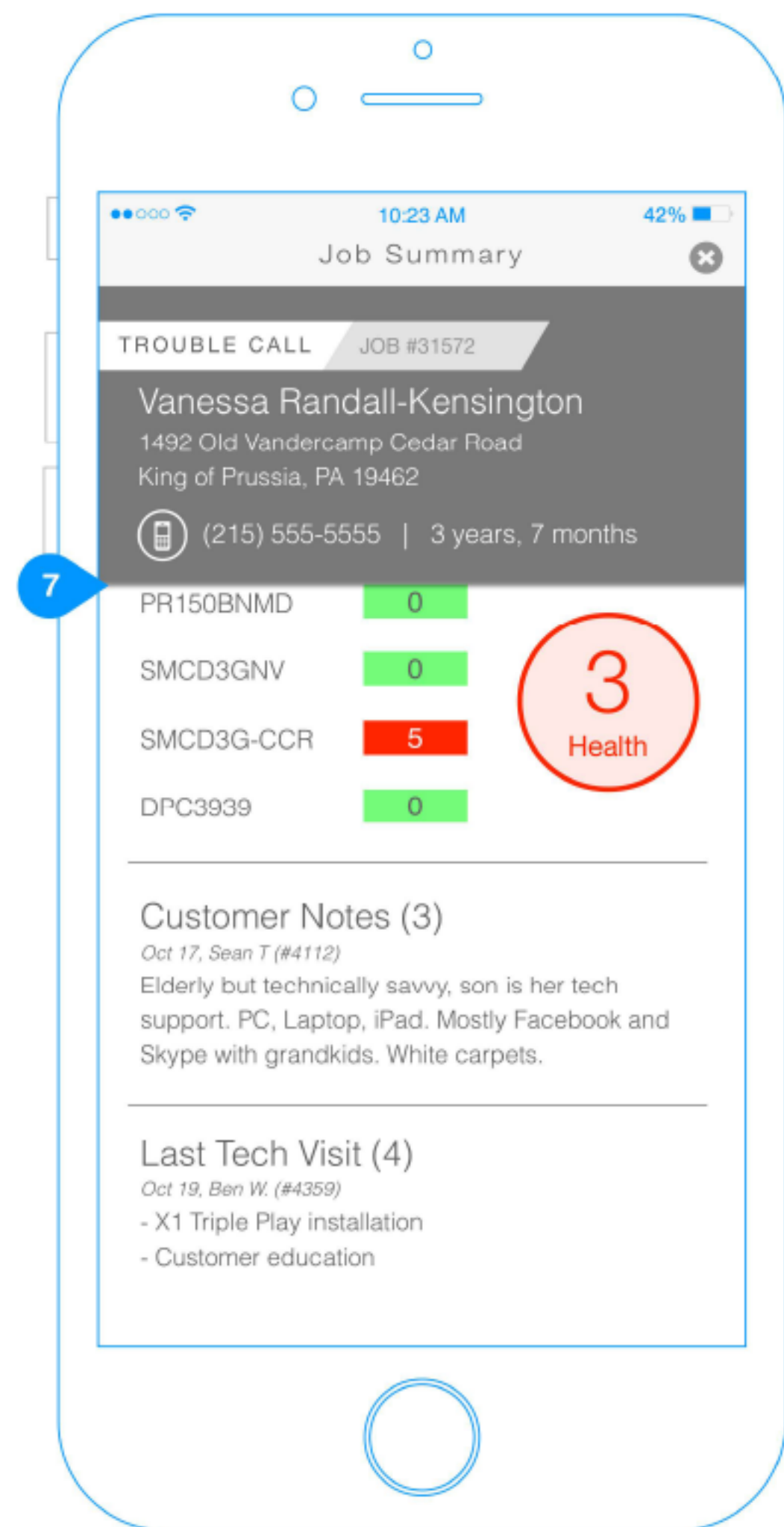
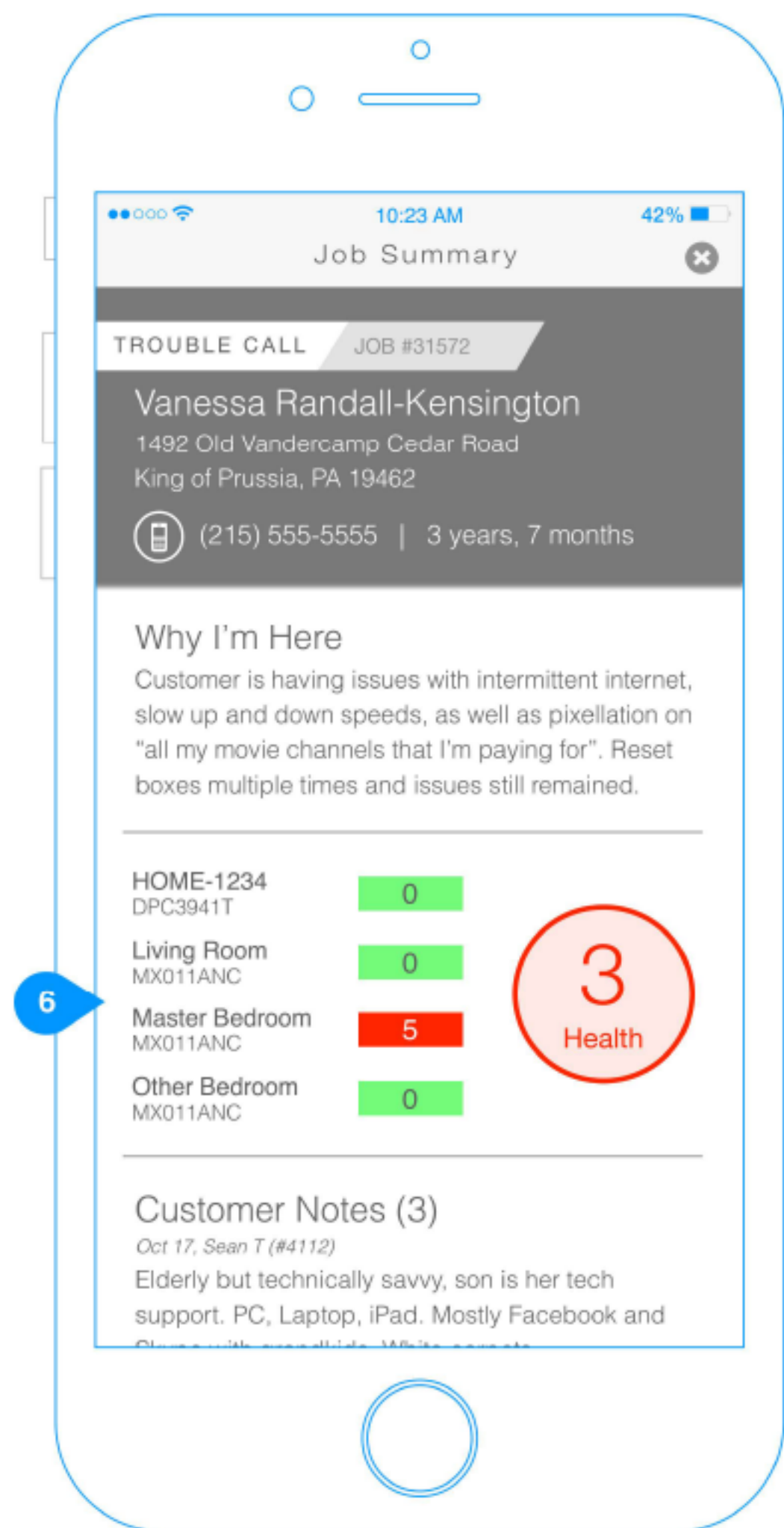
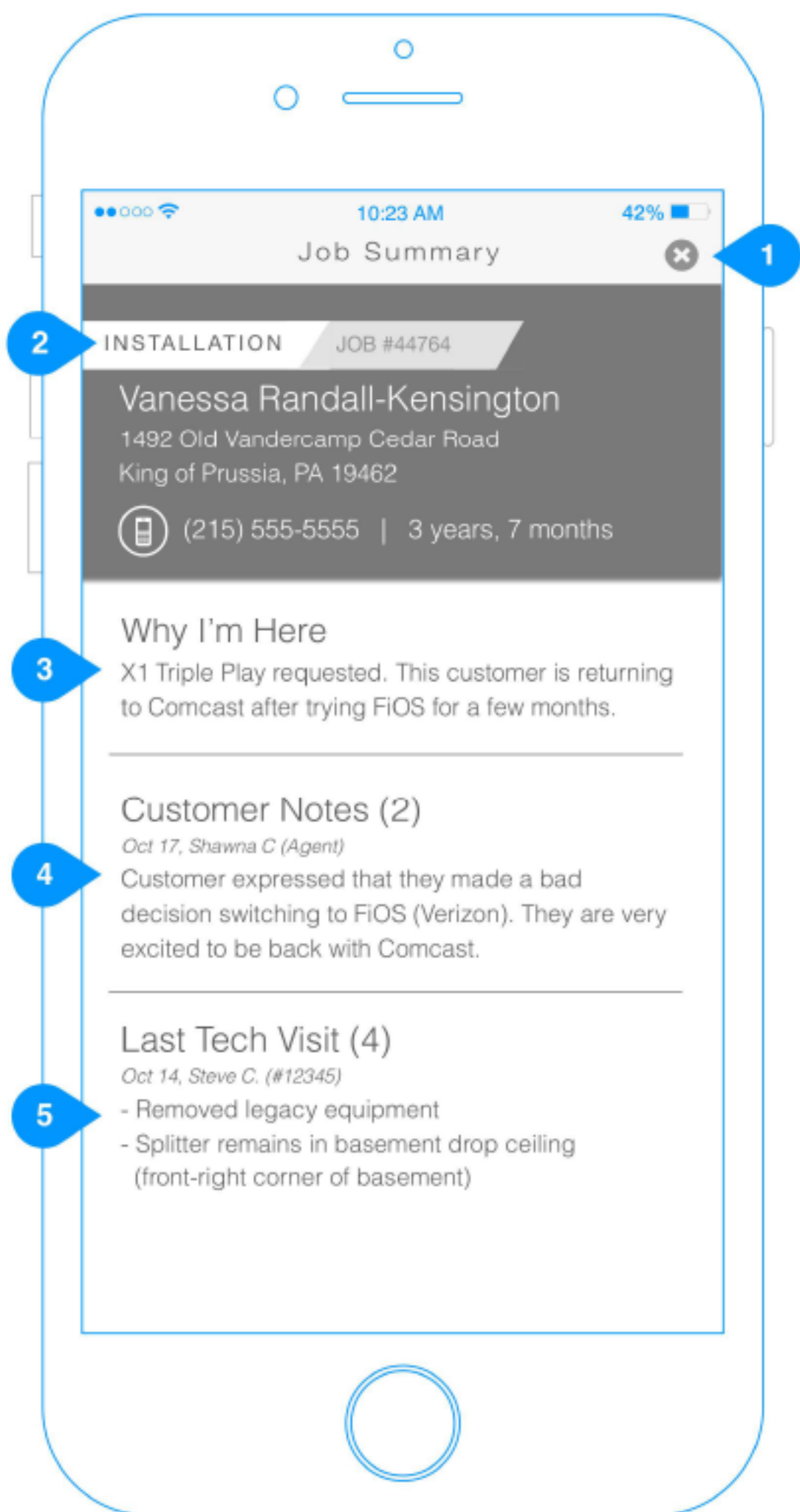
Wireframes

Non-SSO Login



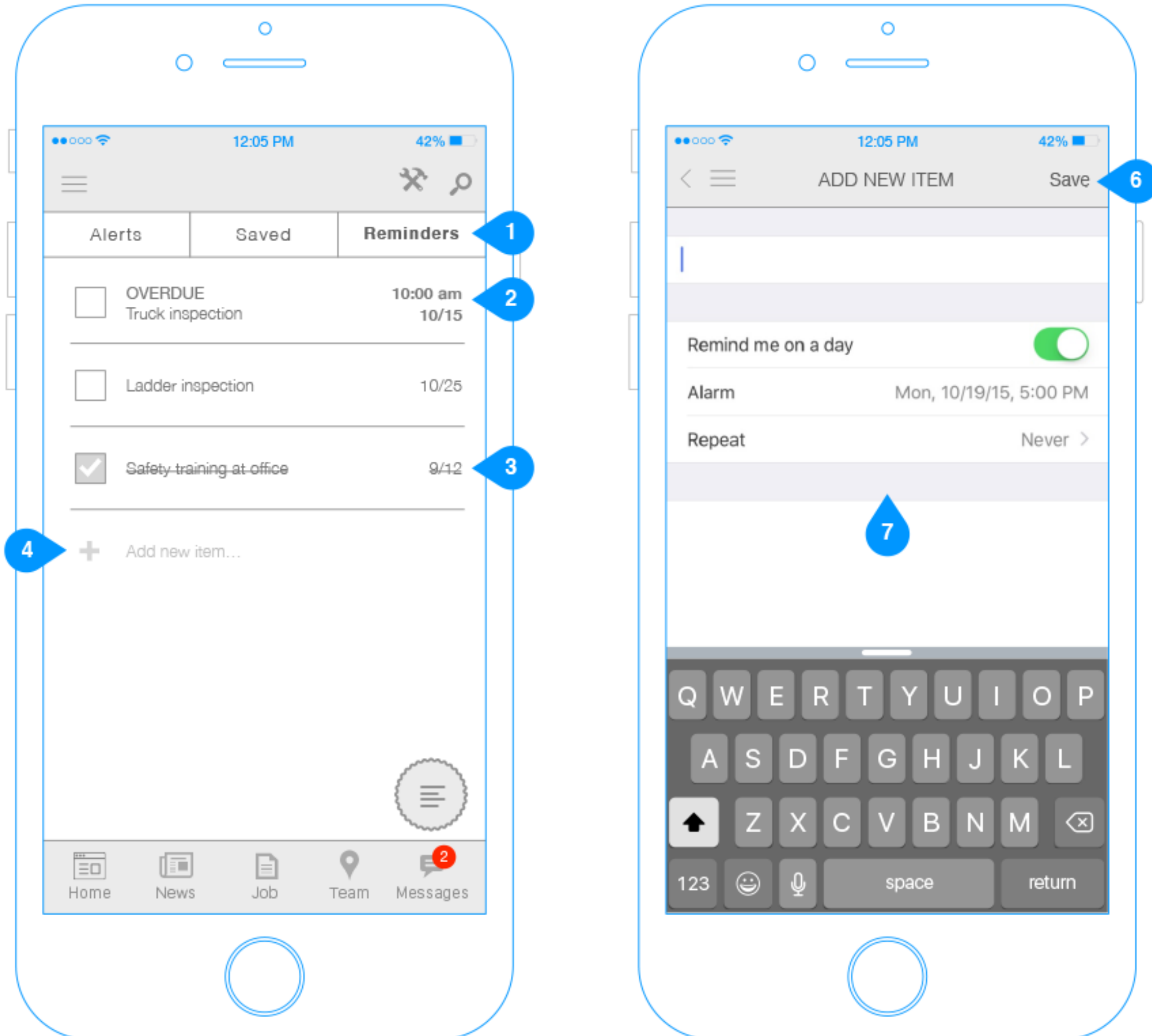
- 1 Set Up Touch ID Pop-up**
After the first successful login by a user, this pop-up will be shown to users.
- 2 Not Now Button**
Users can tap this button to dismiss the pop-up.
- 3 Yes Button**
Users can tap this button to dismiss the pop-up and navigate to the TOUCH-ID-PASSCODE screen to set up their desired passcode.
NOTE: Passcode management will be detailed in the Settings area.
- 4 Cancel Button**
Users can tap this button to stop this flow and return to the previous screen.
- 5 Passcode Entry (Masked)**
When the 4th number is entered the app will navigate to the TOUCH-ID-PASSCODE-CONFIRM screen.
- 6 Number Keypad**
Since only numbers are allowable for entry, the number keypad should be used for passcode entry screens.
- 7 Passcode Entry (Masked)**
If the passcode entered matches the passcode entered on the previous screen, then when the 4th number is entered the app will navigate to the HOME screen.

Job Summary



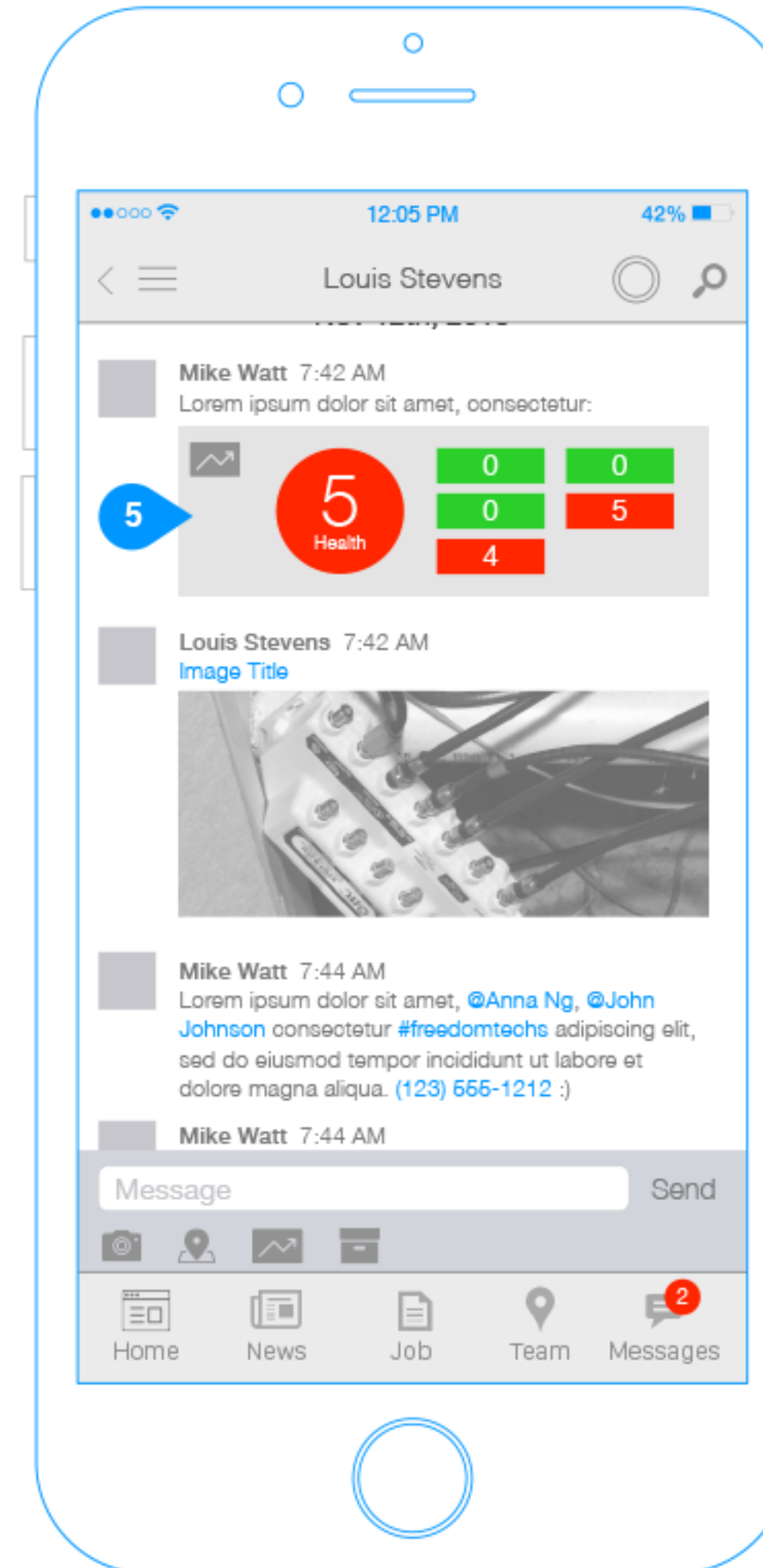
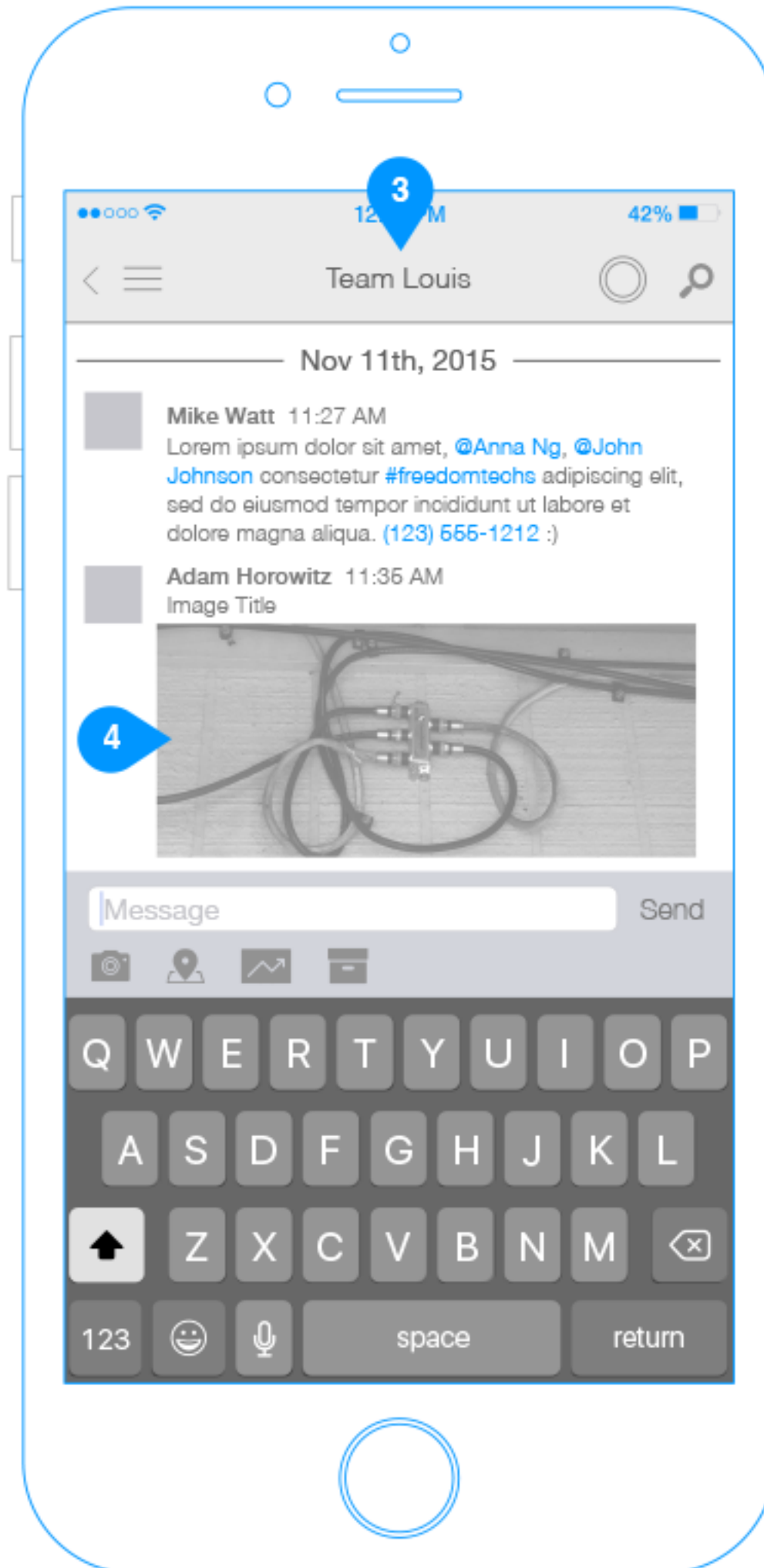
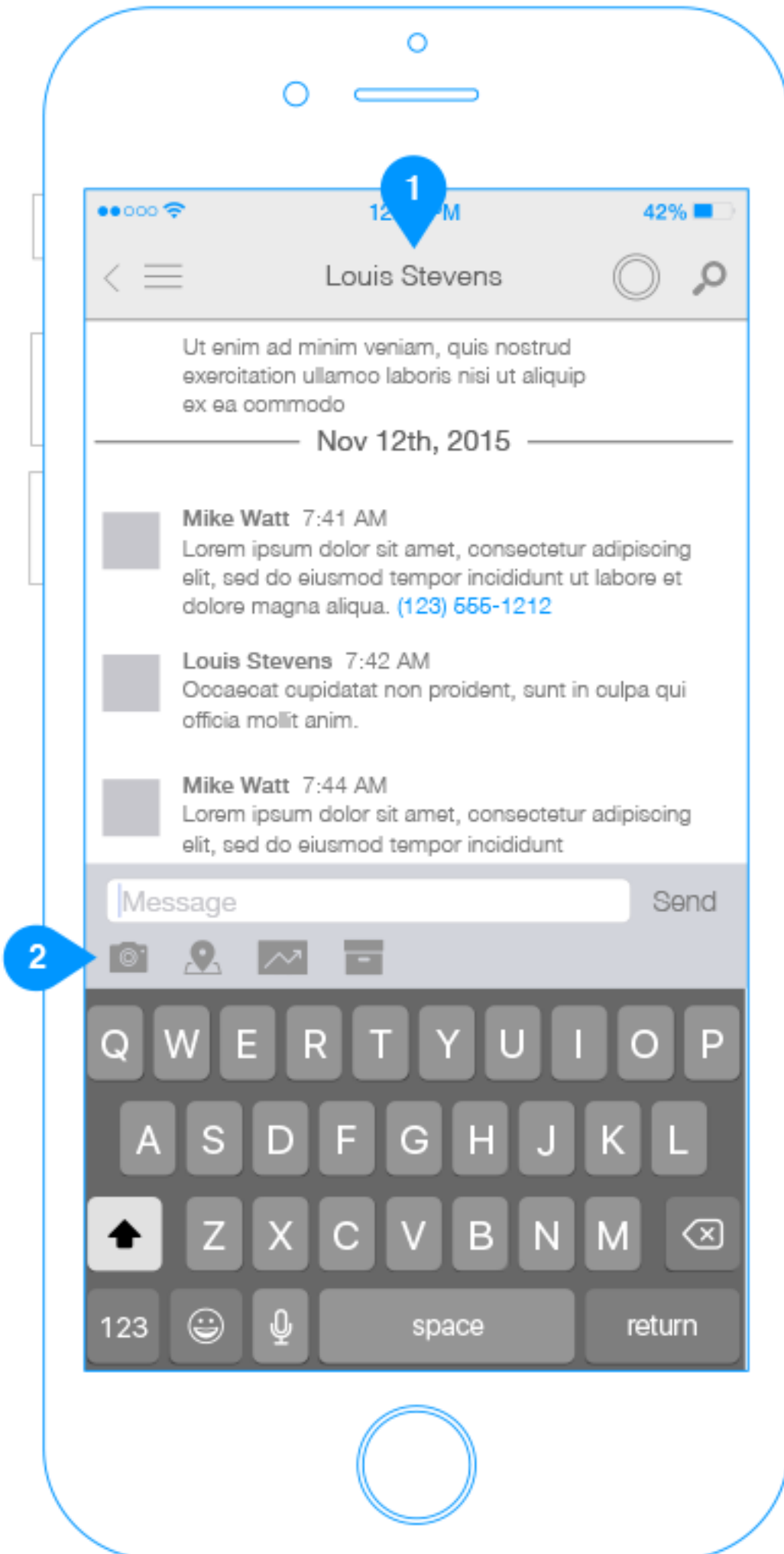
- 1 Close**
When finished viewing the summary, users can tap the close button/icon to dismiss this window/overlay.
- 2 Job Type / Number**
In the Summary view, this area is informational only - not tappable.
- 3 Why I'm Here**
This area will contain information that led to the truck roll being scheduled. Requested equipment, problem(s) the customer was experiencing, etc.
- 4 Customer Notes**
This area will contain the last customer notes entered by the call center. This includes who added the note and when it was added.
- 5 Last Tech Visit**
This section will contain information related to the last time a truck roll occurred at this location. This includes who the last technician was and when it occurred.
- 6 Health Information**
This section will contain information related to the health of the home/ business at the present time.
- 7 Scrolled**
The customer information card should dock at the top of the screen and the remaining summary content should scroll beneath it.

Reminders



- 1 Reminders Tab**
When tapped, all reminders are displayed with the most recent due first. Reminders are created and deleted by the technicians.
- 2 Reminder**
Similar to iOS reminders, the full text of the reminder along with its due date/time will be displayed in this view. Users will tap on the reminder to edit its details. Items that are now overdue, are marked such that they are visually different from the upcoming reminders.
- 3 Completed Reminder**
Technicians can tap the checkbox to mark the reminder as completed. These reminders will be moved to the bottom of list. These reminders are persisted in this state in case the technician wishes to tap the checkbox again and mark the reminder as not completed. This allows for easily re-using reminders.
- 4 Add New Item**
Technicians can tap this button to add a new reminder. The app will navigate to the Add New Item screen (REMINDERS-ADD-ITEM).
- 5 Left Triage Action**
Technicians can swipe left on any reminder to reveal the Remove action. When tapped users will receive the confirmation pop-up to confirm the removal action.
- 6 Save**
When tapped, the contents of the reminder that have been entered will be committed. The app will navigate back to the Home screen with the Reminders tab open to reflect the newly added reminder.
- 7 Add New Item Form**
This form will allow the user to add a new reminder. Only the title/description field is required.

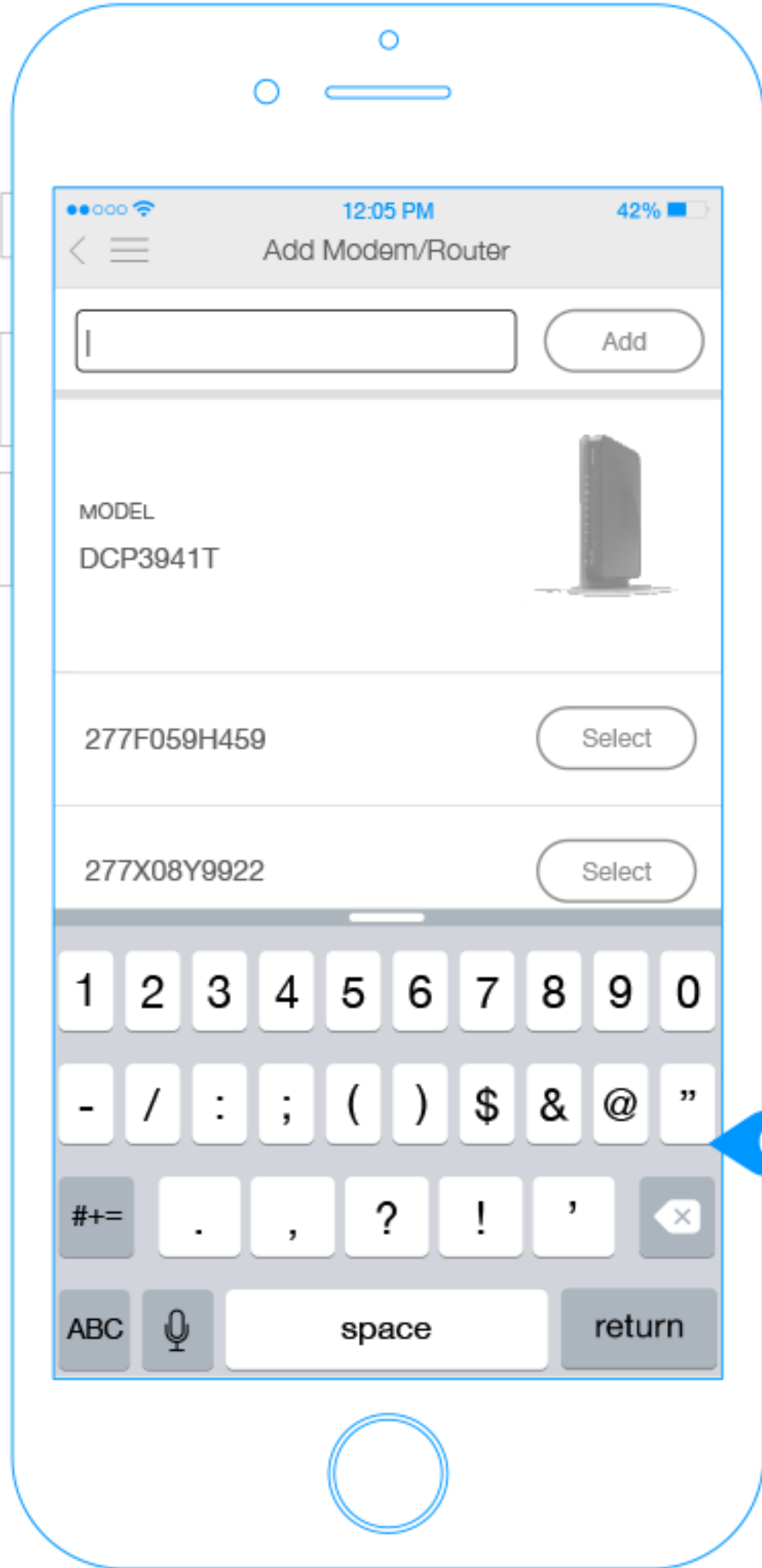
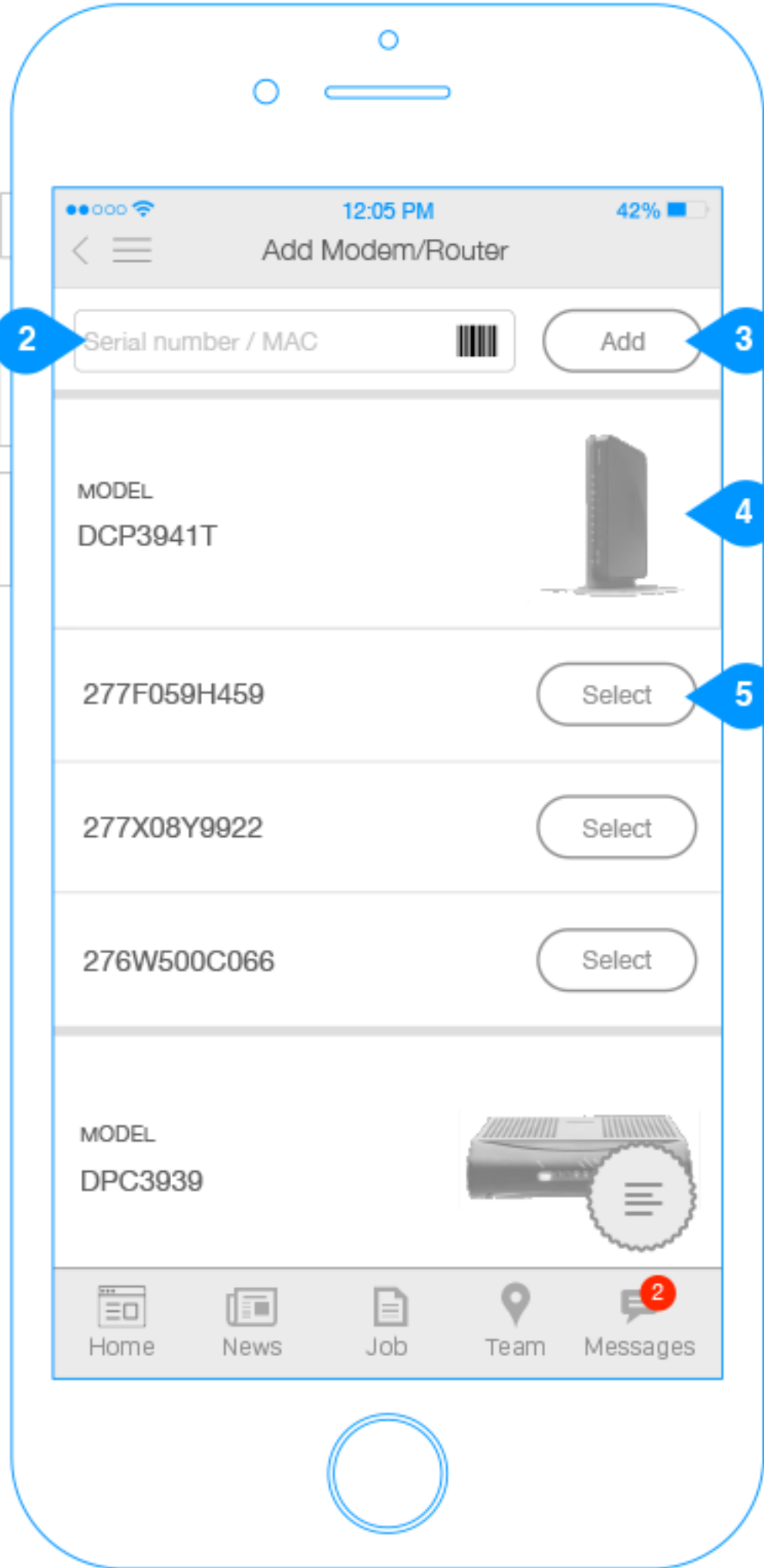
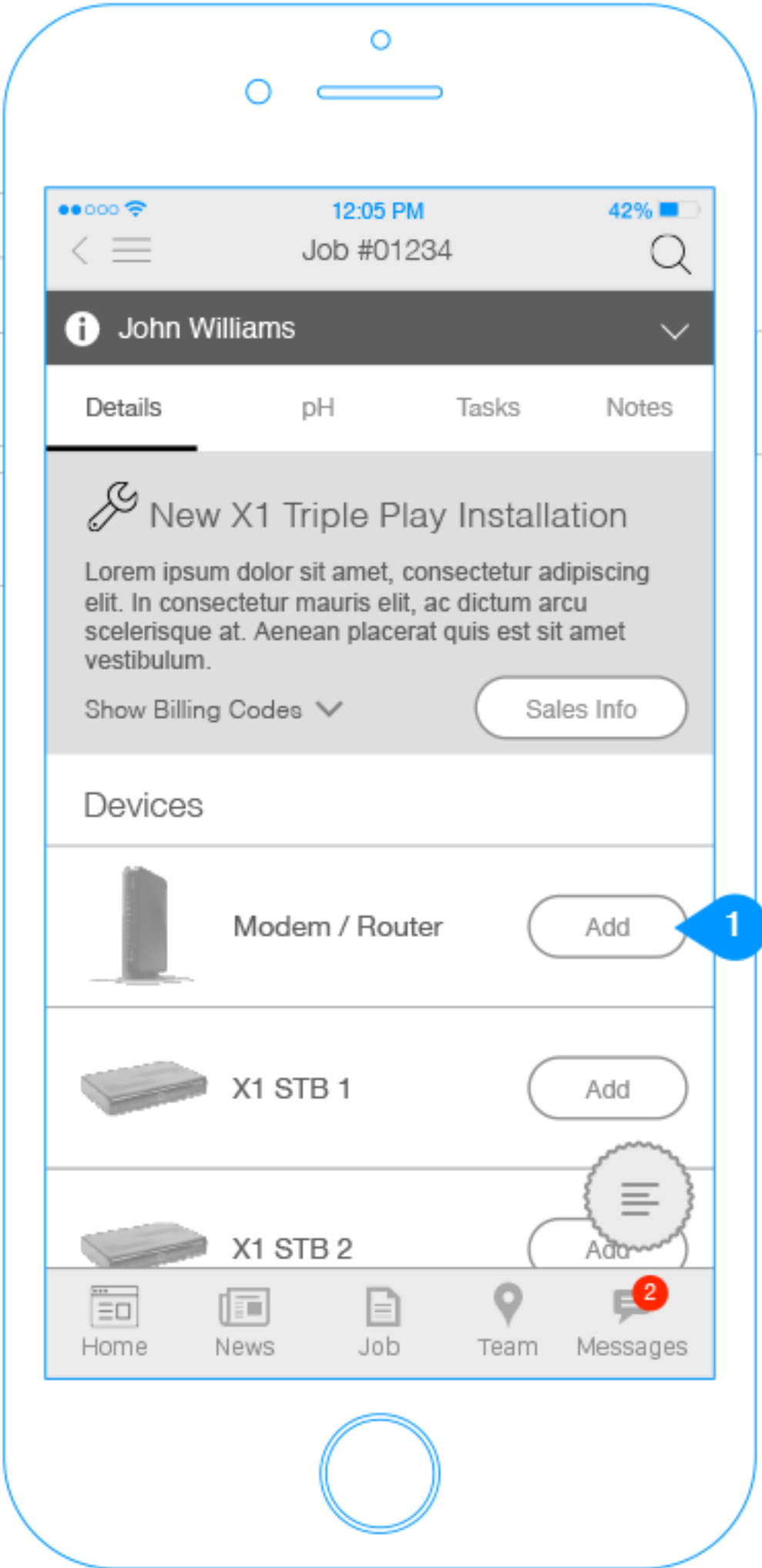
Messaging



- 1 Direct Message Conversation**
In this example Mike Watt is messaging Louis Stevens.
- 2 Message Options**
Technicians will have the ability to easily add several things to their messages to assist in making their point, illustrating something or marking a location. Those options are shown as: add a photo, drop a pin, show health data of current job, and show the job details card.

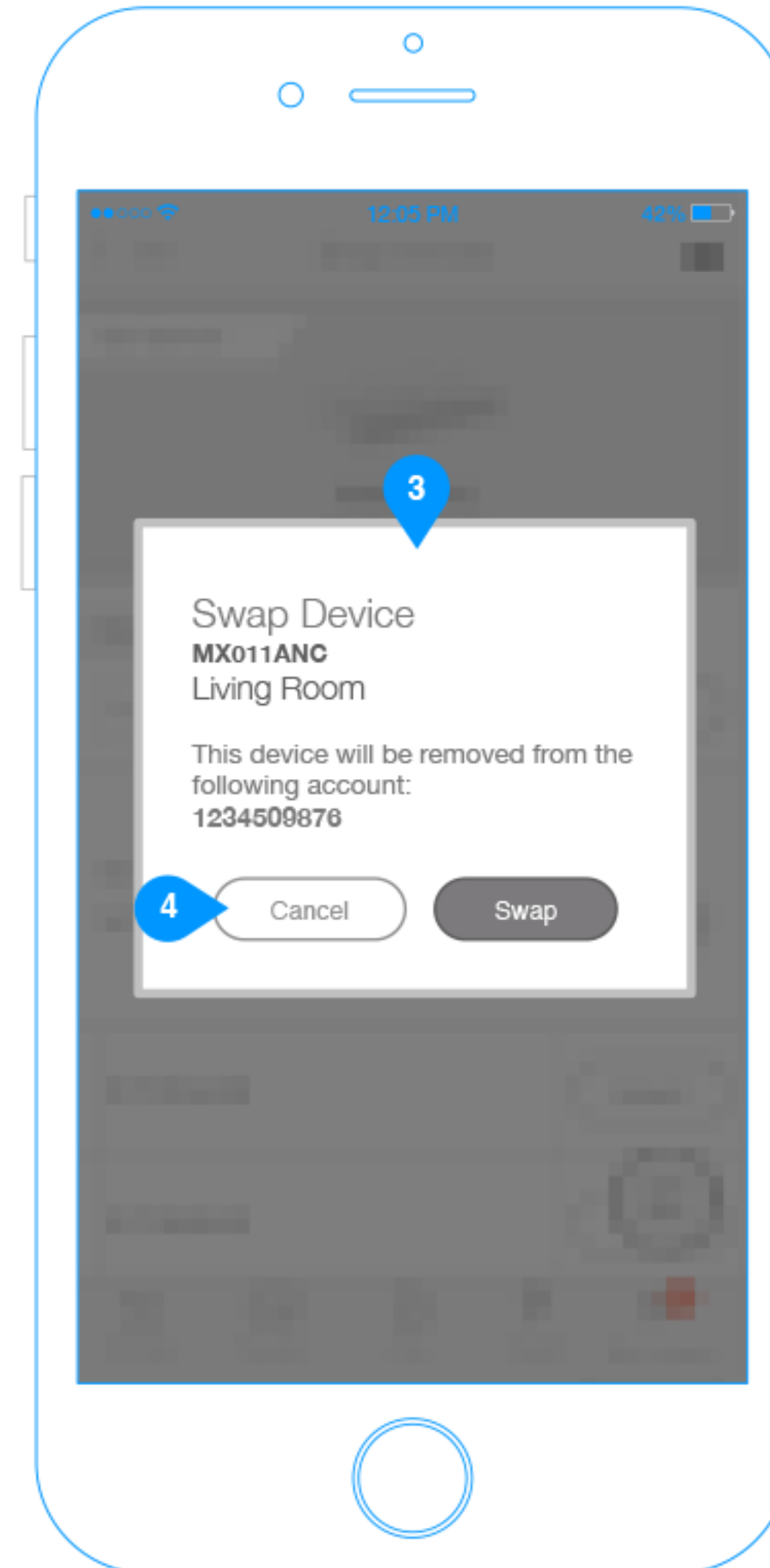
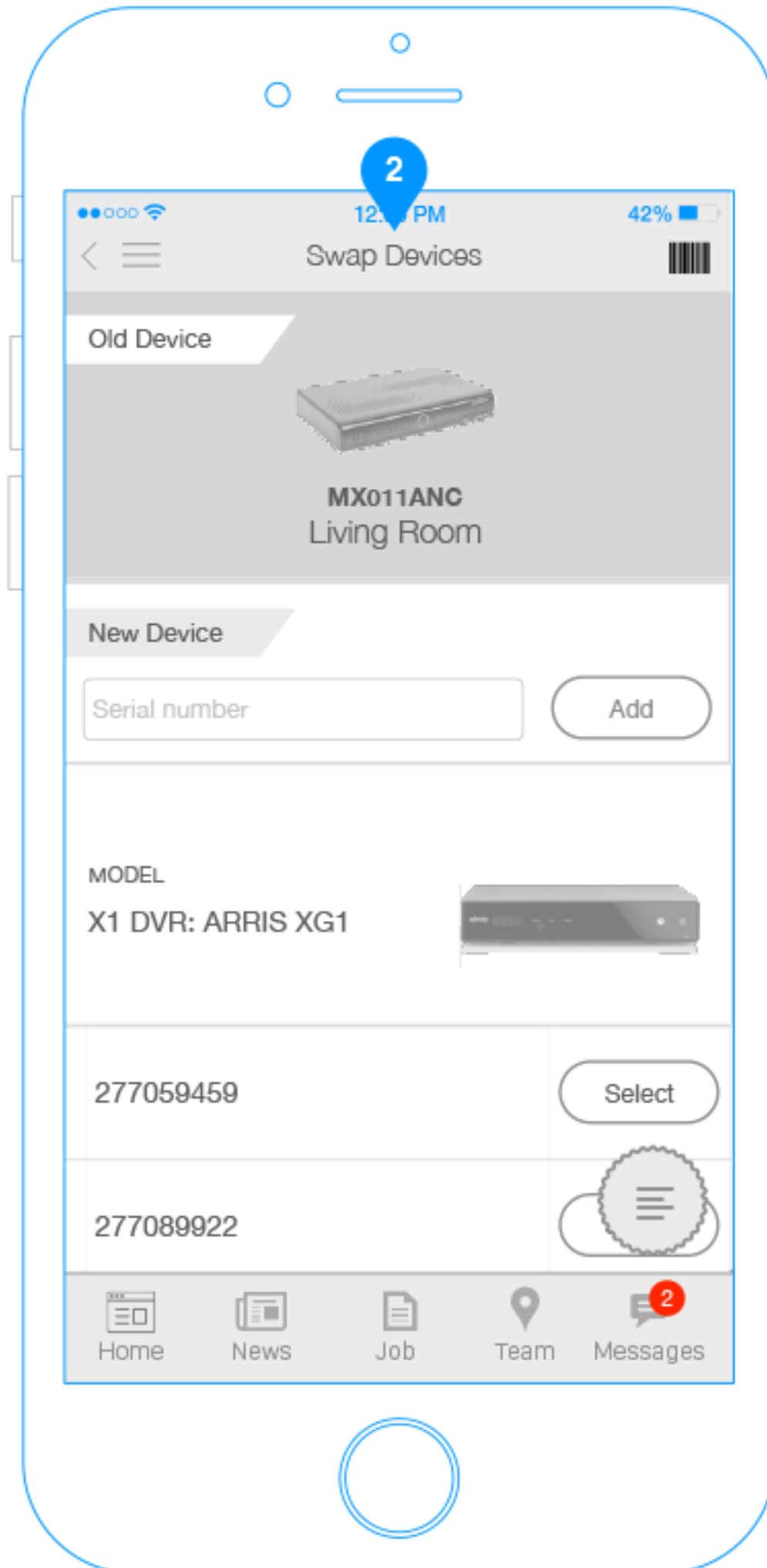
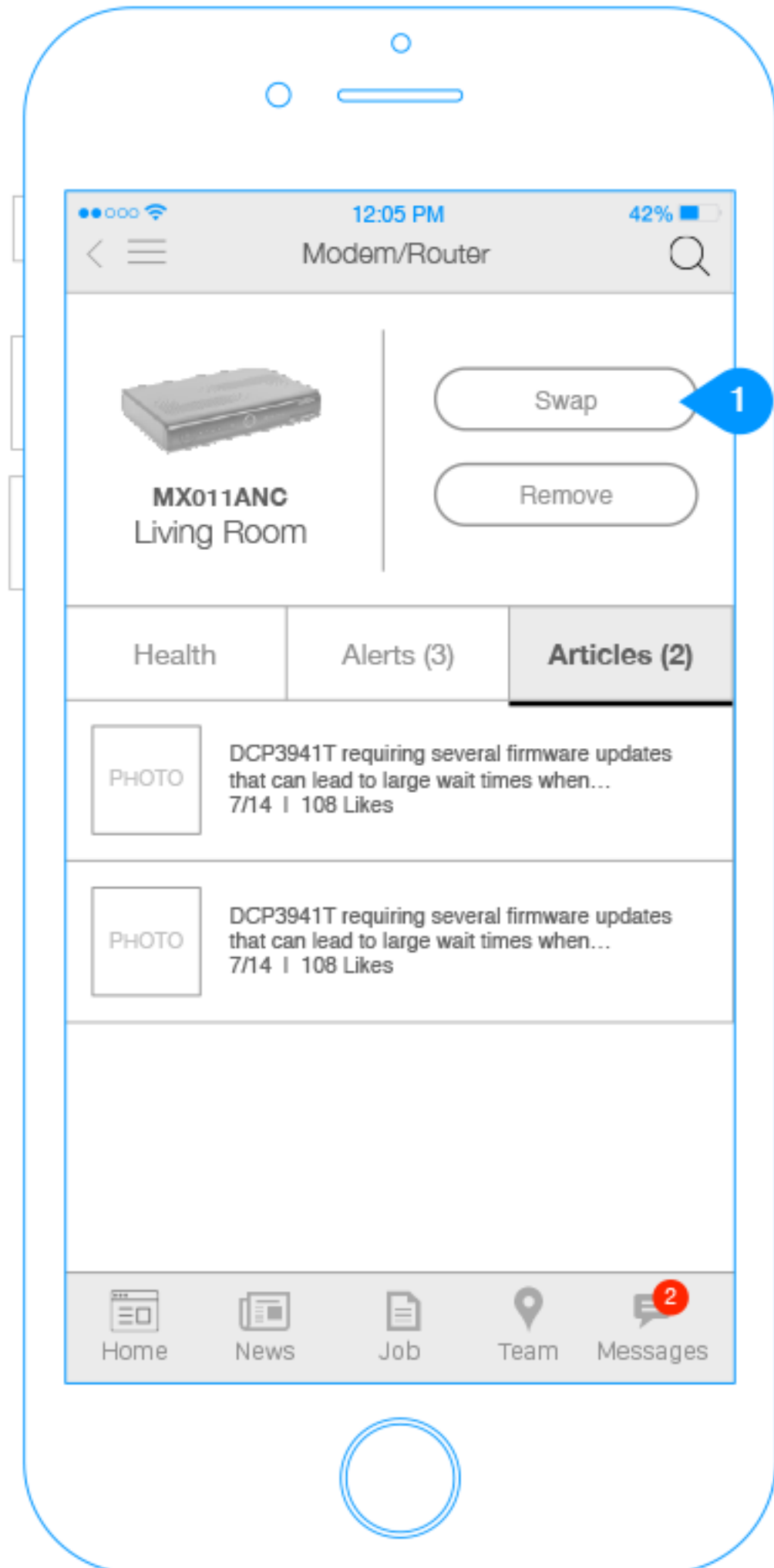
Tapping on these items will place a pin, health info card, or job info card directly into the message stream. Adding a picture will take the technician to their device camera roll to insert a photo or photos.
- 3 Team Message**
Each tech will have an ongoing team conversation provided in their conversation list. This is an open forum to post questions, solutions, etc. and converse with their teammates.
- 4 Photo Example**
This is an example of a photo that was added to the team conversation by Adam Horowitz.
- 5 Health Example**
This is an example of a health card that was added to the team conversation by Mike Watt. The intent is for the card to deep link to Mike Watt's job and view the full details of the health of that home/business — this would be a read-only view of the job details screen.

Add Device



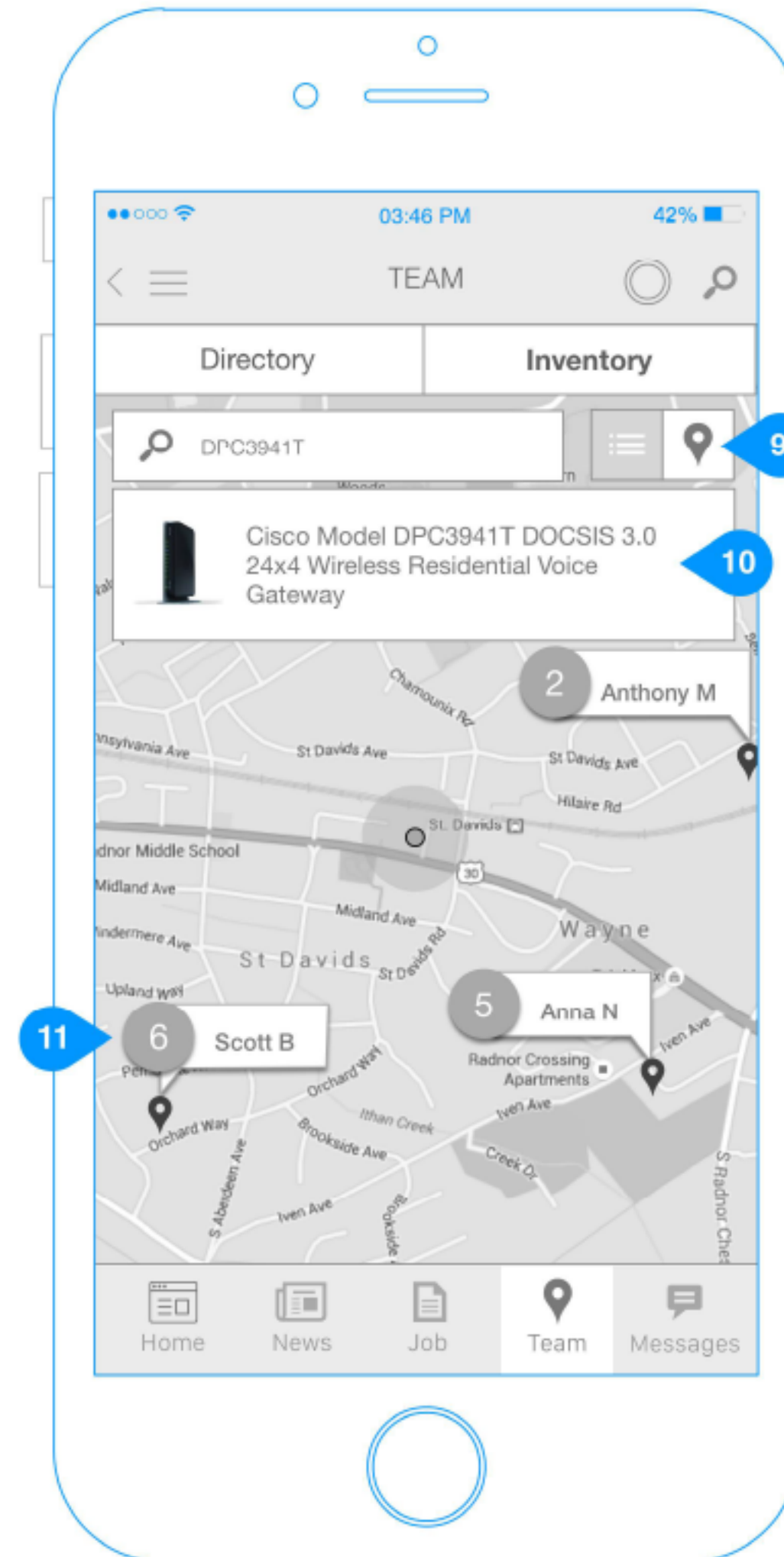
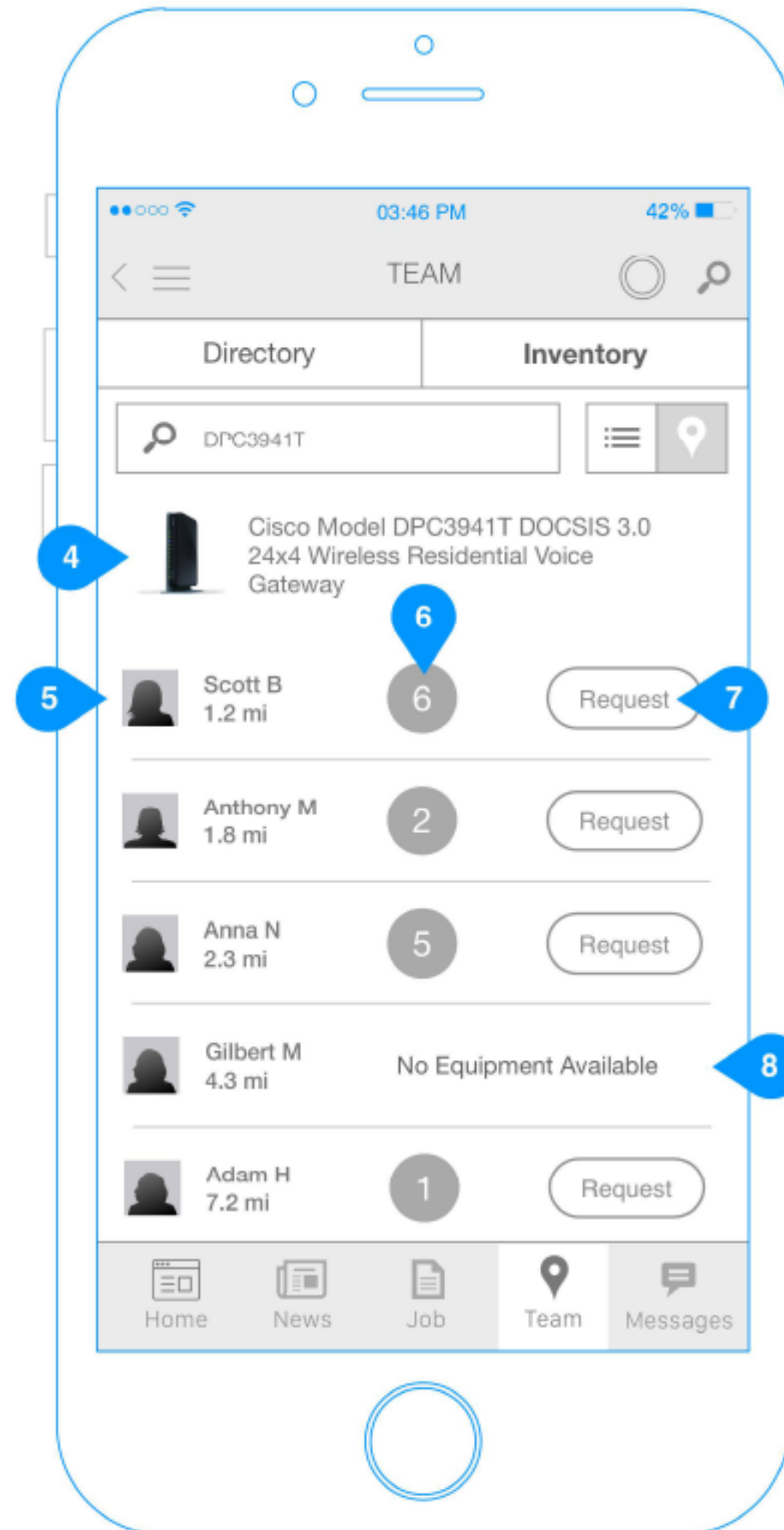
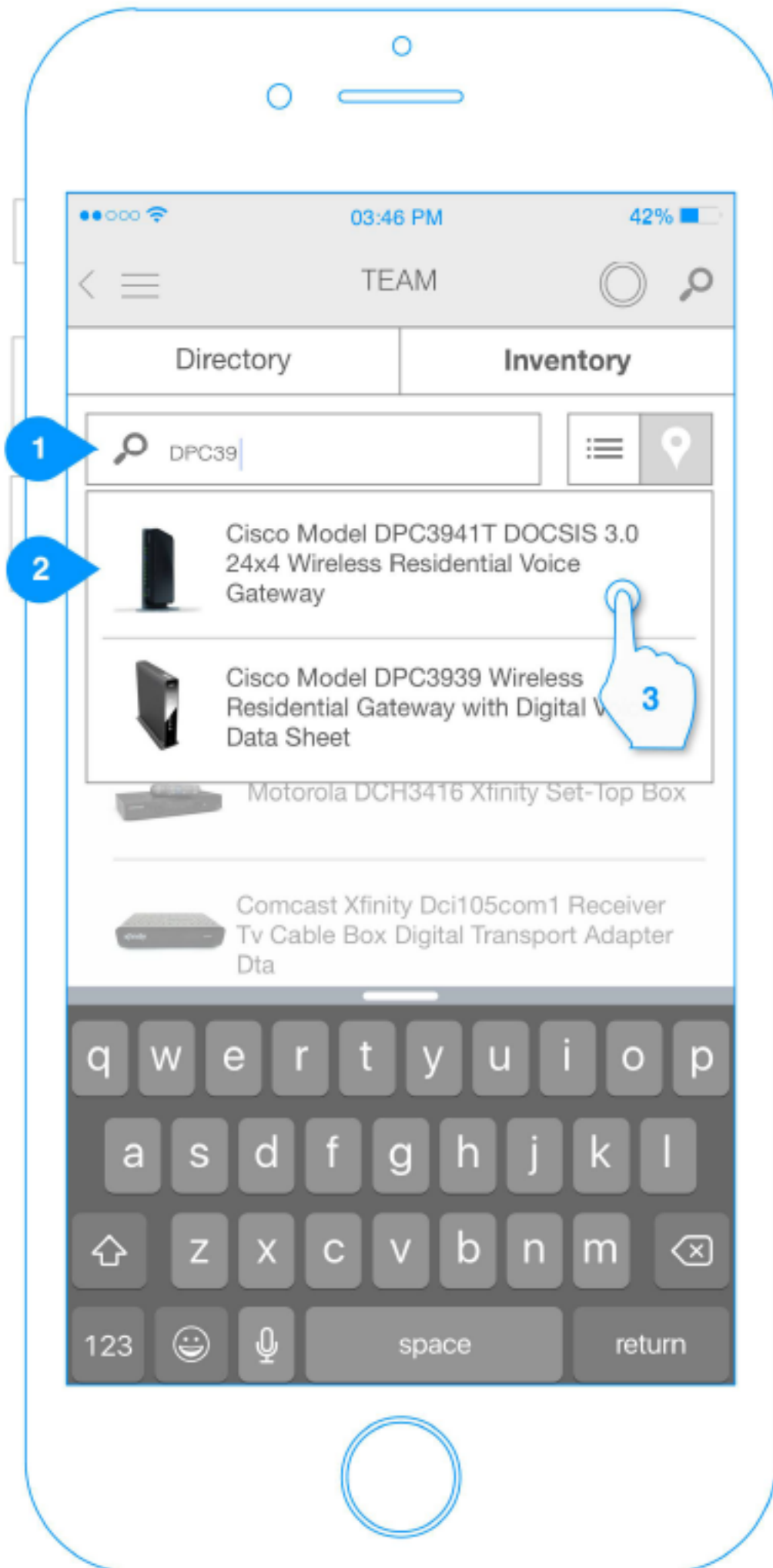
- 1 Add**
For each device, technicians will tap the Add button to navigate to the "Add <device type>" screen.
- 2 Manual Addition**
If a device is not displayed in the pick list below, or the technician just prefers to enter the serial number or MAC address manually, they will tap into this field. Optionally, the bar code can be tapped to scan the bar code on the device itself (this functionality is TBD).
- 3 Add Button**
For manual entry, when the technician has finished typing the serial number, they will tap the Add button. When tapped, the app will verify the serial number and type of device, and if successful add the device to the customer account.
- 4 Device Listing**
The device listing will be displayed by device type. Only applicable device types will be shown depending on which device needs to be added. For instance, when the tech taps to add a modem/router, only modem/router device types will be displayed. Both the model number and a device image will be displayed to assist the tech as they look for their device.
- 5 Select**
When technicians find the device they need to add, they will tap the Select button. When tapped, the device will be added to the customer account.
- 6 Number Keypad**
Since most serial numbers start with a number sequence, we will default the keypad to the number keypad as shown.
- 7 Type Ahead Searching**
As the technician types in a serial number, any corresponding matches from the listings below will be shown. At any time the technician can tap Select for a given device below or tap Add when finished typing in the serial number.

Swap Device



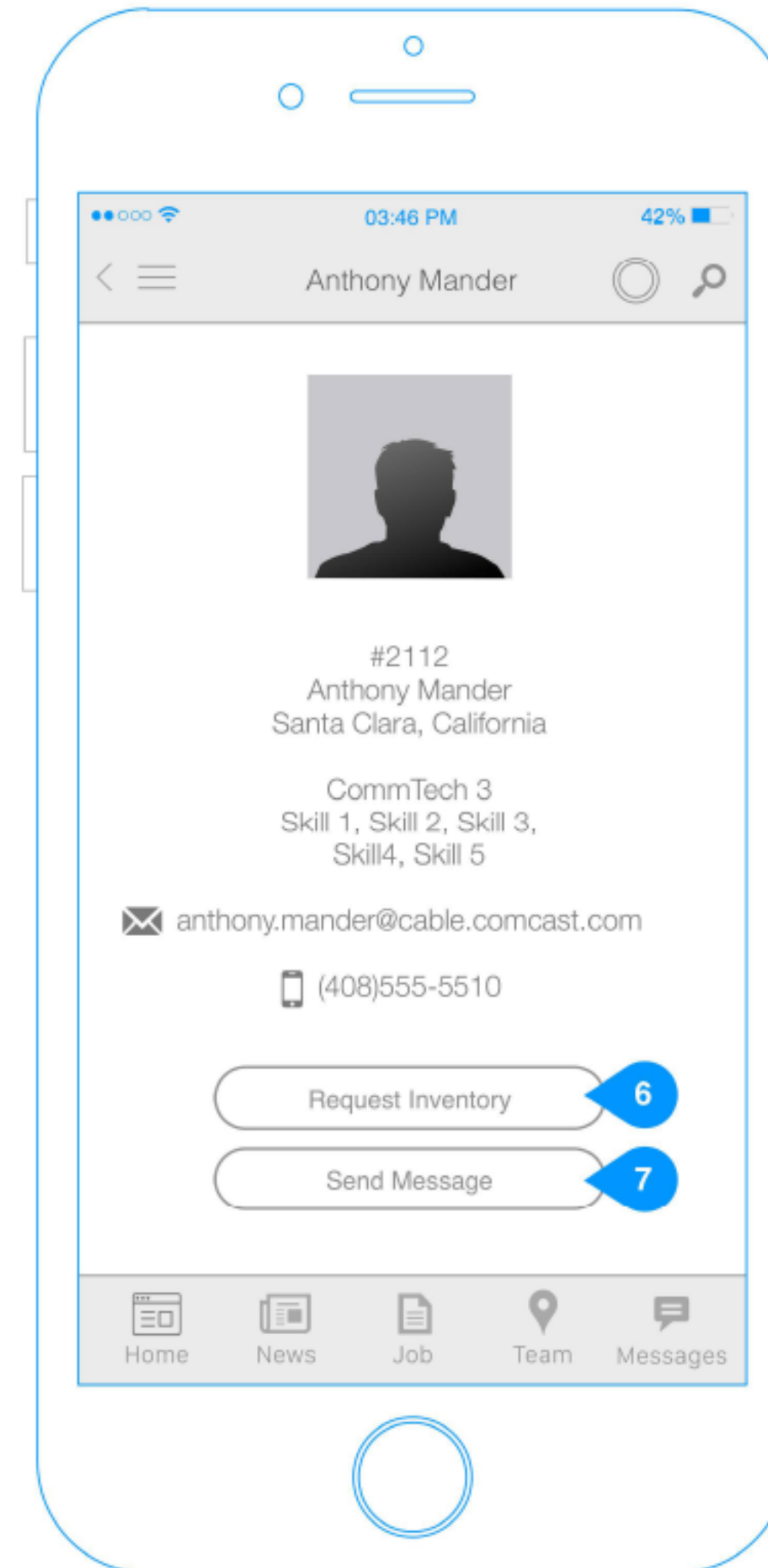
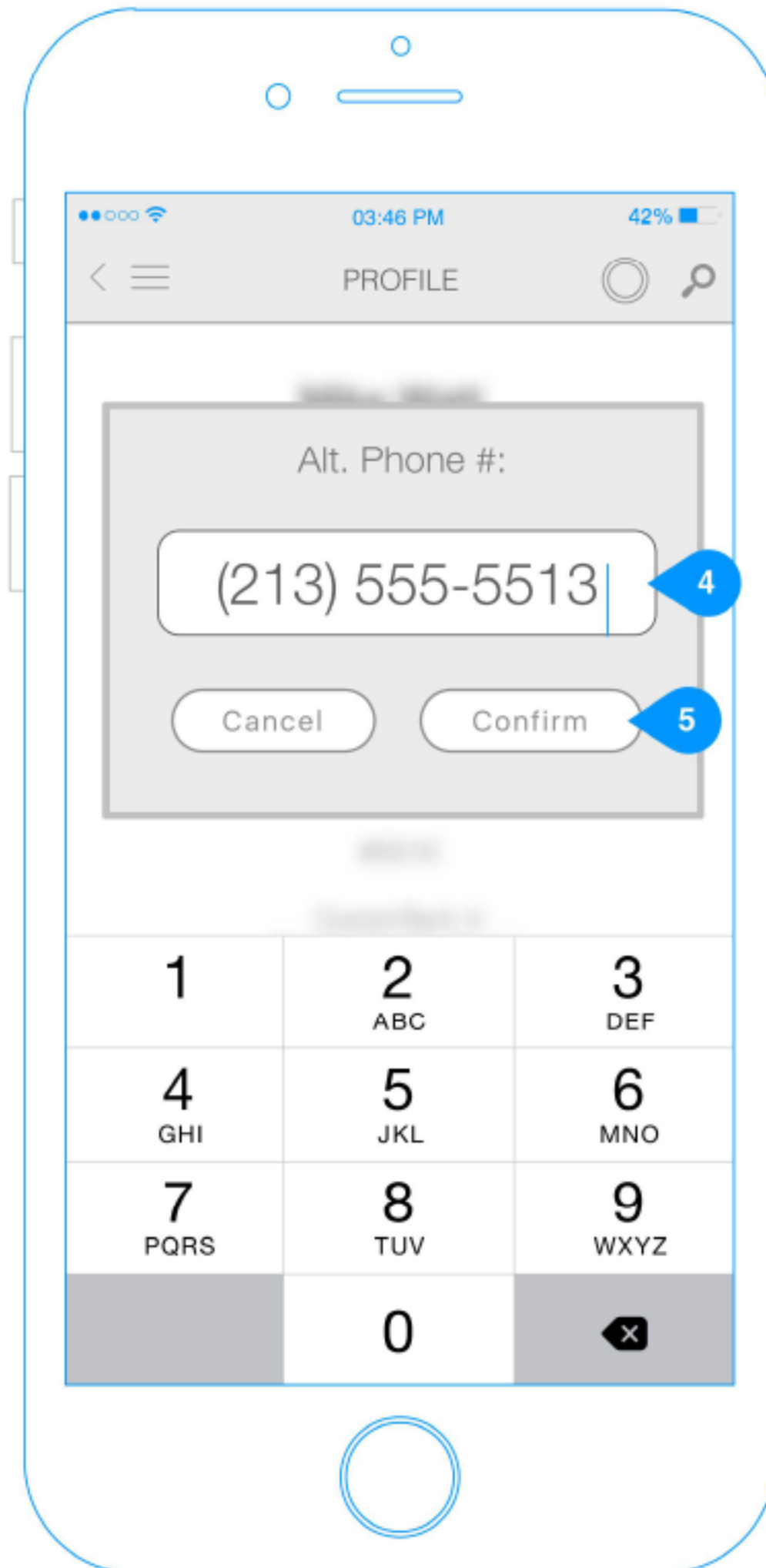
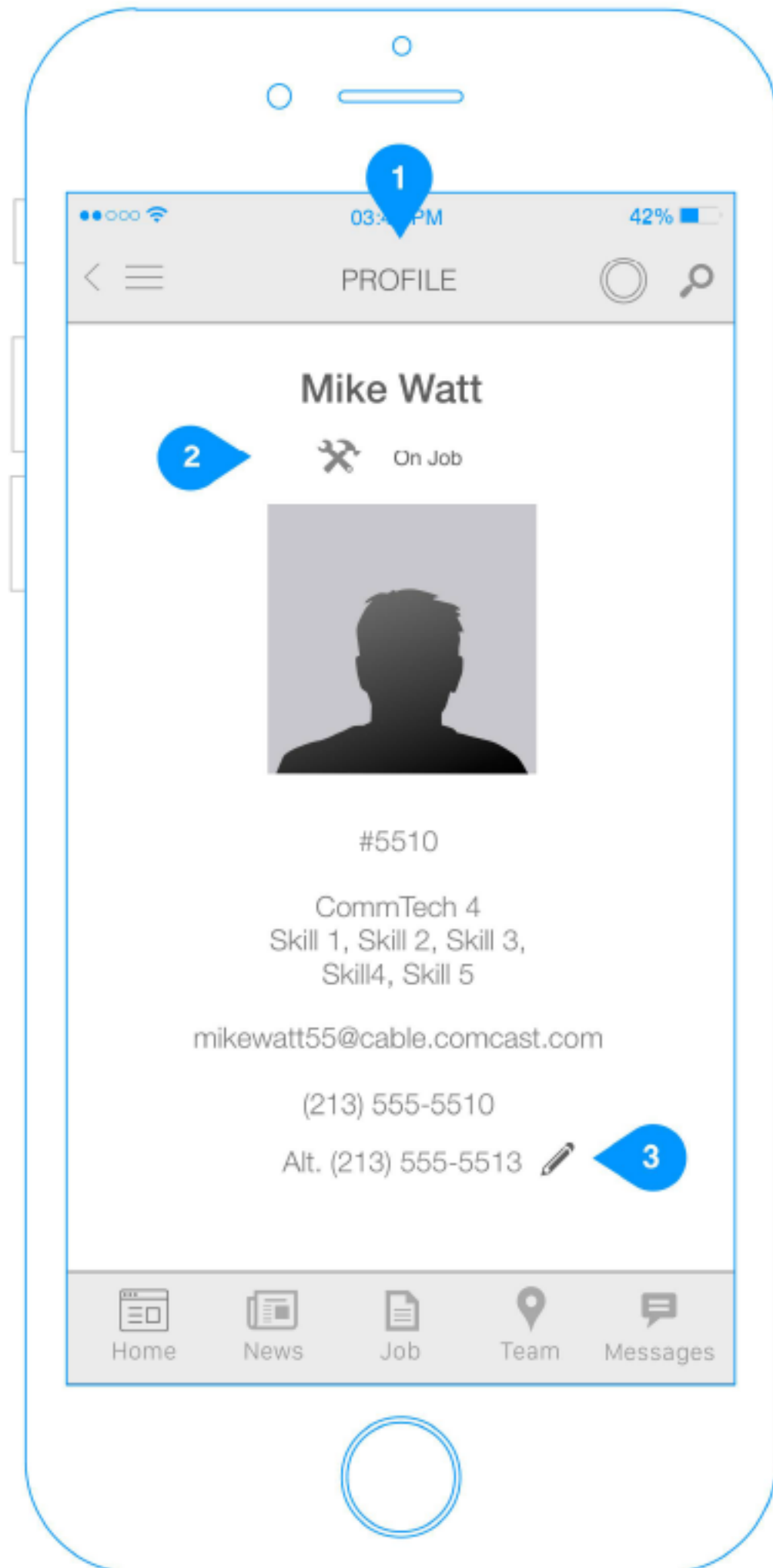
- 1 Swap Button**
When tapped, this will confirm the removal of the specified device and remove it from the customer account.
- 2 Swap Devices**
This screen displays the device that will be removed and allows the technician to select a replacement device all in one step.
- 3 Swap Devices Pop-up**
When a technician taps Select (or manually adds a device) from the Swap screen they will receive the pop-up to confirm the swap on the account.
- 4 Cancel Button**
When tapped, this preserve the current state of the account, close the pop-up, and return the app to its previous state.

Find Inventory



- 1 Search**
Technicians can search for inventory that their team members might have. As they type in criteria, the system will display predictive results.
- 2 Predictive Results**
As the technician types in the product, results will display, showing a product image, and the full name of the product.
- 3 Selection Tap**
Tapping on the predictive results will take the technician to the inventory search results for that product.
- 4 Inventory Search Results**
The inventory search results will display product information at the top of the page, with the product image, and a complete name of the product.
- 5 Team Members**
Each team member will display, in ascending order based on distance from technician, showing member profile picture, distance, and full name.
- 6 Inventory Level**
Each team member's known inventory level for the selected product will display.
- 7 Inventory Request**
Tapping the request button will generate a request message with the selected team member.
- 8 No Inventory**
For team members that do not have any inventory of the selected product, no request button will display.
- 9 View Toggle**
Once switched, a technician is allowed to view the search within the context of the map.
- 10 Inventory Search Results**
The inventory search results will display product information at the top of the page, with the product image, and a complete name of the product.
- 11 Inventory Level**
Each team member's known inventory level for the selected product will display along with their name on the map.

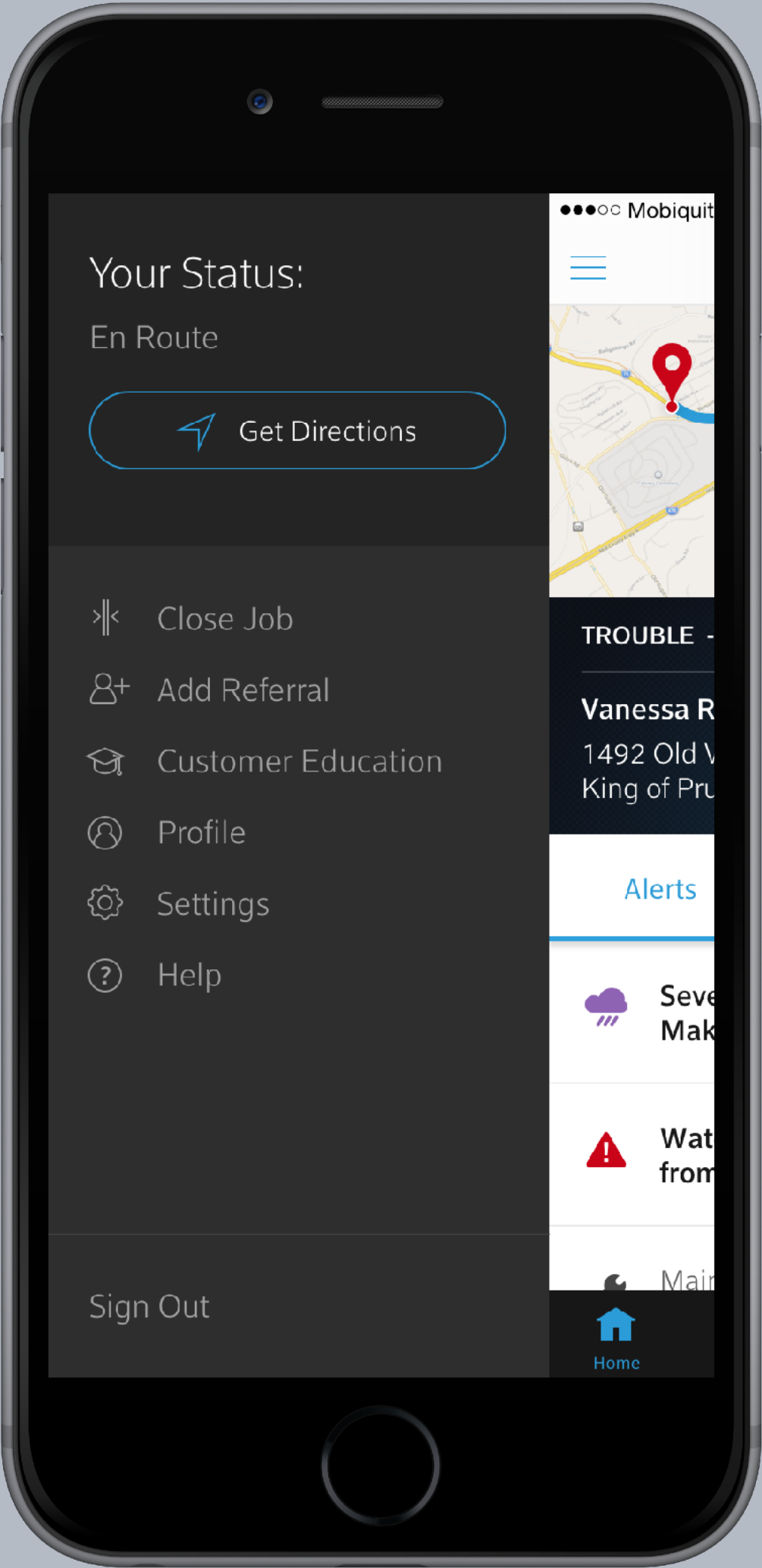
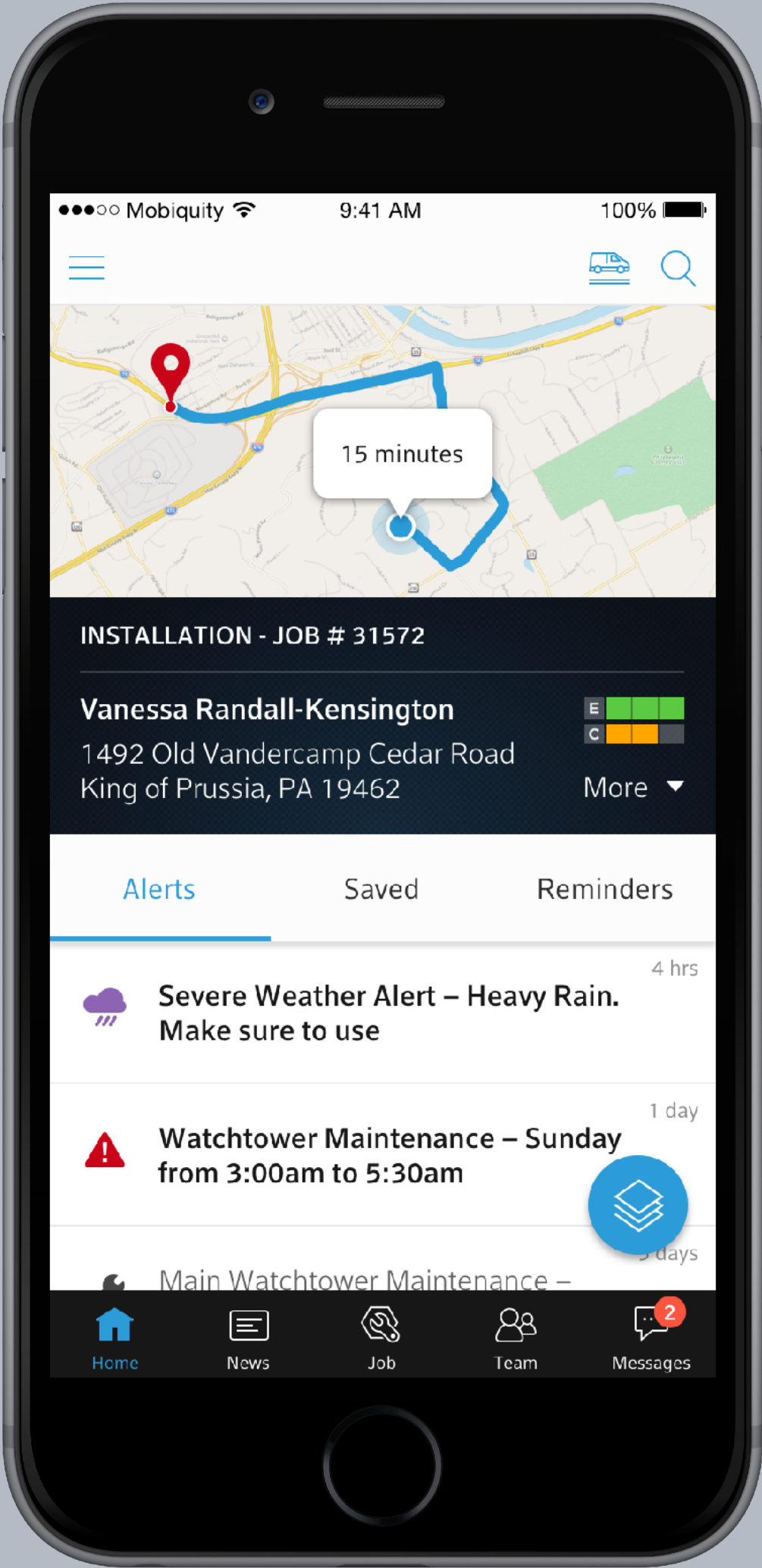
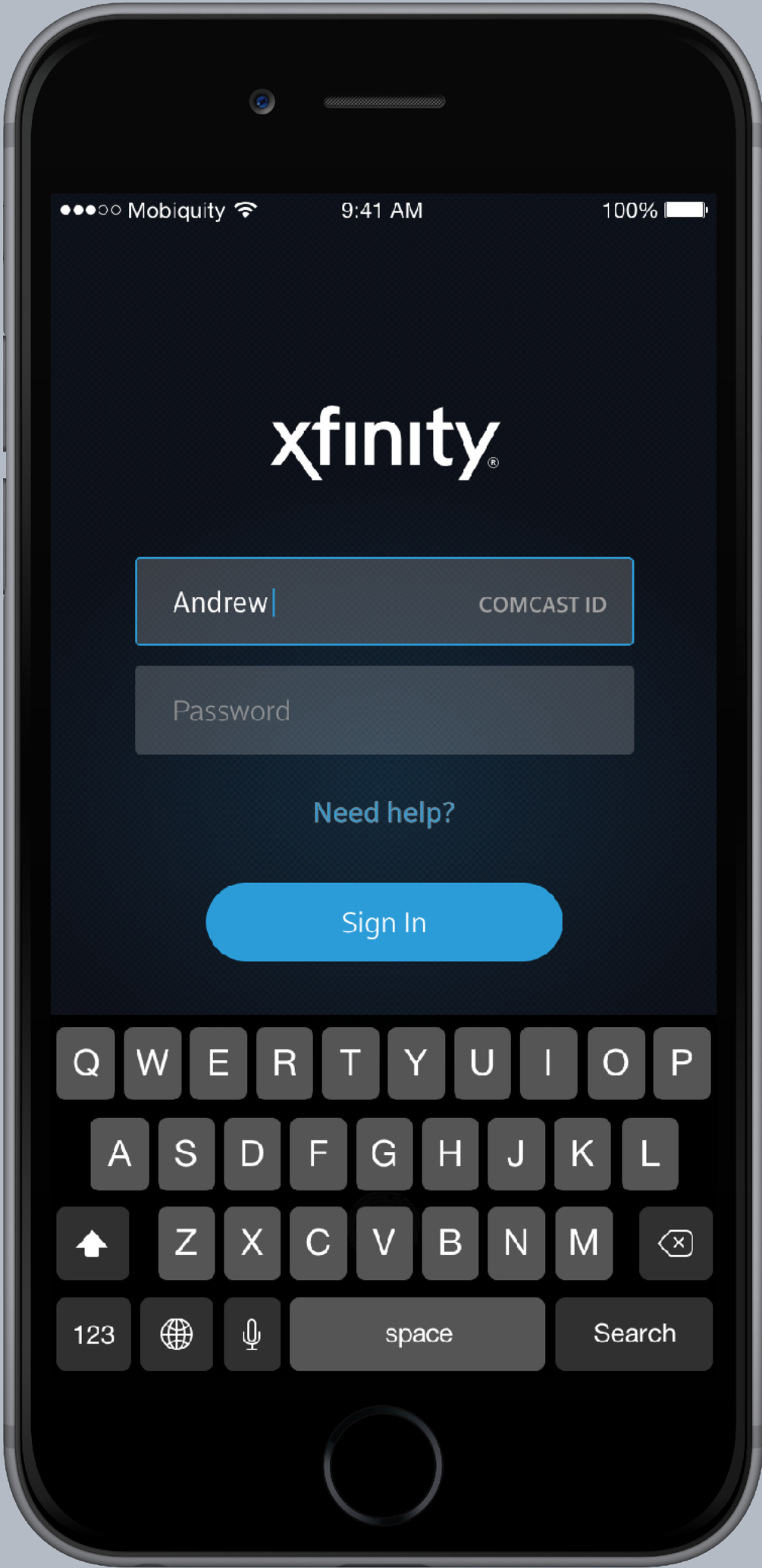
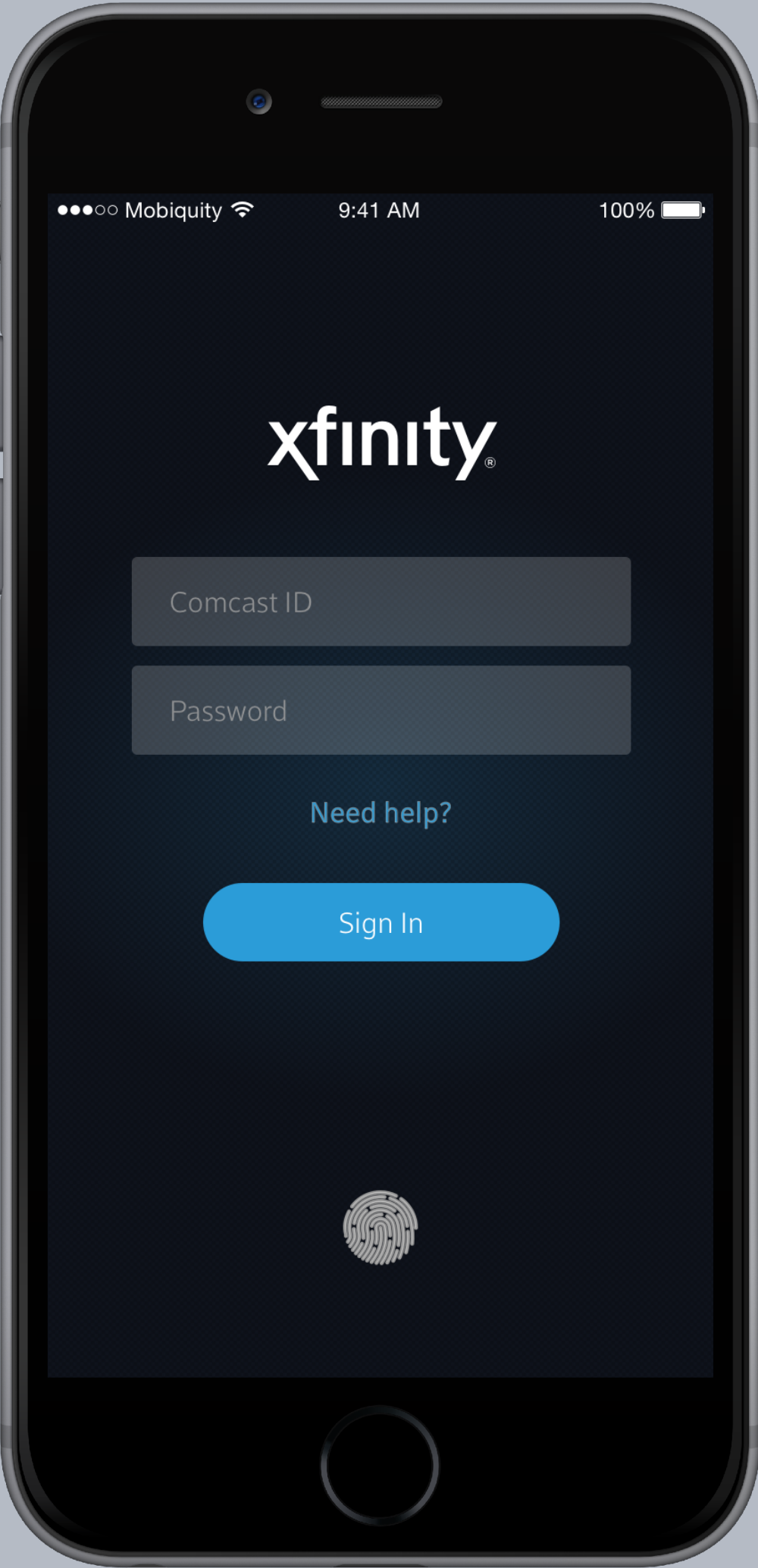
Profile



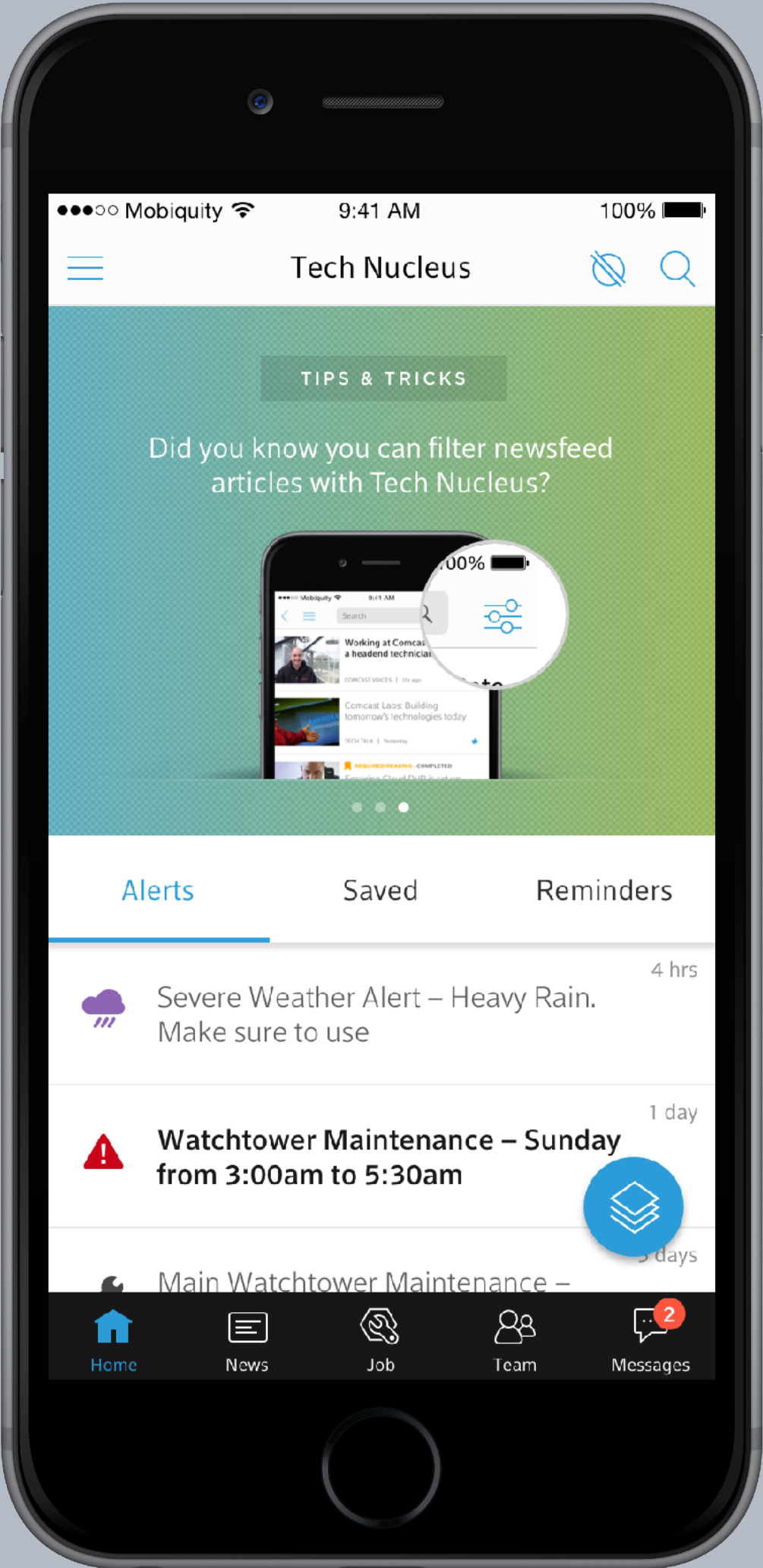
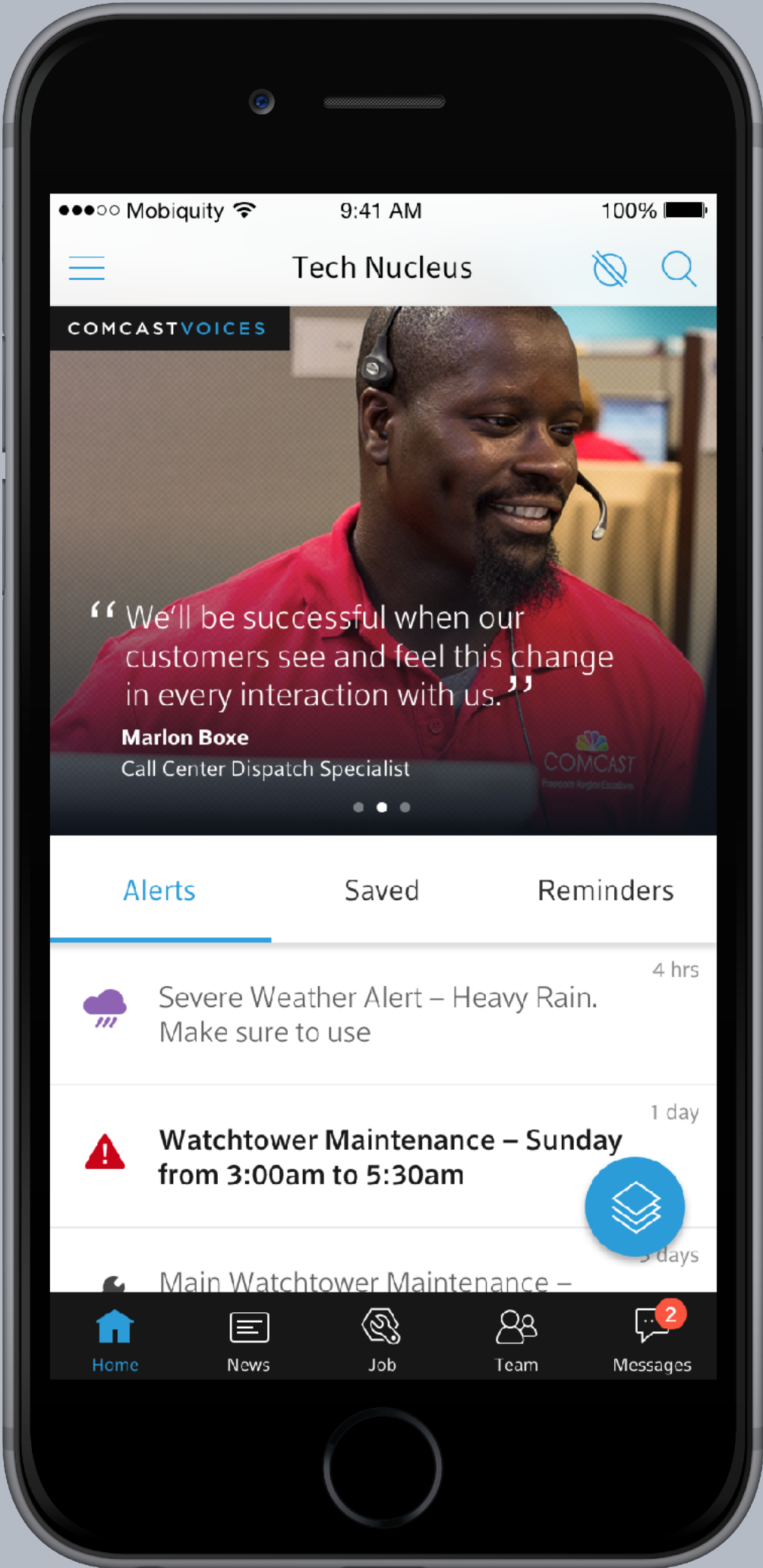
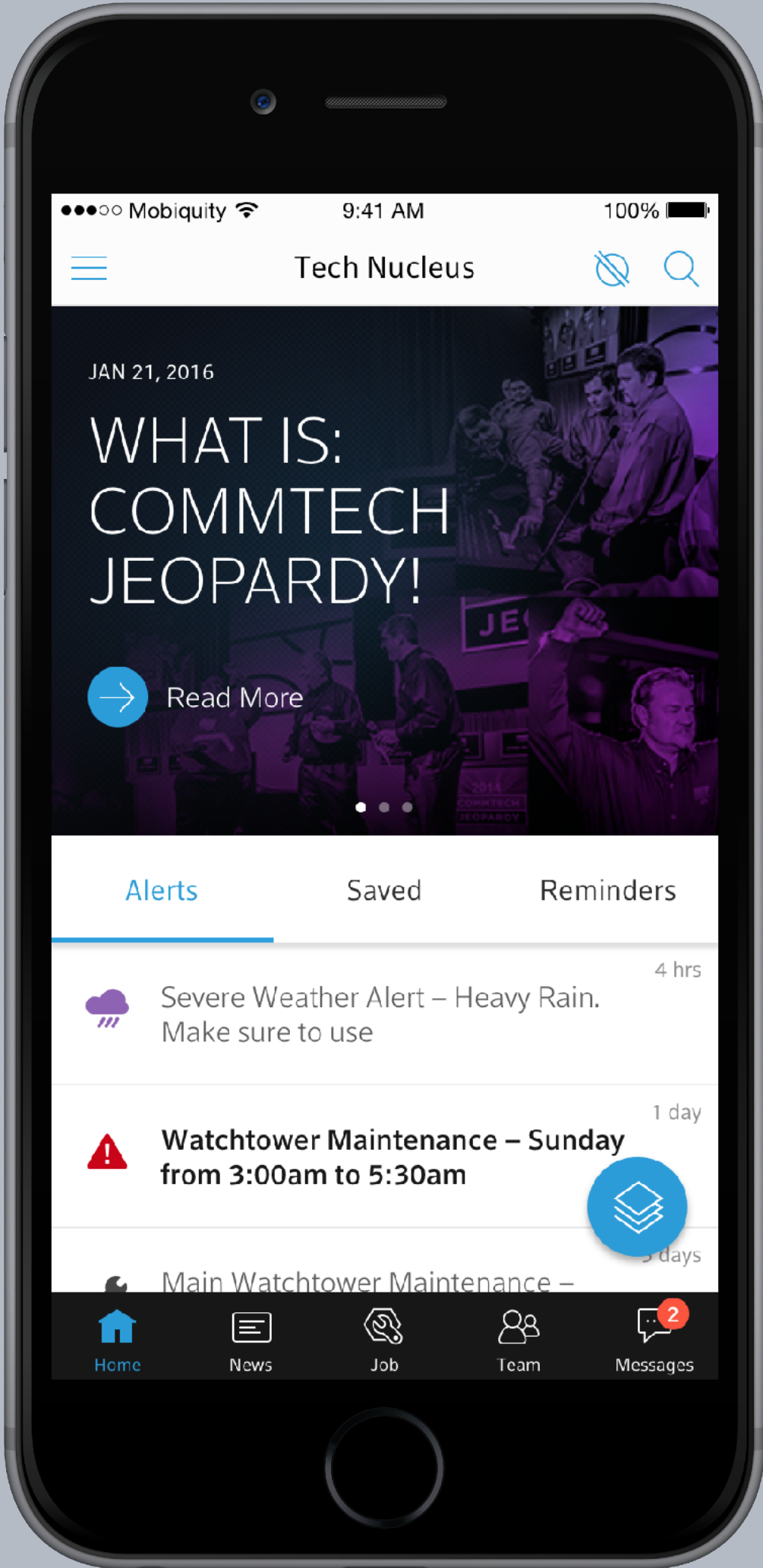
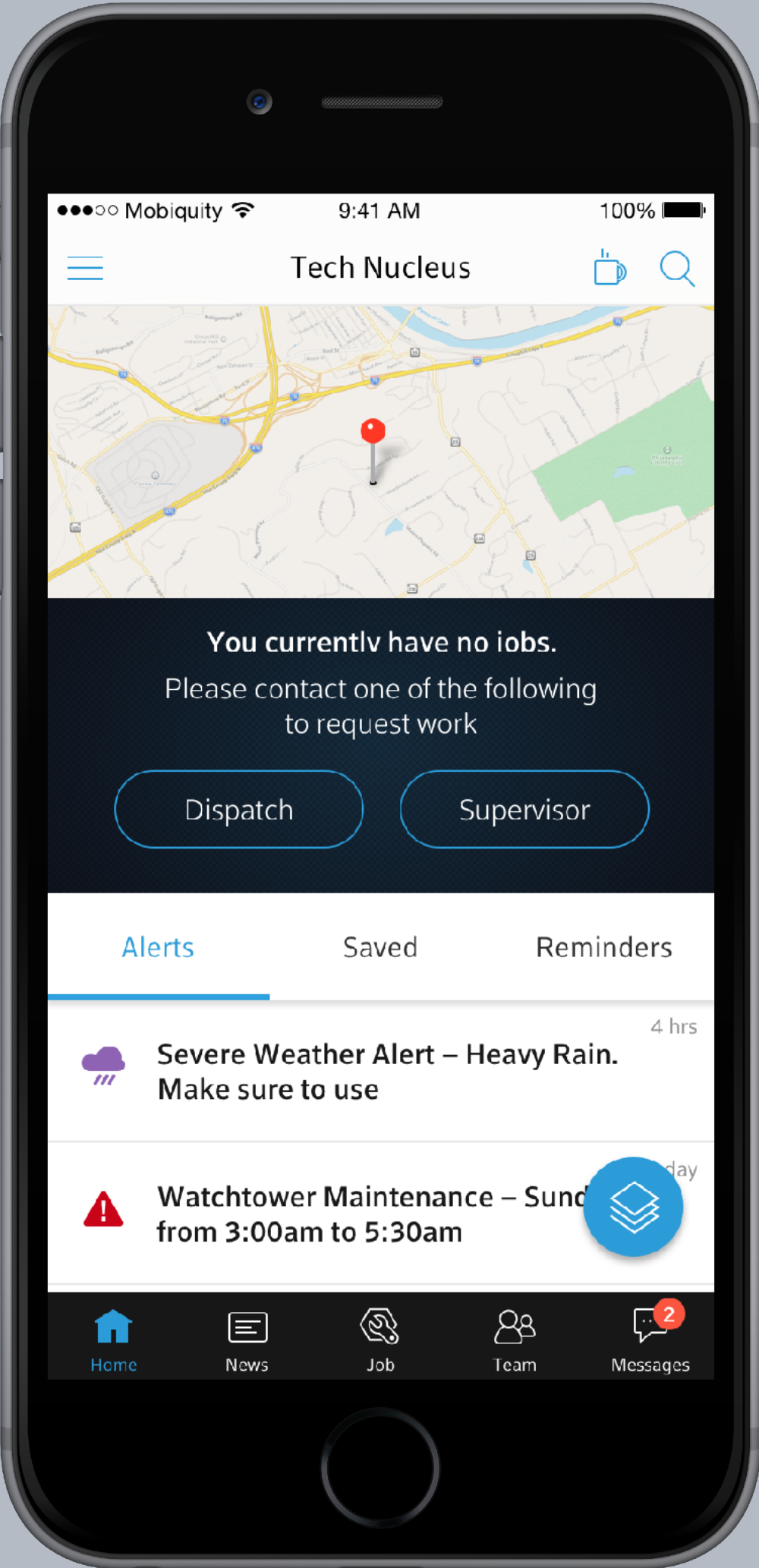
- 1 Profile Page**
Each technician will have a profile page, displaying information about him. A technician can access his own page through the contextual menu, and make edits from there.
- 2 Profile Information**
Each profile will display the following information
 - Current work status, with icon
 - Profile image
 - Personal message
 - Tech number
 - Screen name
 - First and last name
 - General location (not current GPS location)
 - Job Level
 - Job Skills
 - Email address
 - Phone numbers
- 3 Edit Alt Phone Number**
On the technician's page, he will have the ability to tap to edit his phone number.
- 4 Enter Alt Phone Number**
Technicians can tap in their phone number with the provided keypad.
- 5 Confirm / Cancel**
The Cancel button will dismiss the pop-up and return the tech to the previous page (Profile page). The Confirm button will save the phone number that was typed in and return the tech to the previous page (Profile page).
- 6 Request Inventory**
When tapped, this will navigate the technician to the Team page with the Inventory tab displayed.
- 7 Request Inventory**
When tapped, this will navigate the technician to a conversation with this technician. If no conversation exists with this technician, a new one will be started.

Visual Design

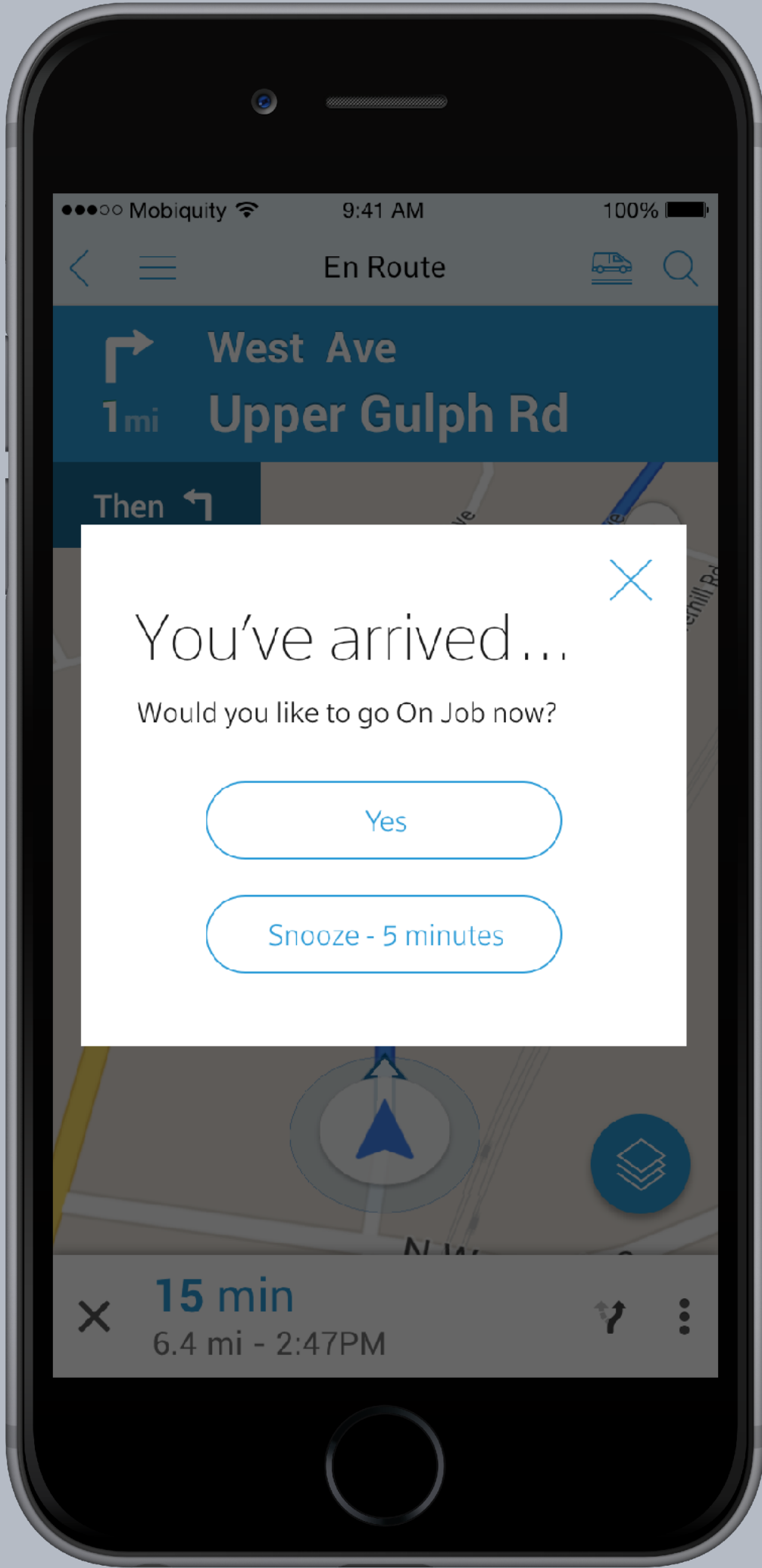
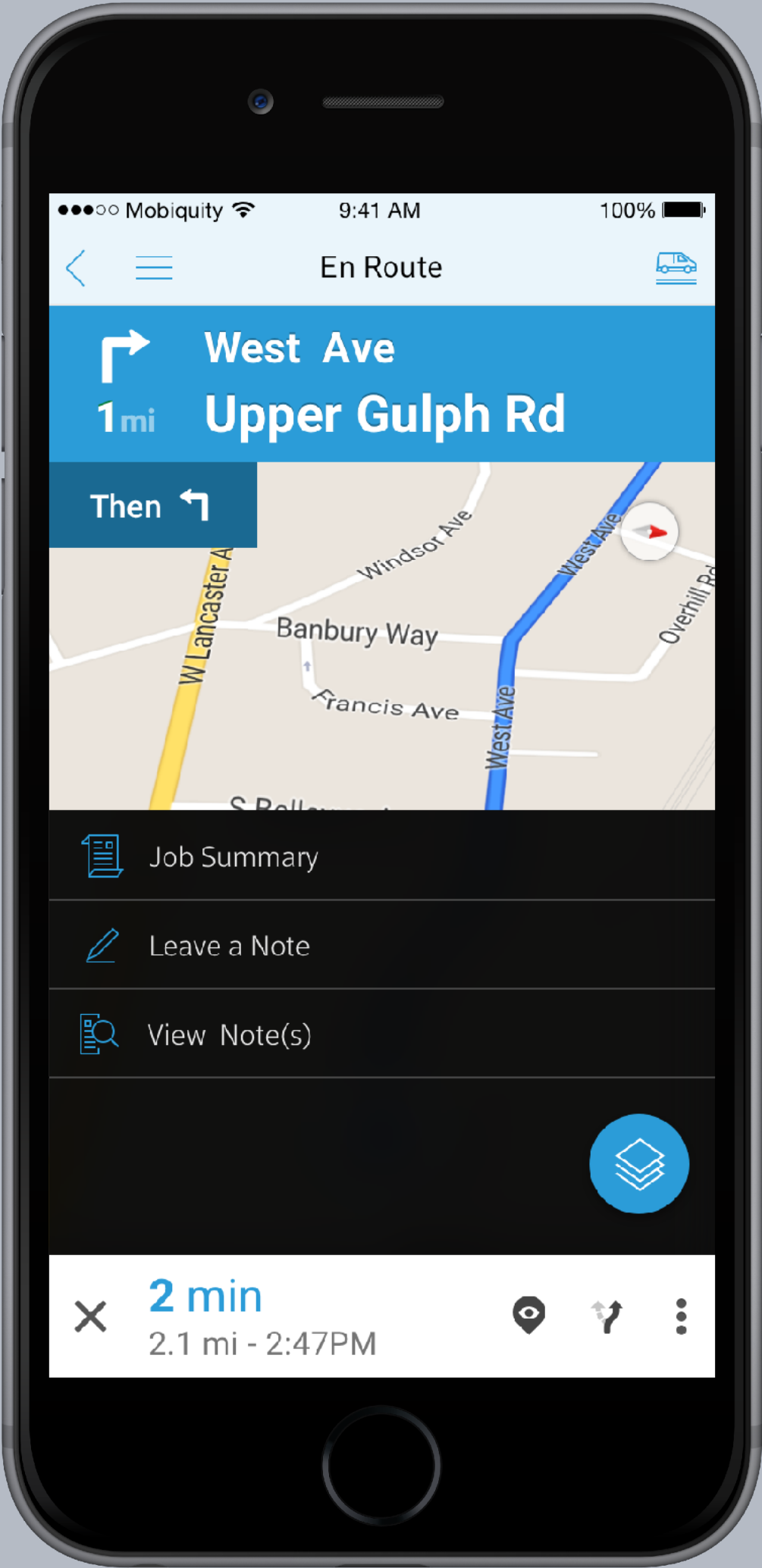
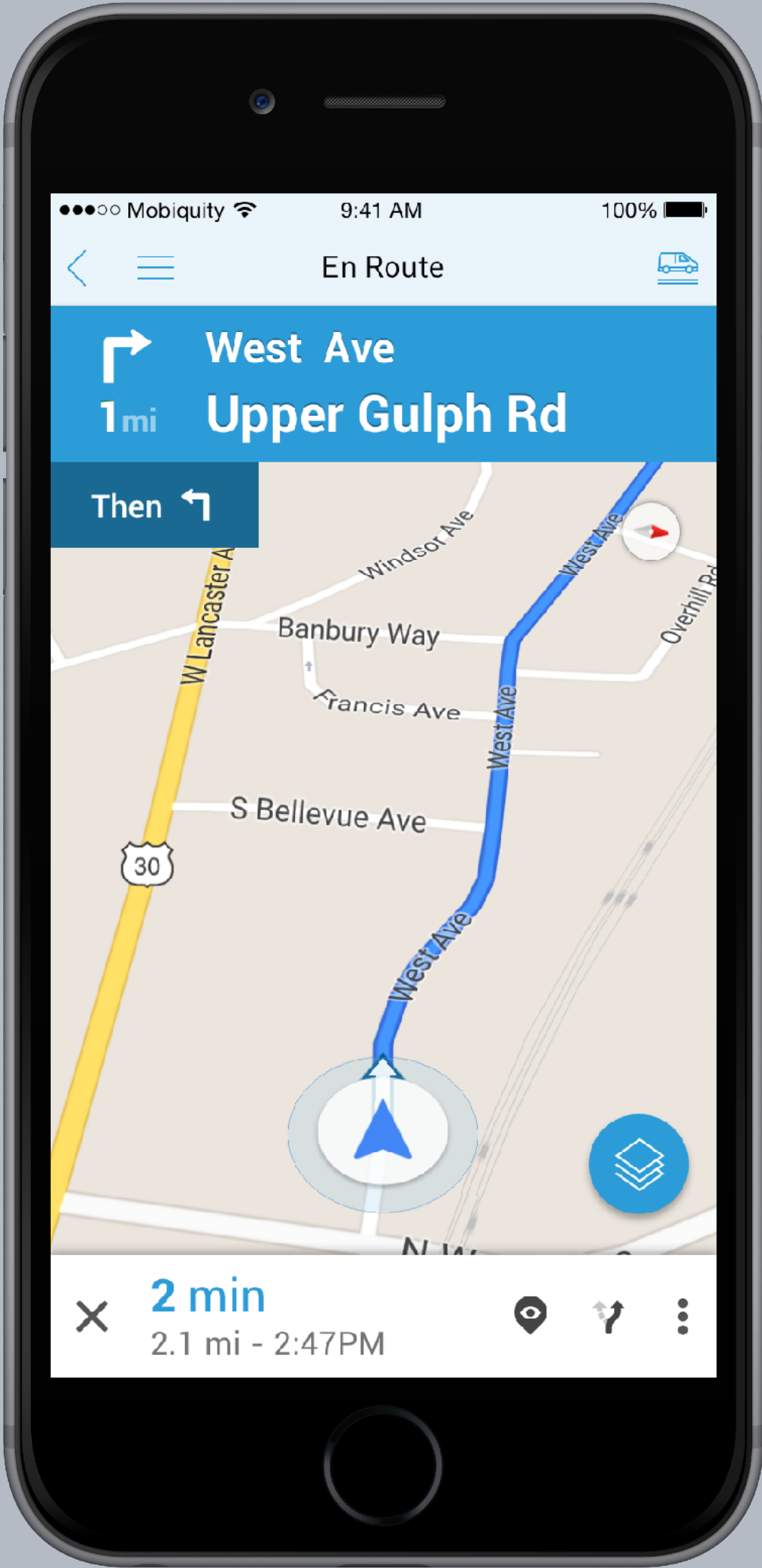
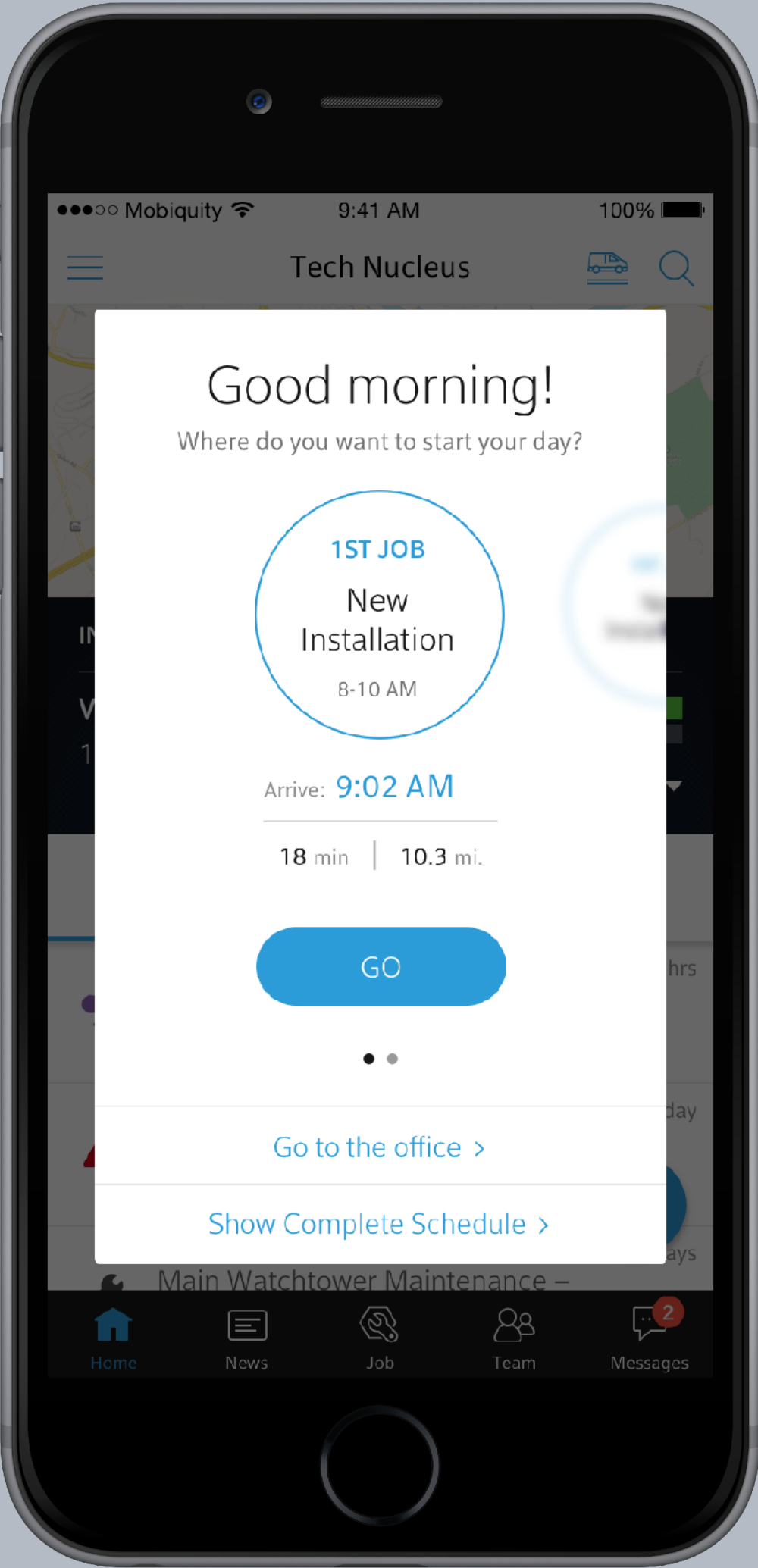
Visual Design



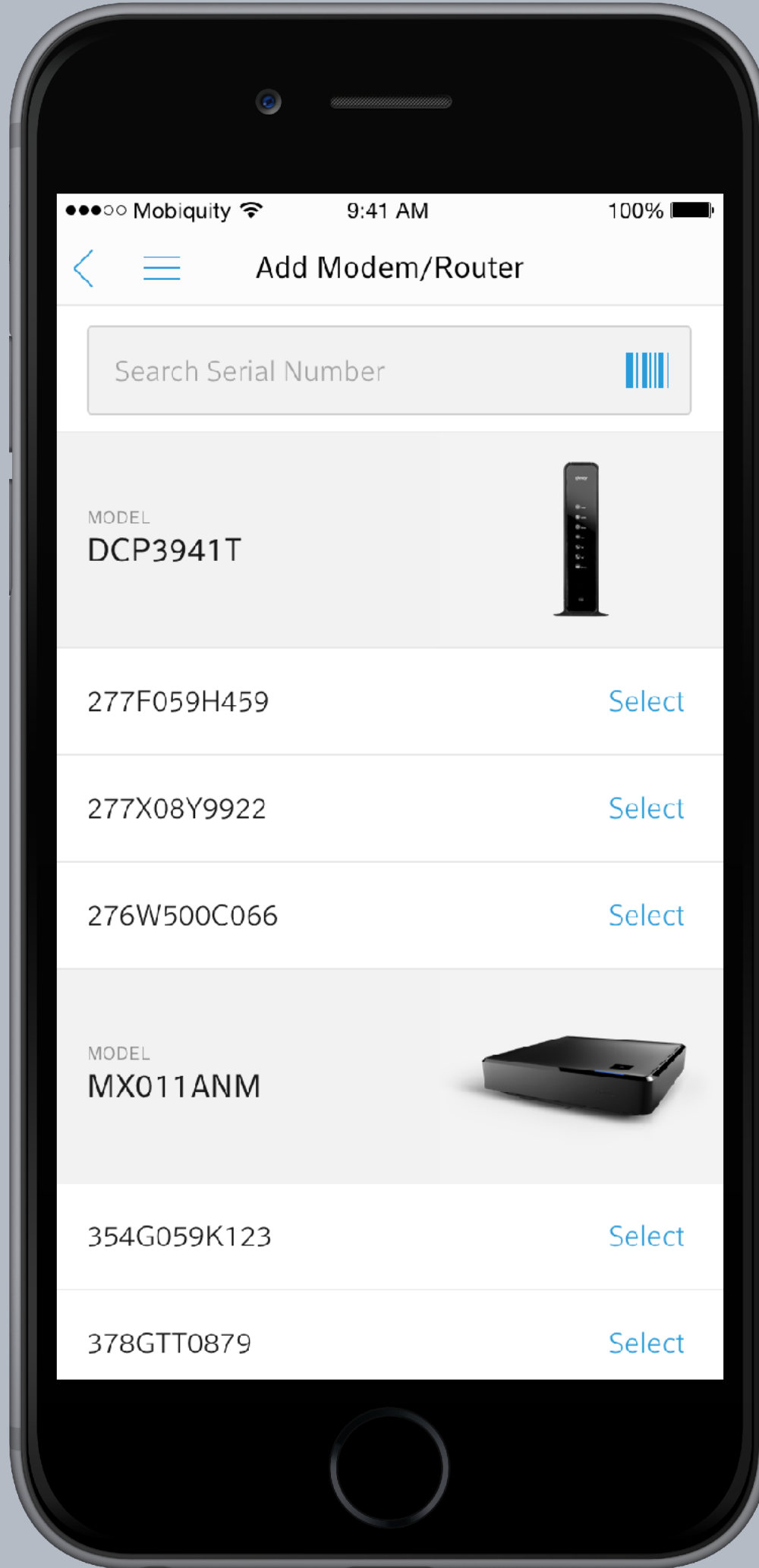
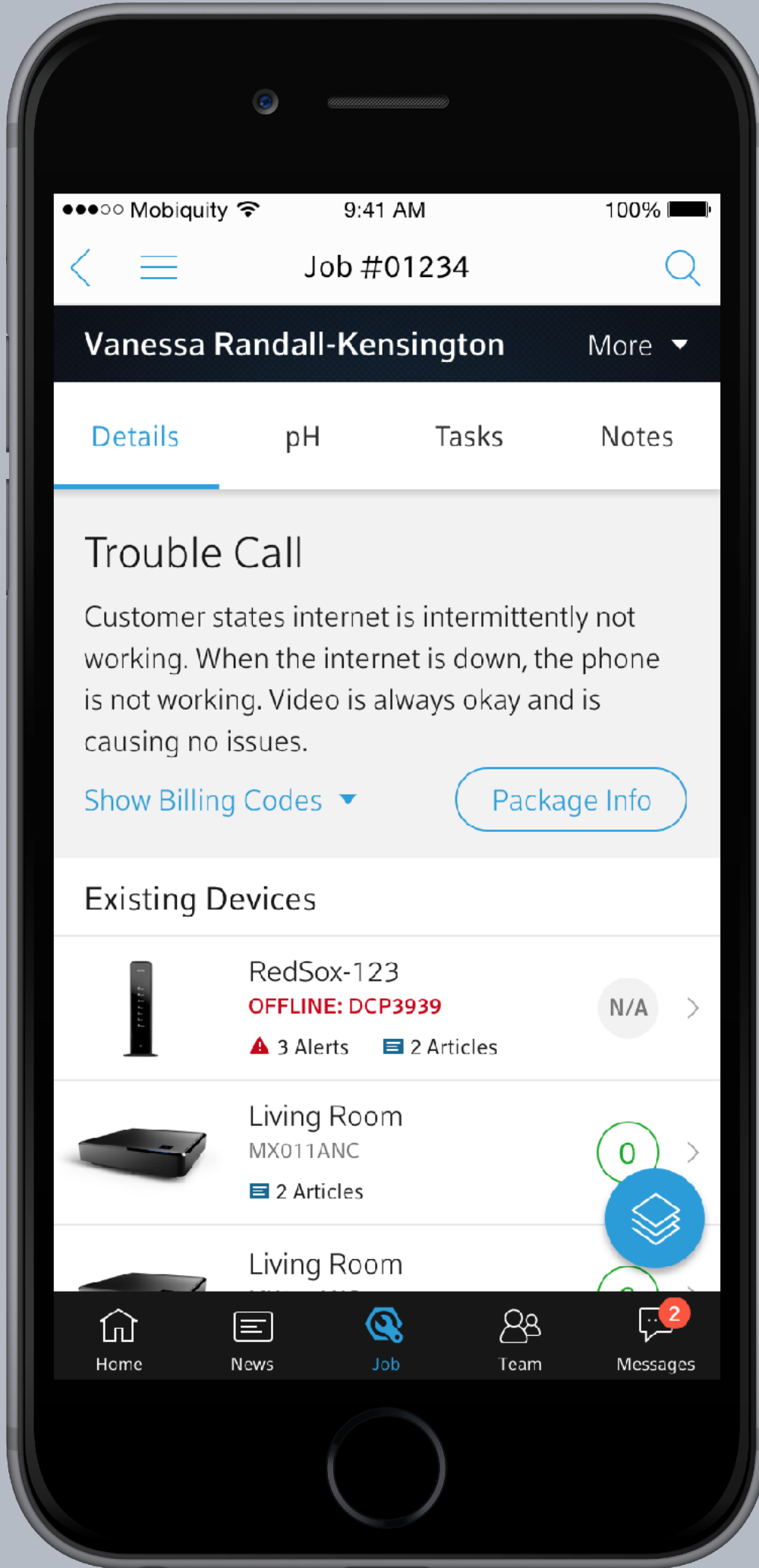
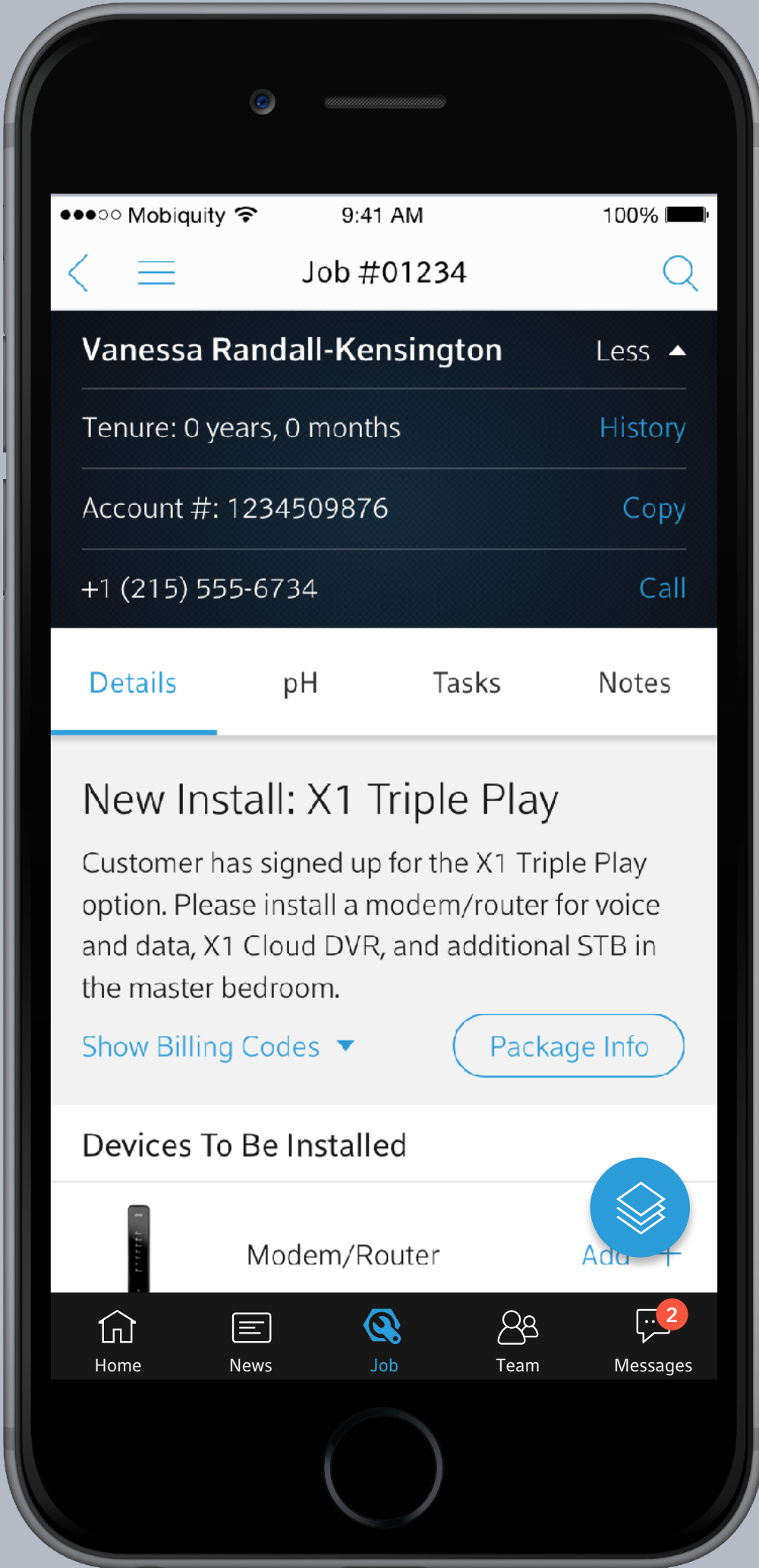
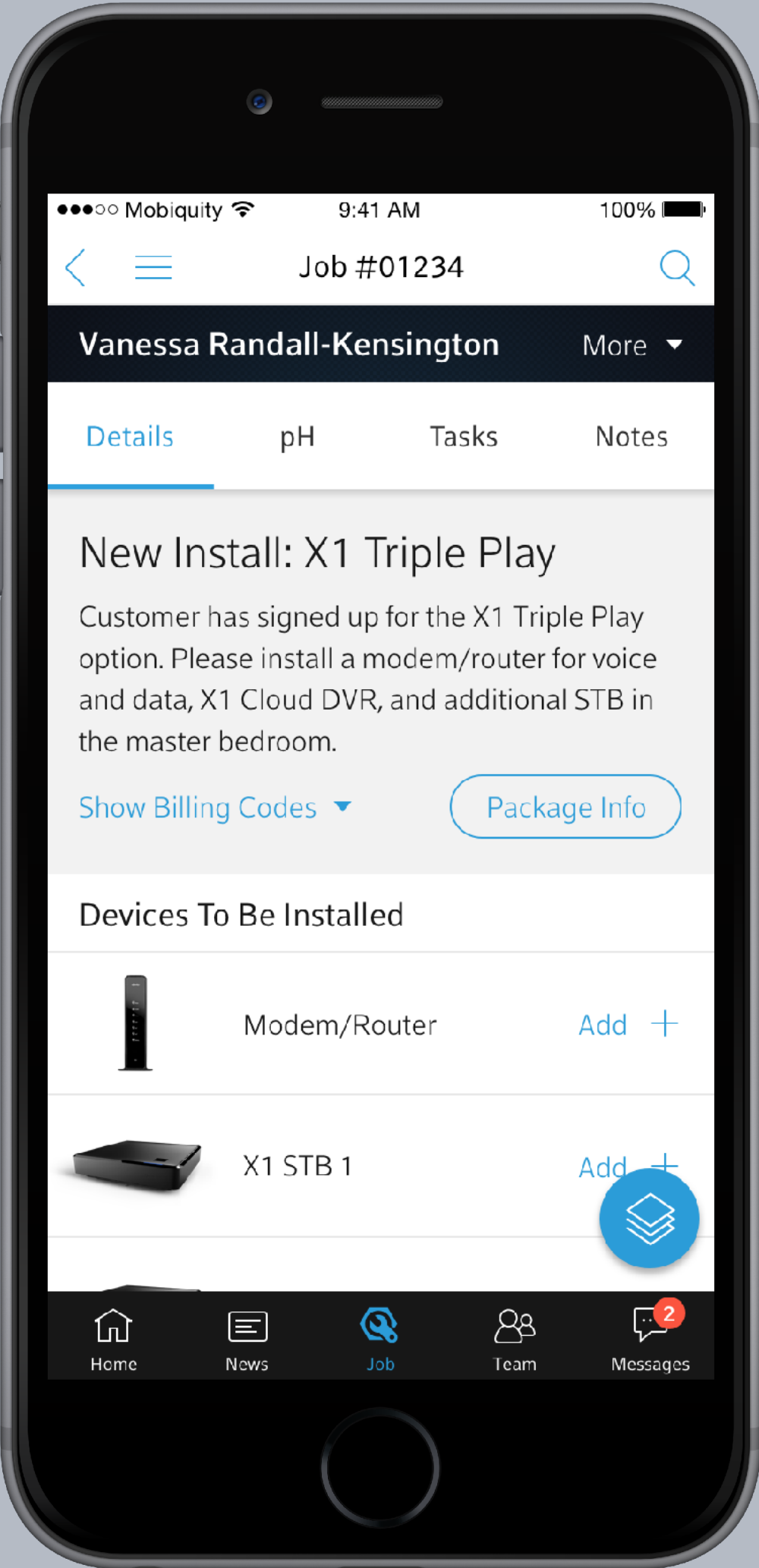
Visual Design



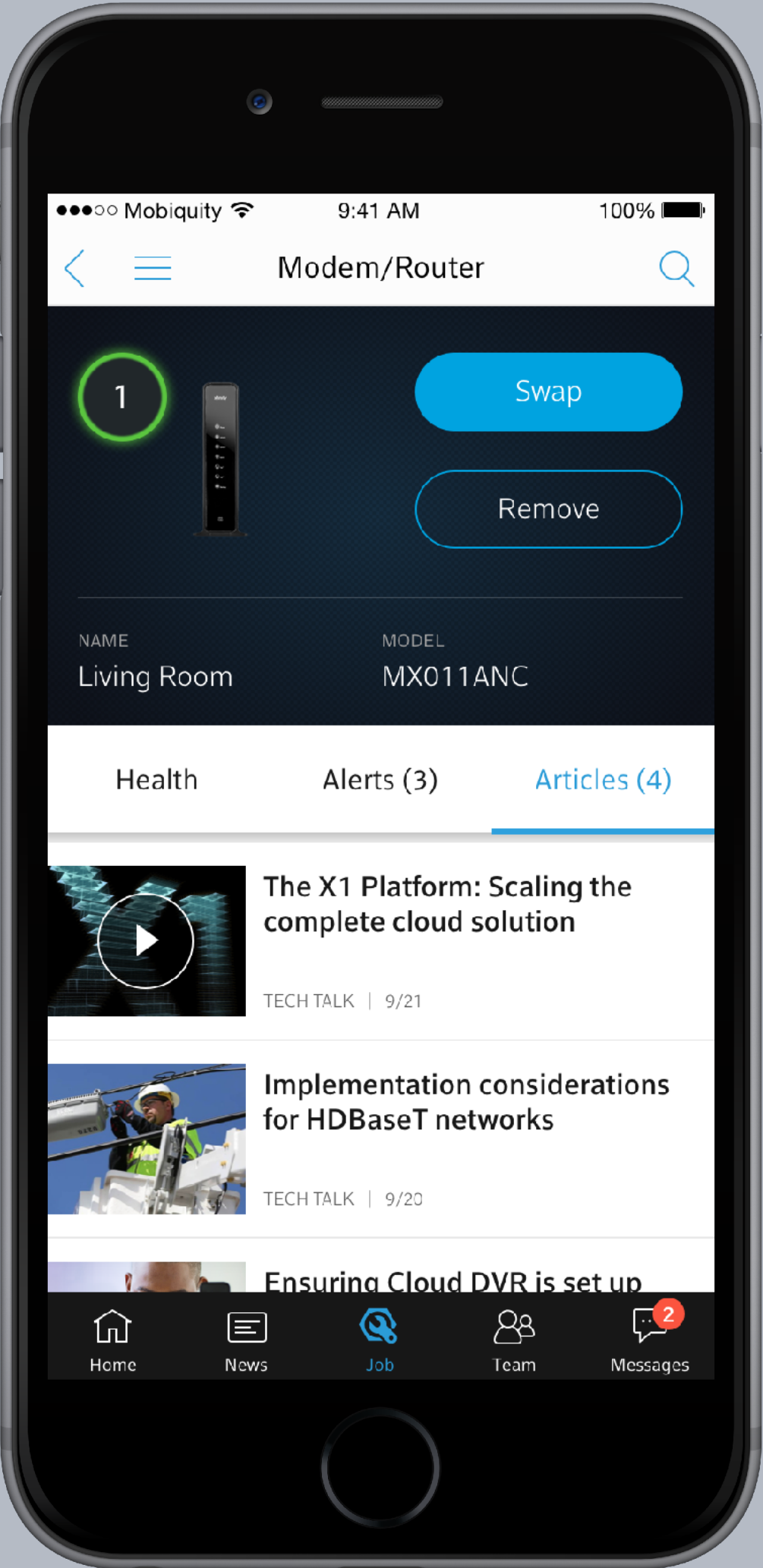
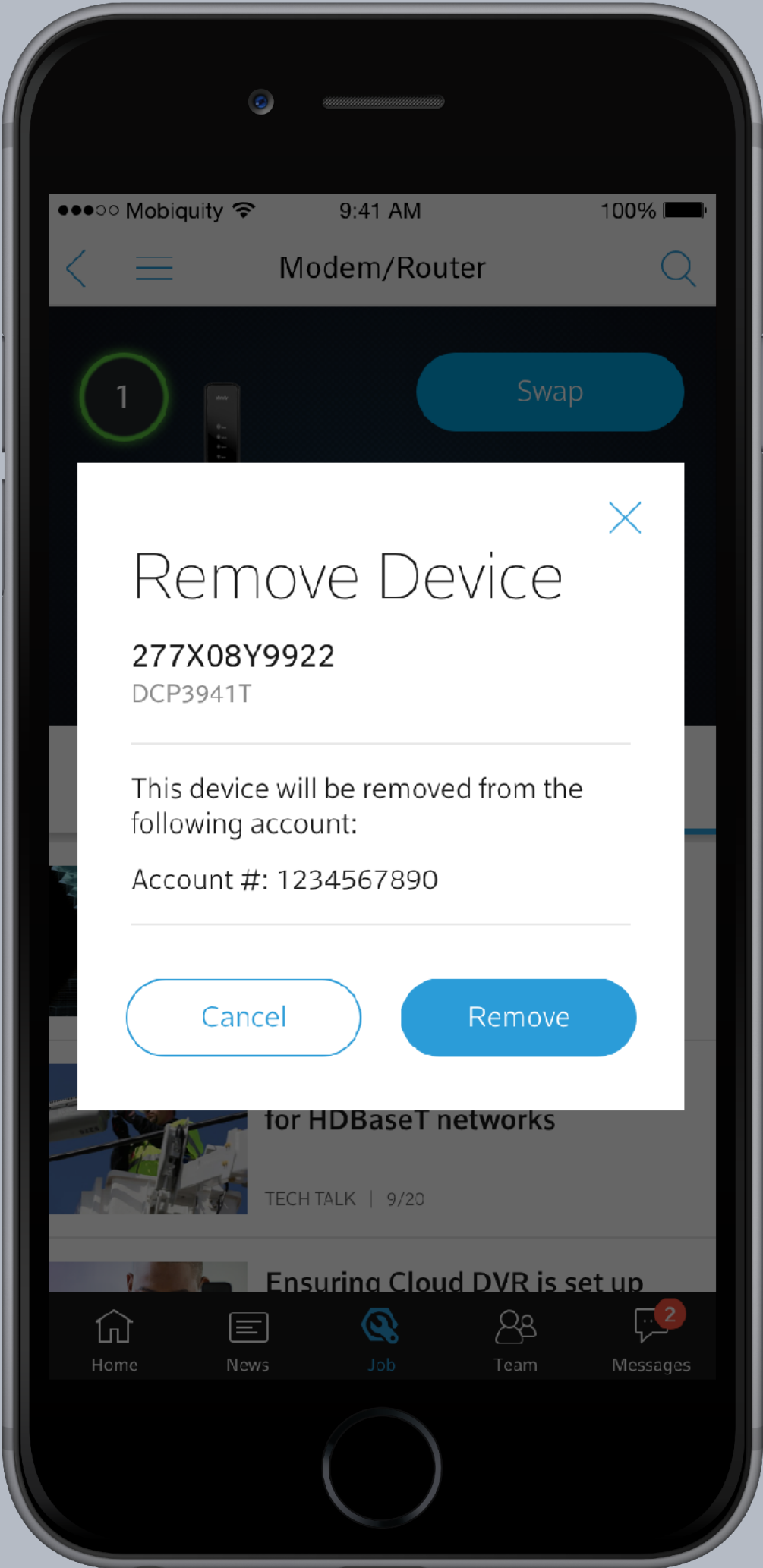
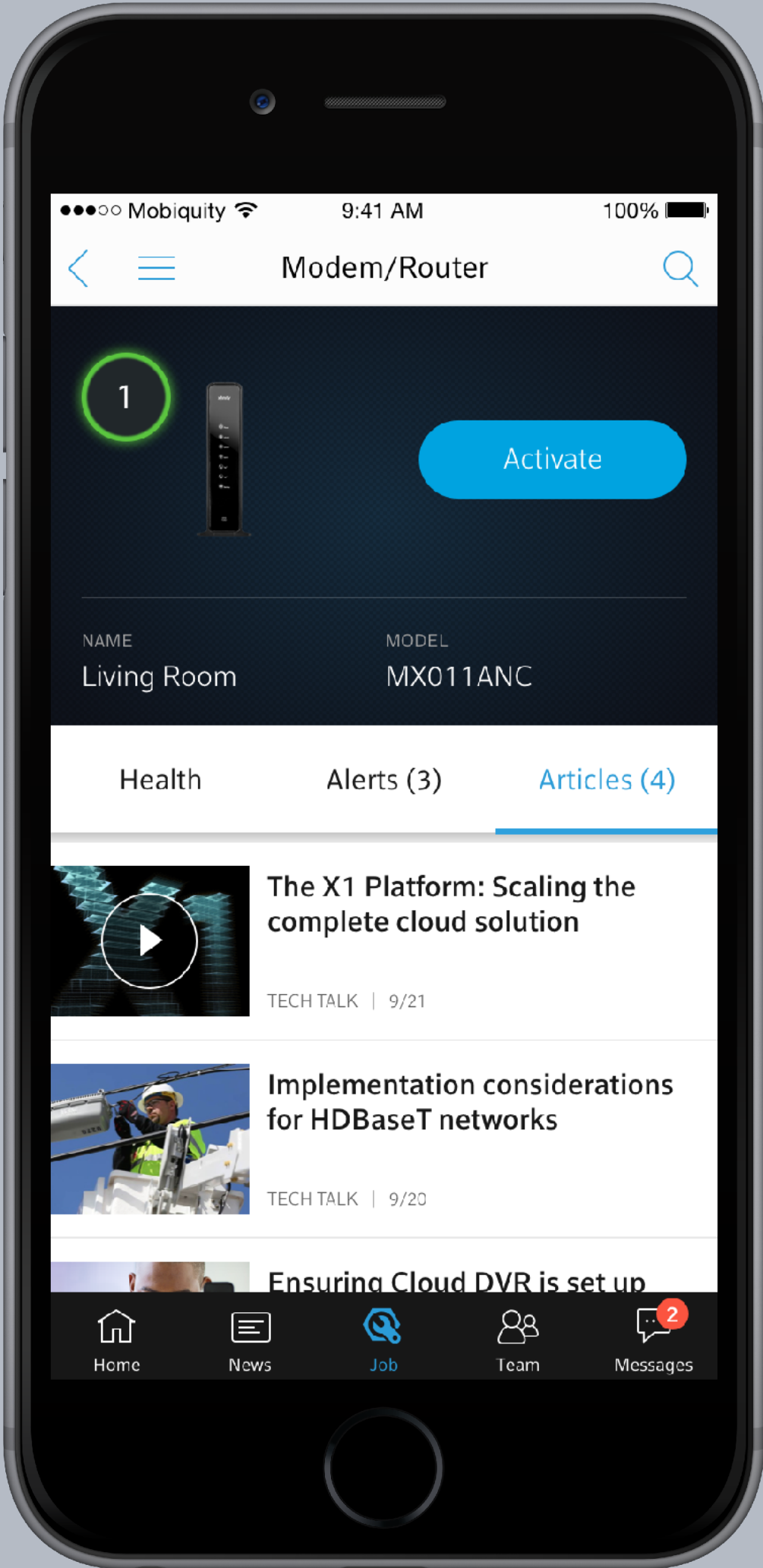
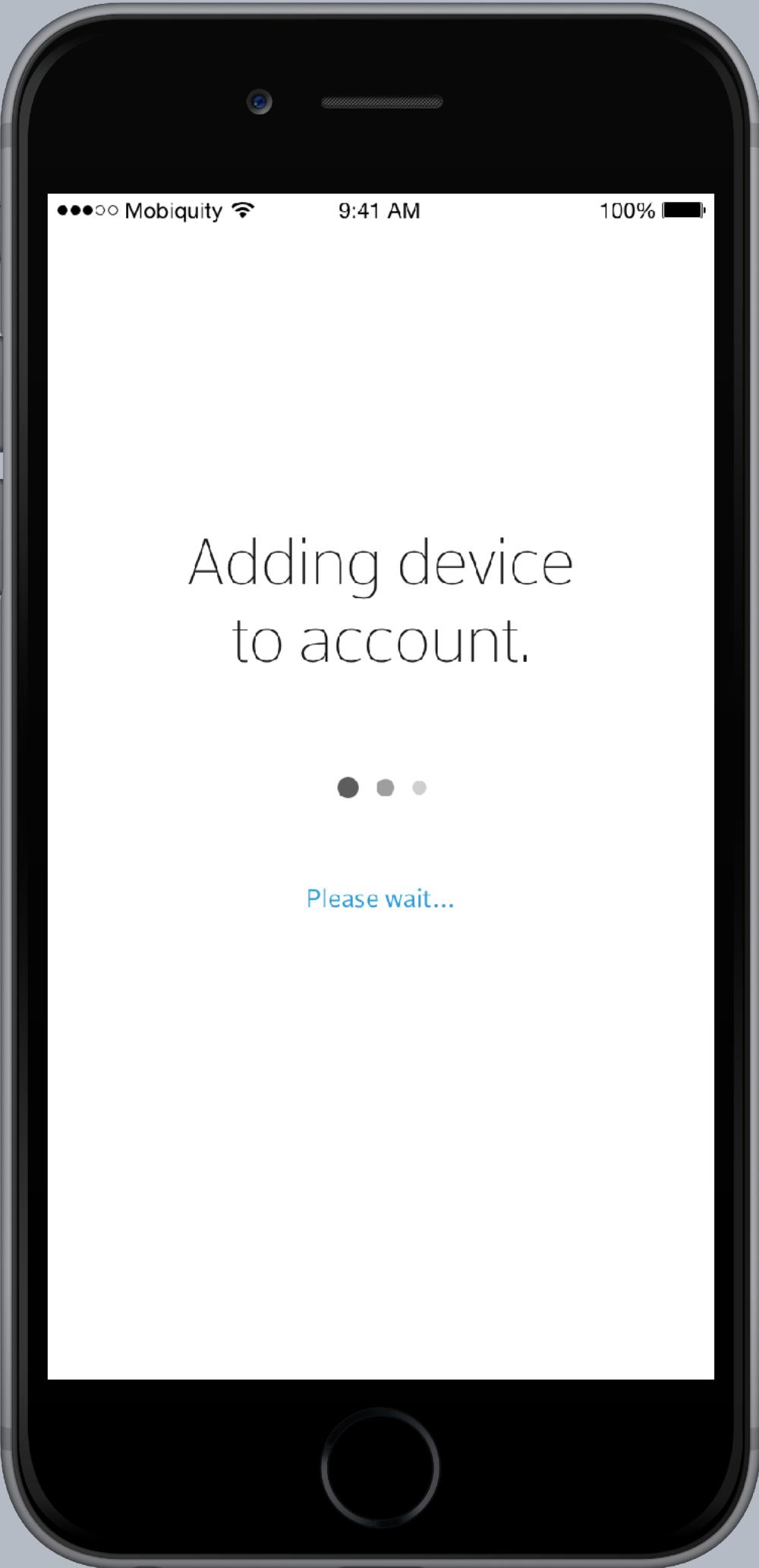
Visual Design



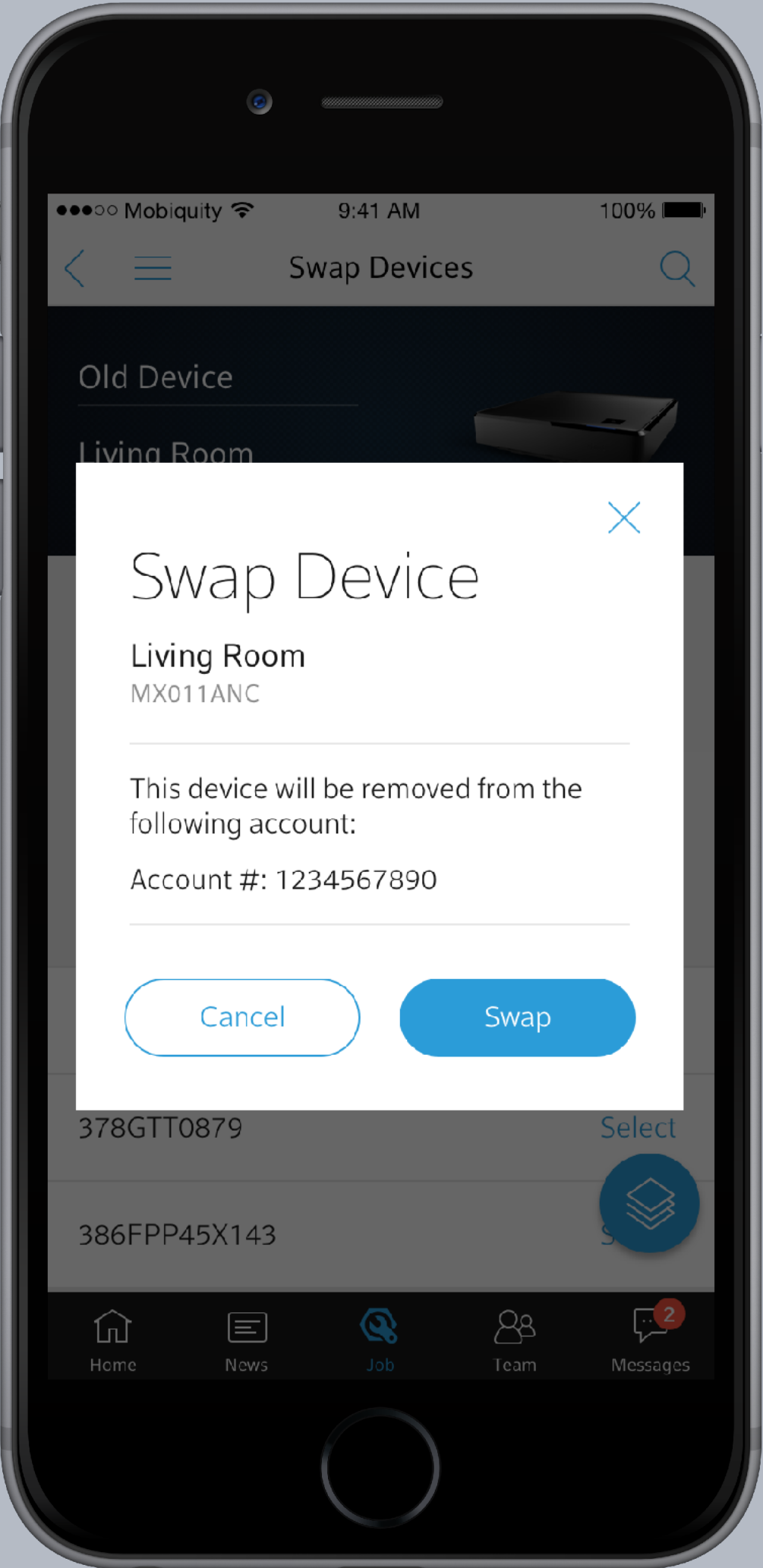
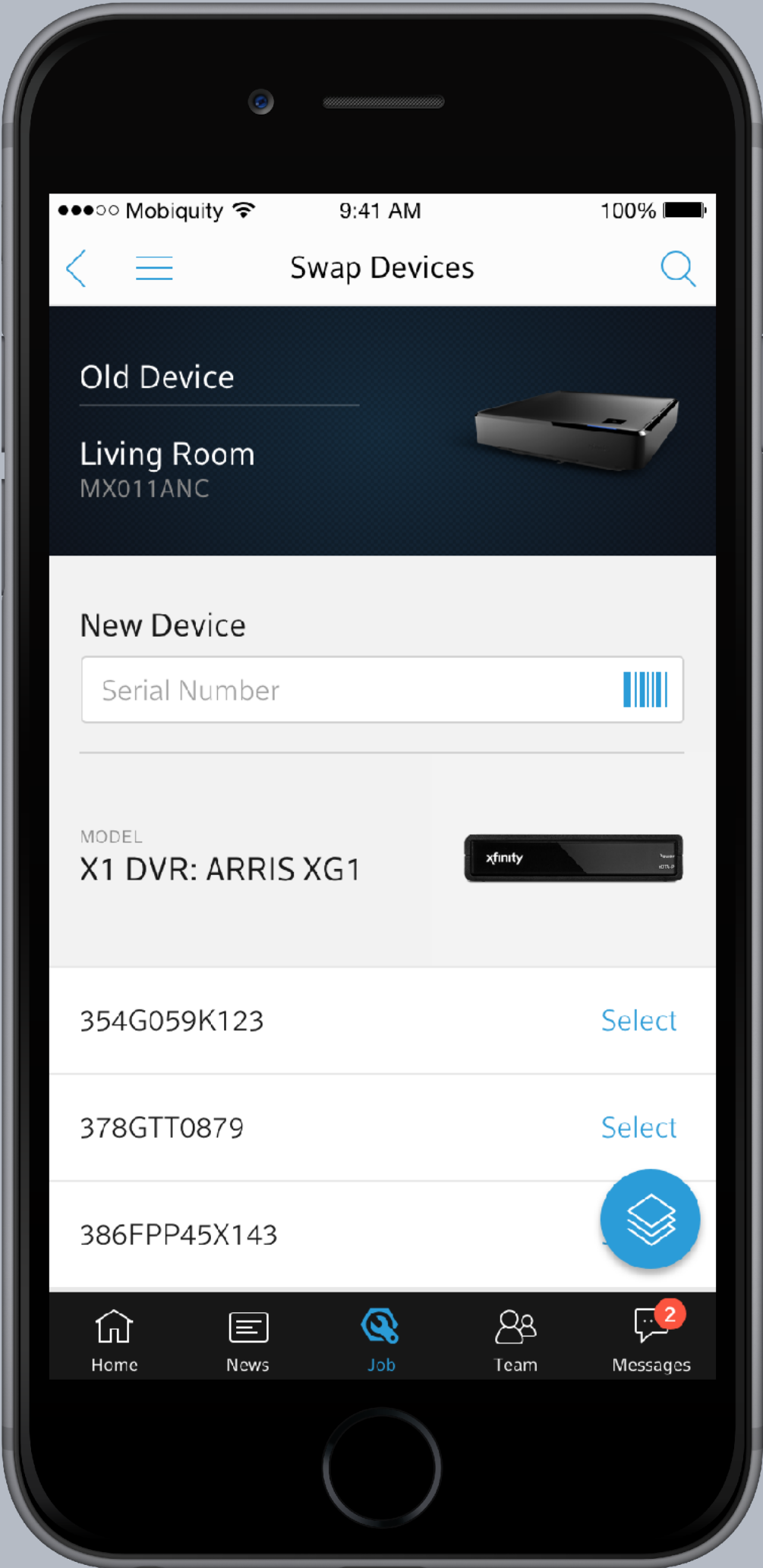
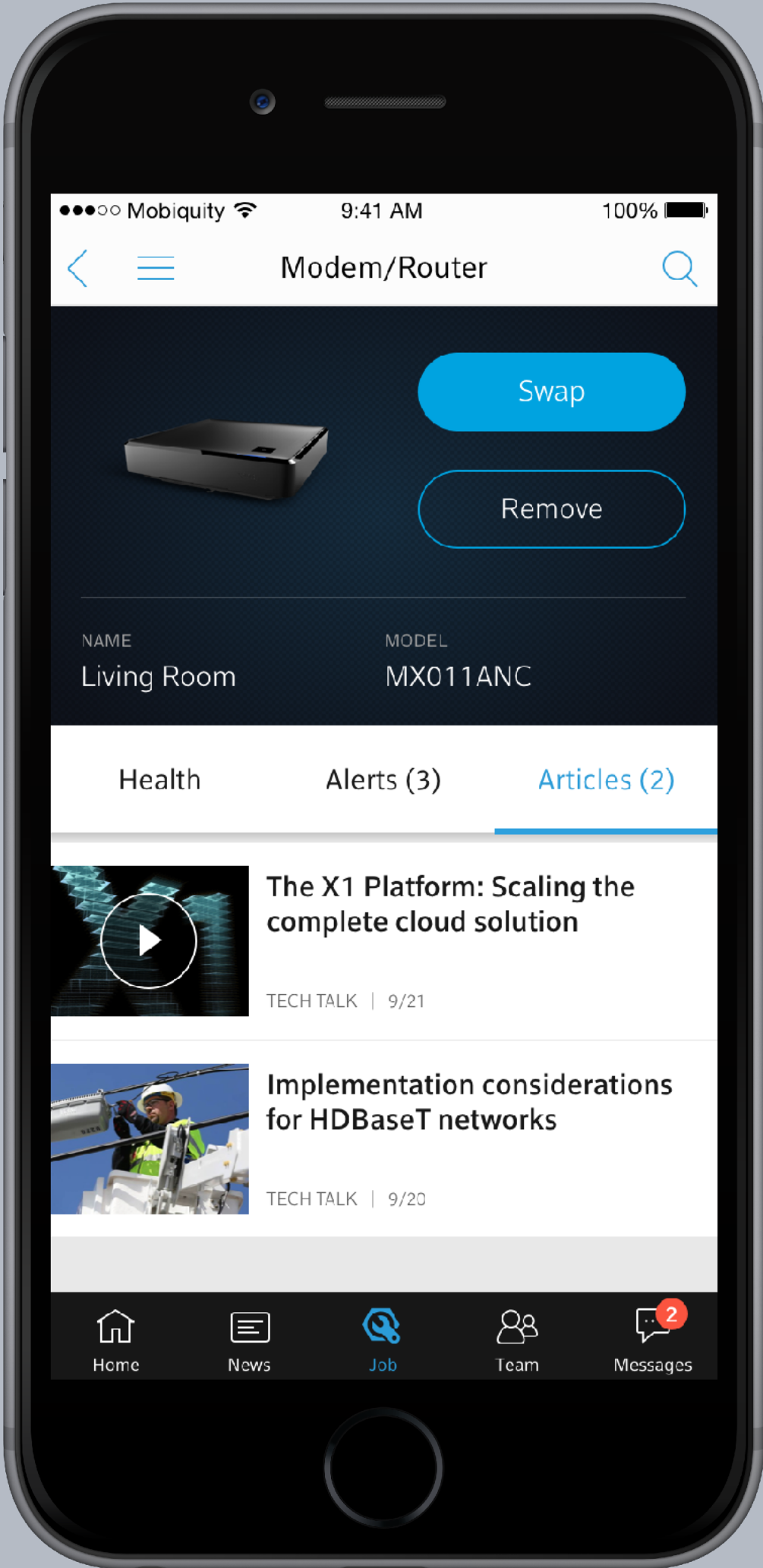
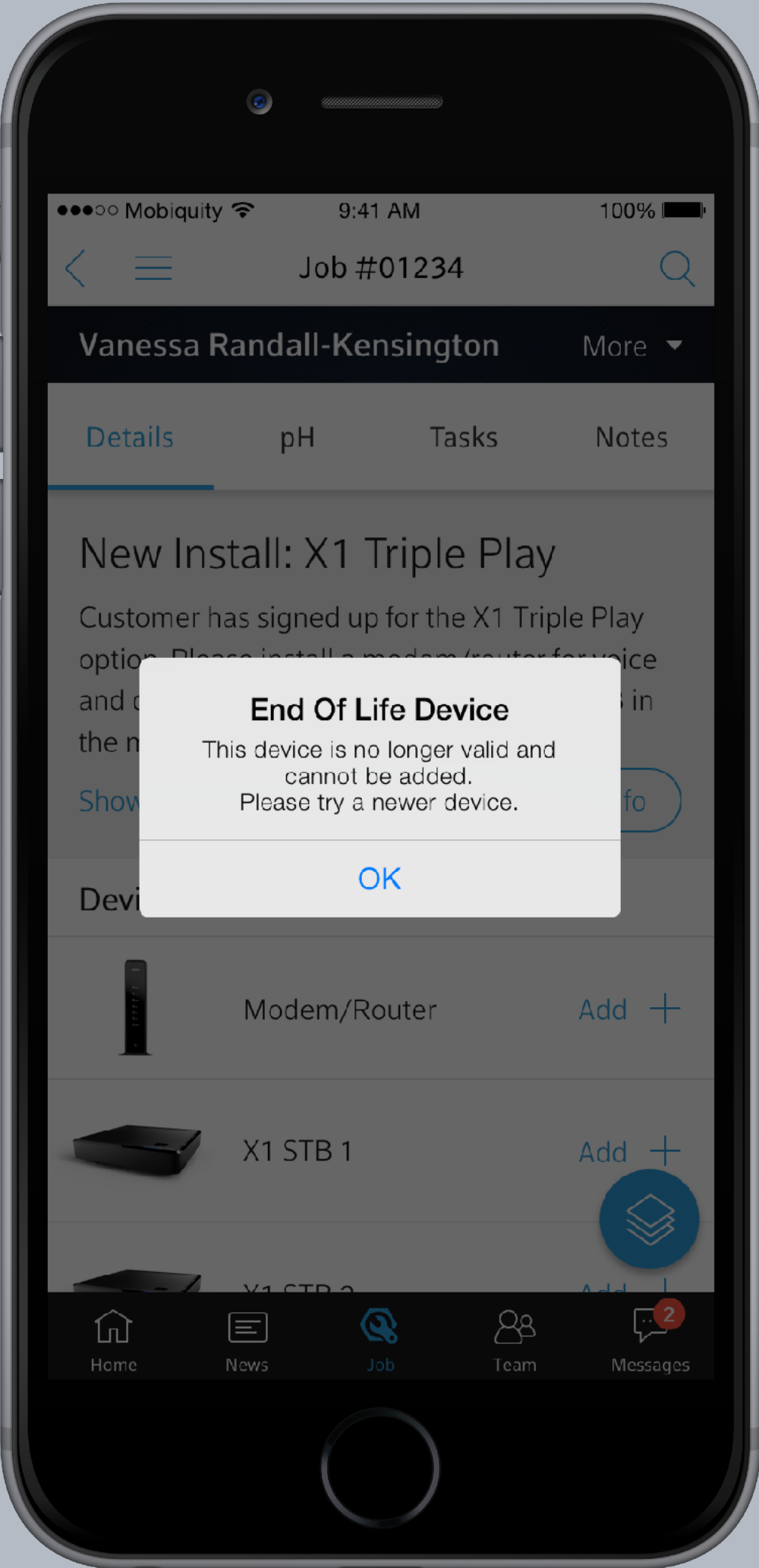
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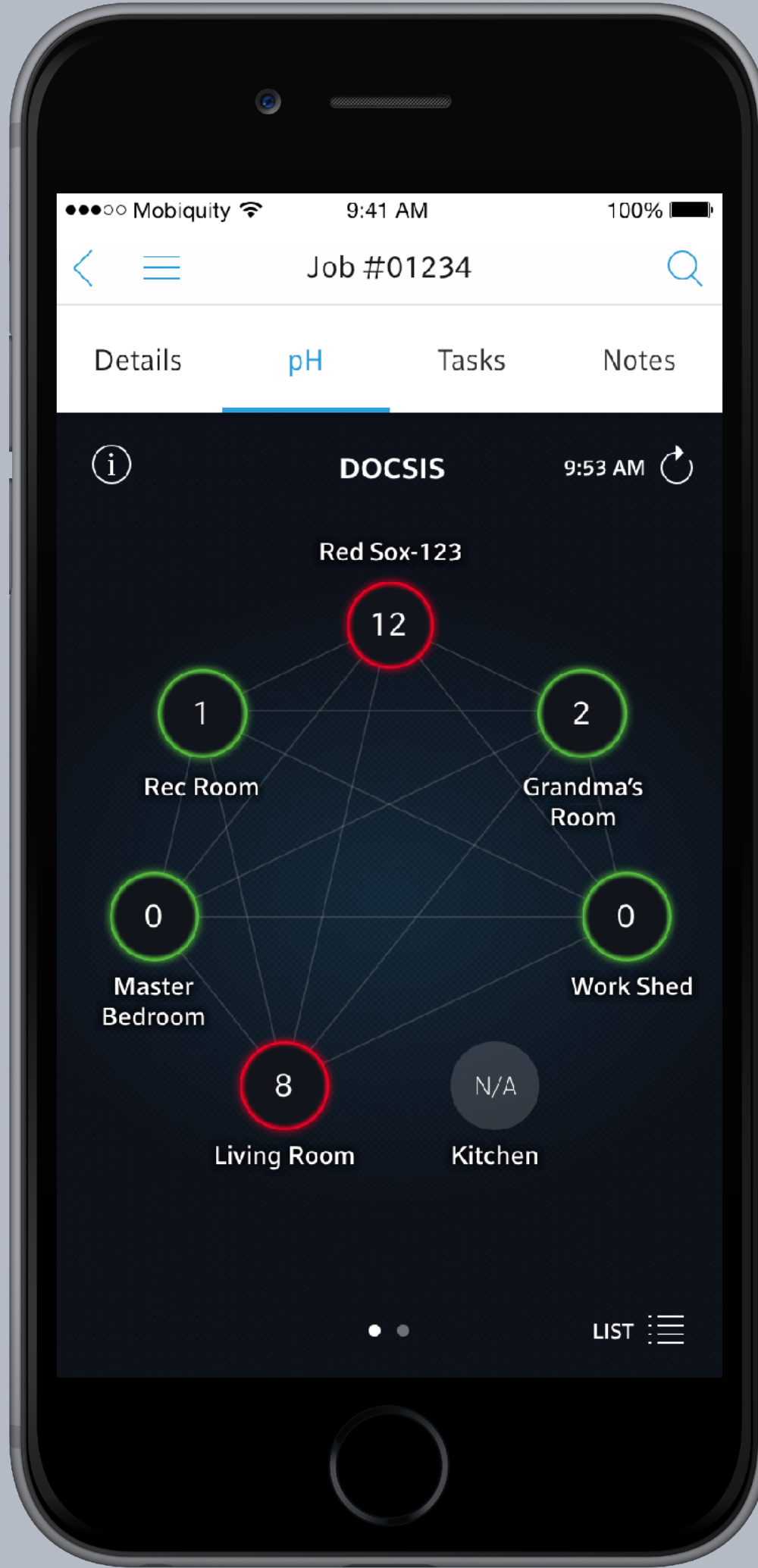
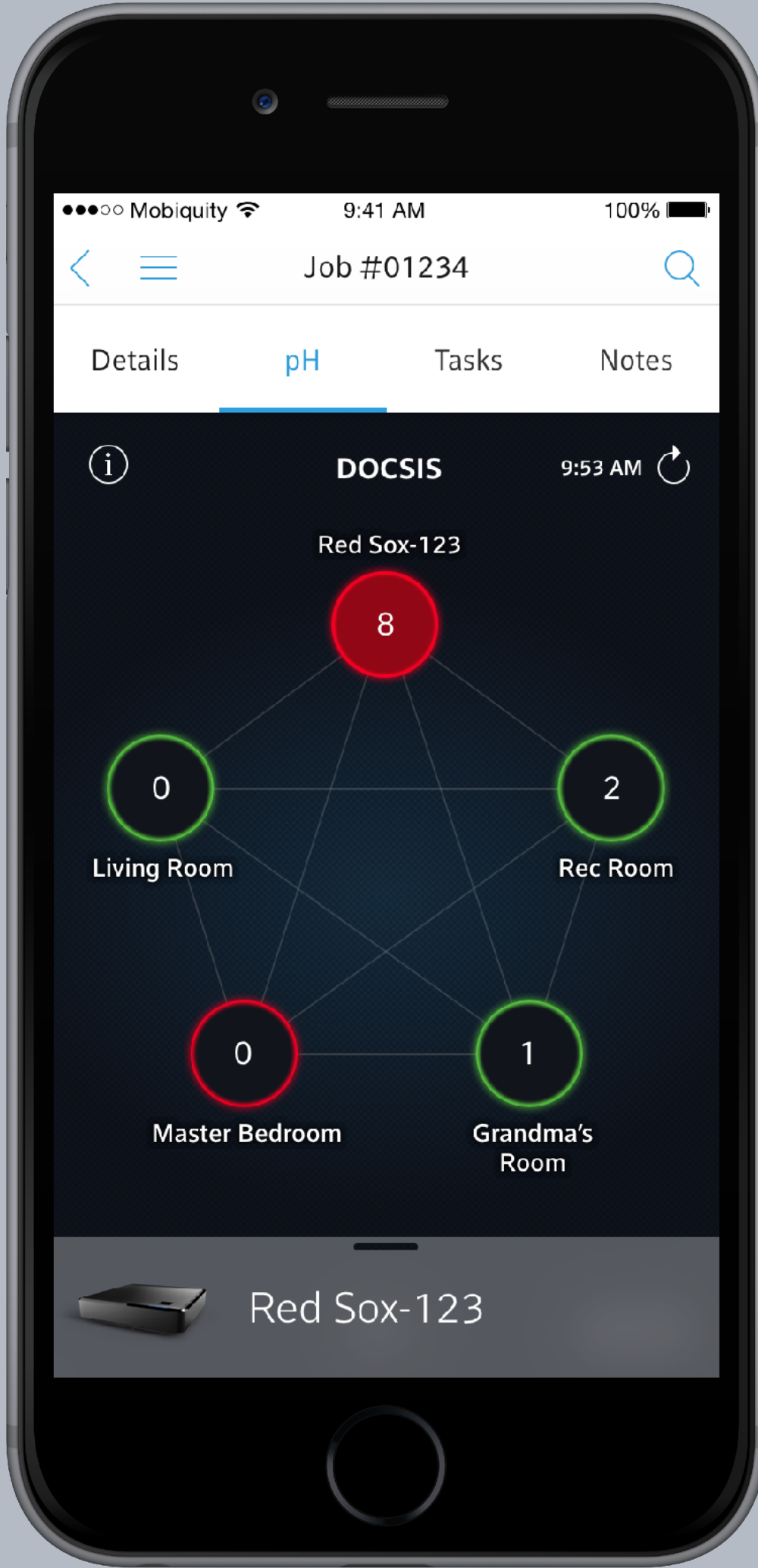
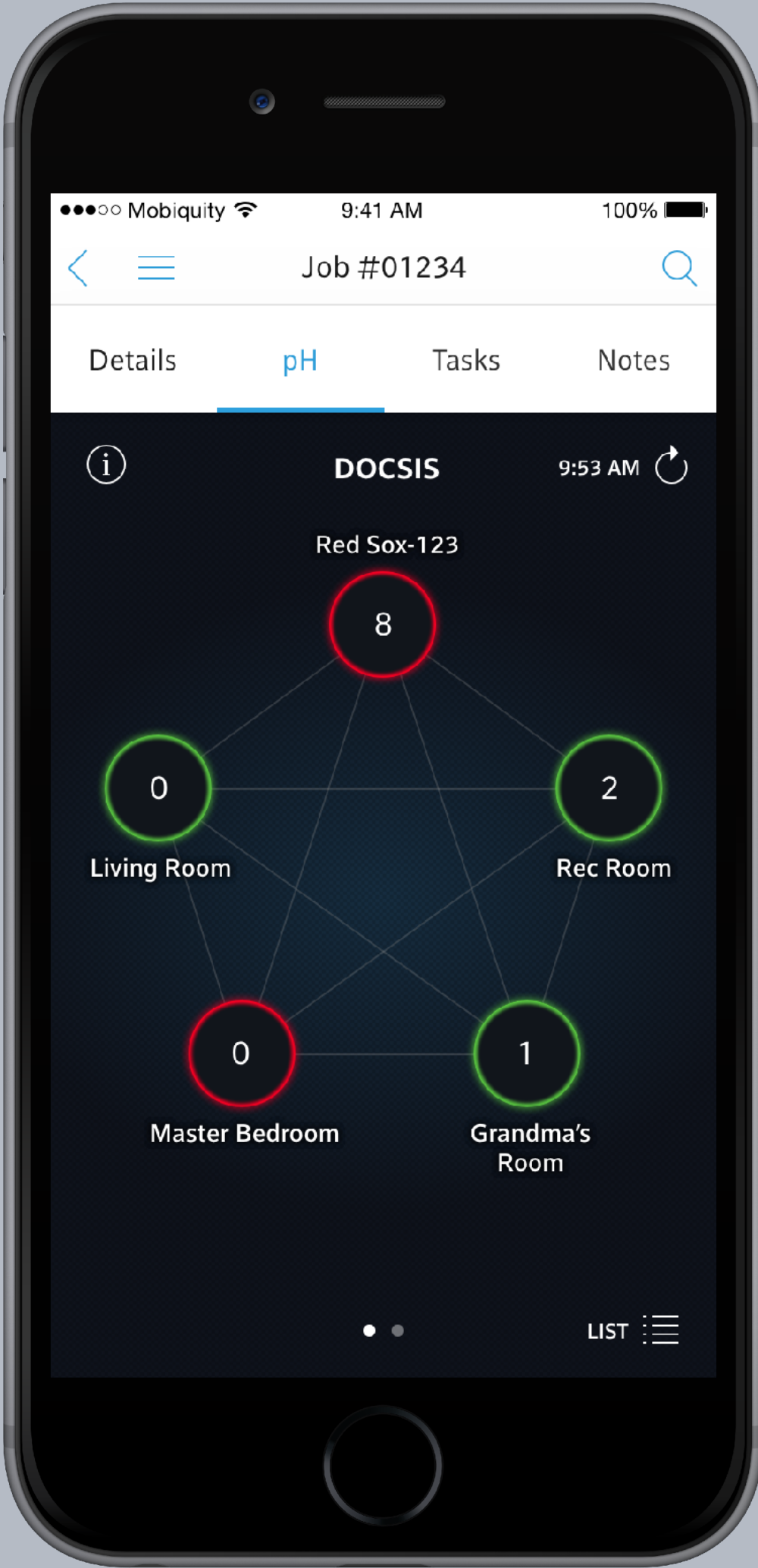
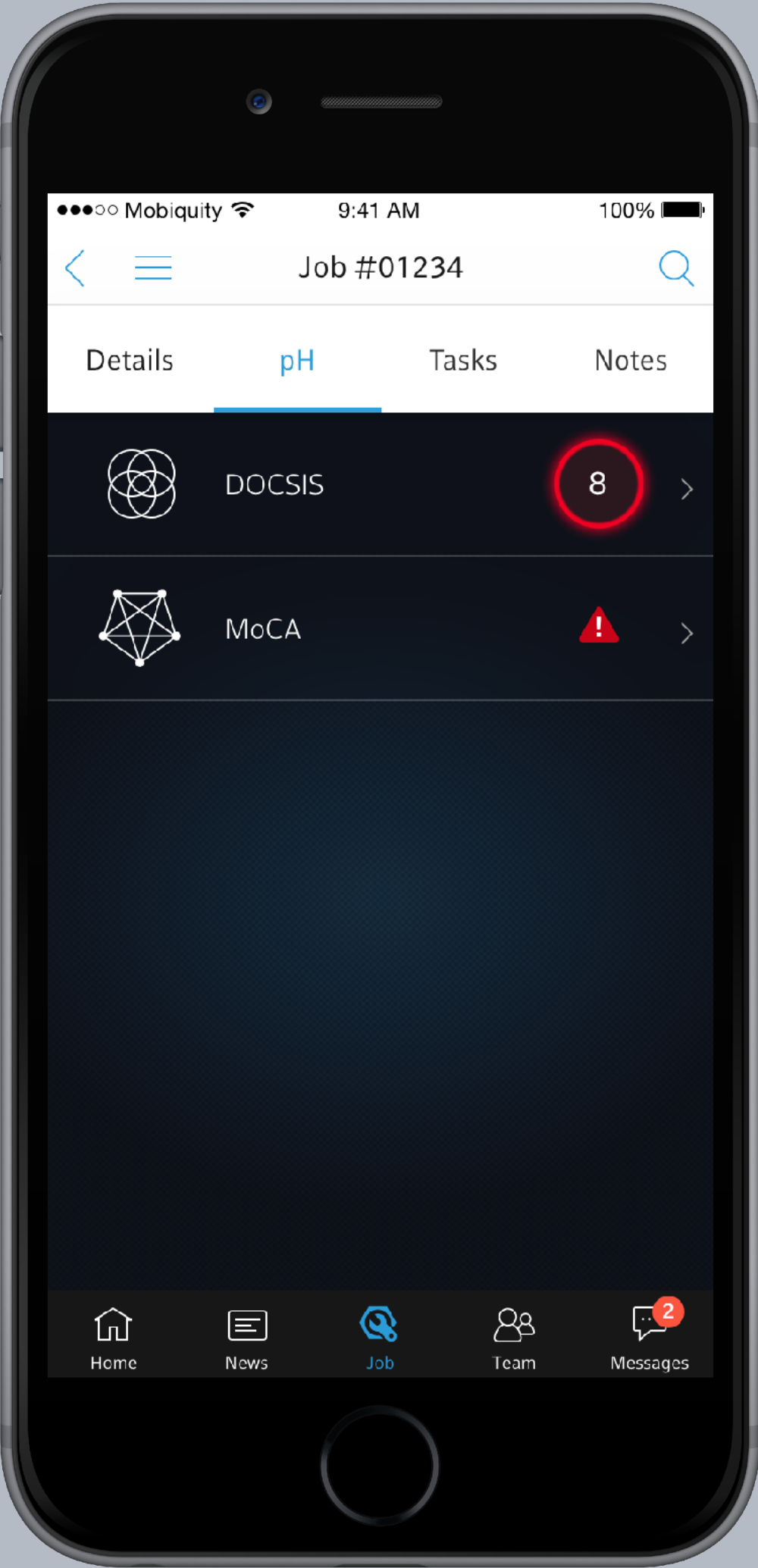
Visual Design



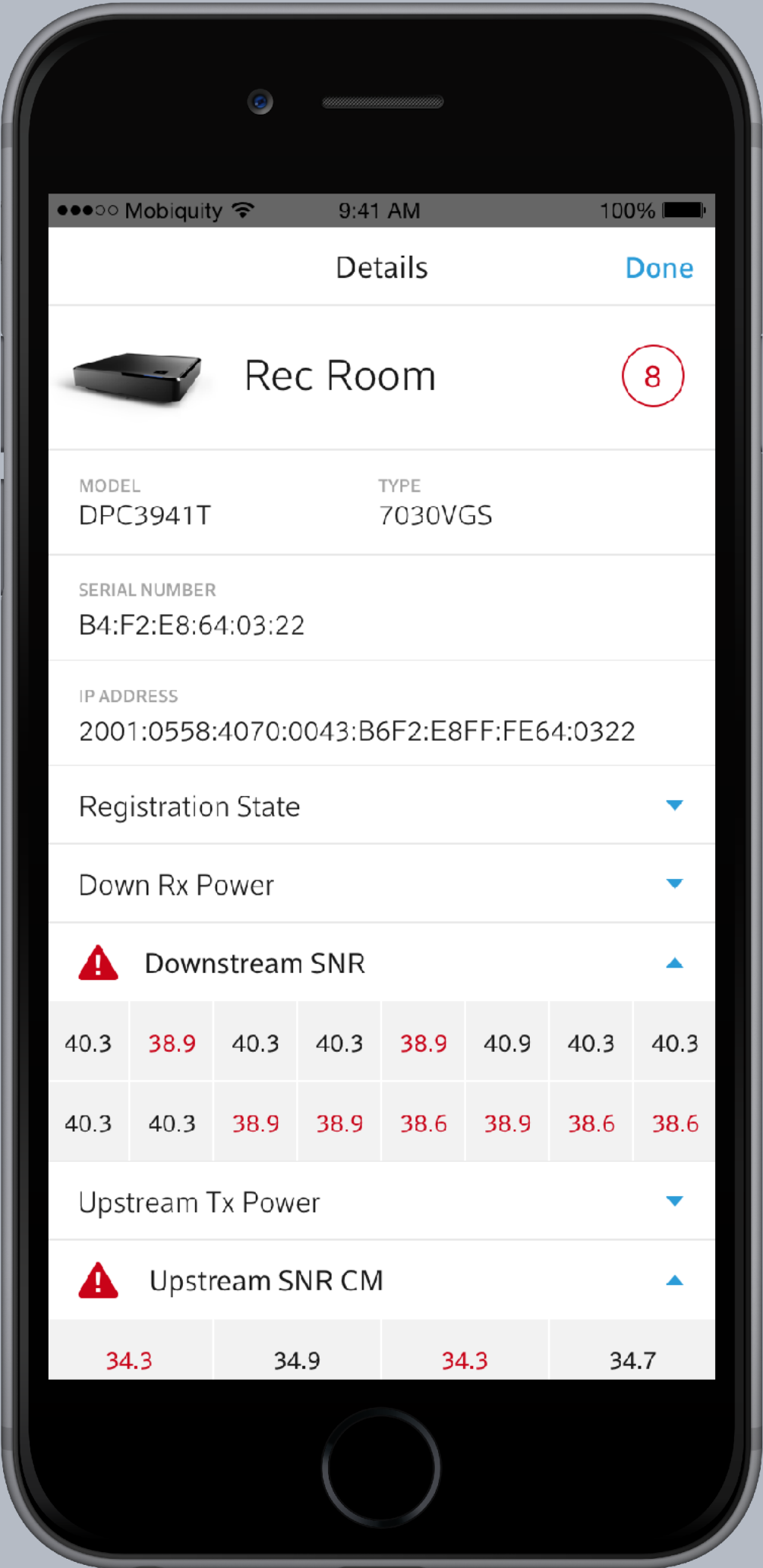
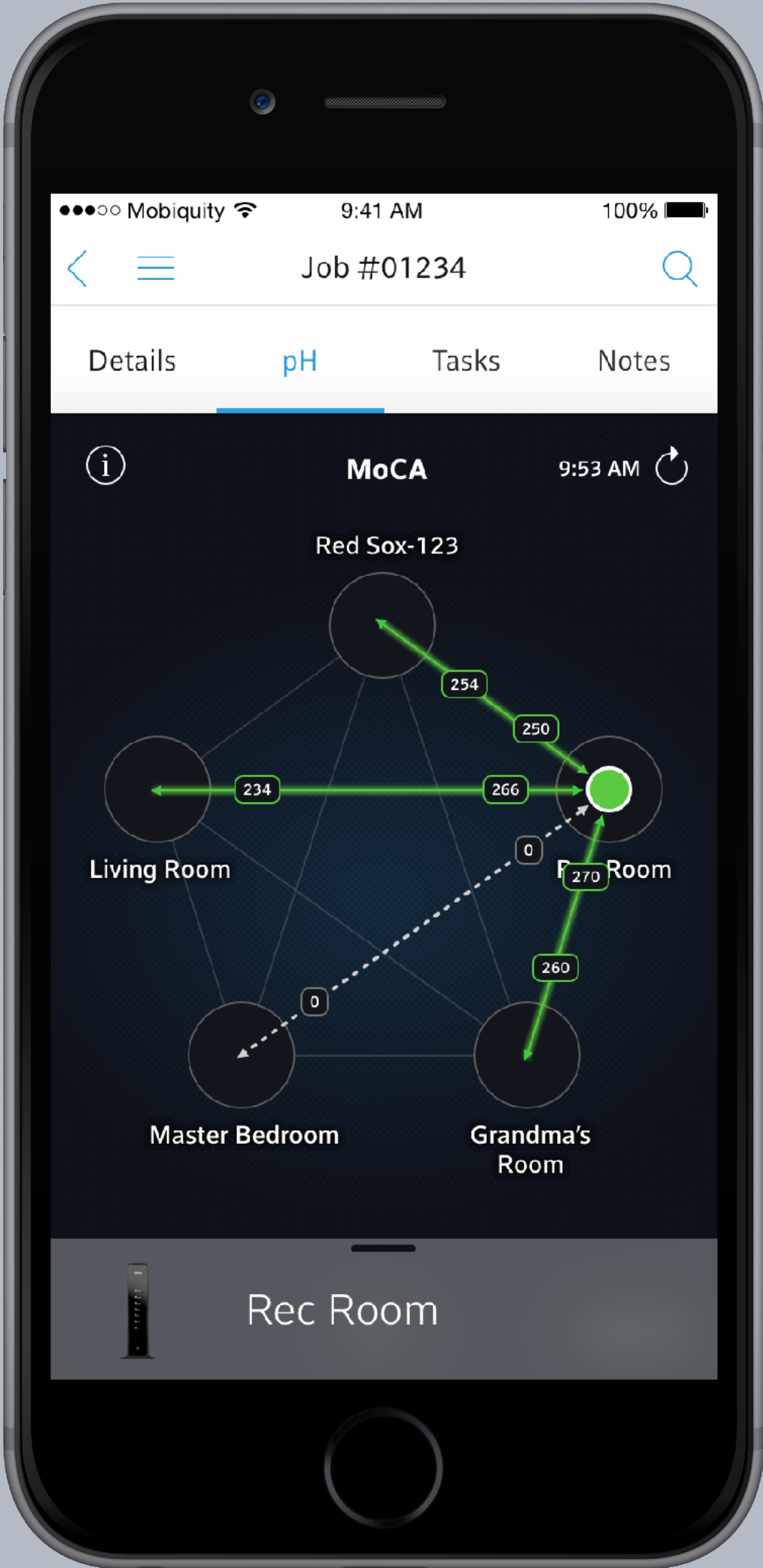
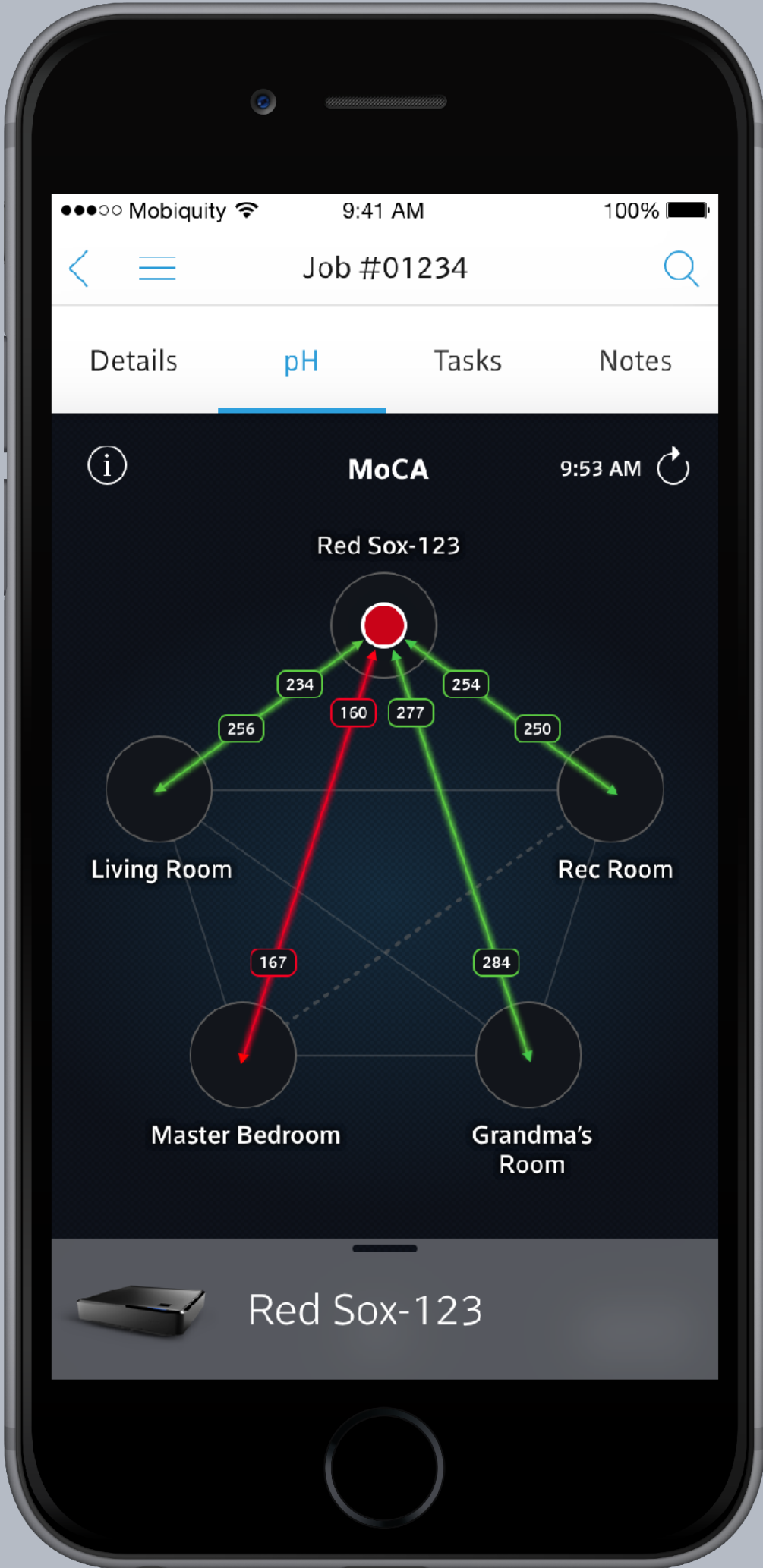
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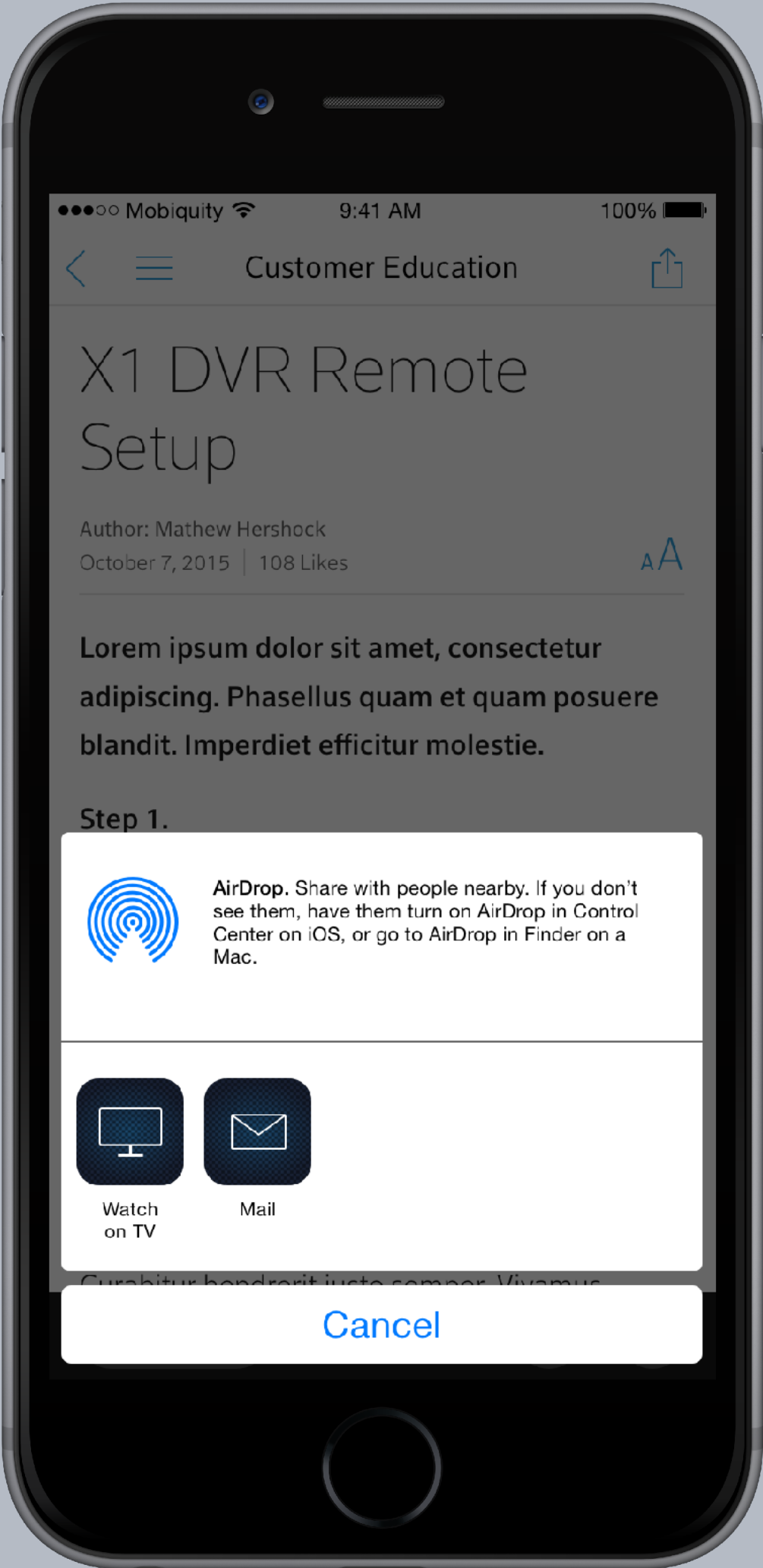
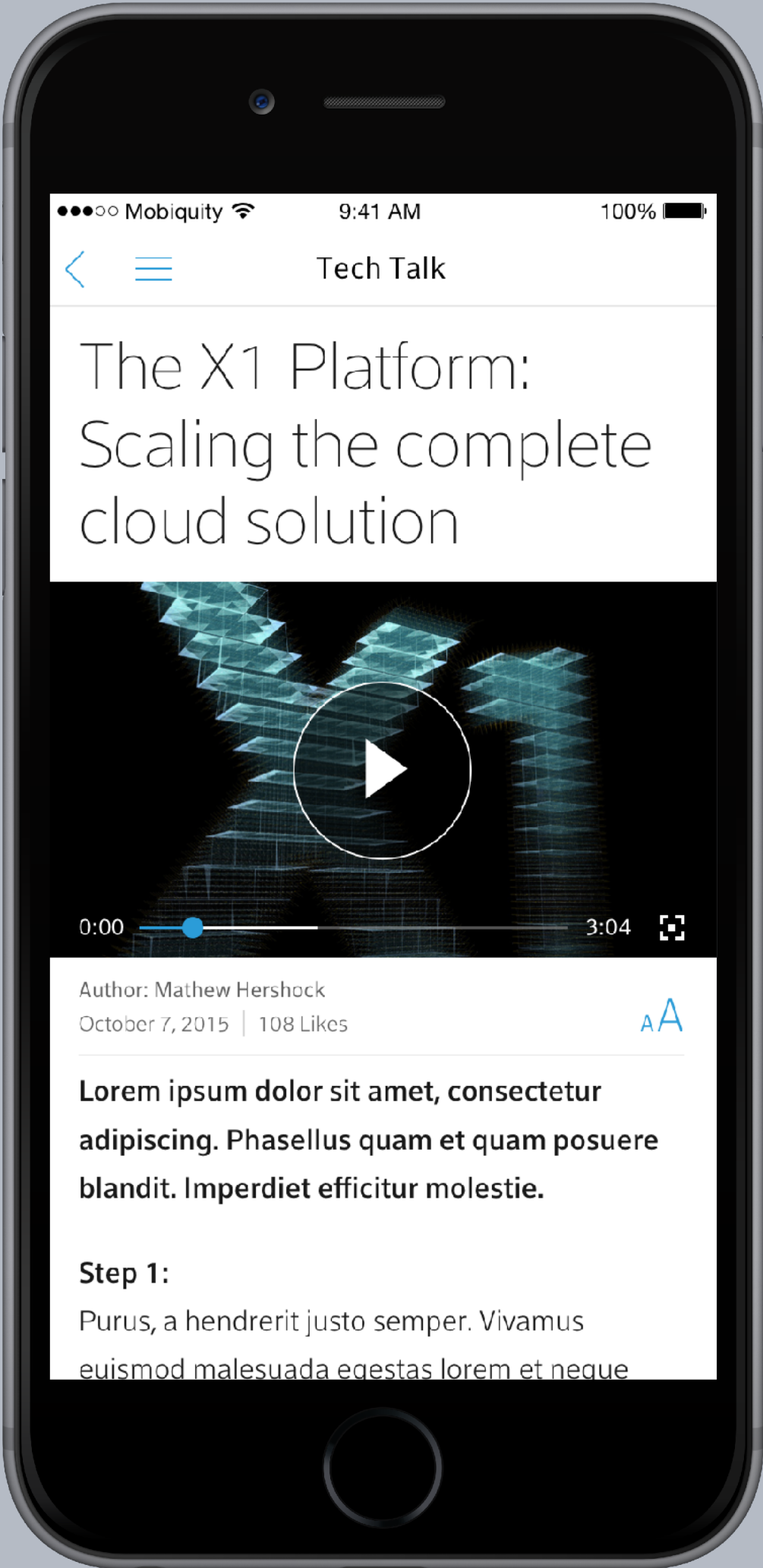
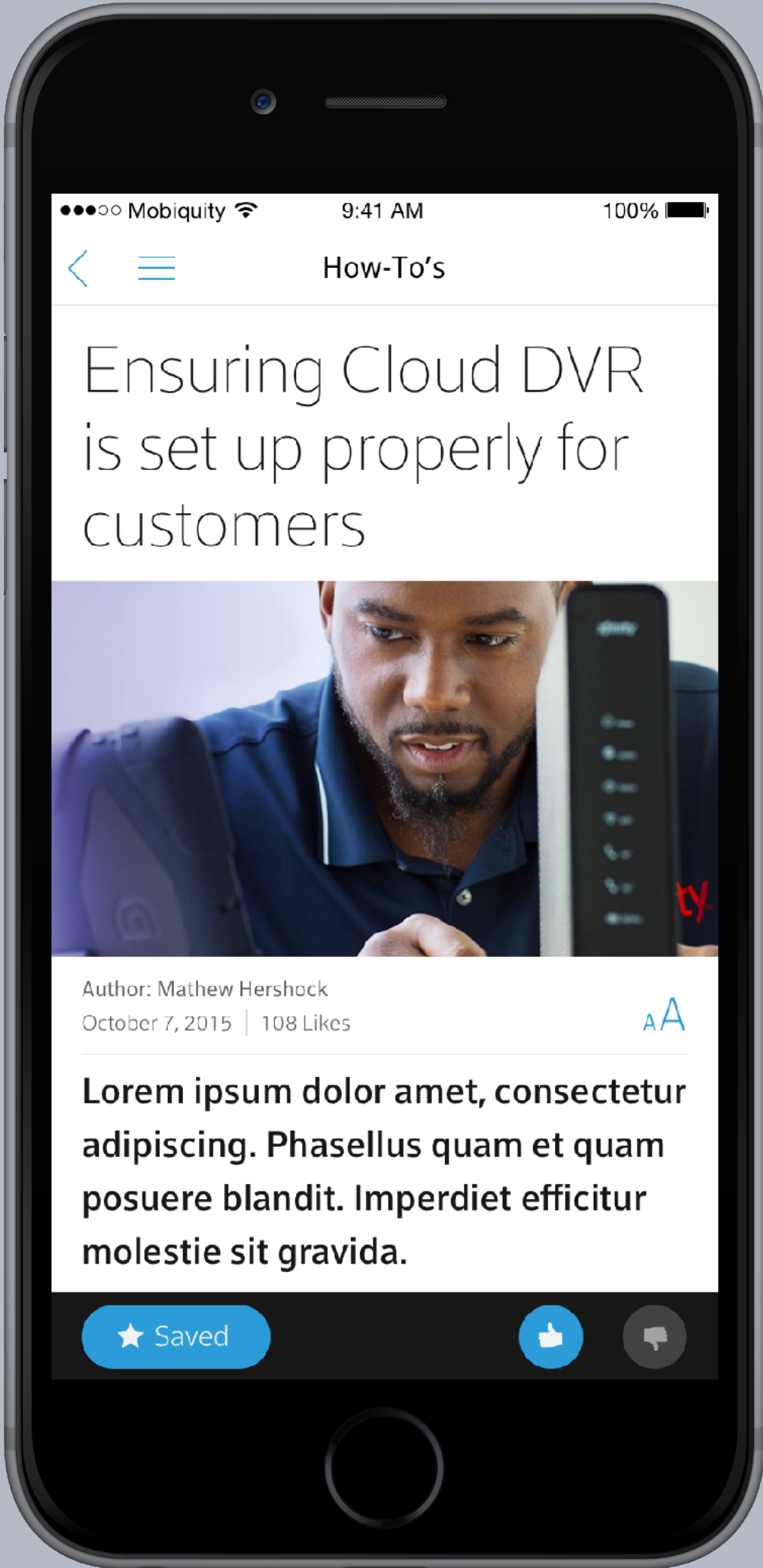
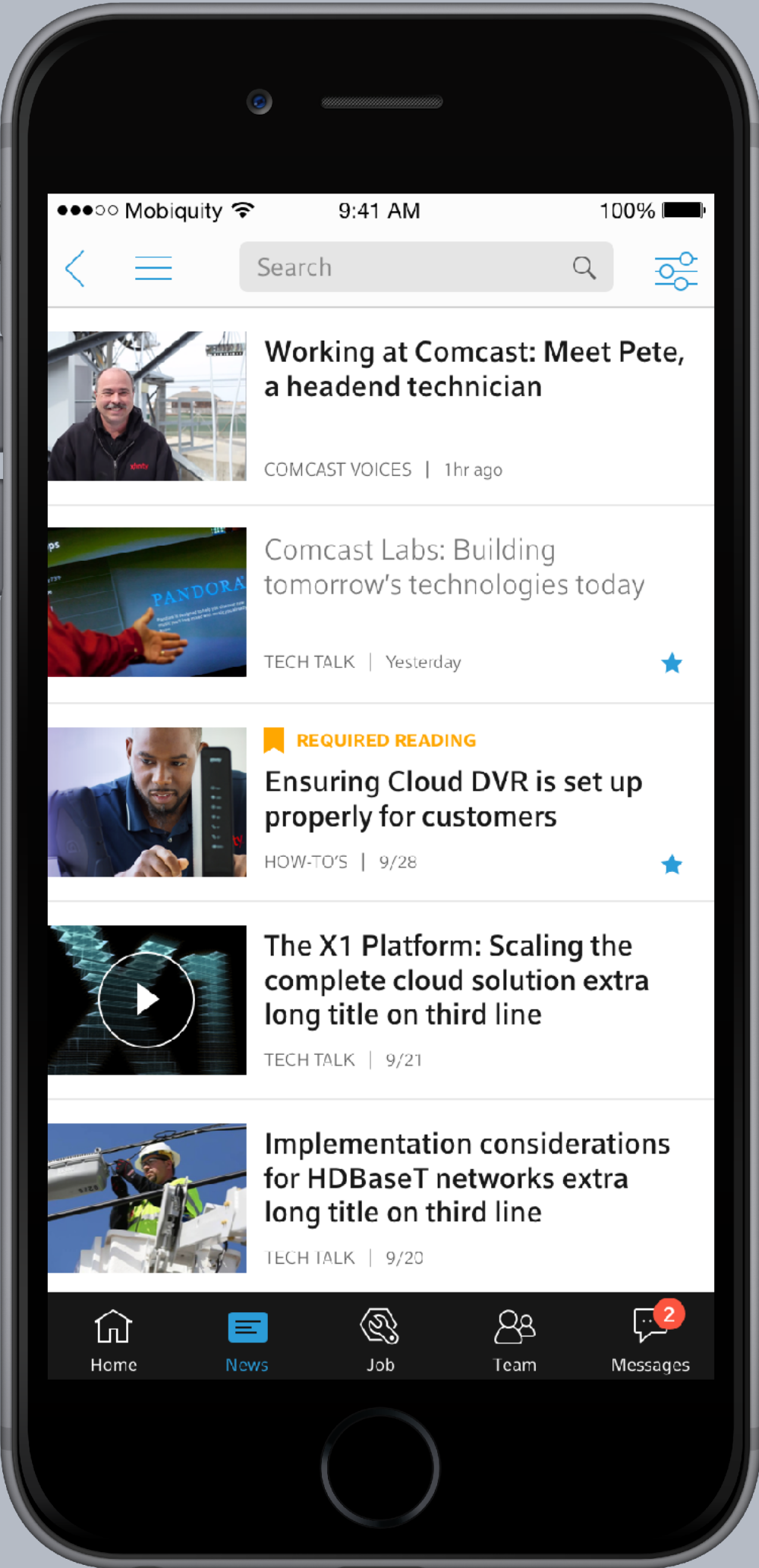
Visual Design



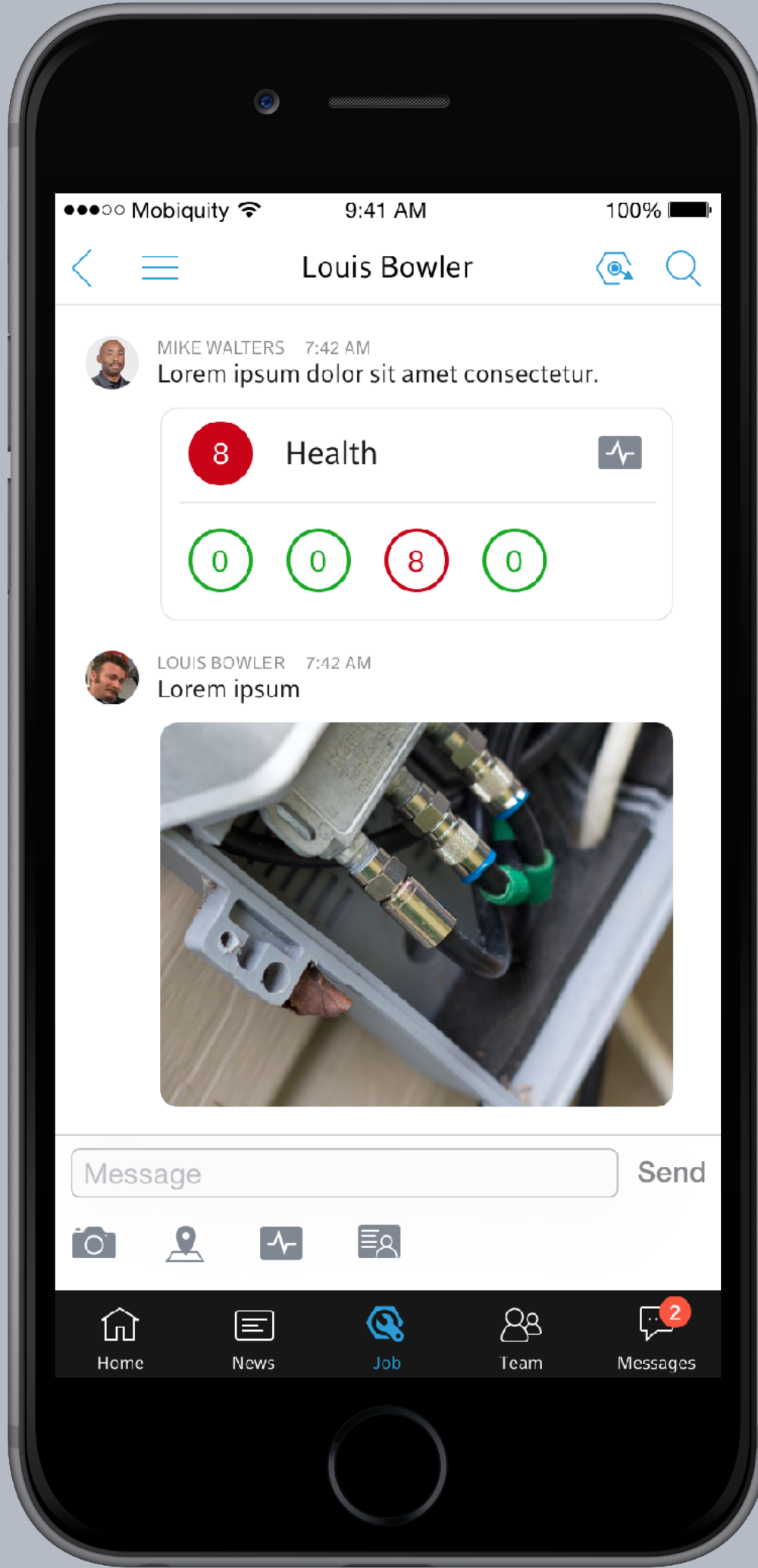
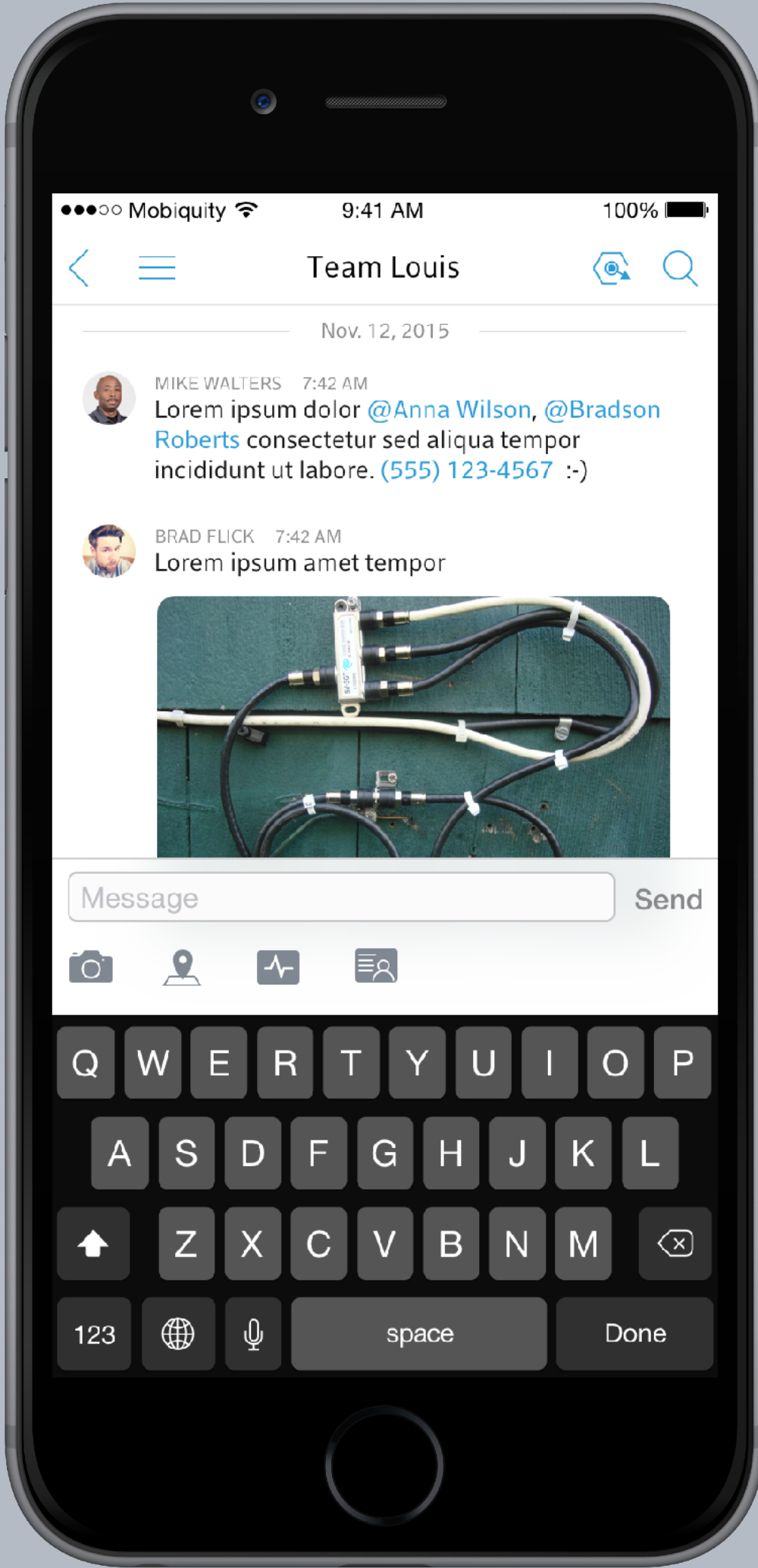
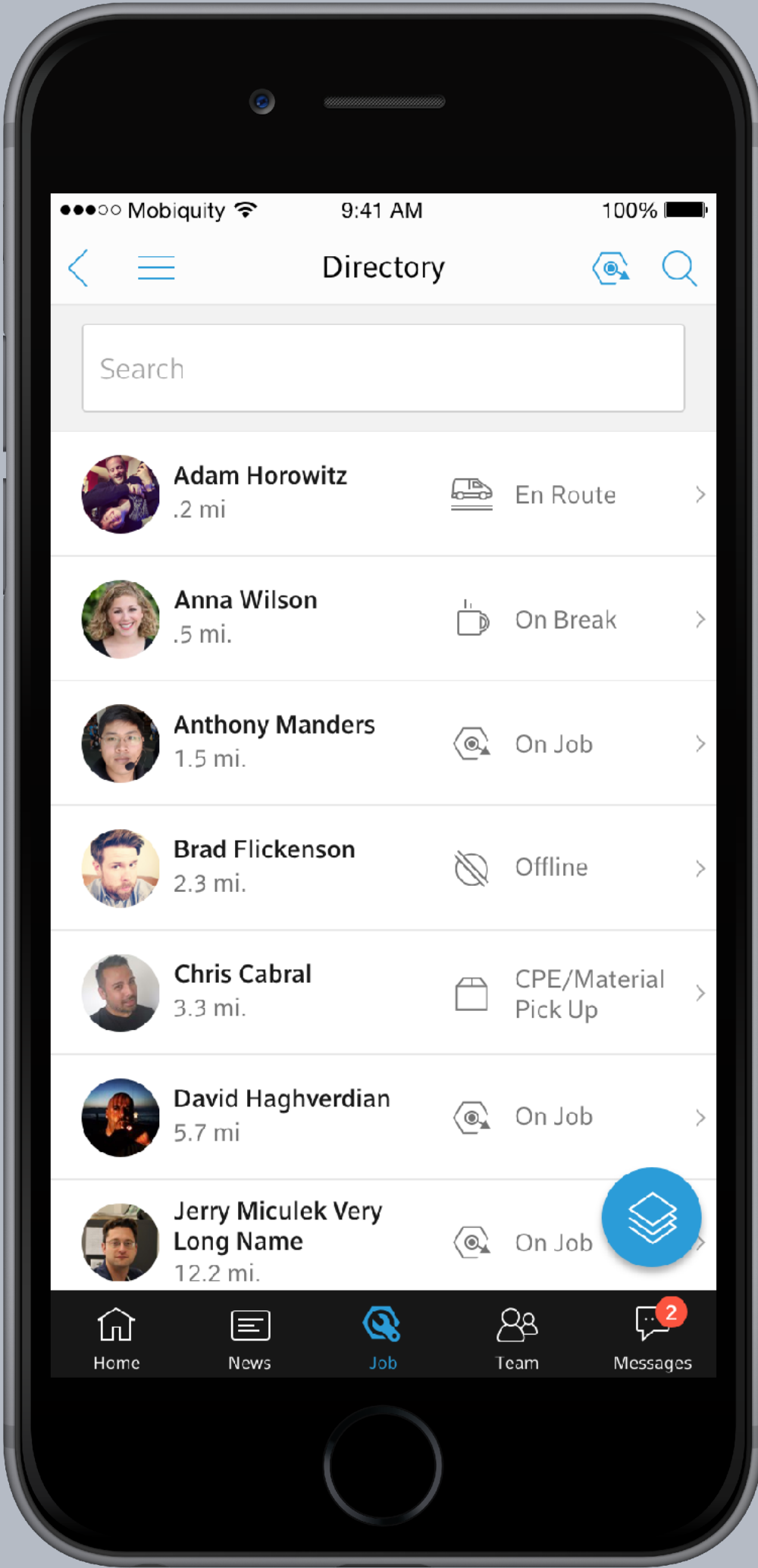
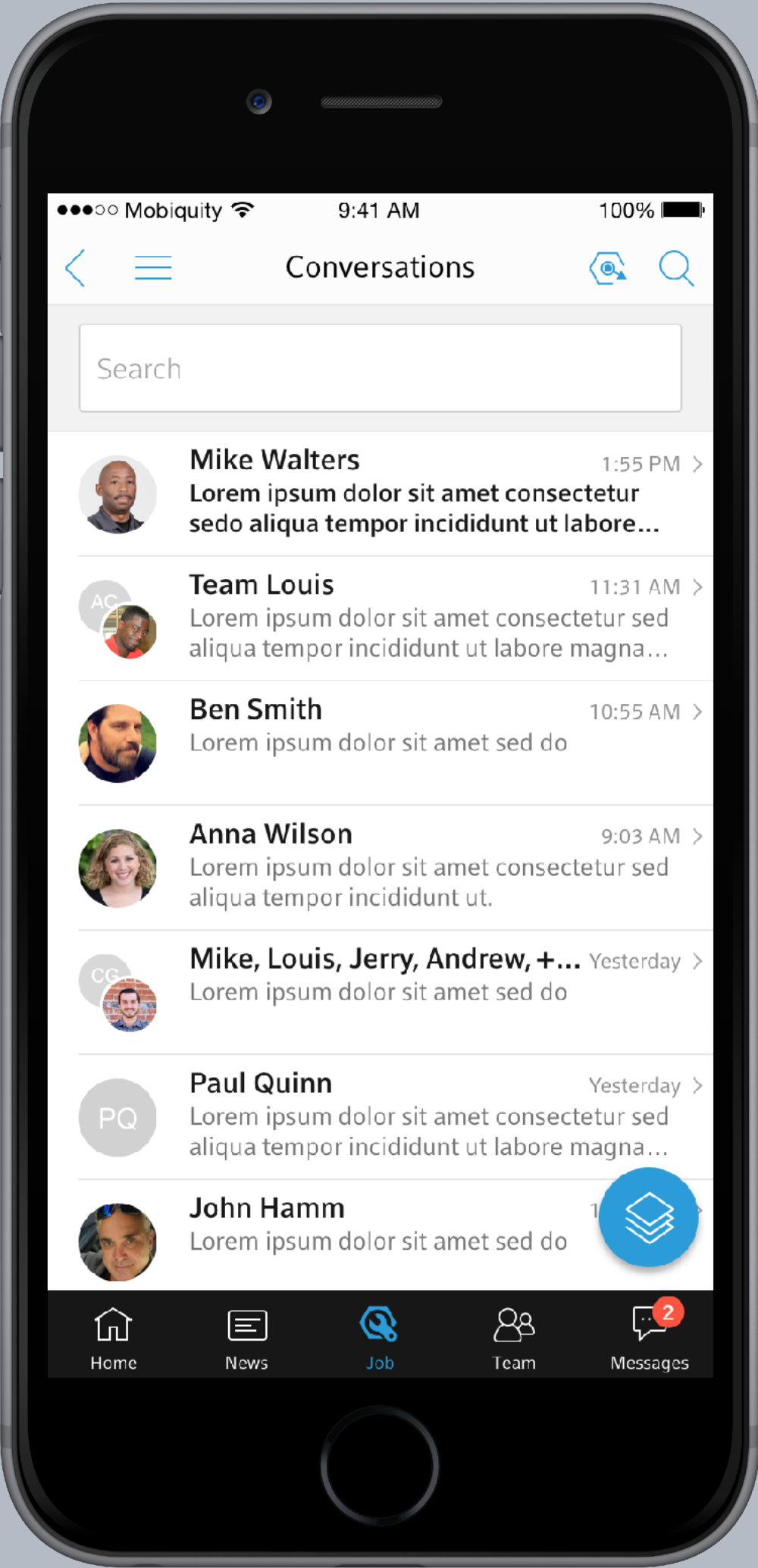
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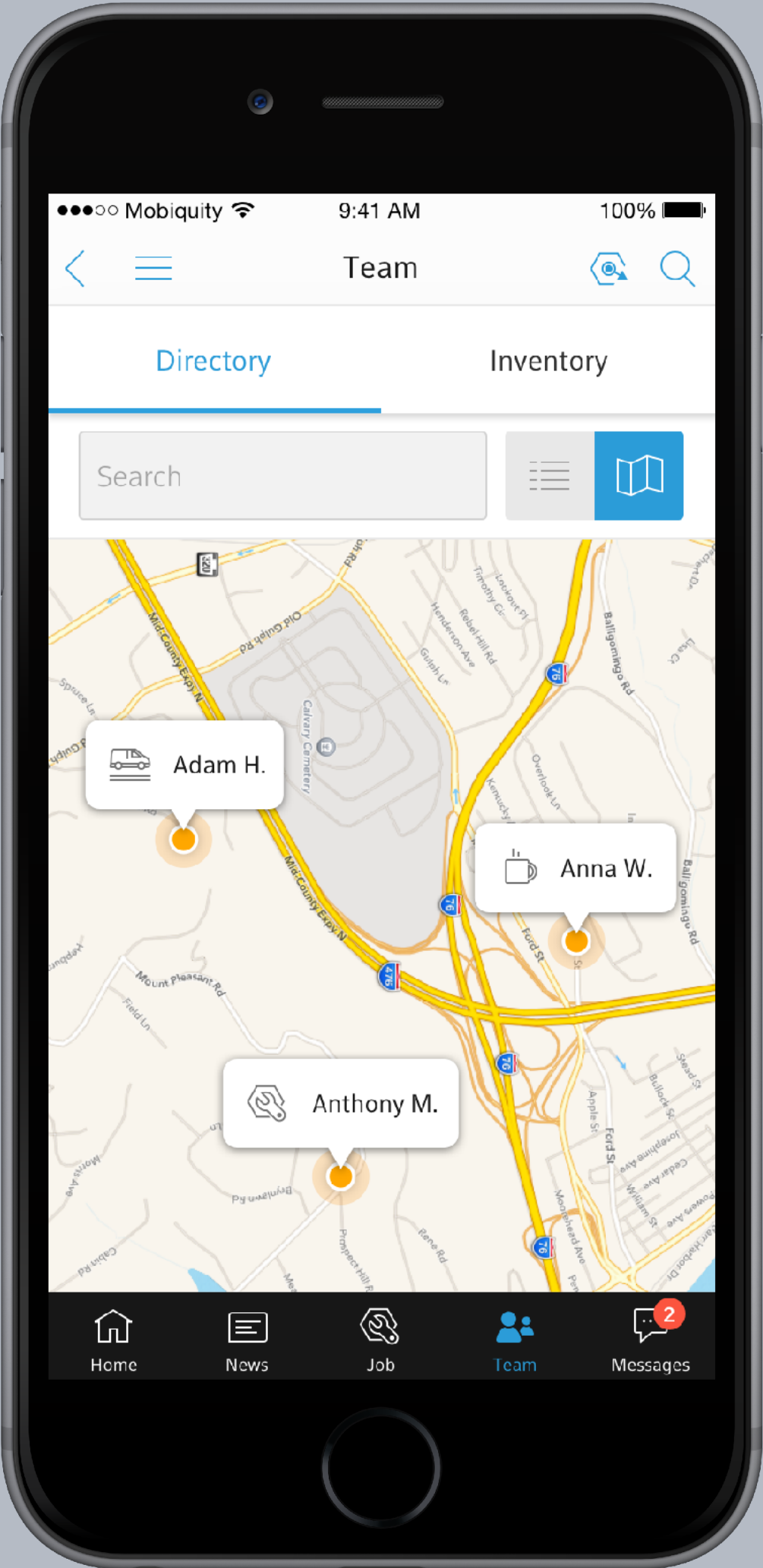
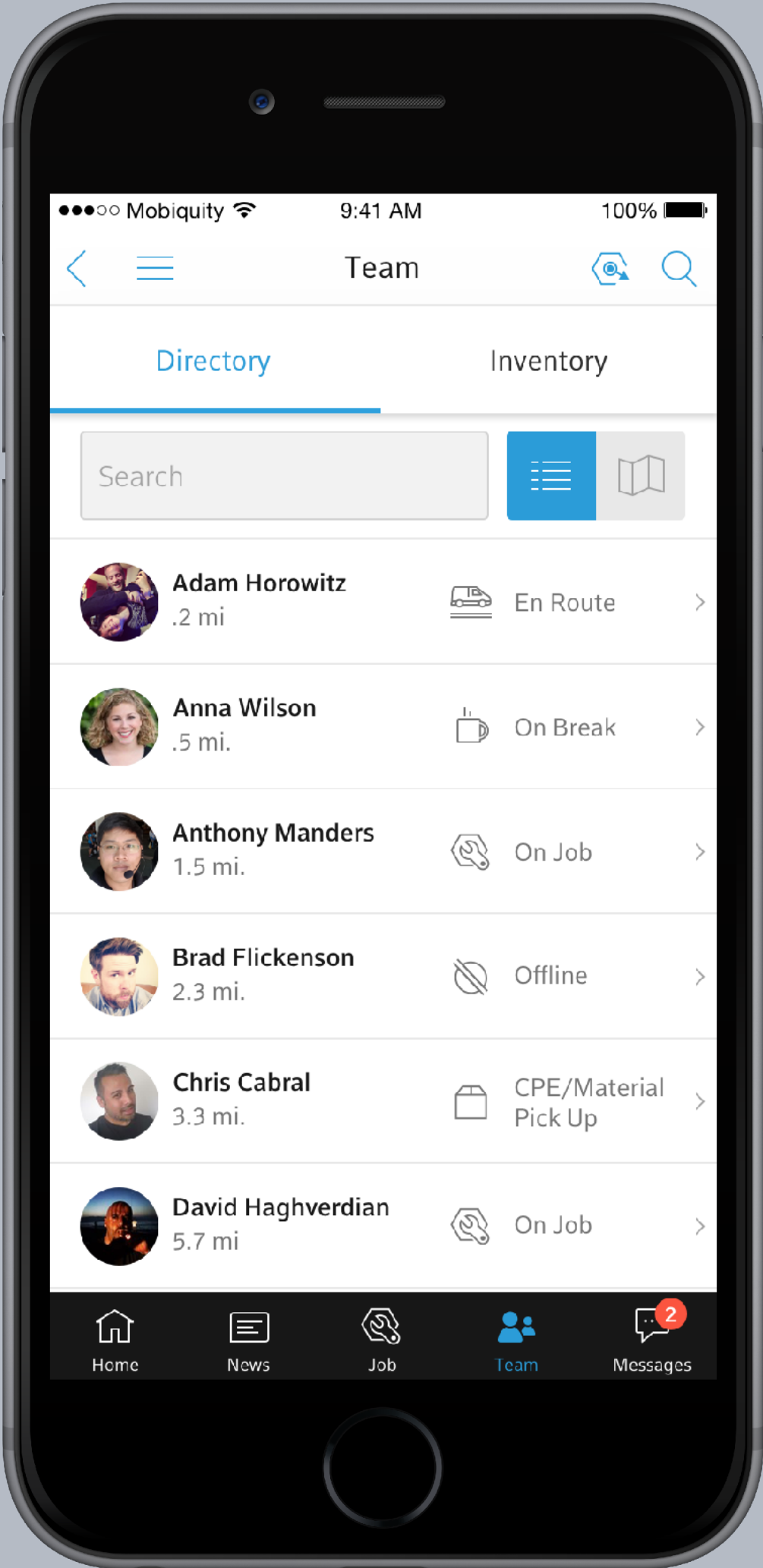
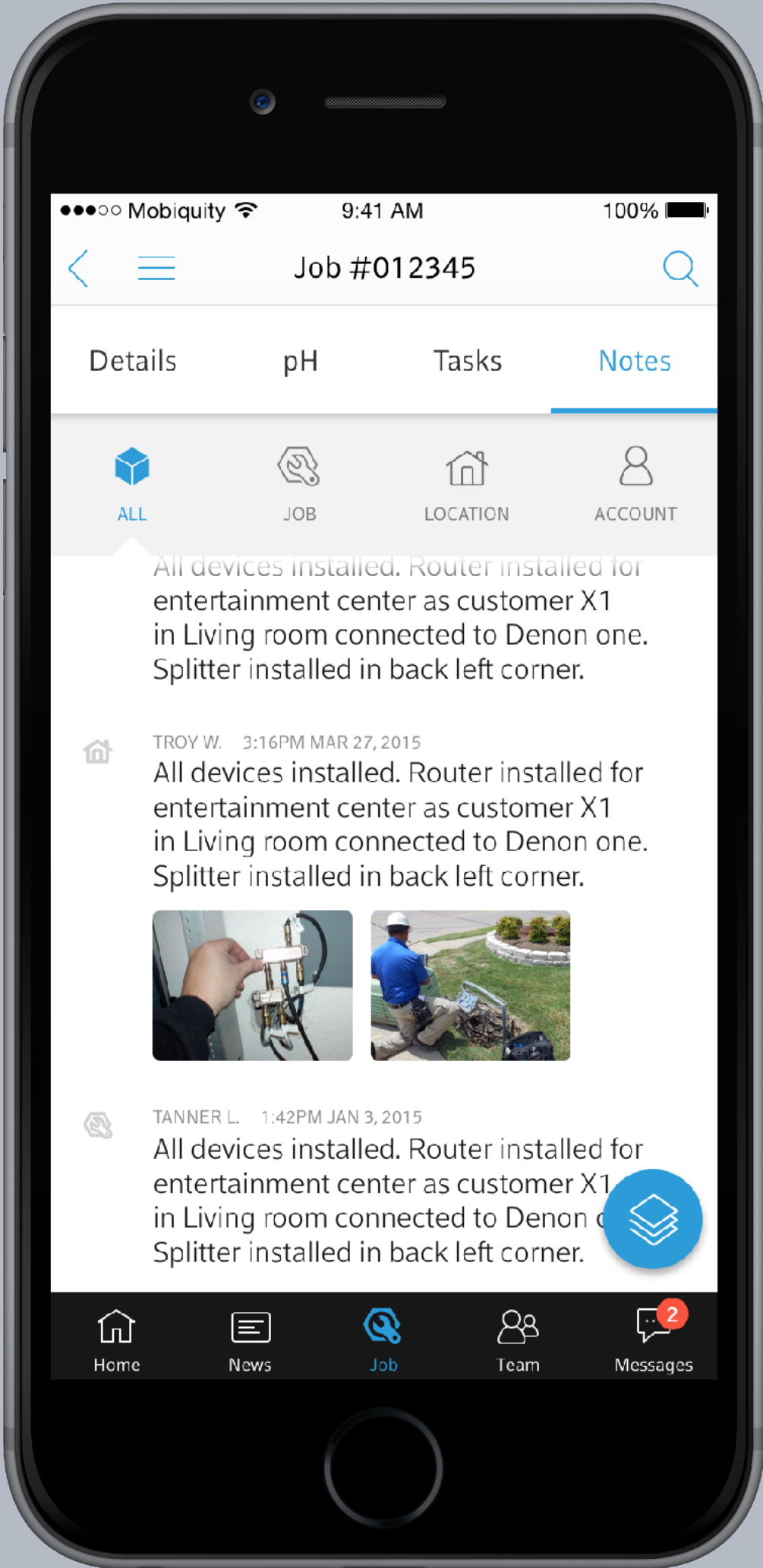
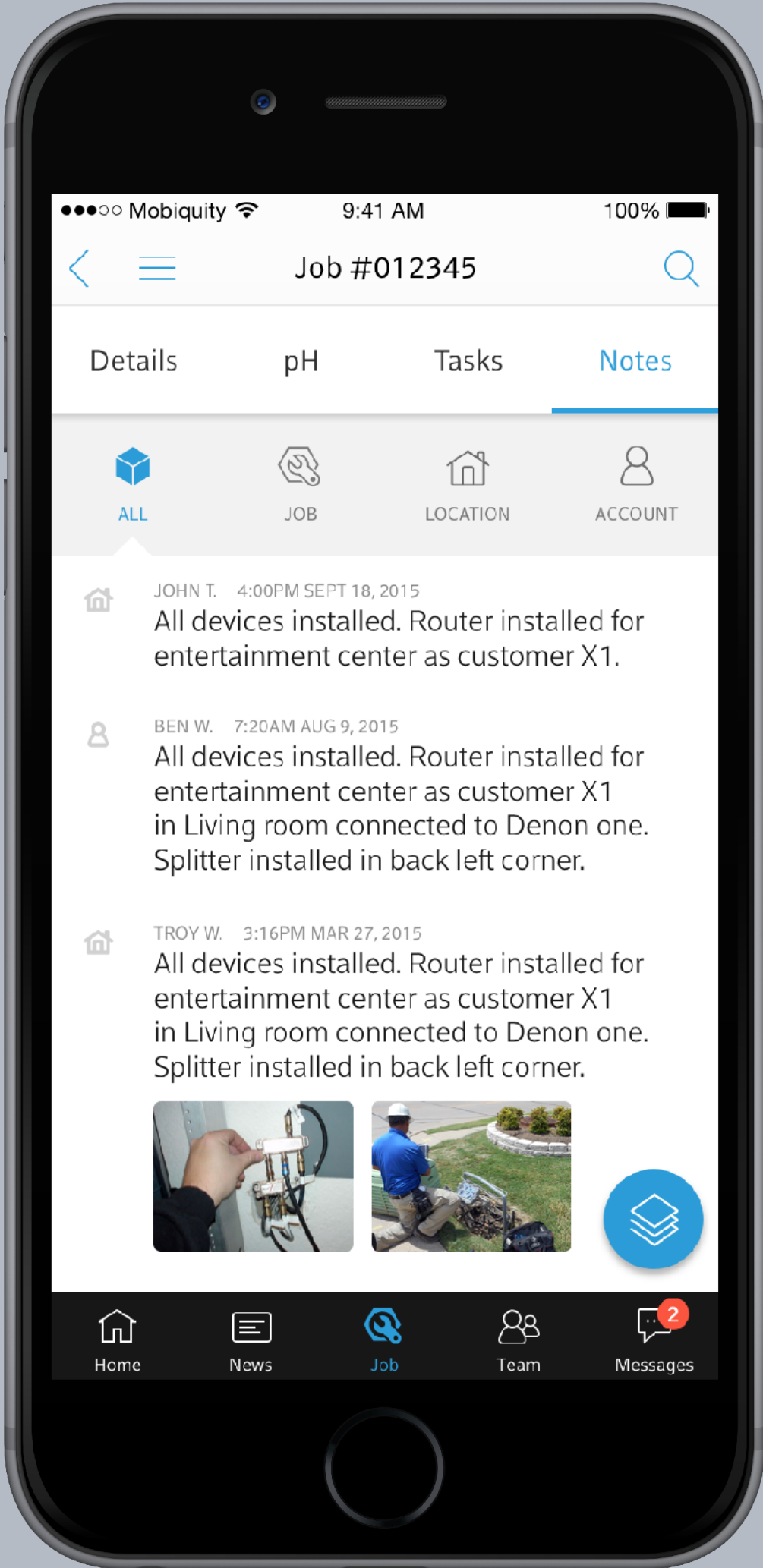
Visual Design



Visual Design



Visual Design



Style Guide

Comcast Tech Nucleus UI Kit – Version 9.0

This UI Kit was created at 1x for iOS. Use these patorns and templates to efficiently design mobile experiences for Comcast Tech Nucleus.

Typography

Big Section Title

Smaller Section

Regular Title

Body text. Lorem ipsum dolor sit amet, consectetur adipiscing elit. Sed at elit, enim. Nam luctus libero nibh.

Small Header
SMALL HEADER LABEL
[Link](#)

Big Section Title

Smaller Section

Regular Title

Body text. Lorem ipsum dolor sit amet, consectetur adipiscing elit. Sed at elit, enim. Nam luctus libero nibh.

Small Header
SMALL HEADER LABEL
[Link](#)

Color

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F2F2F2	E8E8E8	D1D1D1	B9B9B9
A2A2A2	888888	747474	5D5D5D
4A4A4A	333333	1A1A1A	000000

Iconography

BOTTOM BAR

Home News Job Team Messages

SIDE NAVIGATION

Close Job Add Referral Customer Education Profile Settings Help

NOTES

Job Location Account All Job Location Account

LOREM IPSUM

Current Job Customer Education Required Reading Saved Popular All Filter Checkmark

KEYBOARD TOOL BAR

Photo Location Health Details Voice Draw

Buttons & Form Elements

BUTTON STATES

Primary Standard Inactive

Primary Standard Inactive

Save Save Save Save

Framework

TITLE BAR

Title Title Title Title Title Title

BOTTOM BAR

Home News Job Team Messages

Lists

What I did...

List item Lorem ipsum dolor sit amet

Consectetur adipiscing elit, sed do tempor

Eiusmod incididunt amet labore

Devices to Be Installed

Modem/Router X1 STB 1 X1 STB 2

Severe Weather Alert – Heavy Rain.

Watchtower Maintenance – Sunday from 3:00am to 5:30am

Main Watchtower Maintenance – Wednesday from 3:00am to 5:30am

Lightning Shower predicted. Avoid using Umbrellas.

Please Do Not Transfer Calls or Give Out Number For 56412 (Retention) - Greater Boston/Western New England

Confirm Contact Info

Primary Email VRKens@comcast.net

Primary Phone (555) 555-5555

Working at a headend

COMCAST VOICES

Comcast Lab tomorrow's

TECH TALK | New

REQUIRED RE Ensuring Cl properly for

HOW-TO'S | 5/31

STATUS BARS (DARK)

●●●○ Mobiquity 9:41 AM 100%

●●●○ Mobiquity 9:41 AM 100%

Redlines

Redlines

