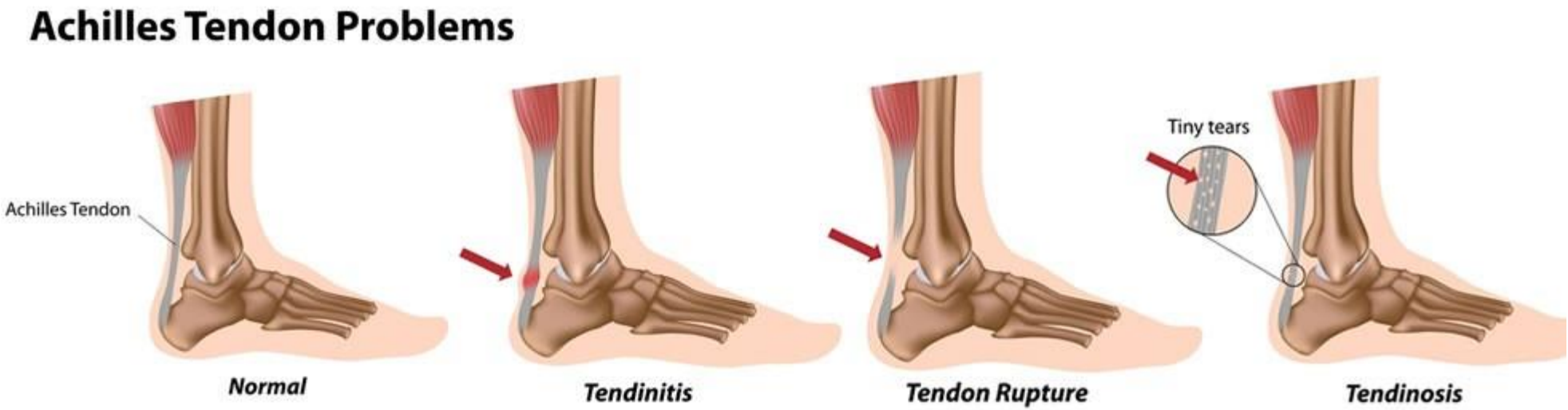
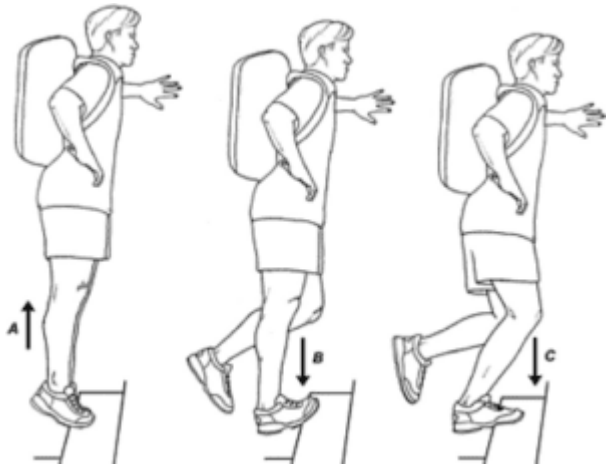
App Development – V1

12.16.2020 – K.Merry

Recap: The Problem



Typical exercise-based treatment: Heel Drops



Development Steps

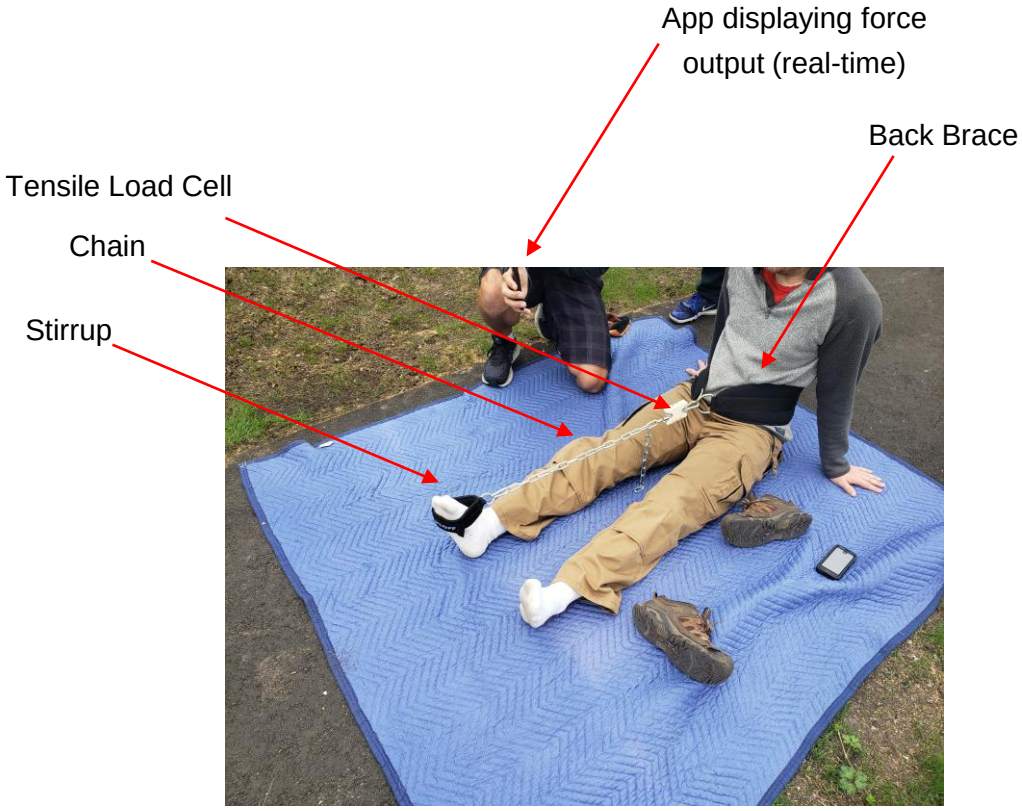
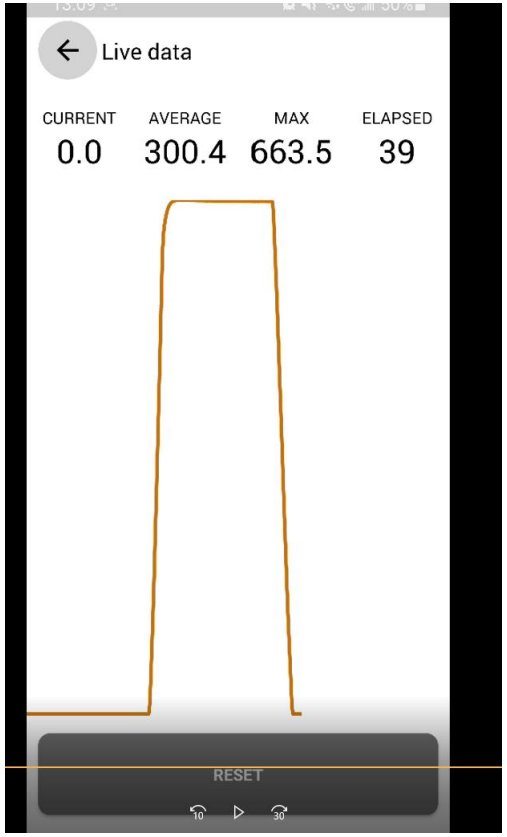
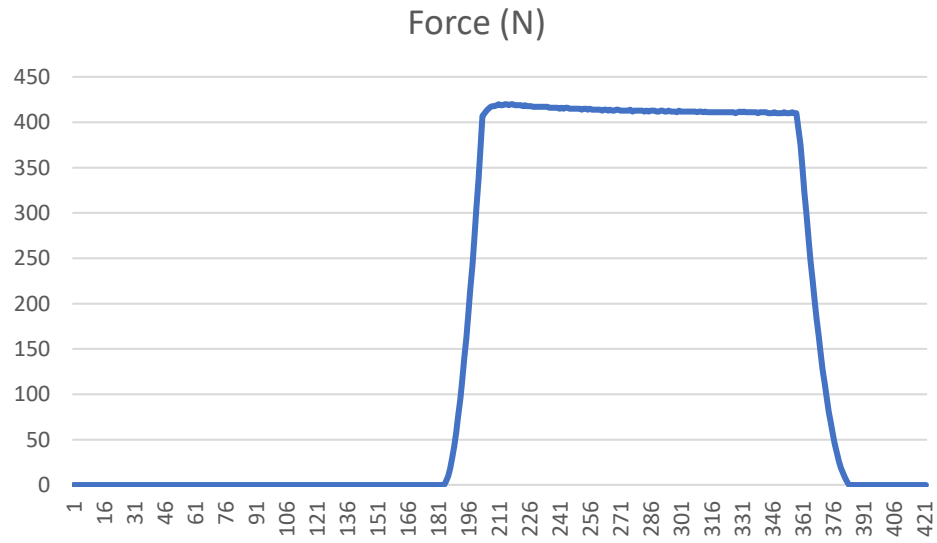


Photo c/o collaborator Rob Morgan, used by permission.





Expert Panel Needs Assessment

- Sent out to internal research team (5 members) to address initial app requirements
- Help to gauge what the V1 build should look like + what functions should be present

Questions asked:

*What **features must you see** in the proposed PT Load-Monitoring app?*

*What **features would you like to see** in a PT Load-Monitoring app?*

*What **information would you like tracked** in the PT Load-Monitoring app (e.g., reps, sets, adherence, compliance to prescribed target loads for each individual session, progress over time, etc.)?*

*How would you like the **user interface** to look in the PT Load-Monitoring app (e.g. Colourful/graphical; Clean/minimalistic; Text-based; mixed; etc.)?*

*Do you **expect to see an overview dashboard** to show the summary of progress and/or relevant program information in the PT Load-Monitoring app? If yes, what information would you like displayed as an overview?*

*What type of **security** protection do you expect to see in this PT Load-Monitoring app to protect personal health information?*

*Please list **any other comments** or relevant information that may have not been captured by the above questions.*

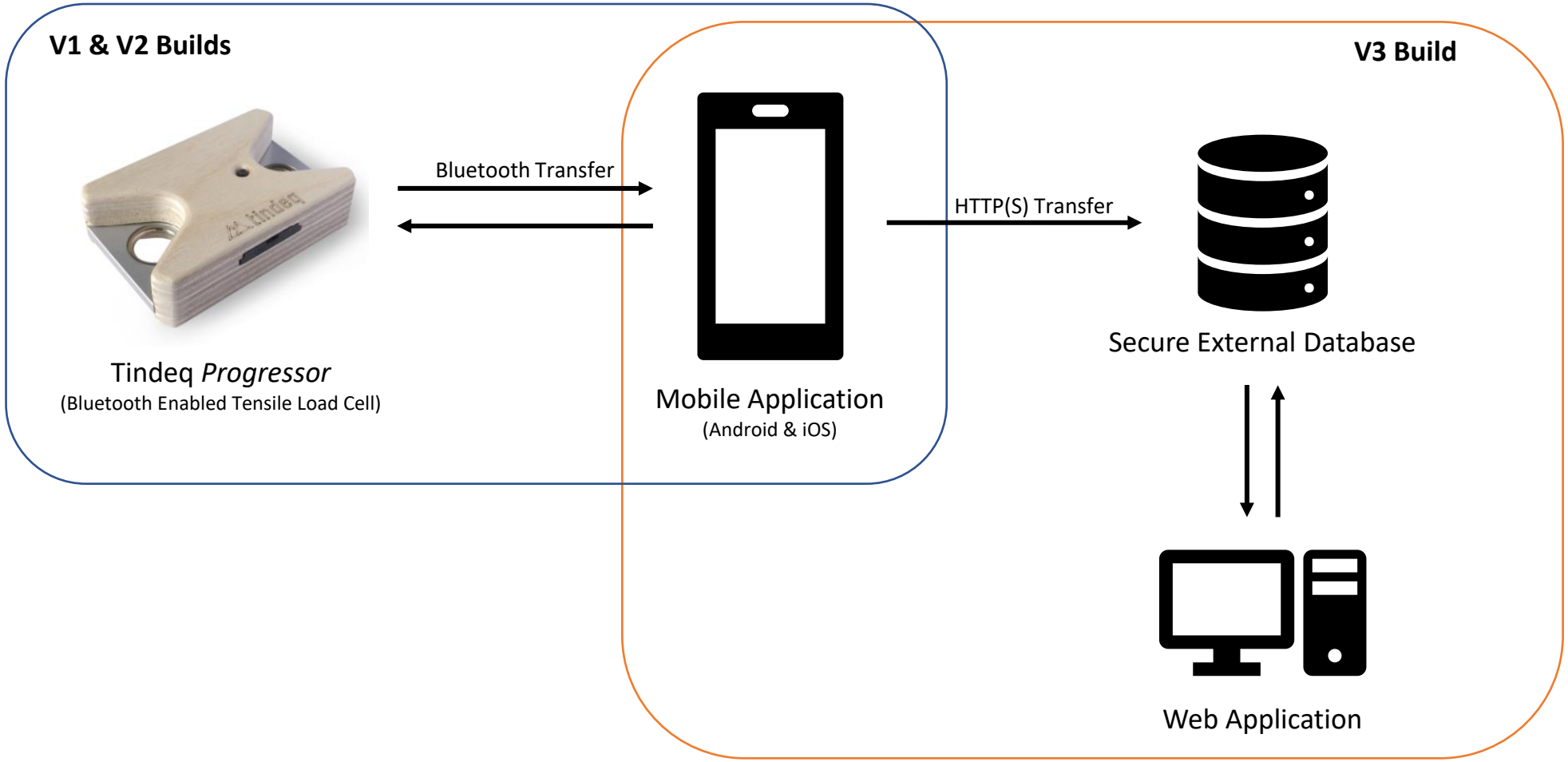
Development Steps

- **V1 Build – Skeleton app**
  - Features focused to bluetooth connectivity and load monitoring/displaying
  - No data storage
  - No clinician interactions/questions
  - Similar to current build of the Tindeq Progressor app→ feature focused

- **V2 Build – Extend in-app features**
  - Add in calendar features + date-wise planning/tracking of exercise sessions
  - Summary features pertaining to exercise + overall progress
  - Pain tracking (post-session prompt + VISA-A delivery)
  - Reminders/push notifications

- **V3 Build – Expand interaction outside of single device**
  - Move data storage off-device (secure cloud?)
  - Develop Web-app for clinicians to access participant data
  - Clinician/participant interaction through in-app messaging
  - Login system (of some sort—likely using participant IDs not sensitive personal information)

Anticipated System Architecture



V1 Features

- **Home Screen**

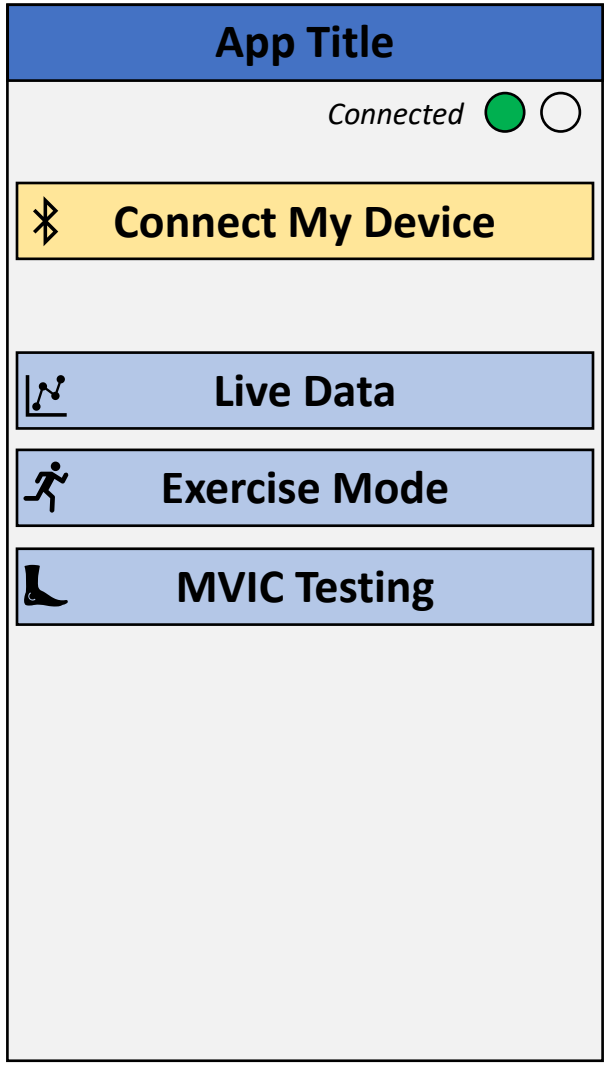
- **Live Data Mode**
  - Scrolling plot w/ x (time) and y (load) axis (refresh rate?)
  - Timer function counting up from 0
  - Numerical readout of current load (refresh rate?)

- **Exercise Mode**
  - First prompts users to enter value for target load, hold time, sets, reps, and inter-set rest time
    - How to differentiate reps from one another during a set? Does the plot just keep scrolling? How does the app detect that one rep has been completed or that a set has been completed? How does it tell the user that?
  - Scrolling plot w/ x (time) and y (load) axis (refresh rate?)
  - Load goals in the form of horizontal overlaid bar on the y-axis
  - Timer function which counts backwards when load > target load; time will reflect 'time under tension' goal
    - Background changes colour when current load > target load
  - Numerical readout of current load (refresh rate?)

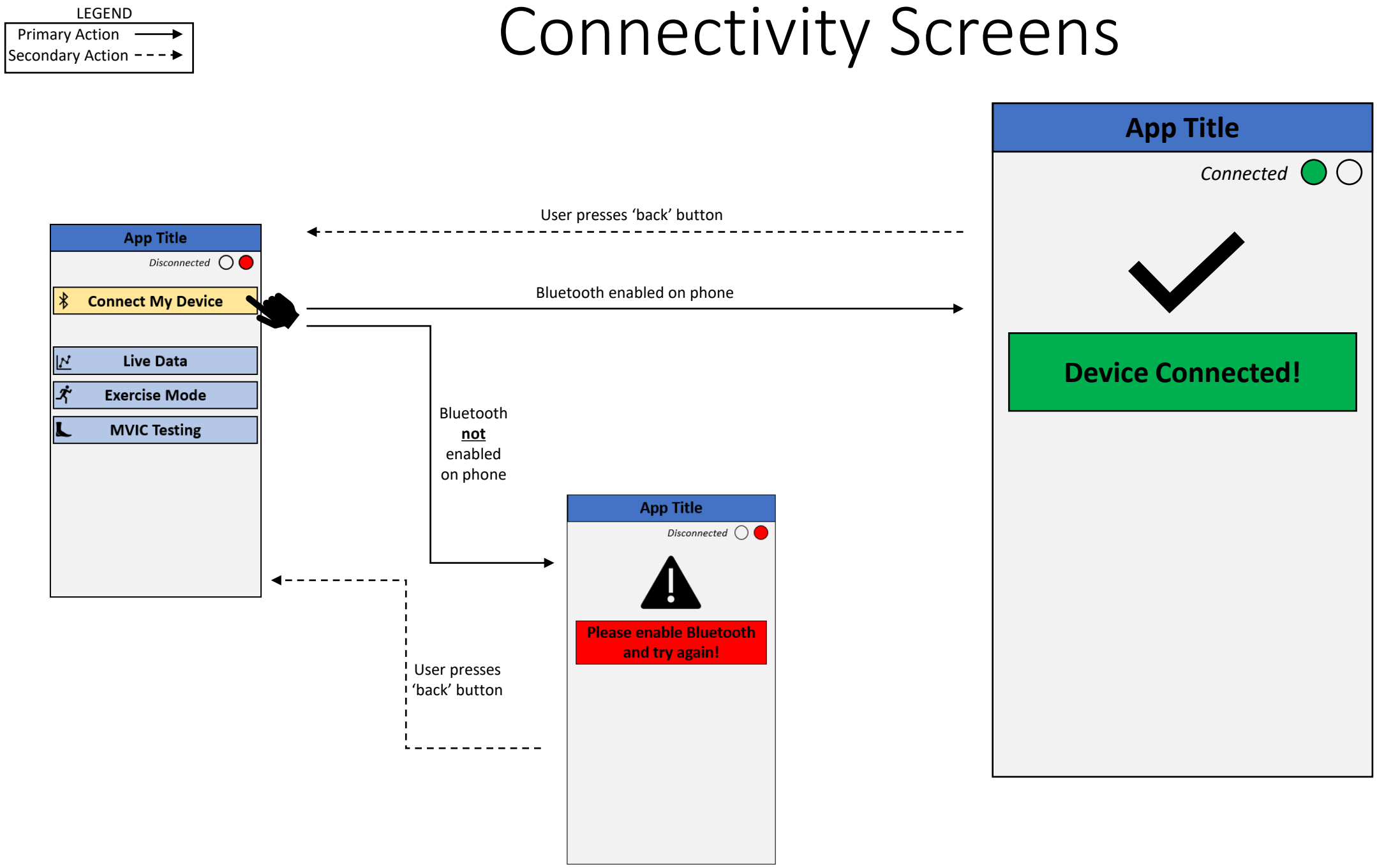
- **MVIC Testing Mode**
  - First prompts the user describing how MVIC is tested/what is expected of the participant during the test

- **Bluetooth Connection Screen**
  - Should prompt user to ensure the bluetooth on their phone is 'on'
  - Should inform user as to how to connect, and show them that the device is connected (e.g. green background or light?)

Home Screen

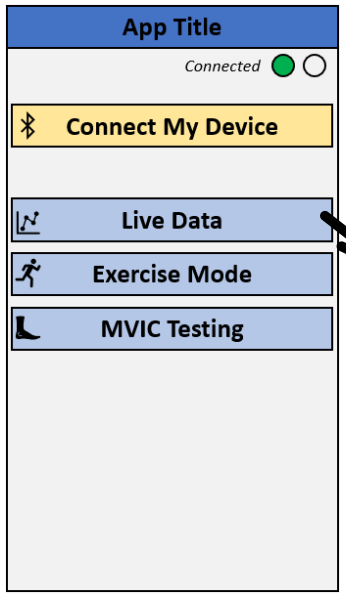

App Title
Connected
Connect My Device
Live Data
Exercise Mode
MVIC Testing

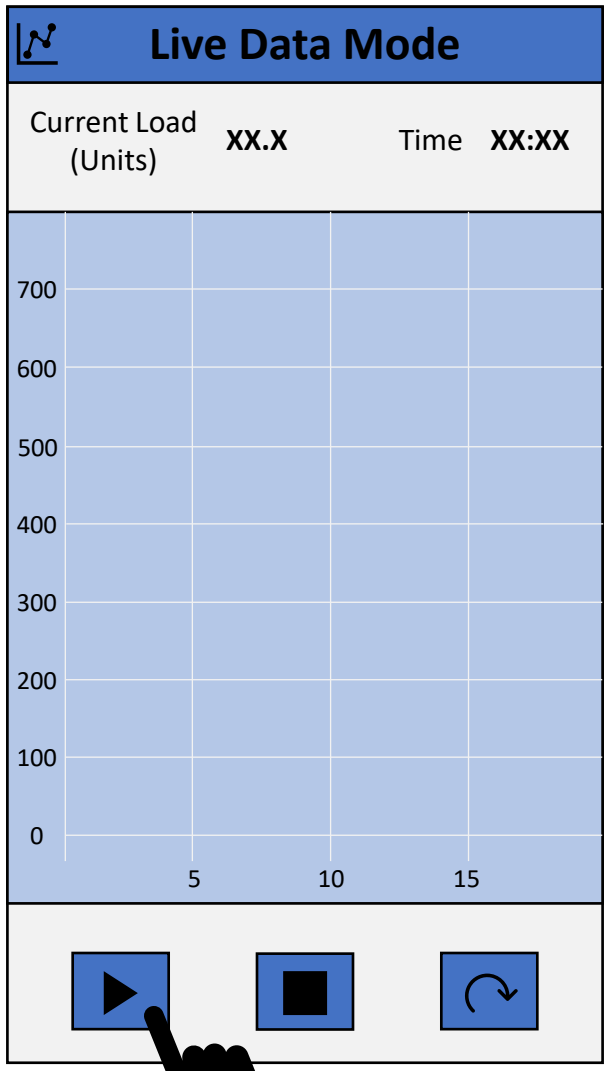
Connectivity Screens

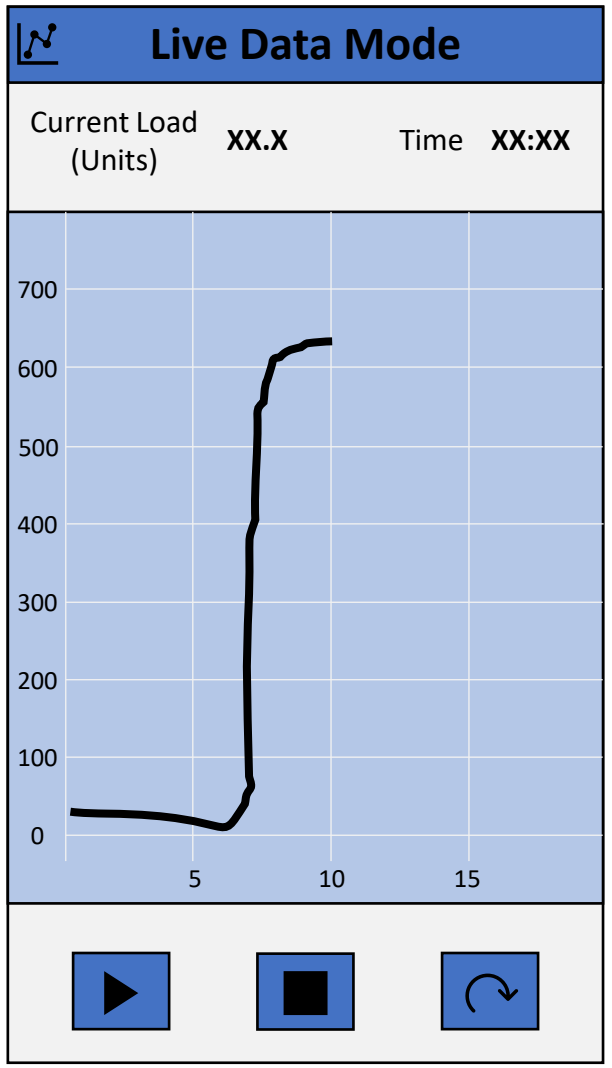


Live Data Mode

User presses ‘back’ button

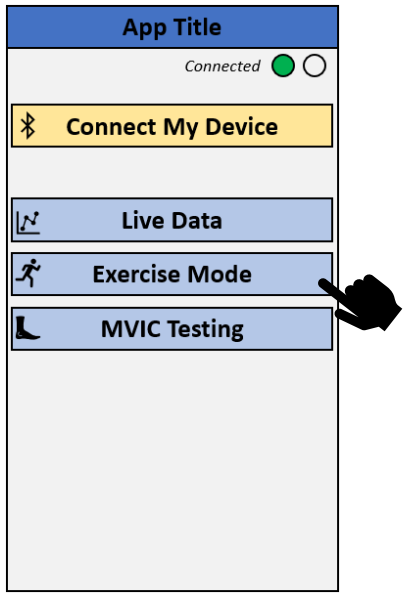


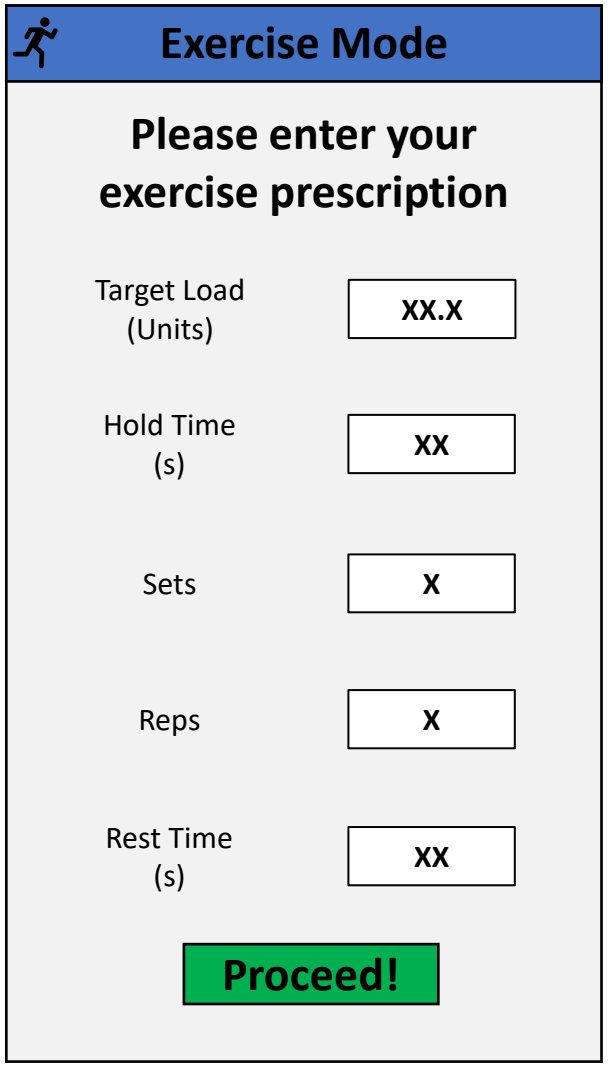




- Live data kept at the center of the screen
- Plot scrolls R→L with ~20s visible (10s data + 10s empty)

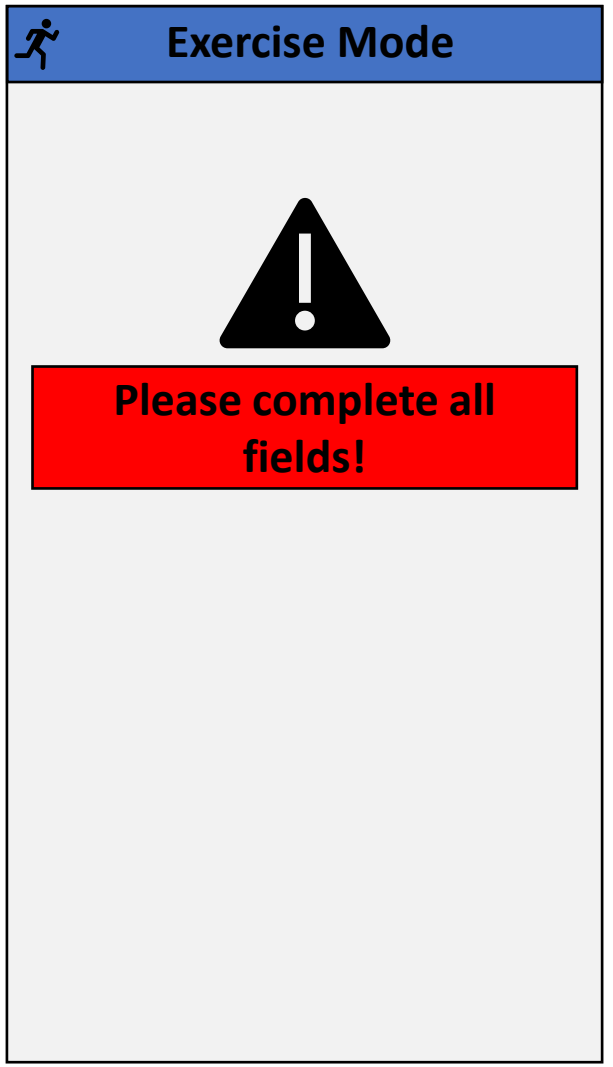
Exercise Mode



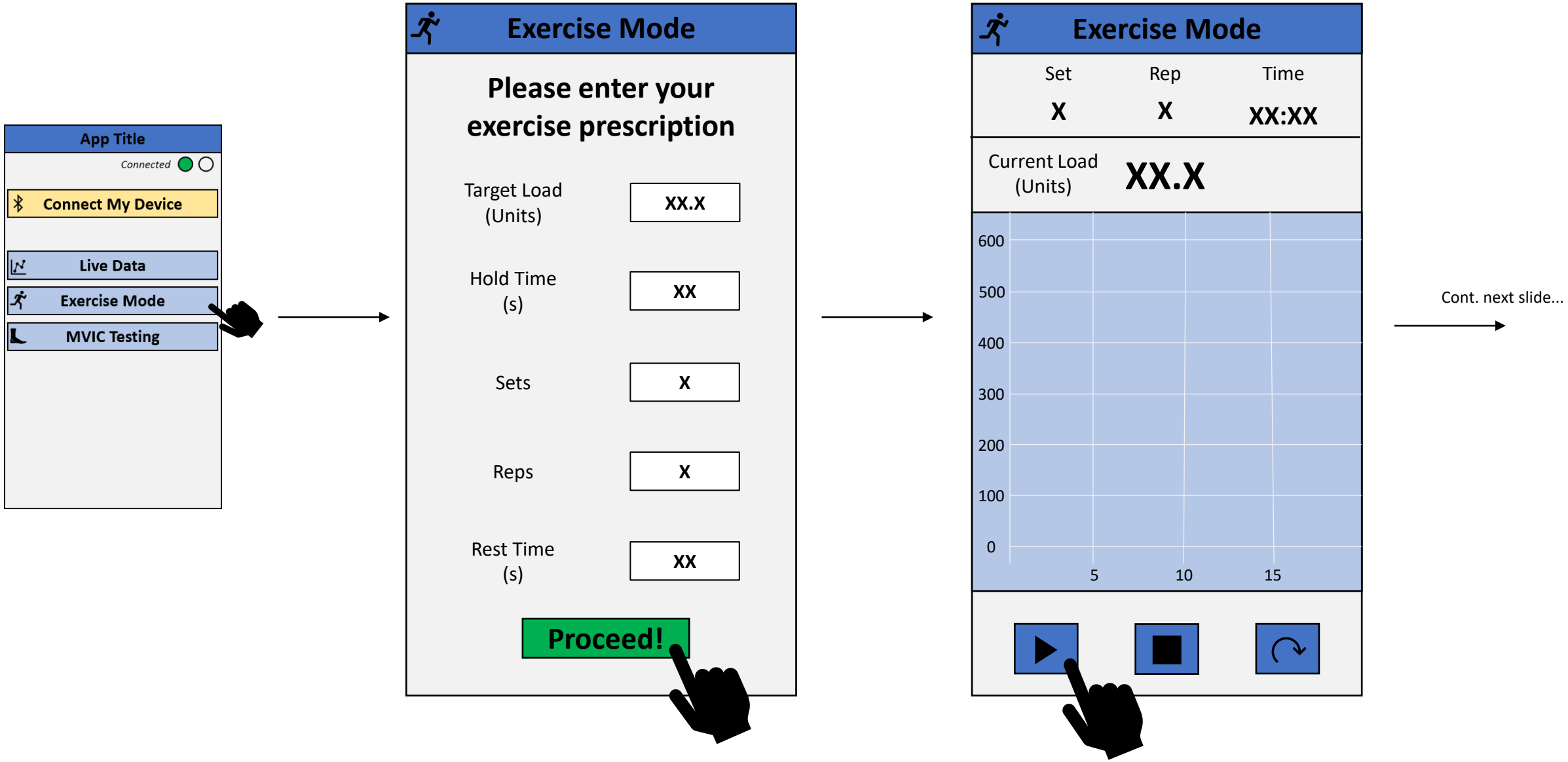


User presses 'Proceed!' button when not all fields are completed OR some are completed wrong (i.e. not numbers)

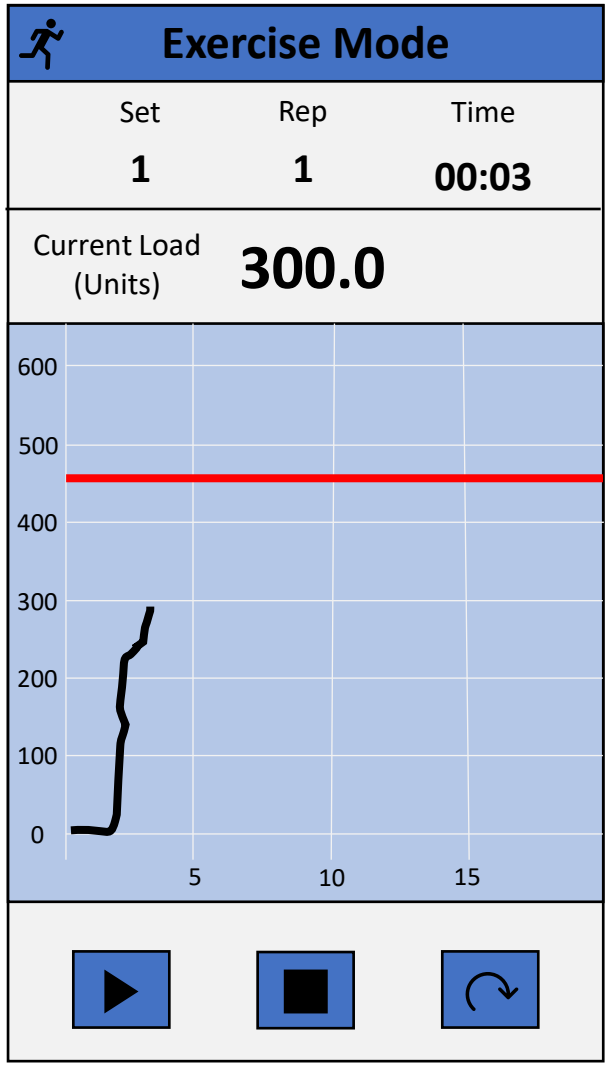
User presses 'back' button

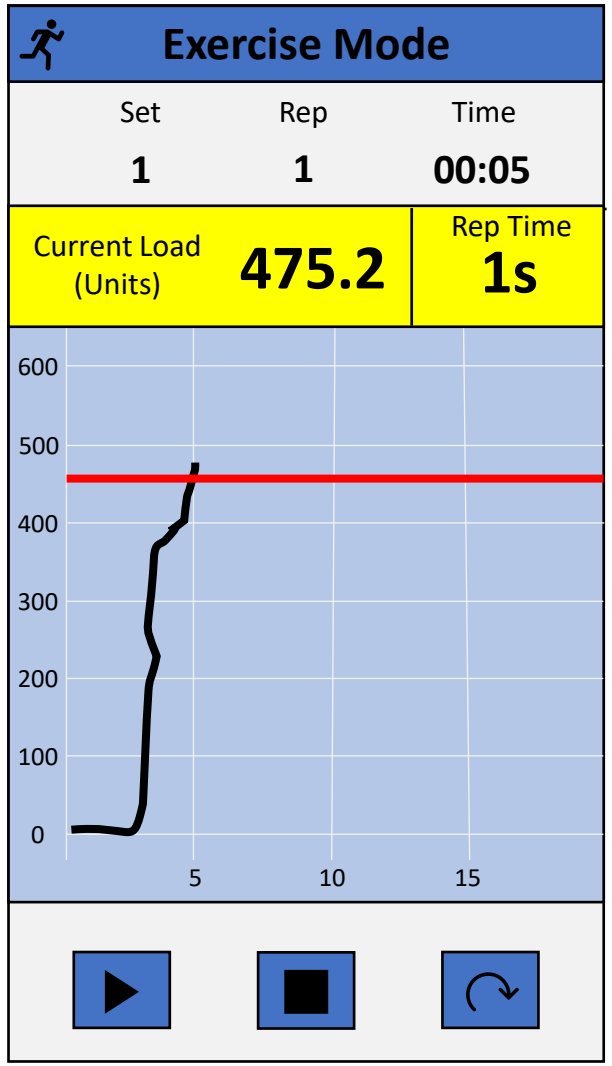


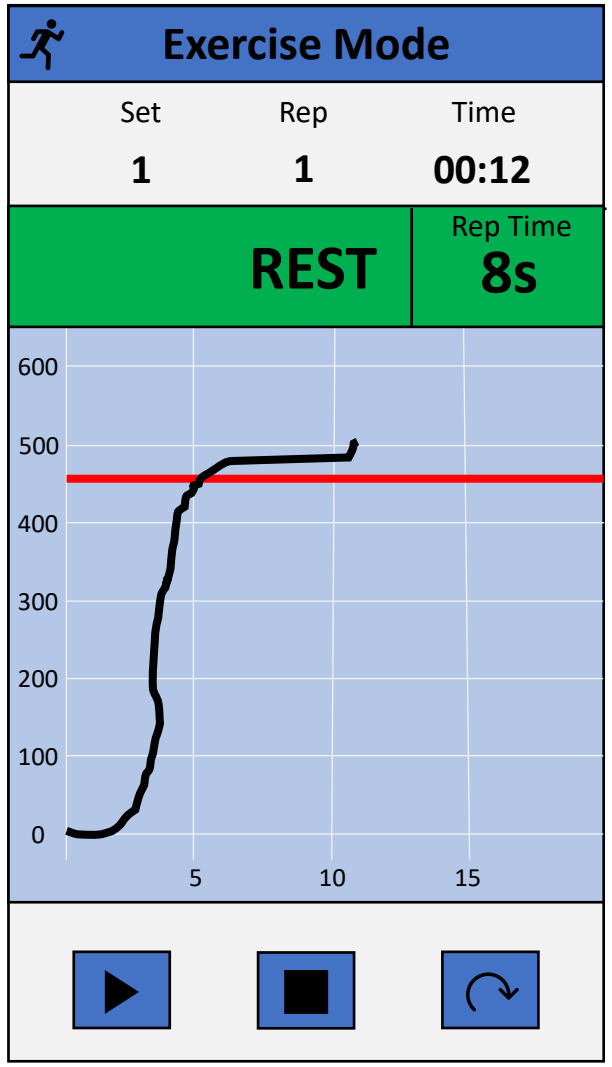
Exercise Mode



Exercise Mode

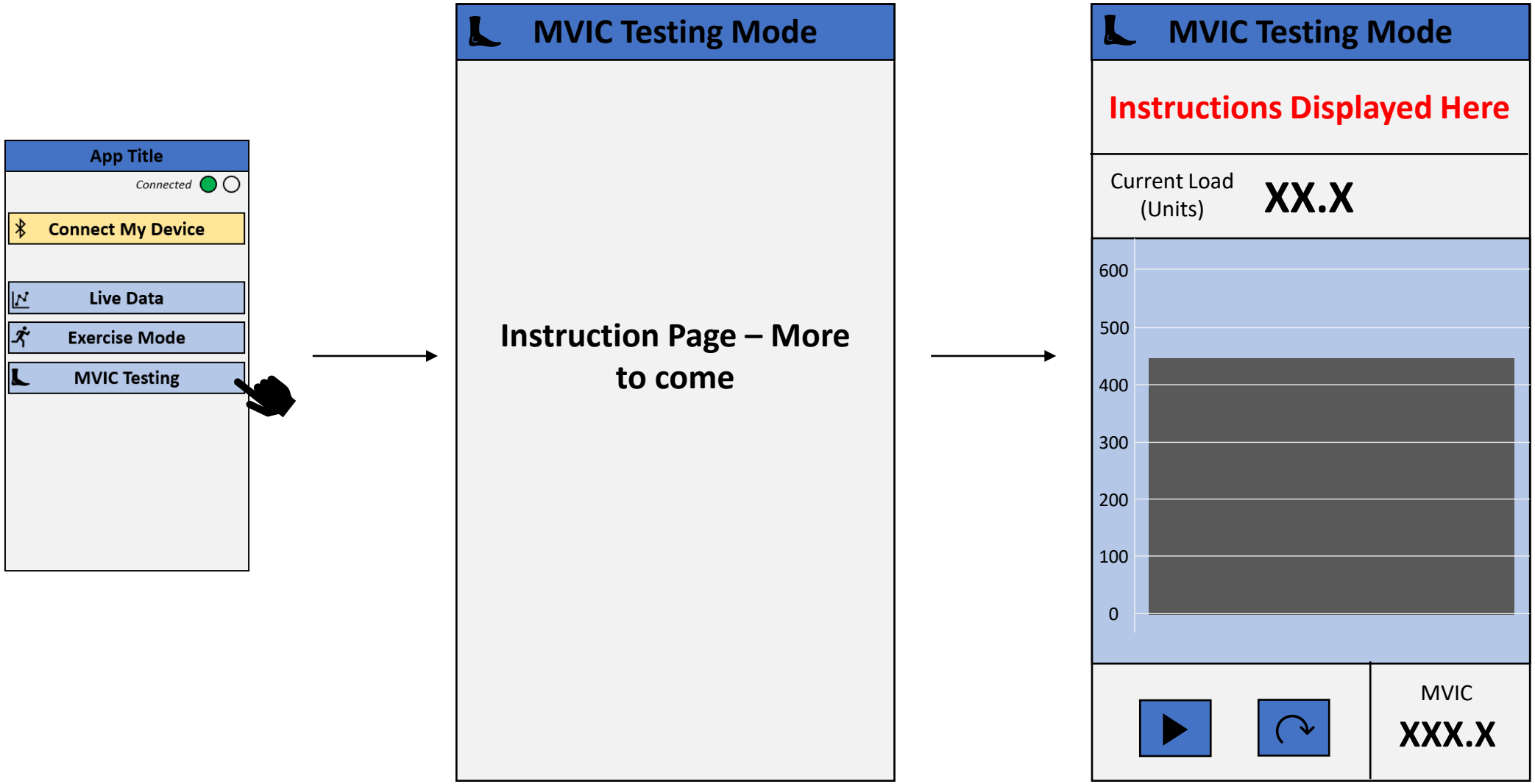


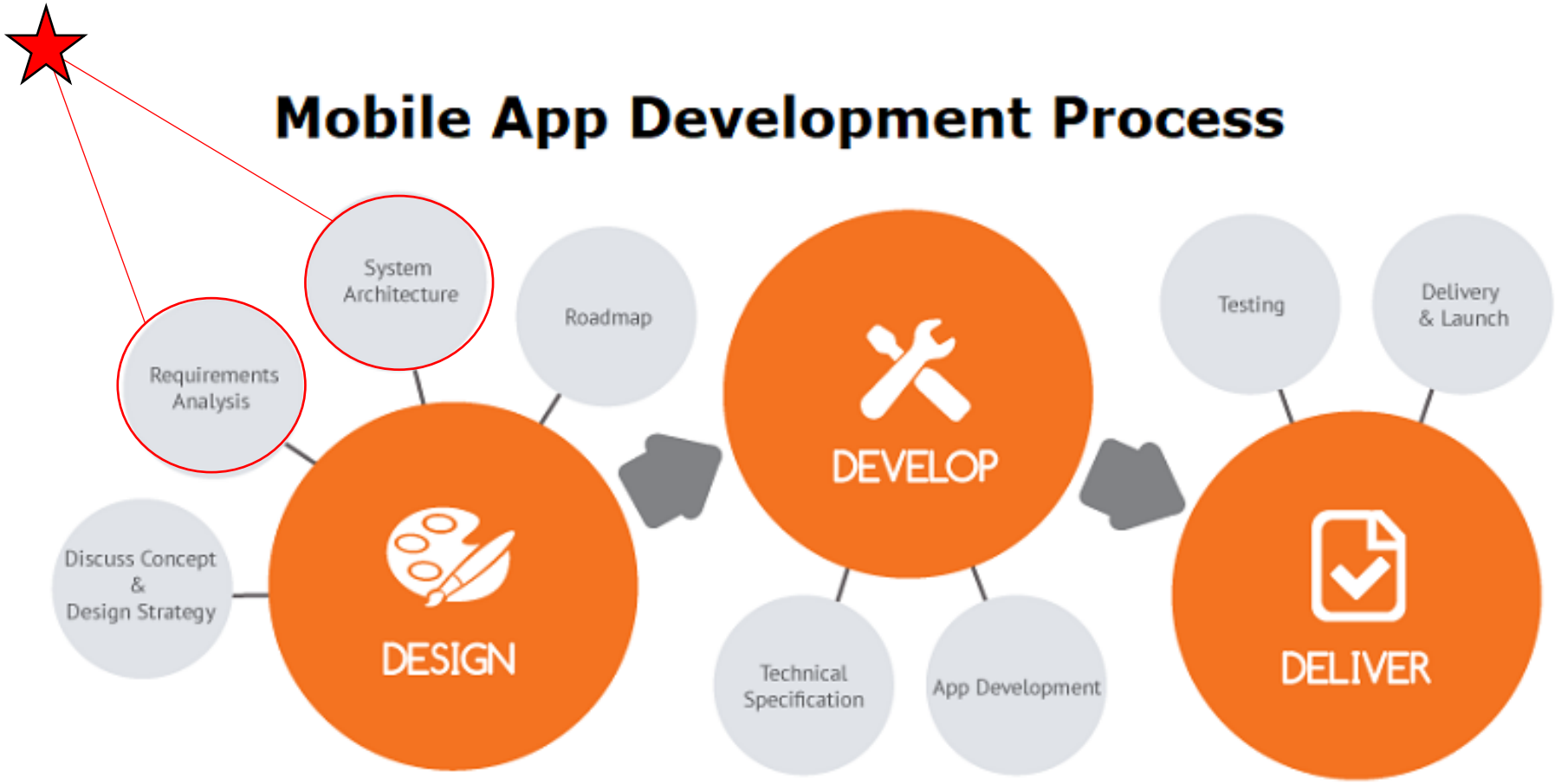




...You get the idea. Details on exercise mode still TBD.

MVIC Testing Mode




Mobile App Development Process
System Architecture
Roadmap
Requirements Analysis
Discuss Concept & Design Strategy
DESIGN
DEVELOP
Technical Specification
App Development
Testing
Delivery & Launch
DELIVER

Misc Screens - TEMP