



# Lois/Clark Device Behavior

**April 28, 2015**  
**New Business Group UX**

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# Current Jewelry Behavior

# Summary of Device Behaviors (Completed)

| Action                                  | Light Color   | Light Feedback       | Buzz Feedback                               | Resulting Device State                                       |  |
|---|---|----------------------|---|--|--|
| <b>Power On</b><br>(Off Initially)      | Short press & release                               | ○○ White             | 2 blinks<br>(250ms On, 250ms Off) x2        | 2 short buzz<br>(250ms On, 250ms Off) x2                     | Device ON<br>(Bluetooth ON, Activity tracking ON)  |
| <b>Power Off</b><br>(On Initially)      | Long press for 3 sec until haptic feedback, release | ○○ White             | 2 blinks<br>(250ms On, 250ms Off, 500ms On) | 1 short buzz, 1 long buzz<br>(250ms on, 250ms off, 750ms on) | Device OFF<br>(Bluetooth OFF, Activity tracking OFF)   |
| <b>Low Battery</b><br>(On Initially)    | Low battery (~1 day remaining)                      | Status sent to phone | --  | --   | No Change – phone is expected to provide a notification to the user.                                 |
| <b>Auto Power On</b><br>(Off Initially) | Place on Charger                                    | --                   | --  | --   | If device placed on charger when battery drained, device powers on automatically when enough charge. |
| <b>Device Pair Success</b>              | A new device is paired                              | ● Blue               | 1 blink<br>(500ms On)                       | 1 buzz<br>(250ms On)   | Device is paired   |
| <b>Wipe Pairing</b>                     | Long press for 8 sec until haptic feedback, release | --                   | --  | 1 very long buzz<br>(1.5 seconds)                            | Pairing is wiped   |

Exact LED Colors TBD pending testing. Inactive = no movement/no alerts received from paired phone.

# Summary of Device Behaviors (Planned)

| Action  | Light Color                             | Light Feedback                                    | Buzz Feedback  | Resulting Device State |   |
|---|---|---|--|------------------------|---|
| <b>Status Alert</b><br>(On movement)                          | On movement<br>(if inactive for 10 min) | ○ White (Normal Battery)<br>● Amber (Low Battery) | 1 blink (500ms On)<br>2 blinks (250ms On, 250ms Off) | --                     | No Change   |
| <b>Status Alert when Removed from Charger</b><br>(Powered ON) | Remove from Charger                     | Play appropriate Status Alert                     | --   | --                     | No Change   |
| <b>Notification Silence On Charger</b>                        | Place on Charger                        | --  | --   | --                     | Incoming Notifications (emails, calls etc.) do not play.  |
| <b>Recovery Mode</b>  | Very long press for 12 sec              | --  | --   | --                     | Device plays LED pattern (TBD).<br>Device is in Recovery Mode until a Firmware Update.<br><i>[By Beta. App must guide user to do FW update]</i> |
| <b>Bluetooth Advertising</b><br>(On Initially)                | Short press & release                   | --  | --   | --                     | Device advertises itself for 30 seconds (there are also other BT triggers)  |

Exact LED Colors TBD pending testing. Inactive = no movement/no alerts received from paired phone.

# Bluetooth Advertising

Events that will make the Device advertise itself (30 seconds):

If the Device has not been paired with a phone

- The device is turned on
- The bluetooth pairing information is removed (via an 8-second button press)
- *[Planned] The button is pressed once when the device is already turned on*

If the Device has been paired with a phone

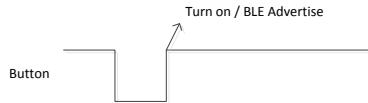
- The device is turned on
- A button press
- A recognized double or triple tap
- The BLE connection is interrupted
- The bluetooth pairing information is removed (via an 8-second button press)
- Periodically (~every 1s) to maintain a constant connection
- *[Planned] When movement (accelerometer) occurs after device hasn't moved in a given time TBD*

More details in Clark/Lois BLE Behaviors document.

# Button Overview

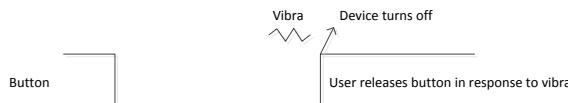
**Note:** Currently, on *release* of the device button the haptic response is played. This will be fixed so that the haptics play after the button is held for the specified time.

Power On



*Note: If device is already powered on, pressing the button will trigger BLE to advertise*

Power Off



User releases button in response to vibra

Wipe Pairing Info



User releases button in response to vibra

Recovery Mode  
(used rarely)



*Hold button for 12s for recovery mode/hw reset until light feedback (exact pattern TBD)*

# Debug Notifications – Extra Lights You're Experiencing

*These occur along with the normal behaviors. They are temporary debugging codes and will be removed before the Beta Field Trial.*

**Please see Device Release Notes for the most up to date debug notifications.**

# Tap Input

**Two Taps  
(Configurable)**



**Three Taps  
(Configurable)**



**Pattern Error:** Feedback if a tap not successfully sent to phone.  
Buzz: 250ms LED: Red 5 Flicker (100ms On, 100ms Off)

**Pattern Gestures:** Blink feedback for two and 3 taps.

# Special Situations for the R/GA App to handle

# [Planned] Recovery Mode

*Recovery Mode is needed for 3 situations*

- 1. Device is non-functioning and no other fixes work (User-Initiated)*
- 2. If BLE link is cut during FOTA (Automatic)*
- 3. If too many critical problems have been detected (Automatic)*

*There should be:*

- In-App detection of Recovery Mode and guidance for getting the user out of it (a firmware update).
- FAQ/Support for putting the device into Recovery Mode when nothing else works, and getting the device out of Recovery Mode.
- FAQ/Support for what to do when the device goes into Recovery Mode by itself.

# Unpairing a Device – Potential Issues

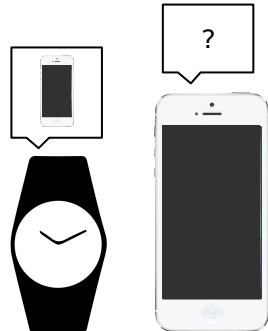
Unpairing should be done on both the jewelry and the phone to prevent future pairing issues. The user needs to be instructed to unpair from both the phone and the jewelry.

Two potential sticky situations:

## Jewelry is still paired, Phone has no pairing info/is new

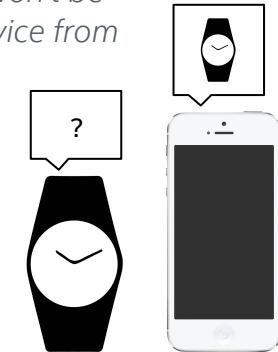
Scenario 1: Kate is lending her watch to Julie  
*Julie can't pair until she wipes watch BT settings.*

Scenario 2: Olivia got a new phone  
*Olivia can't pair until she wipes the watch BT settings.*



## Jewelry is wiped, Phone is still paired

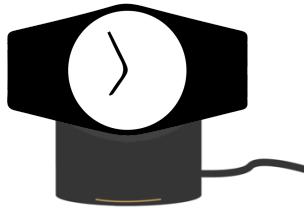
Scenario 3: Kate gets her watch back from Julie  
*Kate's phone will have old pairing info, even though it recognizes the watch. She won't be able to pair until she removes the device from her BT menu.*



# Pairing, Wiping, Reconnecting

# Pairing New Jewelry – Never Been Paired

**Put Device on Charger  
and plug in**



Brand new devices arrive in a shipping mode.

They **must be put on the charger to get out of shipping mode and be able to pair.**

It will power on automatically and advertise.

NEW  
DEVICES  
GROUP

**Begin Pairing Flow In App**  
User follows App instructions to trigger Bluetooth advertising



We recommend requiring the user to press the button (an intentional act).

Note: **A firmware update** might be necessary right after pairing.

**Confirmation of Pairing on Jewelry**

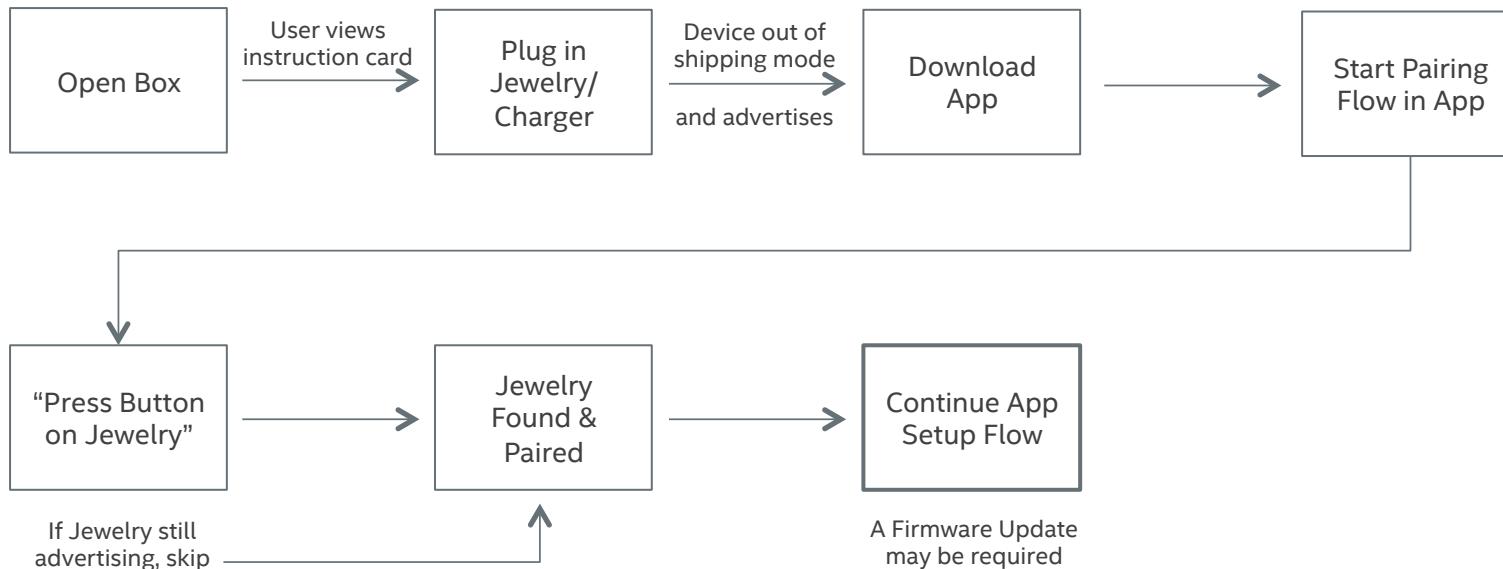


1 Blink (500 ms)  
1 Buzz (250 ms)



# Pairing New Jewelry – Never Been Paired

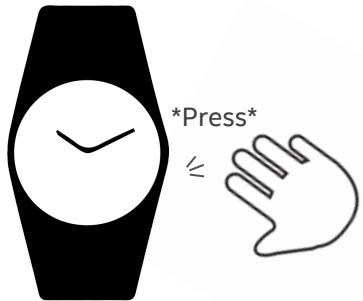
## A Potential Flow



# Pairing New Jewelry – Previously Paired (ex. sharing/selling)

## Remove previous pairing

This will cause the device to broadcast for 30 seconds



\*Press\*



## Begin Pairing Flow In App

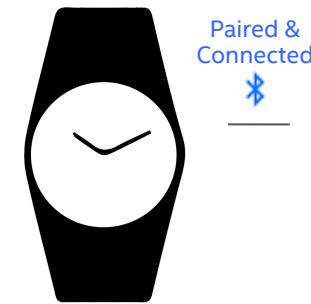
Follow App instructions to trigger Bluetooth advertising



## Confirmation of Pairing on Jewelry



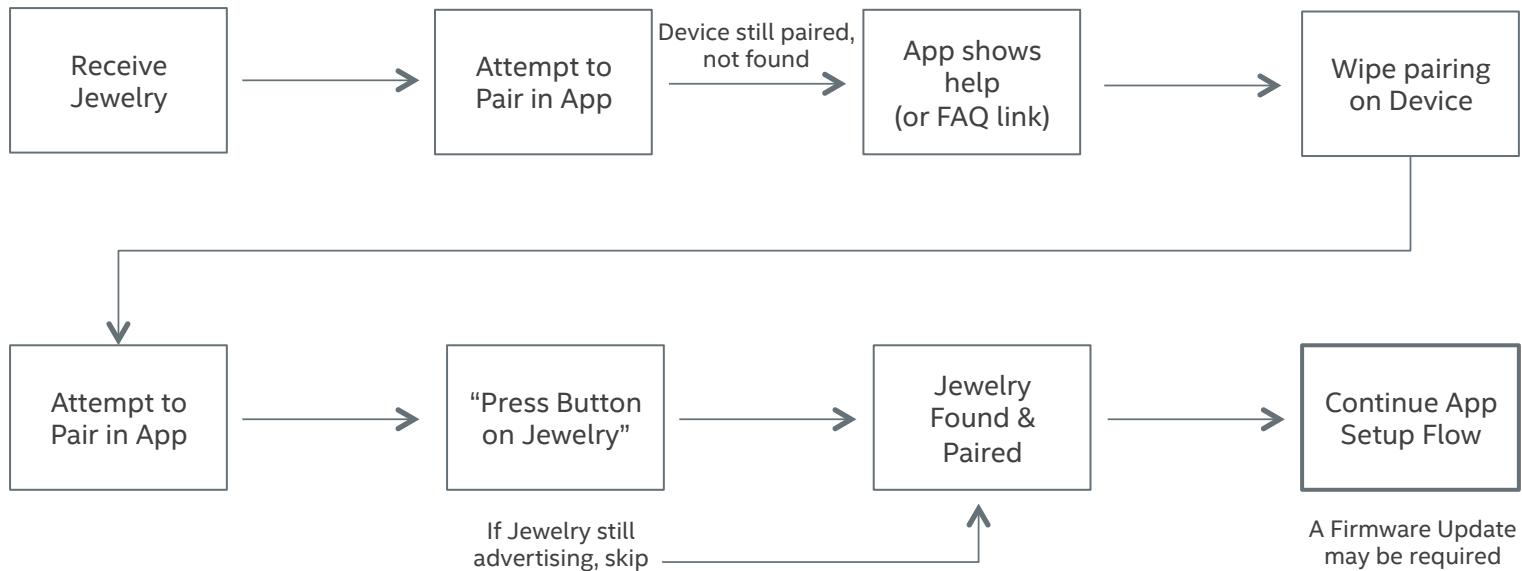
1 Blink (500 ms)  
1 Buzz (250 ms)



We recommend requiring the user to press the button (an intentional act).

# Pairing New Jewelry – Previously Paired

## A Potential Flow



# Wipe the Pairing for the Jewelry

## Remove Previous Pairing

Press Jewelry button for 8s to reset it  
(Jewelry must be on)



\* Press button for 8 seconds until haptic feedback, then release

At 8 seconds, a notification confirmation is played followed by the Power On pattern

1 Buzz (1.5 seconds)



Remove the Jewelry from the phone's Bluetooth menu. This prevents issues if the user tries to pair the same Jewelry again.



# Connecting Jewelry (previously paired) from the Device

## A. One Device

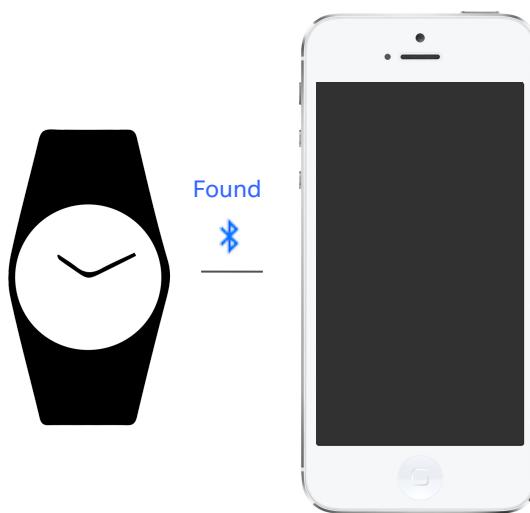
### Trigger Bluetooth Advertising



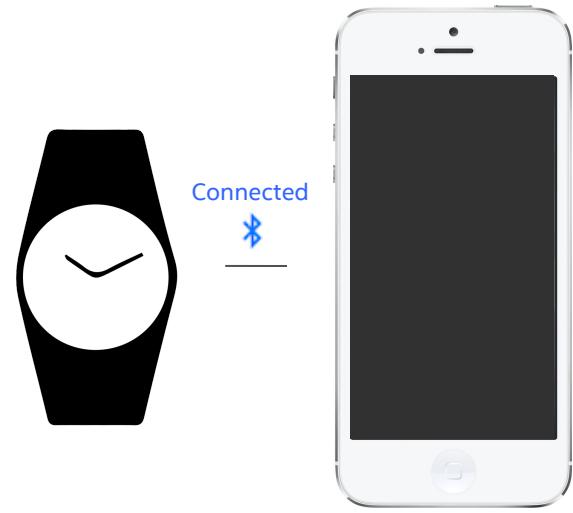
Each time the connection does not exist and there is a paired phone, the device will advertise when:

- Powered on
- A tap is detected
- 30 minutes have elapsed without connection since the last advertising event.
- [Planned] The button is pressed
- [Planned] Device is moved after not moving for a period of time

### Jewelry Finds Phone it is Paired to (if available)



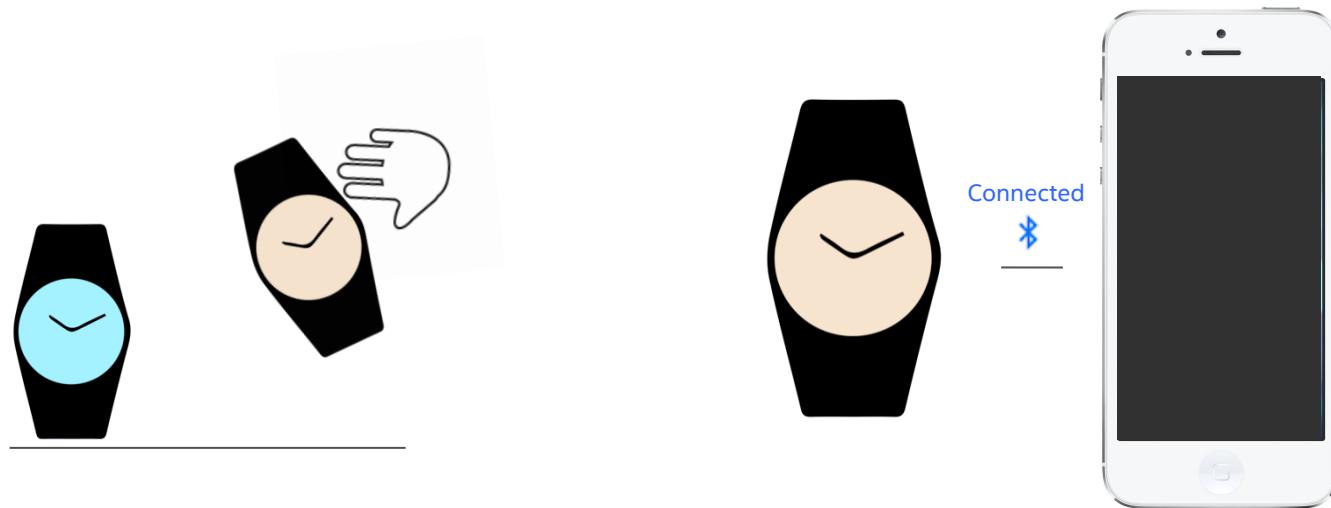
### Jewelry Connects to Phone



# Connecting Jewelry (previously paired) from the Device

## B. Multiple Devices – no devices are already connected

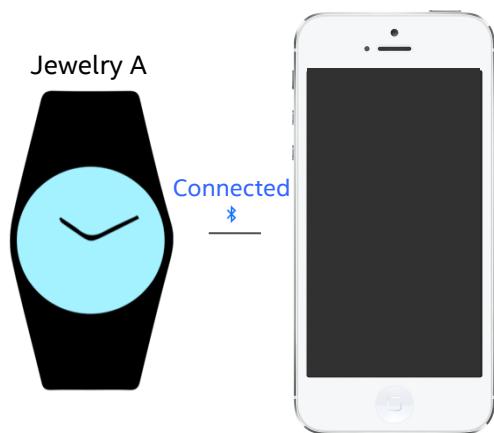
The first jewelry that has a Bluetooth Advertising condition triggered connects to the phone



# Connecting Jewelry (previously paired) from the Device

## C. Multiple Devices – one is already connected

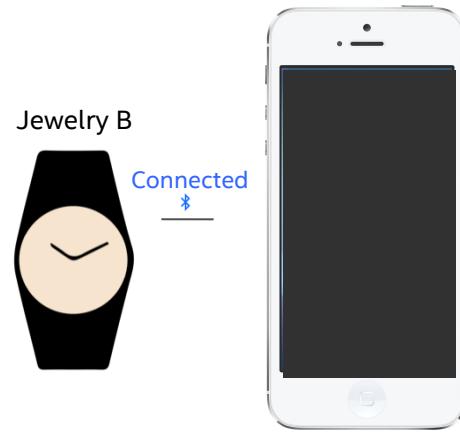
Jewelry A is connected and the user wants Jewelry B to connect



Option 1: Connect from the app



Option 2: Once the user walks far enough, Jewelry A will disconnect and Jewelry B will eventually connect



# Planned Jewelry Behavior

# Planned Behaviors

## First Time Use – Shipping Mode

- When receiving a brand new device, it needs to be put on the Qi charger first to get out of shipping mode. It will turn on and advertise (BT) for 30s.

## Charging Behavior

- See page 26-27.
- Charger LED displays 2 states: “charging” and “full” (if no alignment of coils, light turns off).

## Notification Interrupt

- Differentiate “local” from “incoming” notification.
- Allow some notifications to interrupt others.

## Device needs to queue notifications and play them out serially.

- Incoming Notifications (SMS, email, call etc.) should have the ability to queue and play one after the other.

## Device Connect/Disconnect Alert

- Add as a configuration, off by default.

## Recovery Mode & Alert

- Press button for 12 seconds to trigger Recovery Mode.
- Feedback that the device is in Recovery Mode (an LED pattern).
- The app will need to walk the user through getting the device out of Recovery Mode (a firmware update).
- API update to detect when the device is in Recovery Mode.

## Firmware Update Success

- Buzz: 2 short buzzes (250ms On, 250ms Off).
- There is an open bug – currently there is no feedback for FW update success.

# Battery Behavior

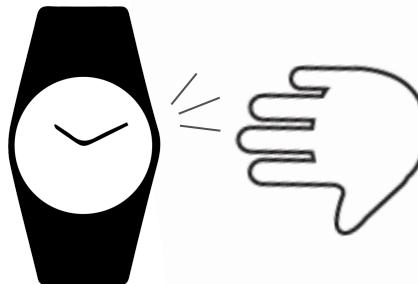
# [Planned] Status Alert: Low Battery

Device is Inactive

Device is inactive for 10 minutes or more.

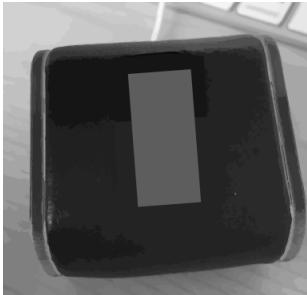
Once moved, Device indicates its low battery status.  
(and sends to the phone, if appropriate)

- Amber (Low Battery) 2 blinks (250 ms On, 250 ms Off)



# [Planned] Charging the Device

Lois



Empty Charger



Charging (Red, or Amber pending tuning ability)

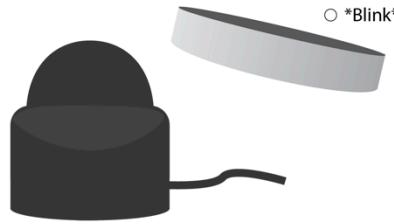


Charged (Blue)

Clark



# [Planned] Charging Behavior / Taking off of the charger if Power is On



Display **Status Alert: Normal sequence** if battery is greater than low.

Display **Status Alert: Low Battery sequence** if device battery is low.

Additionally, if battery is not empty, BLE advertises and if Jewelry is in range, connects to paired phone.



If the battery is dead, the Device will power on automatically on the charger as soon as it has enough charge.

