

Levelling up your Home Automation

Macstock VIII

Kirschen Seah, July 2024
<https://www.freerangecoder.com>



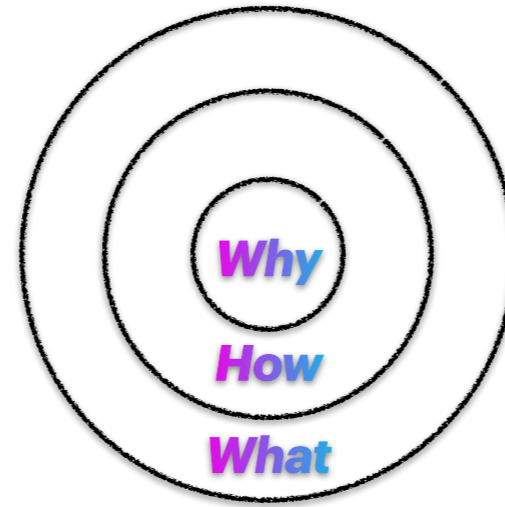
About Kirschen...

Software geekette

Apple afficiando since 1978

Avid bicyclist / Pilot / Retired 😊

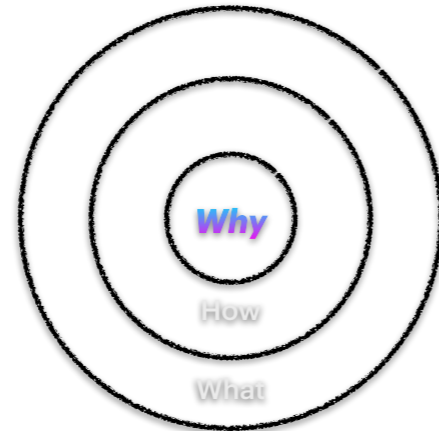
Overview



Simon Sinek - posited The Golden Circle - "Start with Why"
Studied people and companies to distill their attributes for success - including Apple

WHY - Motivation: purpose, cause or belief
* (Allison Sheridan) - the problems we'd like to solve
HOW - Achieve: processes & methods
WHAT - Consequence: results or outcomes

Why



Achievement Unlocked!

Expand Smart Home

Control devices

Apple Store - Smart Home Accessories

Achievement Unlocked! - You've set up a basic Home Automation / Smart Home System

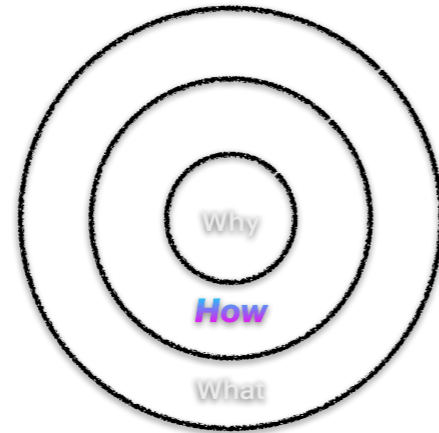
- * Initial devices - lamps, switches
- * Simple scenes and automation

[CLICK] Expand - what other smart home devices are available

- * Additional devices
- * 3rd Party Apps
- * HomeBridge

[CLICK] Control - scripting, schedules, scenes, focus modes

How



HOW - do I make the most of home automation devices
[Spend most of presentation here]

Apps

- * Apple: Home & Shortcuts available on iOS, iPadOS, macOS, watchOS
- * 3rd Party
- * Device manufacturer

[CLICK] Smart Devices

- * Familiar - plugs, lamps
- * Plethora of other devices

[CLICK] Triggers

- * smart switches & sensors
- * Others - NFC, Focus modes, iPhone

Review

Home automation review

Review

Platforms

Standards

3rd Party Apps

Review

Platforms

Amazon Alexa

Apple HomeKit

Google Home

Others

“Big Three”

Watch out for devices which support Amazon Alexa and Google Home but not HomeKit

“Home Assistant” - open source software: runs on Raspberry Pi or on dedicated Home Assistant Green hardware

* Interfaces with several standards

* <https://www.home-assistant.io>

* App available on iOS for device control

Review

Standards

Bluetooth Low Energy

Matter

Thread

Zigbee

BLE -Wireless personal area network (PAN)
https://en.wikipedia.org/wiki/Bluetooth_Low_Energy

Matter - connectivity standard for IoT and smart homes. Devices compatible over all platforms
[https://en.wikipedia.org/wiki/Matter_\(standard\)](https://en.wikipedia.org/wiki/Matter_(standard))

Thread - network protocol, (often used for Matter). Low power
[https://en.wikipedia.org/wiki/Thread_\(network_protocol\)](https://en.wikipedia.org/wiki/Thread_(network_protocol))

Zigbee - transport, protocol, needs bridge or hub (IEEE's 802.15.4 PAN)
<https://en.wikipedia.org/wiki/Zigbee>

Historical - X10 [https://en.wikipedia.org/wiki/X10_\(industry_standard\)](https://en.wikipedia.org/wiki/X10_(industry_standard))

Review

3rd Party Apps

Device Manufacturer

3rd Party Developers

Device Manufacturer

- * Needed to install device firmware updates
- * May need to create a login

3rd Party Developers

- * Provide additional capabilities
- * Many are subscription based
- * Control limited by Apple's HomeKit public libraries

Expanding Capabilities

Expanding Capabilities

More Devices!

Device Data

3rd Party Apps

HomeBridge

More devices to add to your smart home
What data do these devices provide
Available 3rd party apps
Open source - HomeBridge

Expanding Capabilities

More Devices!

Accessories

Bridges

Triggers

Accessories - devices you can add to your smart home

Bridges - devices which connect devices of a different standard to HomeKit

Triggers - devices which when activated send a signal to HomeKit

Expanding Capabilities

More Devices!

Accessories

Bridges

Triggers

Garage doors

Flood sensor

Smart locks

Smart power strips

Switches

Switches - can be triggers (e.g. Onvis) or a HomeKit enabled control (replacing existing wall switch)

In-wall smart plugs

HomeKit video

Expanding Capabilities

More Devices!

Accessories

Bridges

Triggers

IR Blasters

Zigbee

Proprietary

Proprietary - e.g. Philips Hue to HomeKit

Expanding Capabilities

More Devices!

Accessories

Bridges

Triggers

People

Switches

NFC

Sensors

People - Arrive Home, Leave Home, In Home

Switches - wall switch or remote switch

* Wall - Lutron Caseta, Meross, GE, Eaton, Aqara

* Remote - Onvis, Wemo

NFC - iPhone triggered

Sensors - water detected, motion, person (video)

Expanding Capabilities

Device Data

State

Sensor

Image & Video

State can be controlled
Sensor data is read-only
Image & Video from HomeKit cameras viewed in Home App

Expanding Capabilities

Device Data

State

Sensor
Image & Video

On/Off

Brightness

Colour

Volume

State can be controlled

Expanding Capabilities

Device Data

State

Sensor

Image & Video

Humidity

Temperature

Water detected

Sensor data is read-only

Expanding Capabilities

Device Data

State

Sensor

Image & Video

HomeKit Cameras

View in Home app

Image & Video from HomeKit cameras viewed in Home App

Expanding Capabilities

3rd Party Apps



HomeDevices
Controller for HomeKit
Home Assistant
Manufacturers' Apps

⚠ Caution! ⚠

Manufacturer - reiterate: needed to install device firmware updates, may ask to create login

3rd Party Developers - Control limited by Apple's HomeKit public libraries

HomeDevices - Free

Controller for HomeKit - \$30/yr, \$100 lifetime

Home Assistant - client for the Home Assistant server

Expanding Capabilities

HomeBridge

“Bringing HomeKit support where there is none”



HOMEBRIDGE

Software Bridge

Open Source

Plugins

Runs everywhere

<https://homebridge.io>

Server

Plugin examples - Harmony, Ring. Listed on npm (www.npmjs.com), search with “homebridge”

Runs on - macOS, Windows, Raspberry Pi, Linux, Docker (Synology NAS)

Configuration UI - HomeBridge Config UI, HOOPS

Warning - high geek level alert!

Control Devices

Control Devices

Home App

Automation

Shortcuts App

Siri

New HomeKit features

Control Devices

Home App



Accessories

Classes

Groups

Scenes

Accessories

* Classes - Lights, switches, fans

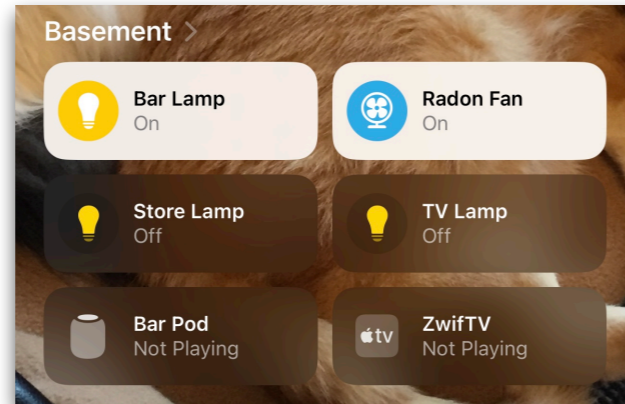
* Groups - group a set of lights for ganged control - turn on/off, change colours of all grouped lights

Scene - Collect groups of accessories and settings

E.g. scene to watch a movie - dim lights, turn Apple TV on etc

Home App

Accessories – Classes



Lamps

Fans

HomePod

AppleTV

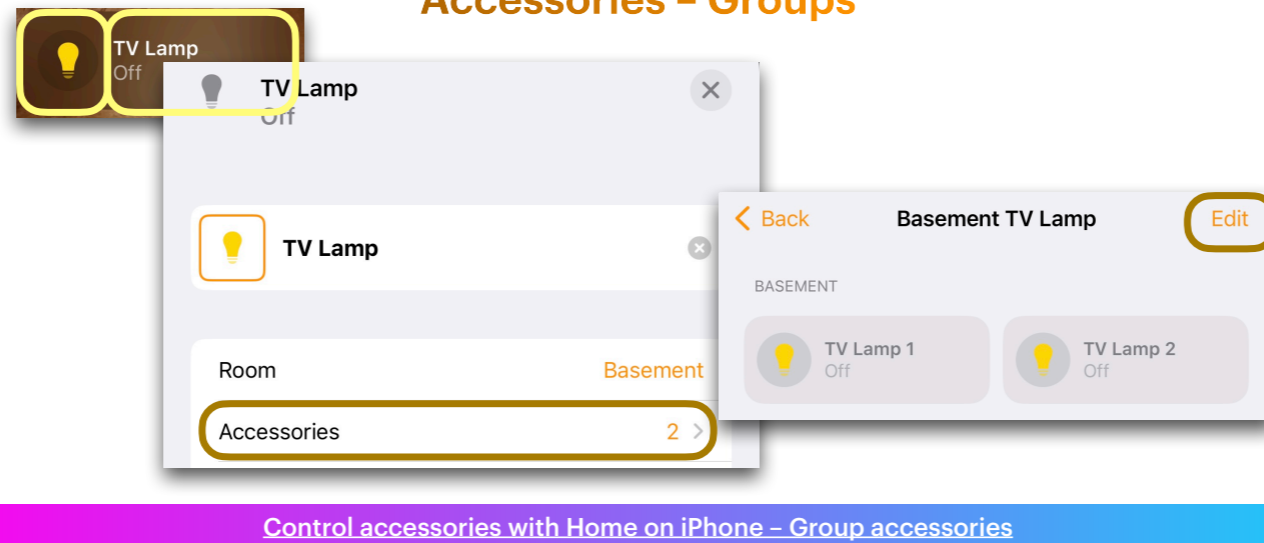
Smart Plug

Smart Plug configured as a Fan - "Display As" under Accessory Settings

Can command S-Lady to "Turn all the basement lamps" - all accessories tagged as "lamps" even though the accessory is not a lamp (e.g. socket connected to a lamp).

Home App

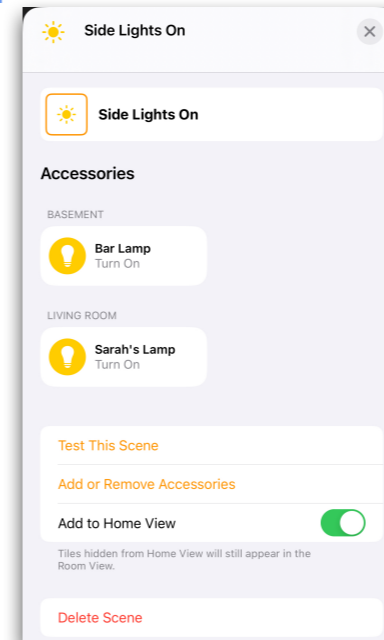
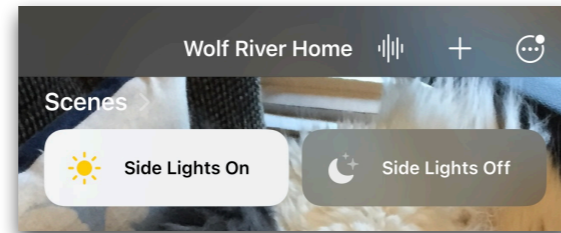
Accessories - Groups



1. **[CLICK]** Tapping on “bulb” will turn lamp on/off
2. **[CLICK]** Tap on Name / State will bring up lamp controller
3. **[CLICK]** Tap and hold will bring up menu with “Accessory Settings”
4. **[CLICK]** Open “Accessory Settings” – Accessories field - “2”
 1. Tap on “Edit” to change grouped accessories

Home App

Scenes



Tap and hold on Scene for Menu
Select "Edit Scene" to make updates

Use Scene instead of Shortcut Home action to set lamp states.

- * Scenes are more ubiquitous than shortcuts script
- * Do not have to add Scenes in Home View
- * More descriptive names can be seen in Shortcuts which use such scenes
- * Tap on "Scenes >" to show all Scenes

Control Devices

Automation

Categories

Home

Personal

Event Types

Triggered

Timed

Home - controlled by Home Hub
Found in both in Home and Shortcuts

Personal - controlled by iDevice (only found in Shortcuts)

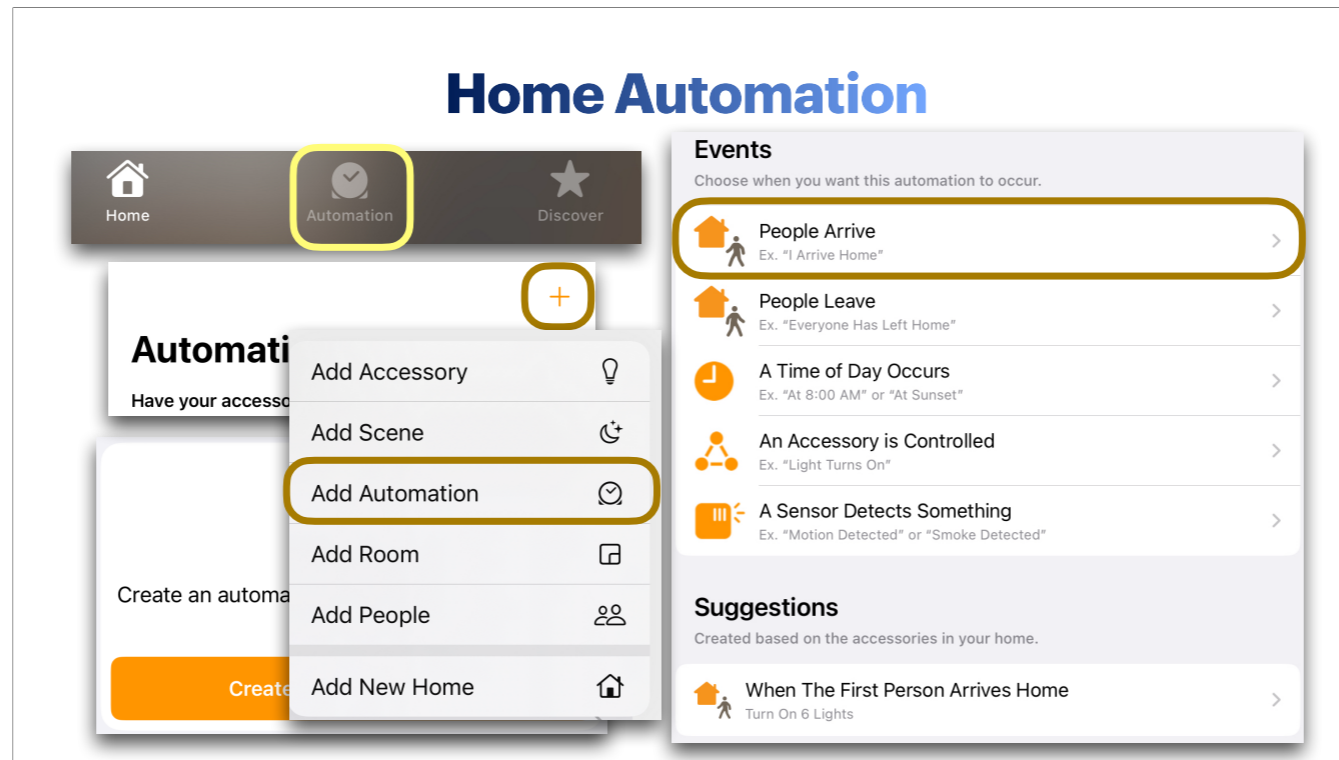
Event Types - occurs in both Home and Personal

Trigger → Scenes / Accessories → Action
Switch, Sensor, Device, Personal Context (where I am, Focus, email / message arrives, NFC tag)

Trigger → Shortcut
These are not located in the Home or Shortcuts app: Action Button / Back Tap

Timed - certain time of day (also sunset, sunrise, bedtime - Focus)
Example of Timed Automation later in presentation

Action - e.g. lamp on & colour, off



1. Tap on “Automation” on Home or Shortcuts bottom tab bar
 1. List of existing automations appears (In Shortcuts App: Personal listed before Home)
2. **[CLICK]** Tap on “+” in top right, then select “Add Automation” - Events appear
 1. **[CLICK]** Shortcuts app can create Home Automation - scroll to bottom of Events
3. **[CLICK]** Example: Pick “People Arrive”

Home Automations run on Home Hub

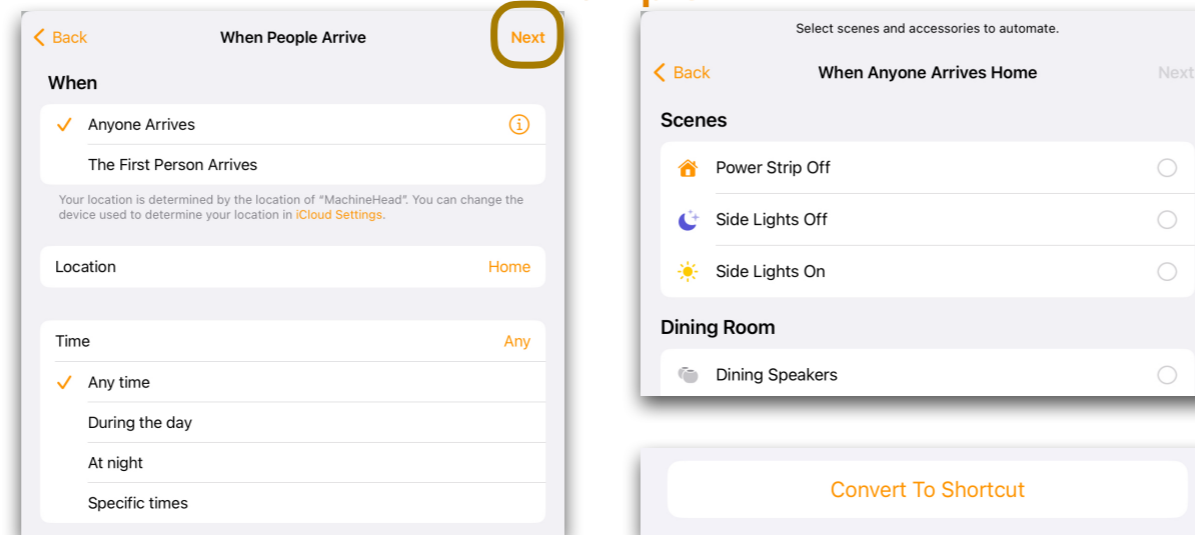
Example of Timed Automation later in presentation

Sensor - e.g. flood sensor triggers, temperature above a value

Suggested events are shown at the bottom

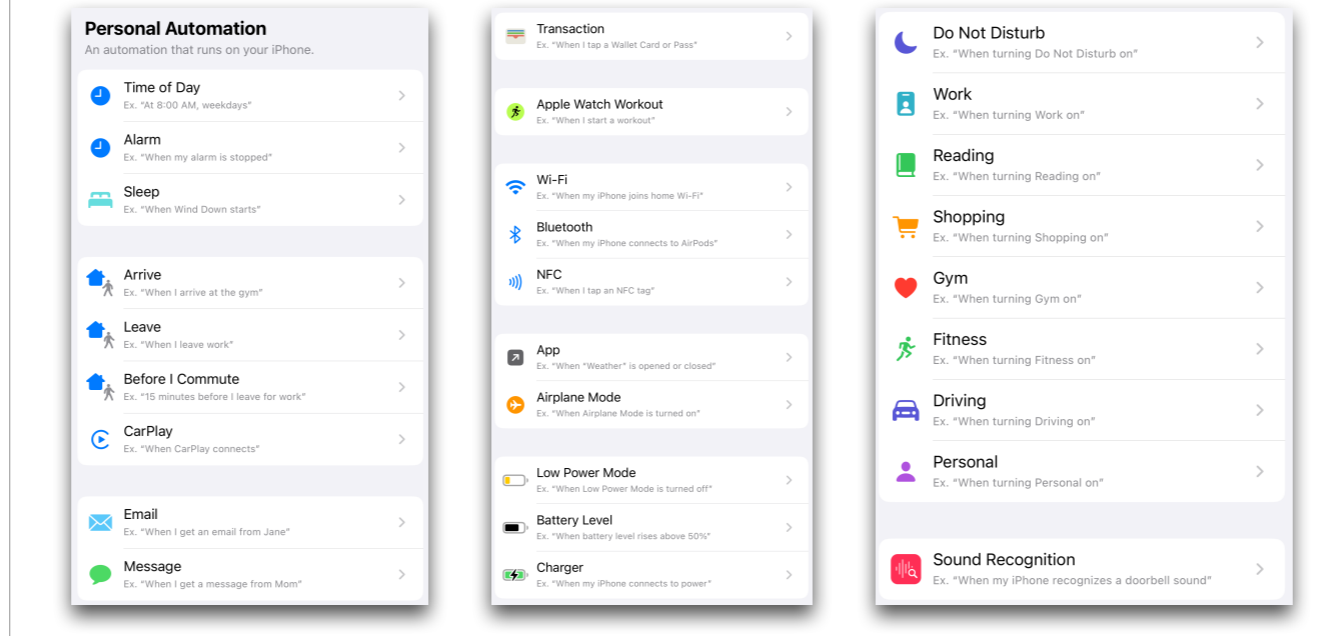
Home Automation

Example



1. Tap on "Next" to set accessory / scene state
2. **[CLICK]** Pick Scenes / Accessories to set state
3. **[CLICK]** Scroll all the way down to convert the scenes and accessory settings to a shortcut - can add conditions and any other (restricted) shortcut actions.

Personal Automation



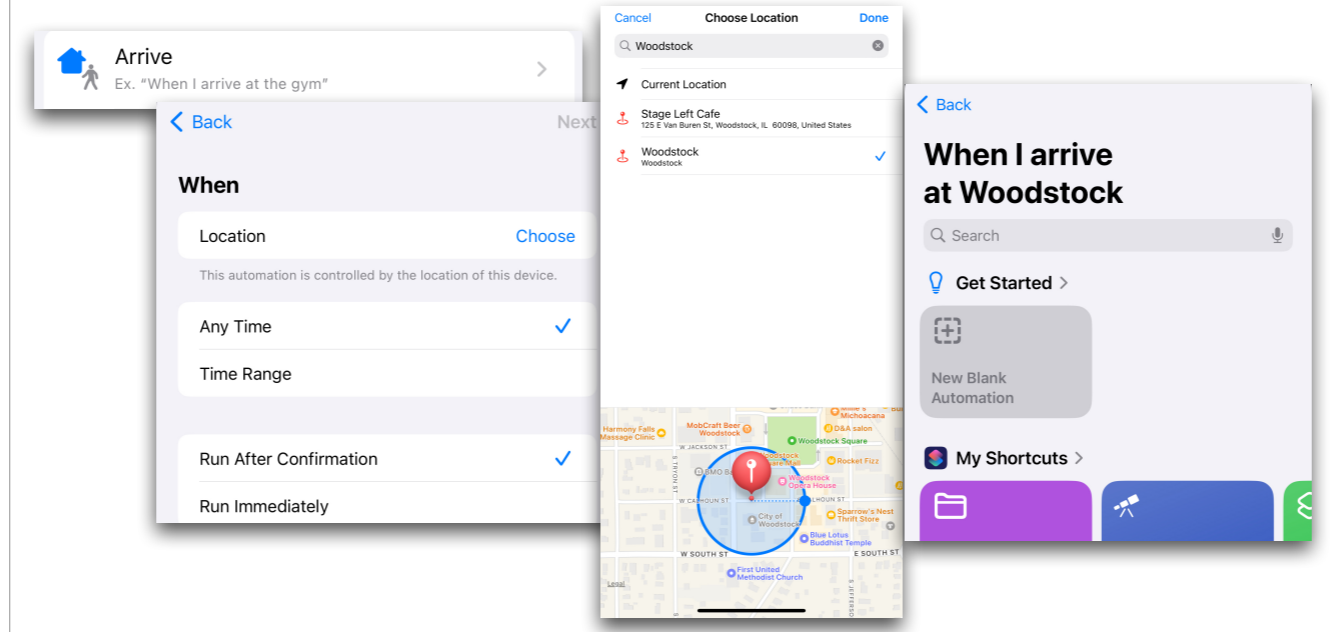
Runs on iDevice

Note: "Sleep" Focus - separate - sleep, wake, and wind down times controlled in Health app

Sound recognition - home alarms can trigger lamps or send notification (e.g. hearing impaired)

Location, personal context "before I commute", focus mode

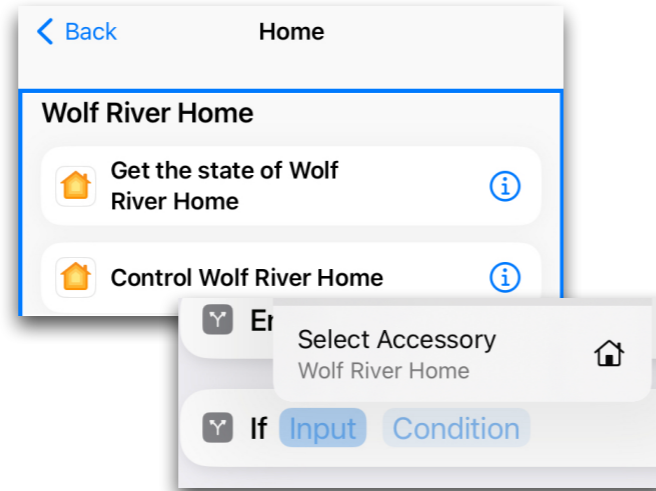
Personal Automation



1. Pick Automation Event - e.g. Arrive
2. Set Parameters - location, time, run confirmation
3. Pick Shortcut

Control Devices

Shortcuts App



Shortcut Actions

Get Home State

Control Home

Conditionals

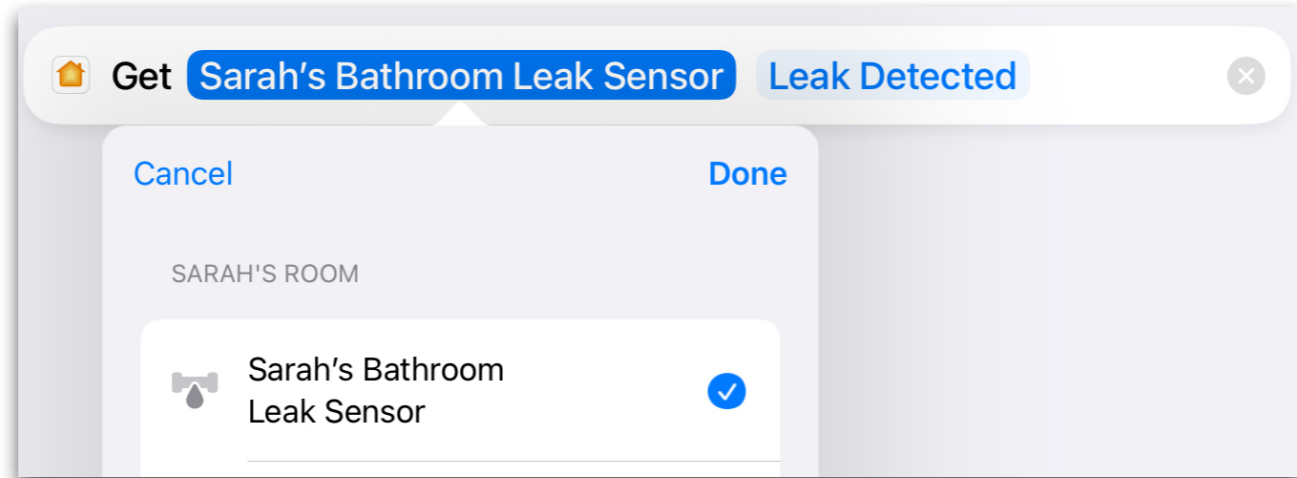
2 Home actions in iOS 17. One more - "Find Home" in iOS 18

[CLICK] Conditionals - Can test for state of Home devices

iOS 18 - complex conditionals with OR and AND

Shortcut Actions

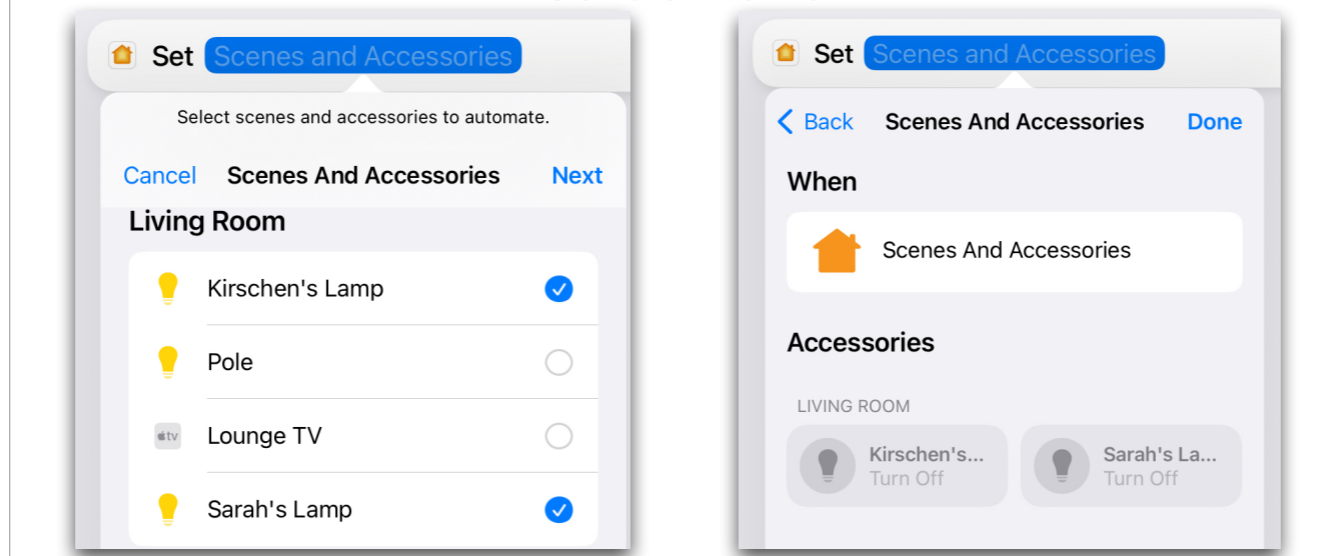
Get Home State



The state of only one sensor data item from only one accessory can be retrieved
Useful to set variables

Shortcut Actions

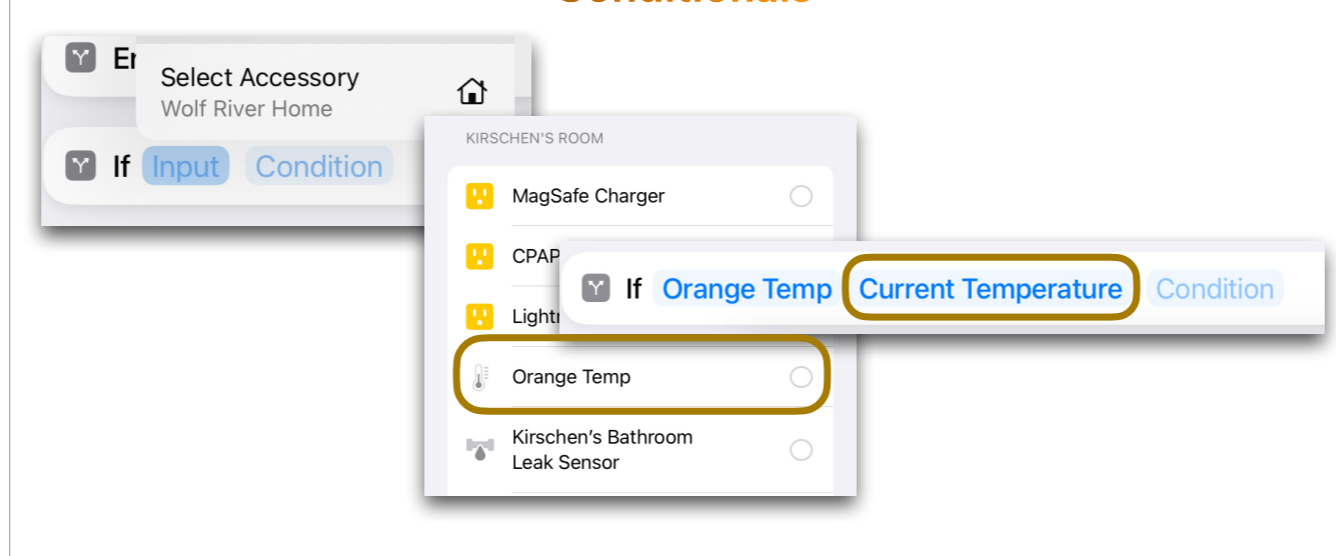
Control Home



Note: "Set" will show number of Scenes and Accessories, need to tap to see what state is being set

Shortcut Actions

Conditionals



1. Tap on Input to select Accessory
2. **[CLICK]** Tap on Sensor Data to access (e.g. Current Temperature / Is Active / Is Not Active / Name)

Control Devices

Siri



Home Control

Accessories

Scenes

Query Home State

Run Shortcut

Use Siri via voice or typing

Home Control

* "S-Lady Turn on bar lamp"

* "S-Lady Side Lights On" - activates a scene called "Side Lights On"

Query Home State – "S-Lady Is the bar lamp on?"

Run Shortcut – "S-Lady *Shortcut Name*", e.g. "S-Lady Start a Nap"

Control Devices

New HomeKit Features

HomePod

Temperature

Humidity

iOS 18

Guest Mode

More Shortcuts Actions – e.g. Find Home, Toggle State

Temperature / Humidity - can be used as data items or triggers

iOS 18

Guest Mode

Shortcuts actions

* Find Home

* Toggle Accessory State

Case Studies

Case Studies

Trigger

Timed Automation

Focus Mode

Shortcuts Automation

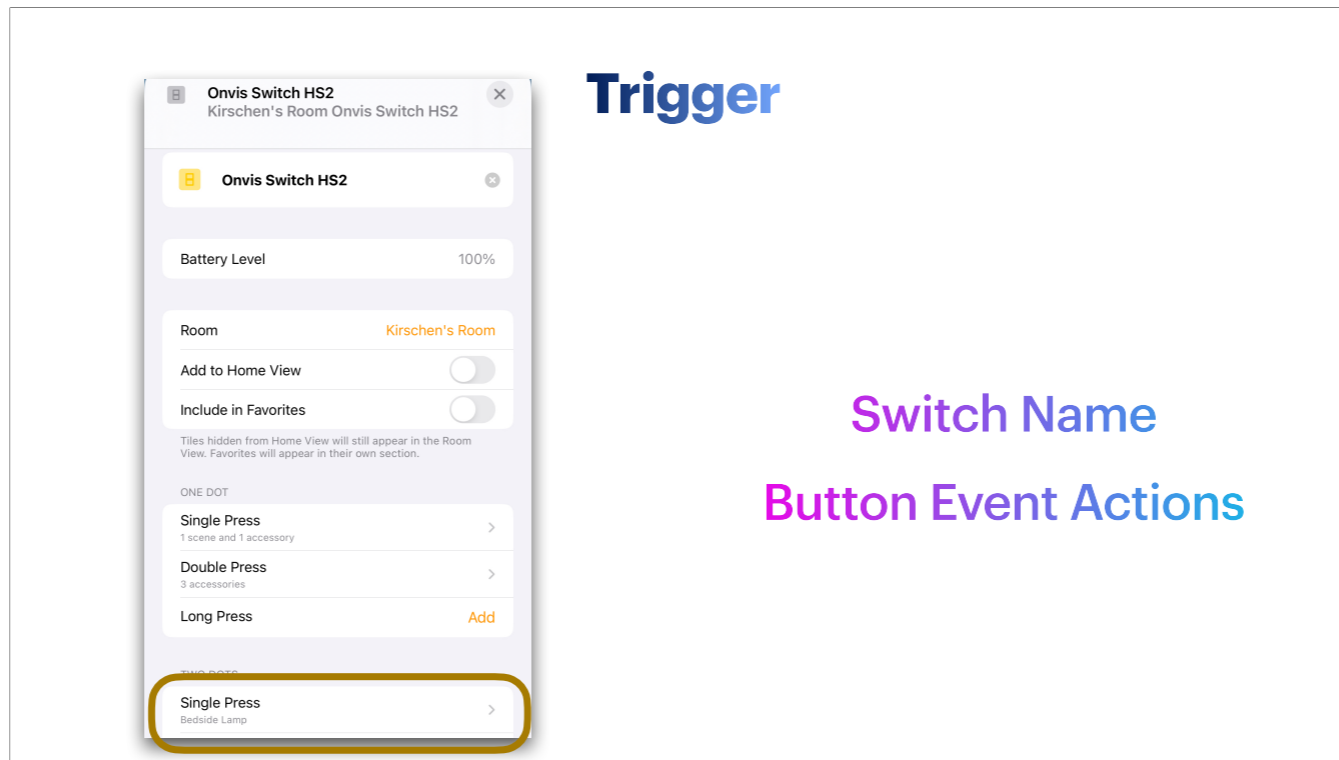
Trigger



The screenshot shows the Home app interface for a room named "Kirschen's Room". At the top, there are temperature and humidity sensors. Below that, there are "Scenes" and "Lights" sections. In the "Lights" section, the "Bedside Lamp" is highlighted with a yellow lightbulb icon and a 5% brightness level. To the right of the screenshot is a white Onvis Switch Button 2 device. Below the screenshot, there are two overlapping cards: one for "VOCOLinc Strip" (1 On, 2 Off) and another for "Onvis Switch HS2".

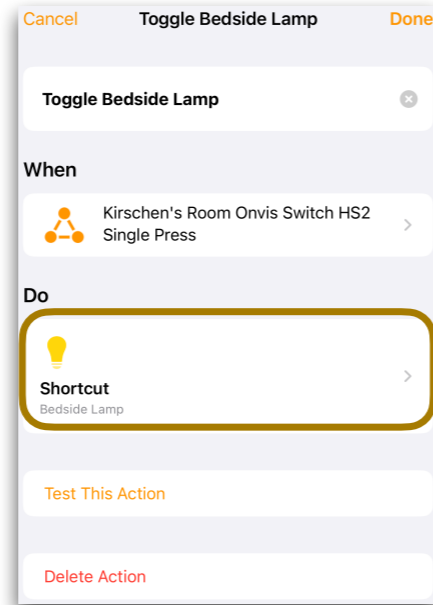
Toggle Bedside Lamp
when
Onvis Switch Button 2 is Pressed

Note: iOS 18 has "Toggle Accessory State" capability
Onvis Switch has 5 buttons - supports single, double, and long press



Can change switch name, much like any default HomeKit accessory's name

Trigger



Action Name

When: Trigger Event

Do: Shortcut

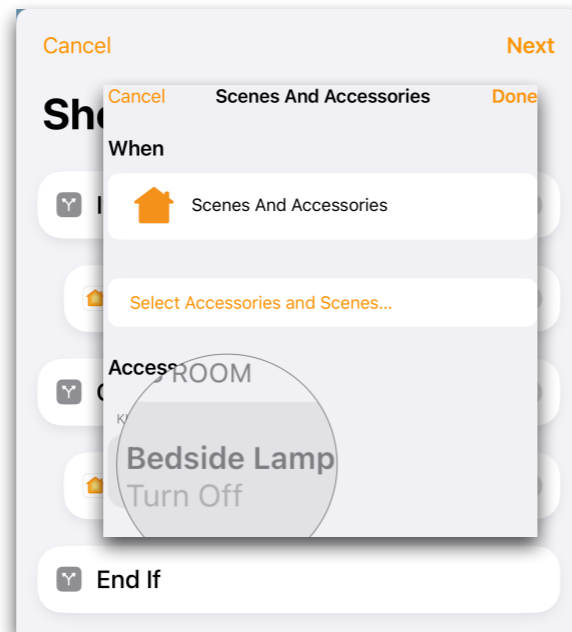
Can trigger scenes, set multiple accessory states

Action Name: "Toggle Bedside Lamp"

When: Trigger Event - Single Press Two Dot button (i.e. Button 2)

Do: Shortcut - Note: Limited actions (Home Automation)

Trigger



If the lamp is on
then
 Turn it off
else
 Turn it on

Want to Toggle Lamp State (iOS 18 apparently has new Shortcuts action to toggle state)

1. **[CLICK]** Set Bedside Lamp Off

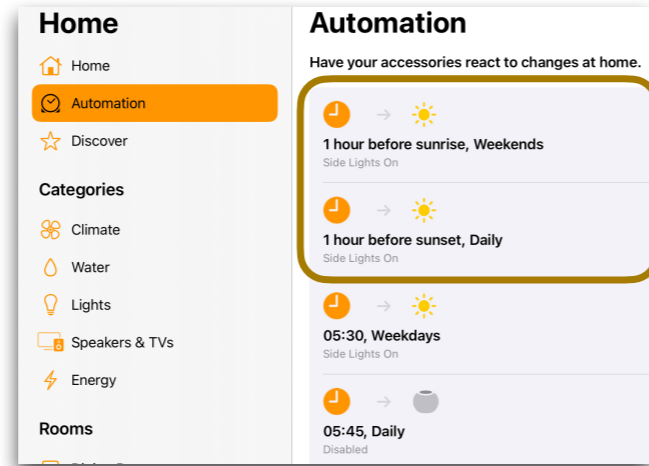
“Control Home” Shortcuts action doesn’t show what state the accessory is being set

* suggest using a scene which sets the accessory state and reference the scene

Also if there are multiple scenes and accessories, action shows counts, e.g. “1 scene, 5 accessories”

Case Studies

Timed Automation



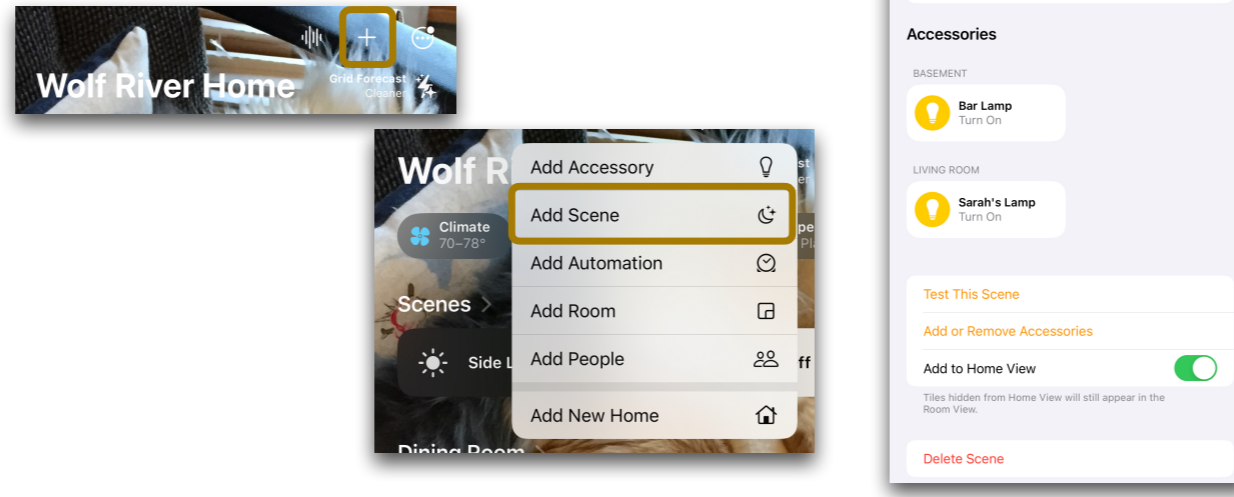
Run Automation at
specified time

Scene
Time of Day

Example: Using a Scene - can add accessories
Note: iPad Home App (left panel has Automation)

Case Studies

Add a Scene



Let's add a Scene

1. **[CLICK]** Click + at top of Home tab to add a Scene
2. **[CLICK]** Select Add Scene
3. Name scene
4. **[CLICK]** Add accessories and set their state

Why use Scenes instead of individually calling out Accessories?

Might want to have same set of accessory actions in several automations

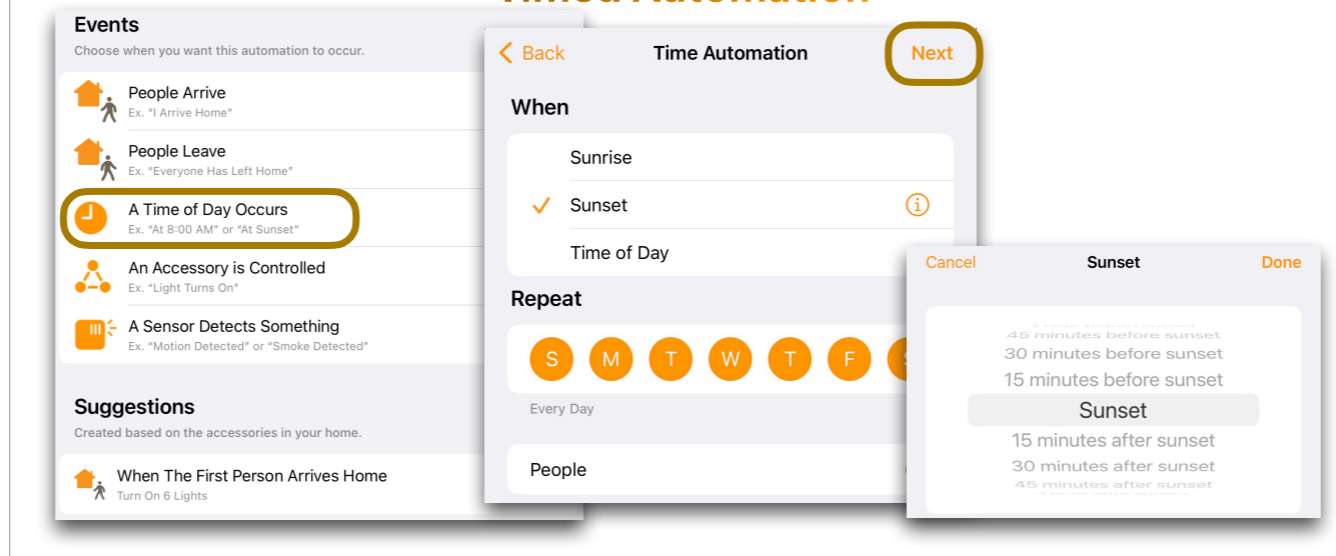
Why not group lamps?

Grouping only allows for ganged control of a number of similar accessories (all on / off)

Link: Create and use scenes in Home on iPhone - <https://support.apple.com/guide/iphone/create-and-use-scenes-iphb96e3f655/ios>

Automation Types

Timed Automation



Now set up a time to activate the Scene

1. Go to Automation
2. Click on + at top right to add an Automation
3. **[CLICK]** Select "A Time of Day Occurs"
4. Time Automation sheet appears
 1. Set up example: 30 minutes before Sunset, every day

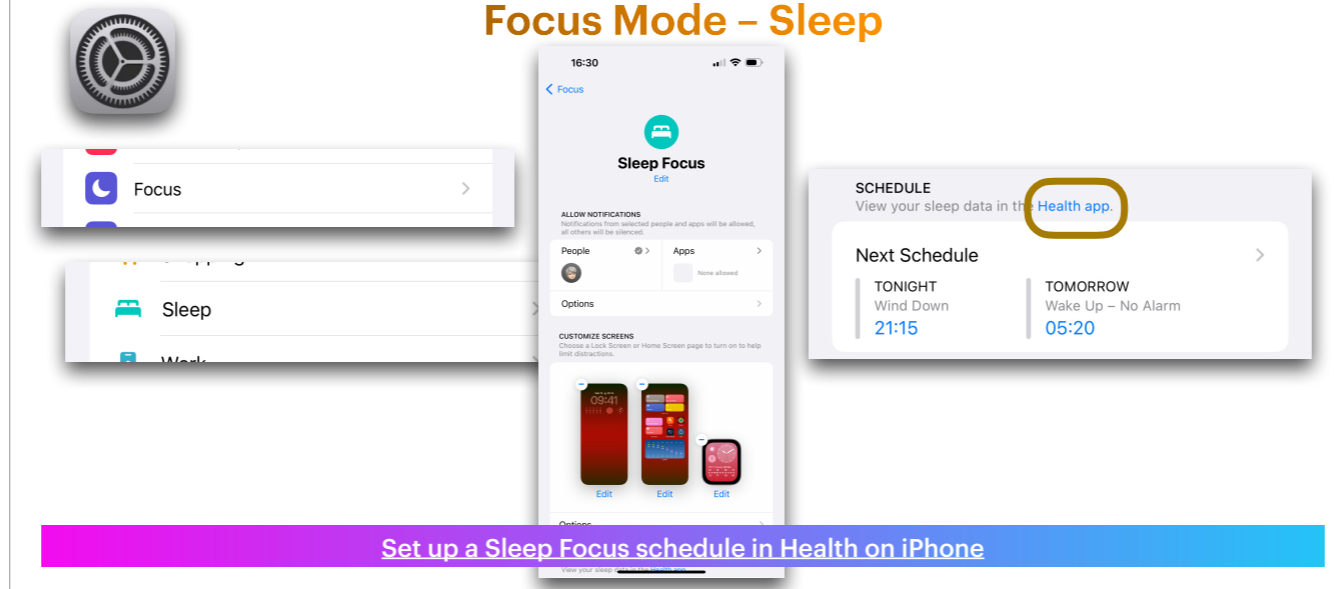
When - sunrise/sunset with offset, exact time of day. Repeat on days of week

People - someone at home etc.

Click on "Next" - pick scenes & accessories and set state

Case Studies

Focus Mode – Sleep



Can trigger an Automation when a specific Focus mode is turned on or off

Found as a Personal Automation under Shortcuts app

Sleep is a special Focus mode - related to sleep / wake hours set in Health app

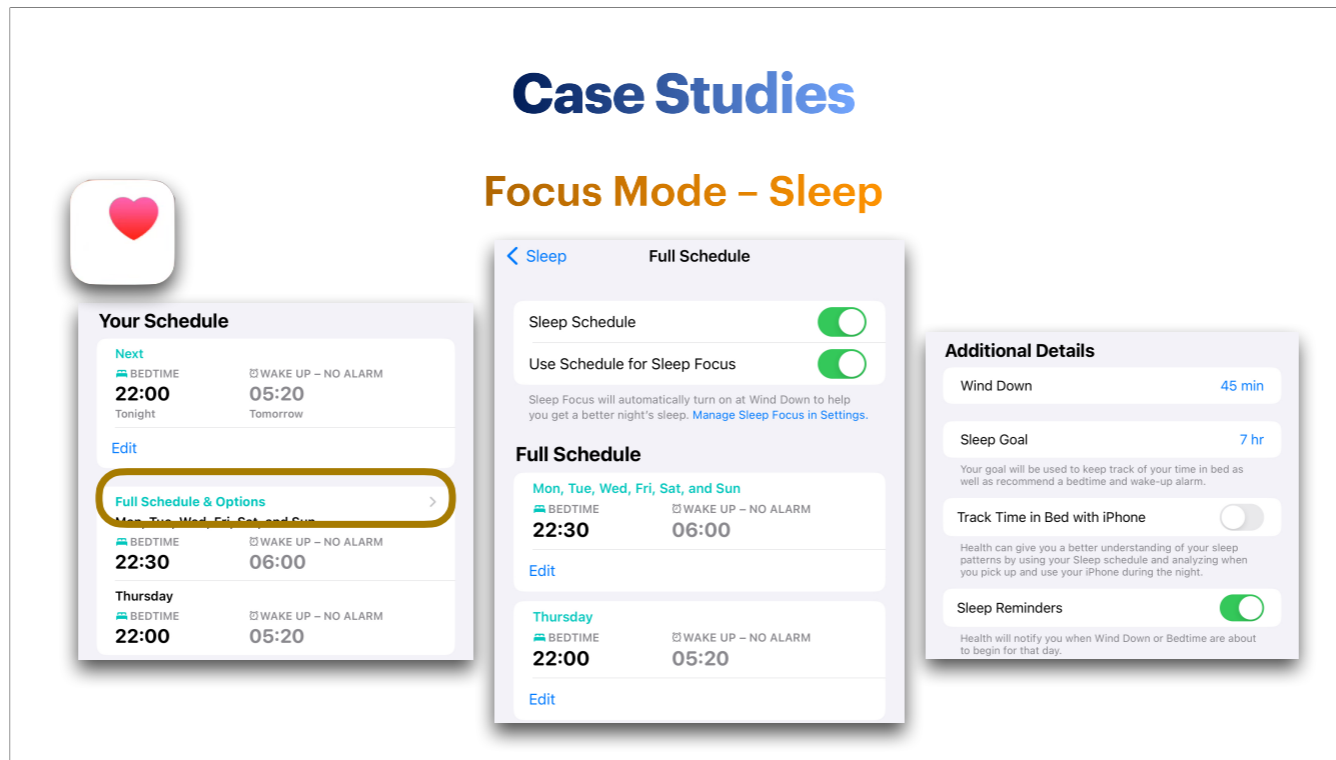
1. Go to Settings and select Focus
2. **[CLICK]** Click on Sleep
3. Set up People from which calls and messages can arrive and Apps which can send notifications
4. Scroll to see Schedule
5. **[CLICK]** Tap on “Health App” to Sleep schedule in Health app

Set up a Sleep Focus schedule in Health on iPhone - Apple Support

<https://support.apple.com/guide/iphone/set-up-a-schedule-for-a-sleep-focus-iphaf56dceb4/17.0/ios/17.0>

Case Studies

Focus Mode – Sleep

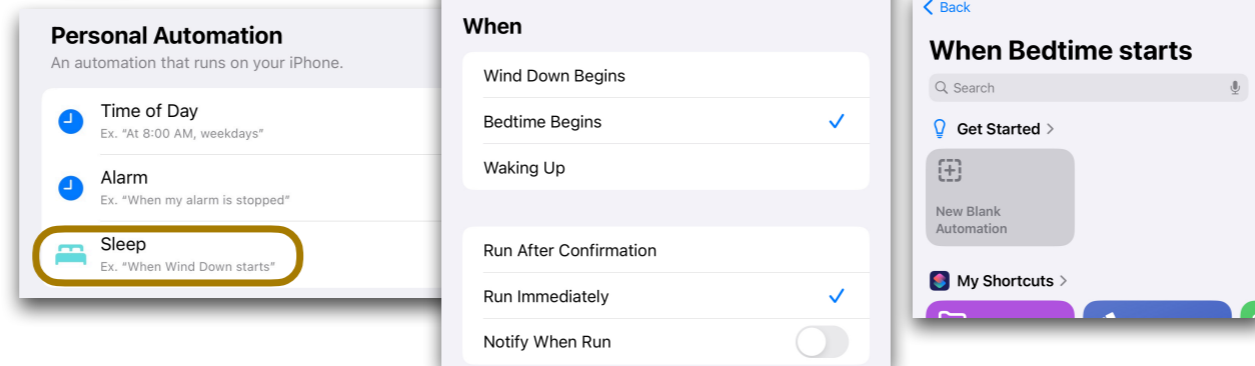


Set sleep / wake hours in Health app - note can have iPhone set up alarms as well

1. Scroll down to see "Your Schedule" - shows Next bedtime / wake up and Full Schedule. Can edit these hours (one time)
2. **[CLICK]** Tap on "Full Schedule & Options"
3. Turn on "Sleep Schedule" and "Use Schedule for Sleep Focus"
4. Add scheduled bedtime and wake up for specified days
5. "Additional Details" - optional Wind Down (this can be used as a Sleep Focus automation trigger)
6. Optional Sleep Goal, sleep tracking, and reminders (shows up on Apple Watch)

Case Studies

Focus Mode – Sleep



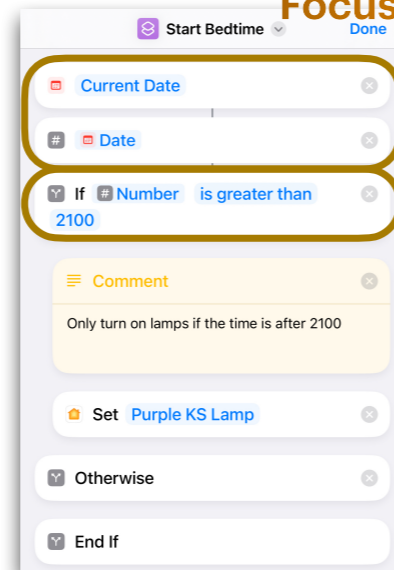
Personal Automation for Sleep - special time-based trigger (Wind down / Bedtime /

1. In Shortcuts app: Tap on “Automation” in the bottom tab bar
2. Tap on + on the top right to create a new Personal Automation
3. List of Personal Automation Events appears
4. **[CLICK]** Tap on “Sleep”
5. Select “Bedtime Begins”. Wind Down is based on wind down period.
6. Select “Run Immediately”
7. Select or create a new Shortcut

Case Studies



Focus Mode – Sleep



Get current time (HHmm)

After 9pm?

Turn on Purple Lamp

1. Get current date - use a custom date format HHmm to get hours and minutes
2. Convert string to number
3. **[CLICK]** Is number greater than 2100 (9pm)?

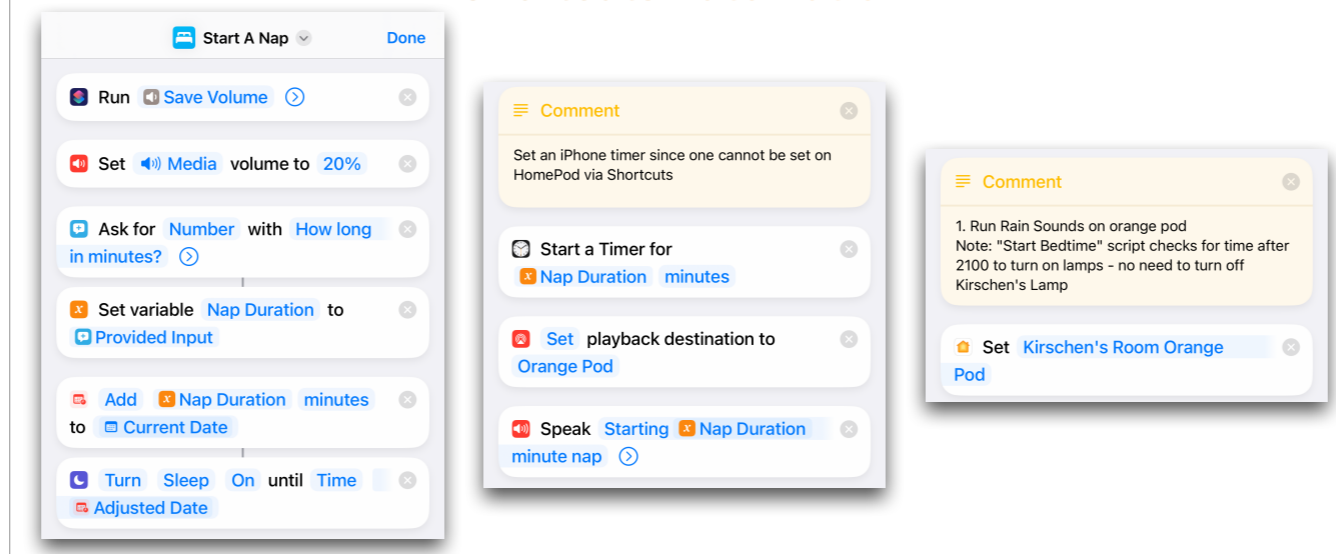
Use Scene rather than run a Shortcut to set lamp state

- * Scene name is informative
- * Can invoke Scene independently (Siri / Home app)

Caution - triggering Sleep focus in a Shortcut will cause Personal Automation for Bedtime to run

Case Studies

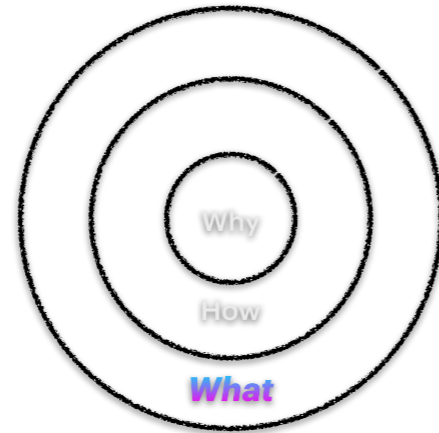
Shortcuts Automation



"Save Volume" - Shortcut to save current volume value to a text file.
Companion Shortcut "Restore Volume" retrieves and sets volume to saved value from text file

"Control Home" action for HomePod allows to set volume, pause, play, choose playlist (and set repeat and shuffle), and play ambient sounds

What



Enhanced Smart Home
Better control
Security ↔ Convenience

WHAT - can I achieve with using automation (scripts, schedules, focus modes) with home automation

What do you get out of this?

Enhanced - more devices which can be controlled

Better control - time dependent, scenes, triggers

Balance security with convenience

E.g. garage door openers (Amazon Key), smart locks. Combine with other security devices - e.g. cameras

Use a separate service for cameras

Next Steps

HomeKit Devices

Apple Store

Amazon

Idiosyncracies

Automation in 2 Apple Apps

Only 2 Home related actions

Can't set HomePod alarms or timers

Limited Actions for Home Automation shortcuts

Difficult to reassign Shortcut to different Trigger

Automation

* Home - Home & Shortcuts apps

* Personal - Shortcuts only

Can see list of Home Automation Shortcut actions when scripting a Shortcut. [Plan to compile list]

Reassign Shortcut : 3rd Party App "Controller for HomeKit" can do this

Tips

Real World Example

Forgot to disable HomePod Music Alarm

Set a timed Home Automation to pause HomePod

Forgot to disable HomePod Music Alarm - was unable to disable the HomePod alarm when away from home
[CLICK] Solution: Set a timed Home Automation to pause HomePod

Most time able to control HomeKit devices remotely

Resources

Books & Courses

[Take Control of Apple Home Automation](#)

[Take Control of Shortcuts](#)

[MacSparky Shortcuts Field Guide](#)

Links

Apple Apps

[Shortcuts User Manual](#)

[Intro to Home on iPhone](#)

Links

Apple Support - iPhone / iPad

[Set up a Sleep Focus schedule in Health](#)

[Create a new home automation in Shortcuts](#)

[Home automation triggers in Shortcuts](#)

Links

Wikipedia

[Home automation](#)

[Matter \(standard\)](#)

[Thread \(network protocol\)](#)

[X10 \(industry standard\) – historical](#)

Podcasts

Automators

<https://www.relay.fm/automators>

Mac Geek Gab

<https://www.macgeekgab.com>

Mac Power Users

<https://www.relay.fm/mpu>

Questions?

Contact

kirschen@freerangecoder.com

Free Range Coder

<https://www.freerangecoder.com>

Other Socials forthcoming...

End of Presentation