Developing Complications for Apple Watch Series 4

Jake Behrens, Apple Watch Evangelist
Check-in
The Venetian Resort
2:00PM

31°
Complication Families

- Modular Small
- Modular Large
- Utilitarian Small
- Utilitarian Small Flat
- Utilitarian Large
- Circular Small
- Extra Large
- Graphic Corner
- Graphic Circular
- Graphic Bezel
- Graphic Rectangular

NEW
Data Providers

CLKTextProvider
CLKSimpleTextProvider
CLKDateTextProvider
CLKRelativeDateTextProvider
CLKTimeTextProvider
CLKTimeIntervalTextProvider
CLKImageProvider
CLKFullColorImageProvider
CLKGaugeProvider
CLKSimpleGaugeProvider
CLKTimeIntervalGaugeProvider
Data Providers

- CLKTextProvider
- CLKSimpleTextProvider
- CLKDateTextProvider
- CLKRelativeDateTextProvider
- CLKTimeTextProvider
- CLKTimeIntervalTextProvider
- CLKImageProvider
- CLKFullColorImageProvider
- CLKGaugeProvider
- CLKSimpleGaugeProvider
- CLKTimeIntervalGaugeProvider
68 BPM, 2 MINS AGO
Water Reminder
32 oz. consumed
4 day streak! Woohoo!
Graphic Complication
Family Templates
let lowTempText = CLKSimpleTextProvider(text: "52")
lowTempText.tintColor = UIColor.cyan
let highTempText = CLKSimpleTextProvider(text: "89")
highTempText.tintColor = UIColor.red
let currentTempText = CLKSimpleTextProvider(text: "72")

let weatherColors = [UIColor.cyan, UIColor.yellow, UIColor.red]
let weatherColorLocations = [0.0, 0.6, 1.0]
let cornerTemplate = CLKComplicationTemplateGraphicCornerGaugeText()

let weatherGaugeProvider = CLKSimpleGaugeProvider(
    style: .ring,
    gaugeColors: weatherColors,
    gaugeColorLocations: weatherColorLocations as [NSNumber],
    fillFraction: 0.7)

cornerTemplate.gaugeProvider = weatherGaugeProvider
cornerTemplate.leadingTextProvider = lowTempText
cornerTemplate.trailingTextProvider = highTempText
cornerTemplate.outerTextProvider = currentTempText

let entry = CLKComplicationTimelineEntry(date: Date(), complicationTemplate: cornerTemplate)
let lowTempText = CLKSimpleTextProvider(text: "52")
lowTempText.tintColor = UIColor.cyan
let highTempText = CLKSimpleTextProvider(text: "89")
highTempText.tintColor = UIColor.red
let currentTempText = CLKSimpleTextProvider(text: "72")

let weatherColors = [UIColor.cyan, UIColor.yellow, UIColor.red]
let weatherColorLocations = [0.0, 0.6, 1.0]
...

let circularTemplate = CLKComplicationTemplateGraphicCircularOpenGaugeRangeText()

let weatherGaugeProvider = CLKSimpleGaugeProvider(style: .ring,
gaugeColors: weatherColors,
gaugeColorLocations: weatherColorLocations as [NSNumber],
fillFraction: 0.7)

circularTemplate.gaugeProvider = weatherGaugeProvider

circularTemplate.leadingTextProvider = lowTempText

circularTemplate.trailingTextProvider = highTempText

circularTemplate.centerTextProvider = currentTempText

let entry = CLKComplicationTimelineEntry(date: Date(), complicationTemplate: circularTemplate)
let circularTemplate = CLKComplicationTemplateGraphicCircularOpenGaugeRangeText()
let weatherGaugeProvider = CLKSimpleGaugeProvider(
    style: .ring,
    gaugeColors: weatherColors,
    gaugeColorLocations: weatherColorLocations as [NSNumber],
    fillFraction: 0.7)
circularTemplate.gaugeProvider = weatherGaugeProvider
circularTemplate.leadingTextProvider = lowTempText
circularTemplate.trailingTextProvider = highTempText
circularTemplate.centerTextProvider = currentTempText

let bezelTemplate = CLKComplicationTemplateGraphicBezelCircularText()
bezelTemplate.circularTemplate = circularTemplate
bezelTemplate.textProvider = CLKSimpleTextProvider(text: "Sunny and Clear")

let entry = CLKComplicationTimelineEntry(date: Date(), complicationTemplate: bezelTemplate)
Water Reminder
32 oz. consumed
4 day streak! Woohoo!
Water Reminder
32 oz. consumed
let rectangularTemplate = CLKComplicationTemplateGraphicRectangularLargeImage()
rectangularTemplate.textProvider = CLKSimpleTextProvider(text: "Flight AB 2122")
rectangularTemplate.imageProvider = CLKFullColorImageProvider(fullColorImage: flightDataImage)

let entry = CLKComplicationTimelineEntry(date: Date(), complicationTemplate: rectangularTemplate)
Keep In Mind

Update opportunities remain the same

Process data and render images quickly

Use accessibility label for full color images
Framework

ClockKit

Display app-specific data in the complications on the clock face.

Overview

Use the ClockKit framework to implement a complication interface for your app. Complications are small interface elements that appear on the clock face and provide quick access to frequently used data. Apps provide data in advance of when it is needed and specify how they want the data displayed. The system updates the appearance of your complication at the time you specify.

Because you specify complication data in advance, you use templates to tell the system how you want that data displayed. ClockKit provides templates for each complication size and style that can be displayed on the clock face. Templates let you arrange text and images. There are also templates for displaying completion rings and other types of formatted content.

Topics
Human Interface Guidelines

watchOS

Apple UI Design Resources for watchOS include Sketch and Photoshop dynamic type guides, layout specifications, app templates, Apple Watch bezels, and other UI materials. An installer for SF Compact, the system typeface for watchOS, is also included.

View the watchOS design guidelines

Add watchOS Sketch Library
watchOS 5.1.4 (Requires Sketch 51 or greater)

Download for Sketch
watchOS 5 (2.3 MB)

Download for Photoshop
watchOS 5 (2.4 MB)

To download watchOS device frames for use when marketing your app, see App Store Marketing Guidelines.

tvOS

Apple UI Design Resources for tvOS include icon and image templates. For more information, see tvOS Help.
<table>
<thead>
<tr>
<th>Graphic Complication Family Template</th>
<th>40mm</th>
<th>44mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLKComplicationTemplateGraphicCornerGaugeImage (Masked to circle)</td>
<td>20 x 20 pt</td>
<td>22 x 22 pt</td>
</tr>
<tr>
<td>CLKComplicationTemplateGraphicCornerTextImage (Masked to circle)</td>
<td>20 x 20 pt</td>
<td>22 x 22 pt</td>
</tr>
<tr>
<td>CLKComplicationTemplateGraphicCornerCircularImage (Masked to circle)</td>
<td>32 x 32 pt</td>
<td>36 x 36 pt</td>
</tr>
<tr>
<td>CLKComplicationTemplateGraphicCircularImage (Masked to circle)</td>
<td>42 x 42 pt</td>
<td>47 x 47 pt</td>
</tr>
<tr>
<td>CLKComplicationTemplateGraphicCircularOpenGaugeImage (Masked to circle)</td>
<td>11 x 11 pt</td>
<td>12 x 12 pt</td>
</tr>
<tr>
<td>CLKComplicationTemplateGraphicCircularClosedGaugeImage (Masked to circle)</td>
<td>27 x 27 pt</td>
<td>31 x 31 pt</td>
</tr>
<tr>
<td>CLKComplicationTemplateGraphicRectangularLargeImage (Corner radius of 4 pt applied)</td>
<td>150 x 47 pt</td>
<td>171 x 54 pt</td>
</tr>
<tr>
<td>CLKComplicationTemplateGraphicRectangularStandardBody</td>
<td>12 x 12 pt</td>
<td>13.5 x 13.5 pt</td>
</tr>
<tr>
<td>CLKComplicationTemplateGraphicRectangularTextGauge</td>
<td>12 x 12 pt</td>
<td>13.5 x 13.5 pt</td>
</tr>
</tbody>
</table>