# Microsoft Band: Developing for Microsoft Band and Microsoft Health

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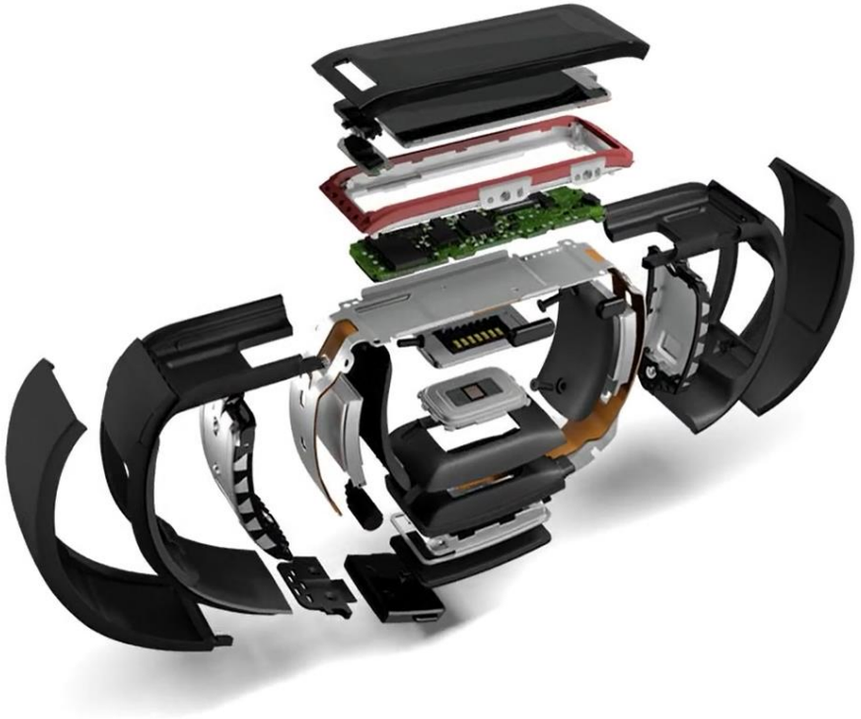
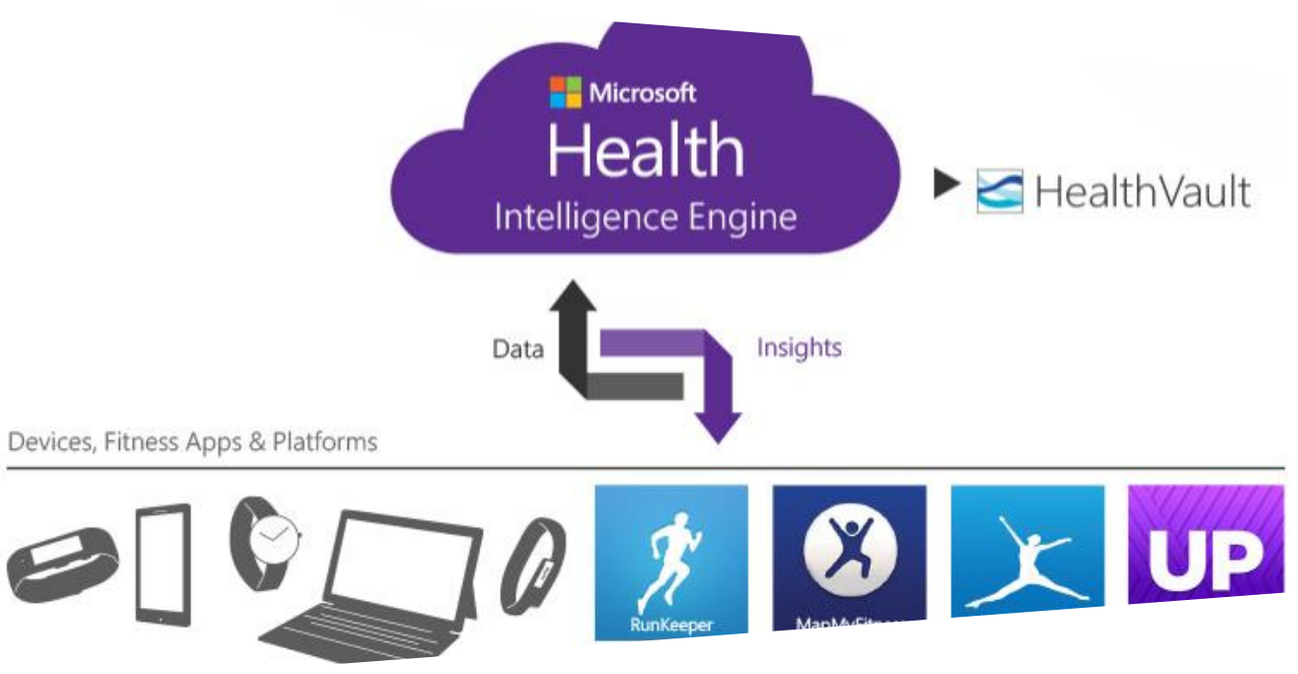
# #include “agenda.h”



What is Microsoft Band & Health?
Interacting with Microsoft Band
Interacting with Microsoft Health
Q&A

# Microsoft Health




Microsoft Health is a cloud-based service that helps you live healthier by providing actionable insights based on data gathered from the fitness devices and apps that you use every day. Activity-tracking devices like the new Microsoft Band, smart watches, and mobile phones plus services like RunKeeper or MyFitnessPal connect easily to Microsoft Health. Using this fitness data and our Intelligence Engine in the cloud, Microsoft Health provides valuable, personal insights so you can reach your fitness goals.

# Microsoft Band

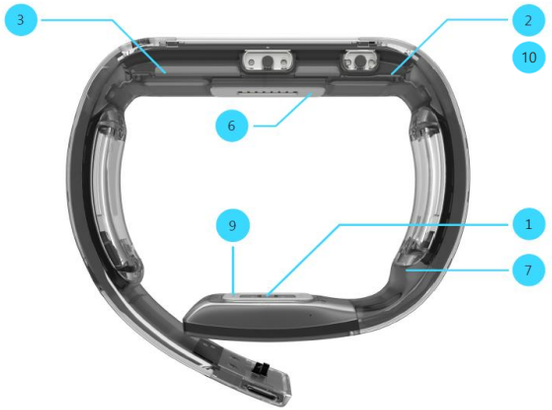
## All day wearable device

Live healthier
Be more productive
Stay connected at a glance


## Advanced Technology

- 10 sensors
- Touch display
- 2 days+ battery life

1. Optical heart rate sensor
2. 3-axis accelerometer
3. GPS
4. Ambient light sensor
5. UV sensor
6. Capacitive sensor
7. Haptic vibration motor
8. Microphone
9. Galvanic skin response
10. Gyroscope

# Microsoft Band Sensors

- Optical heart rate monitor
- 3-axis accelerometer
- GPS
- Ambient Light Sensor
- UV sensor
- Capacitive sensor
- Haptic vibration motor
- Microphone
- Galvanic Skin Response (GSR)
- Gyroscope

# Health & Fitness

## Far beyond a step tracker

Calculates activity level, heart rate metrics and sleep patterns

Steps, calories, distance, run, workout, bike, UV exposure.

Sleep duration, sleep efficiency, wakeup frequency and resting heart rate.

Guided routines for custom activity and workouts.

# Productivity

## Rich notifications that drive user engagement

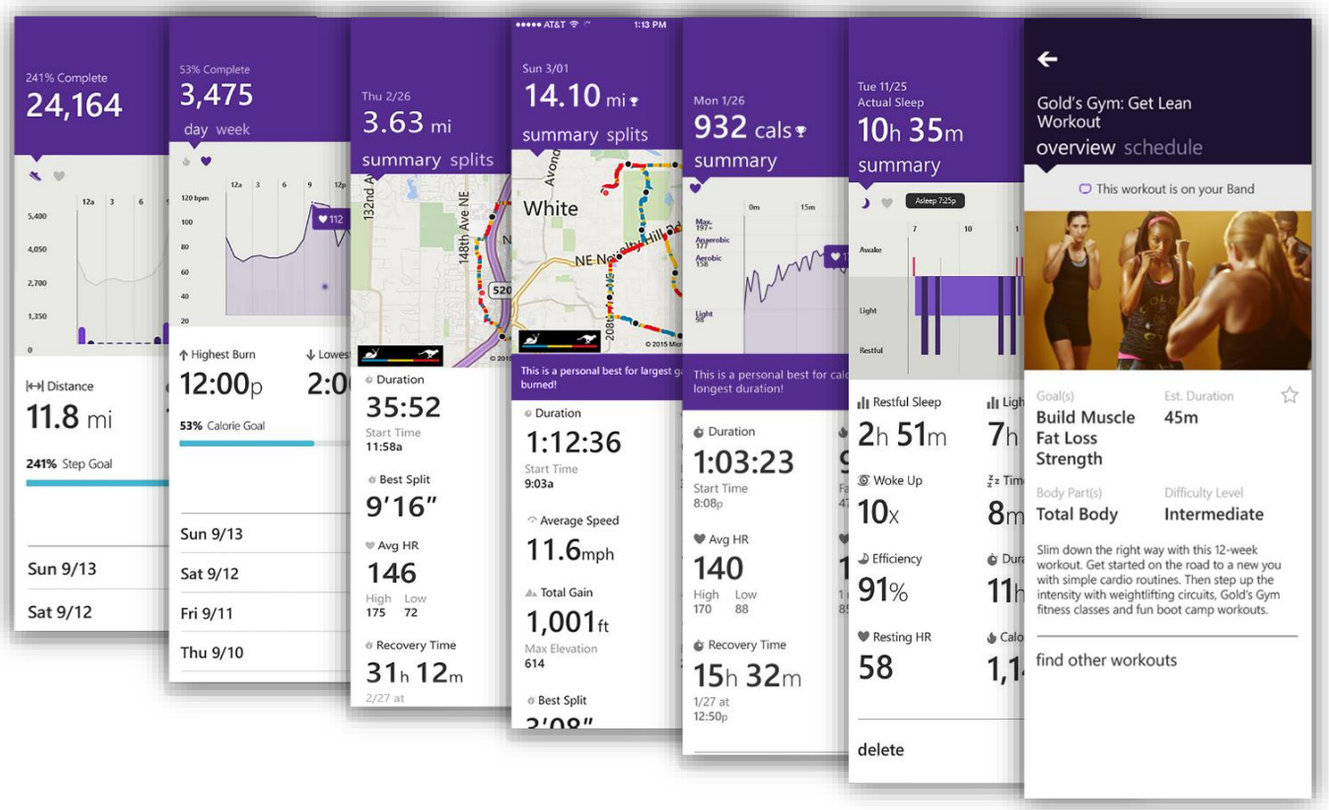
Band surfaces important information at the right time

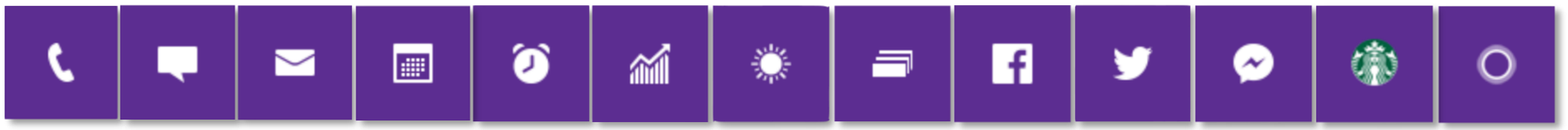
Incoming calls, texts, social updates, weather, finance, and more.

Email previews and calendar alerts.

Cortana.

# A holistic solution



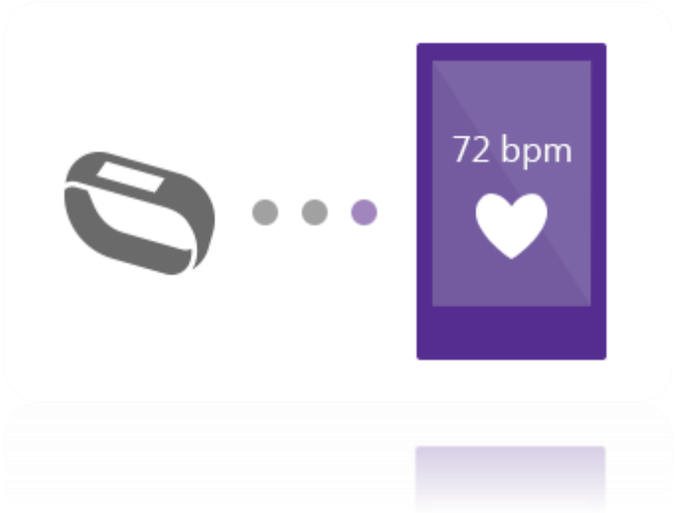
# Developers, developers, developers

# Microsoft Band SDK

Libraries and components that allow applications to extend and enhance experiences with Microsoft Band.

- Opens up Microsoft Band to applications
  - Band as a programming object
  - *Microsoft.Band* namespace for Windows, *IBandClient* represents a Band
- 3 main ways to interact
  - Stream data from Band's sensors
  - Create interactive tiles
  - Personalize and customize
- No application code runs on the Band
  - Band provides an extension model, not an application platform
  - Phone/Tablet/PC application is required
  - Use Band as an sensor rich input device and an auxiliary display

# Stream sensor data




Subscribe to sensors

Receive data via events

Raw data as well as curated values

# Types of subscriptions

```
using Microsoft.Band.Sensors
bandClient.SensorManager
```

Phone must be connected when streaming.

Some sensors require explicit user consent.

Battery impact for long running subscriptions.

| Sensor | Measurement details | Frequency |
|---|---|---|
| **Heart Rate** | # of beats/min, reading quality | 1Hz |
| **Accelerometer** | X, Y and Z acceleration in g units | 8/30/60 Hz |
| **Gyroscope** | X, Y and Z angular velocity in degrees/sec units | 8/30/60 Hz |
| **Distance** | Total distance in cm, speed in cm/s, pace in ms/m, pedometer state | 1Hz |
| **Pedometer** | Total # of steps | Value change |
| **Skin Temp** | Current skin temperature in degrees Celcius | 1Hz |
| **UV** | Current UV radiation exposure intensity | 1Hz |
| **Band Contact** | Current worn/not worn state of the Band | Value change |
| **Calories** | Total # of calories | Value change |

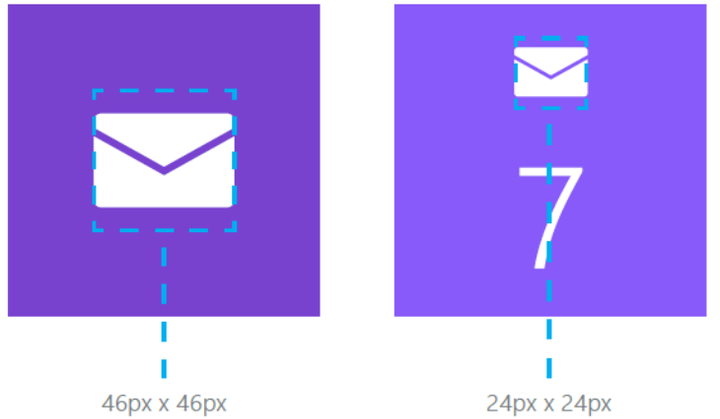
# Create interactive tiles

Create your own tiles
Send notifications and dialogs
Create and send custom pages
Receive events

# Creating tiles

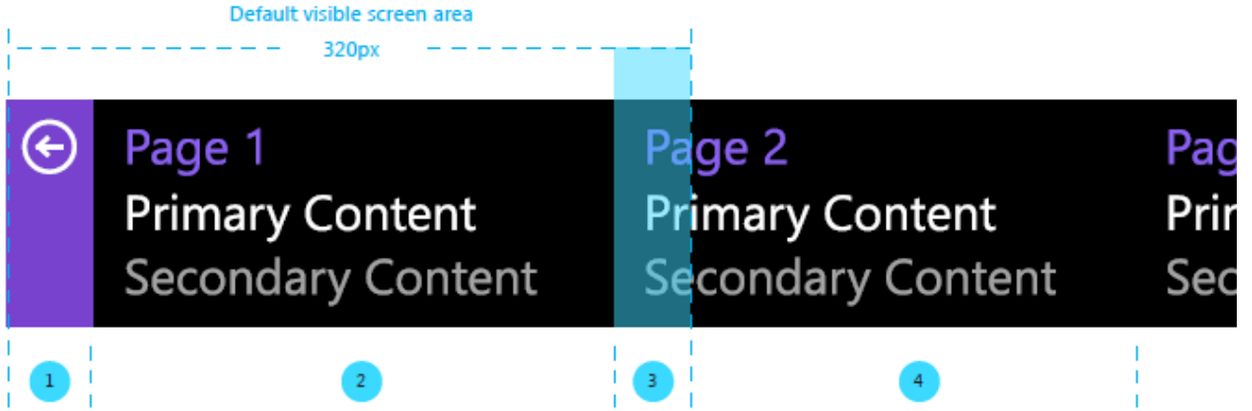
```
using Microsoft.Band.Tiles
bandClient.TileManager
```

Apps can create 1 or more tiles.
Tile has a GUID, a tile icon, a badge icon.
Up to 8 additional icons for use within pages.




Tile can have up to 8 “Pages”.
Viewport for page content is 245 x 106 pixels.

Pages are either generic messages or built from custom layouts.



# Notifications

```
using Microsoft.Band.Notifications
bandClient.NotificationManager
```

3 Types of Notifications

- Messages

Title & body

Persist as pages inside the tile.

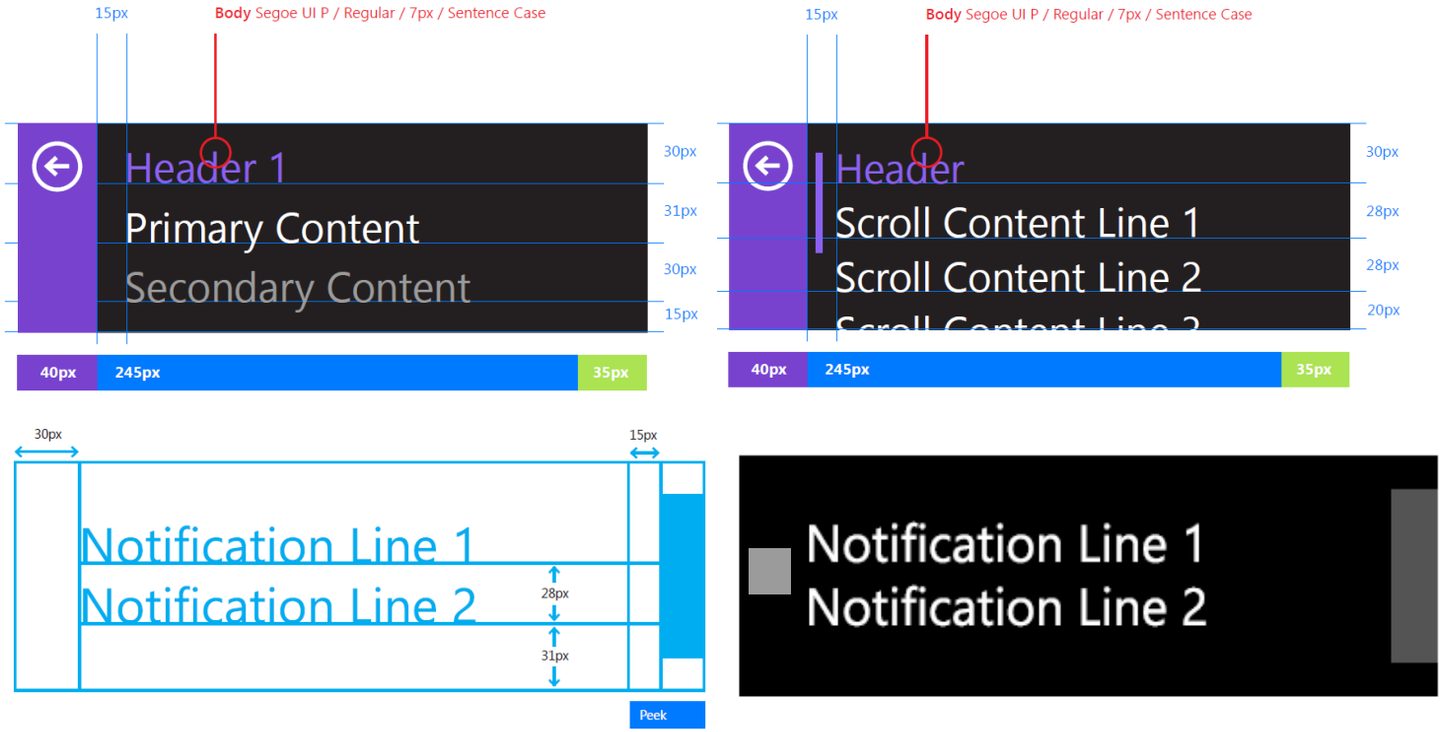
FIFO style queue of 8 messages at a time.

- Dialogs

Pop up messages but do not persist inside the tile.

- Haptic Alerts

Predefined vibration types.



# Custom layouts

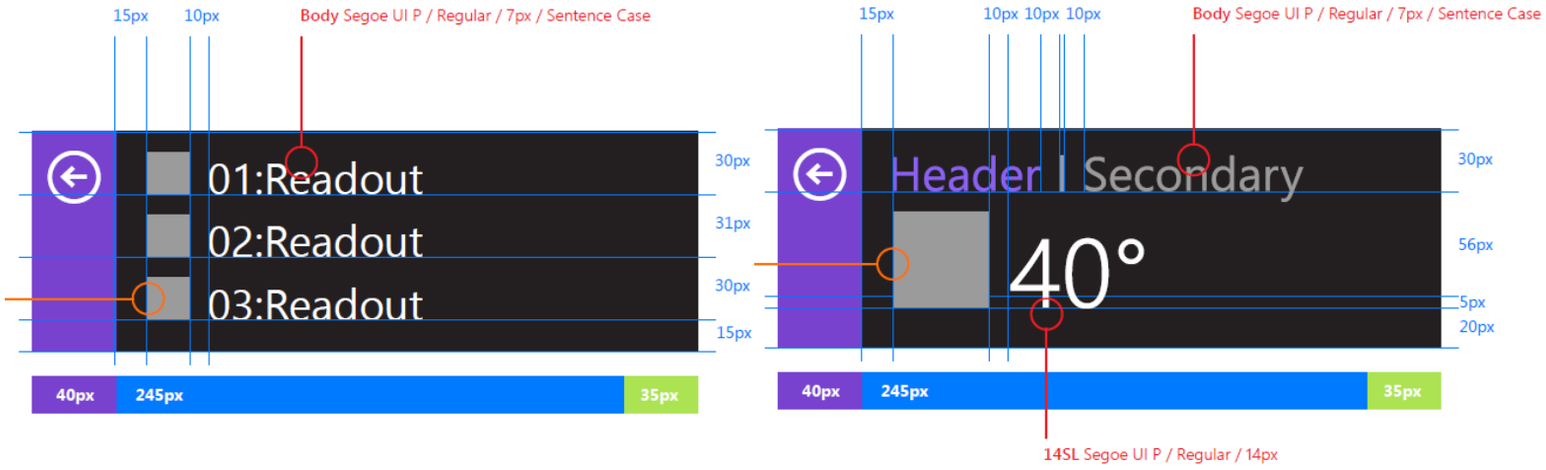
```
using Microsoft.Band.Tiles.Pages
PageLayout
```

Tile can register up to 5 layouts.
Tree of container and primitive elements.

Container elements can have 1 or more container or primitive elements.
Primitive elements contain content.

Elements support positioning, formatting and styling.

| Container Elements | Primitive Elements |
|---|---|
| FlowPanel | TextBlock |
| ScrollFlowPanel | WrappedTextBlock |
| FilledPanel | Icon |
| | Barcode |
| | TextButton |
| | FilledButton |



# Receiving events from tiles

```
using Microsoft.Band.Tiles.Events
IBandTileEvent, IBandTileEventArgs
```

Each tile has 3 events you can subscribe to:

- Tile Opened
- Tile Closed
- Button Pressed

**Events are handled differently per platform**

Android uses broadcast intents
Can invoke callback even when app is not running

iOS uses BLE custom characteristic
App in foreground or background

Windows uses direct communication
App code actively running
Windows 10 UWP App Services will allow non running apps to receive callbacks

# Personalize and customize

Change the “Me Tile” image

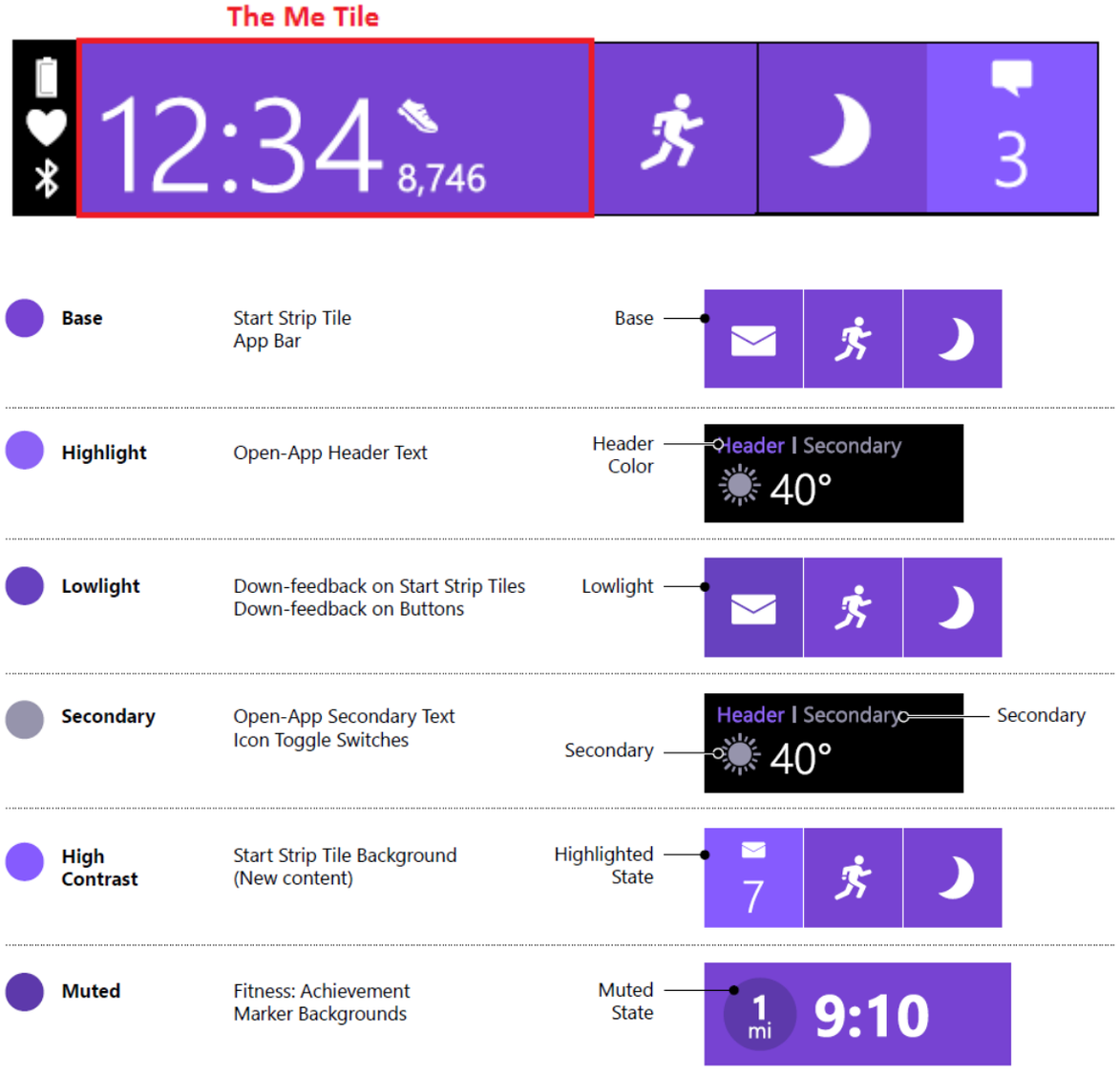
Change the theme color scheme for Microsoft Band

# Personalize and customize

```
using Microsoft.Band.Personalization
bandClient.PersonalizationManager
```

Get and set MeTile image
310x102 pixels

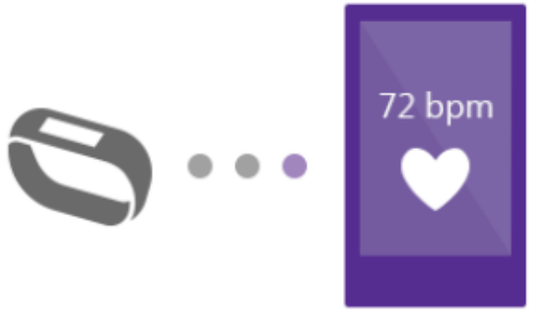
Band theme has 6 different colors to represent various states of tiles and text



# Microsoft Band SDK

## Access sensors

Use a range of sensors including heart rate, UV, accelerometer, gyroscope, and skin temperature, as well as fitness data, to design cutting-edge user experiences.




## Create your tile

Keep users engaged and extend your app experience to Microsoft Band. Create tiles for the band that send glanceable notifications from your app to your users.

## Personalize your app

Monetize your app by offering users ways to customize the band. Change the color theme, or bring the Me Tile to life by changing the wallpaper.

http://developer.microsoftband.com/

# Microsoft Health APIs

An open platform with RESTful APIs that allow developers to build smart applications based on fitness data.

- View sensor data collected from Microsoft Band and other connected devices
- Access and track user fitness history
- Connect apps and services with Microsoft Health to collect activity summaries
- Contribute data to Microsoft Health

# Microsoft Health APIs

- User profile information
- Sensors
- Summaries – hourly, daily, weekly, monthly for Steps, Calories, Distance, Heart Rate etc
- Activities – Run, Bike, Workout, Guided Workout…
- Sleep tracking – restful/light, efficiency, recovery
- Connected devices

# Where do we go now?

- http://developer.microsoftband.com/
  - Download the SDK and documentation
  - Check out samples
  - Go develop!
- http://www.microsofthealth.com/
- http://www.microsoftband.com/
- http://lumiaconversations.microsoft.com/
  - Blogs and news about upcoming features
- healthms@microsoft.com
  - SDK questions and feedback