

Aktuelle Neuigkeiten von letzter Woche

Dr. Holger Kenn, Microsoft DX

//build/



Die Konferenz

- <http://www.buildwindows.com/>
- Microsoft Entwicklerkonferenz
- Jährlich
- >5000 Entwickler
- 2015 in San Francisco 29.4.-1.5.

Ankündigungen zu mobiler Entwicklung

- Android -> Windows Phone: Project Astoria
- iOS -> Windows: Compiler für Objective C
- Manifold.js: Web site -> Hosted web app
- Und wie bisher
 - Xamarin
 - Apache Cordova
 - Unity 3D

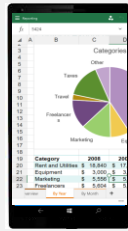
Interessantes für unseren Kurs

- Continuum
- Band SDK
- Project Oxford
- Und kurz was zu HoloLens

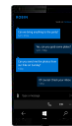
Weitere Ankündigungen

- Windows 10 IoT Core auf dem Raspberry Pi 2
- Container in Windows
- Desktop Apps im Windows Store
- Azure
 - Neues Programmiermodell: Fabric
 - Neuer Konfigurationsmechanismus: Azure Resource Manager
 - Neue Dienste für „Internet of Things“
- Und noch viel mehr...

Sometimes a phone is
not enough



Introducing Continuum



Continuum

Two apps run simultaneously on two
screens

Windows Apps transition seamlessly
and look beautiful on any screen

Keyboard and mouse support

2-619

Microsoft Band: Developing for Microsoft Band and Microsoft Health

Ali Alvi @alialvi
Program Manager, Microsoft Health and Band

Tony Andrews
Architect, Microsoft Health and Band



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

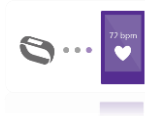


Microsoft Band SDK

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 a 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 Celsius	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

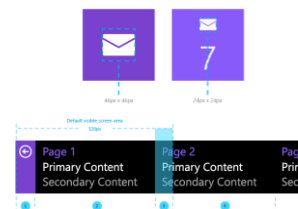
Creating tiles

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.

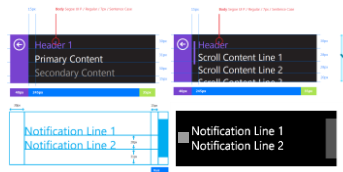


Notifications

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.



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

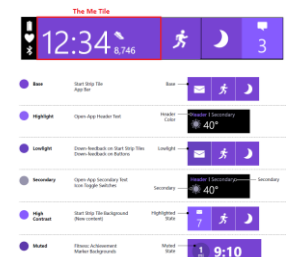
Change the theme color scheme for Microsoft Band

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/>

Web based Microsoft Band tiles

Using Microsoft Health to send notifications to Microsoft Band

Microsoft Health enables Band to be connected
Lots of content on the internet

You specify the source and format
Health app connects the dots

Tiny "browser" on the Band

Why?

Lowers the barrier to entry
Simple and portable
Another way to reach users

Who?

Developers who create web content and want to light it up on the band
Enthusiasts who want to bring existing web content to the band

Web Tile experience

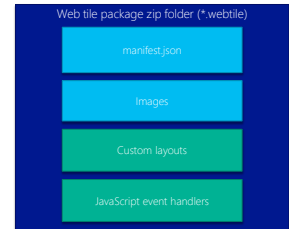


Author your tiles
Data source, layout, bindings
Publish your tiles
Hosted/Stored
Share with people
Social/Email/Web
Health app does the rest
Install, manage & refresh

Web Tile package

Zip file format

- Manifest file
Describes the tile and data source
Contains data bindings for the payload
- Image files
Needed for icons used by the tile
- Custom layouts
Fine grain control of data layout
- JavaScript files
Event handling



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

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Microsoft Project Oxford: Adding Smart to Your Applications

Dr. Harry Shum
Executive Vice President
Technology and Research

Ryan Galgon
Senior PM
Microsoft Project Oxford



Microsoft Project Oxford Services

PROJECT OXFORD

Vision APIs	Face APIs	Speech APIs	LUIS
<ul style="list-style-type: none"> Analyze Image OCR Generate Thumbnail 	<ul style="list-style-type: none"> Face Detection Face Grouping Face Identification 	<ul style="list-style-type: none"> Speech Recognition Text to Speech Speech Intent Recognition 	<ul style="list-style-type: none"> Detect Intent Determine Entities Improve Models



Analyze Image – Example



Type of Image:

Clip Art Type 0 Non-clipart
Line Drawing Type 0 Non-Line Drawing
Black & White Image False

Content of Image:

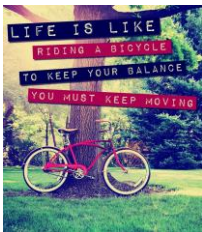
Categories [{"name": "people_swimming", "score": 0.899689375 }]
Adult Content False
Adult Score 0.1853388949522747
Faces [{"age": 27, "gender": "Male", "faceRectangle": {"left": 425, "top": 254, "width": 109, "height": 109}}]

Image Colors:

Dominant Color Background White
Dominant Color Foreground Grey
Dominant Colors White
Accent Color



OCR – Example



TEXT:
LIFE IS LIKE
RIDING A BICYCLE
TO KEEP YOUR BALANCE
YOU MUST KEEP MOVING

```
JSON:
{
  "language": "en",
  "orientation": "Up",
  "regions": [
    {
      "boundingBox": "41,77,918,448",
      "lines": [
        {
          "boundingBox": "41,77,723,89",
          "words": [
            {
              "boundingBox": "41,182,225,64",
              "text": "LIFE"
            }
          ]
        },
        {
          "boundingBox": "356,89,94,62",
          "text": "IS"
        },
        {
          "boundingBox": "539,77,225,64",
          "text": "LIKE"
        }
      ]
    }
  ]
}
```



Face API – Detection



INPUT IMAGE



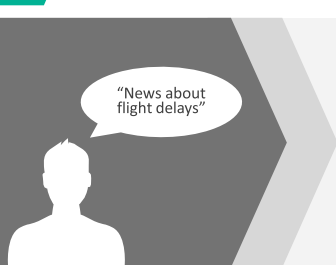
FACIAL RECTANGLE + LANDMARKS

Detection Result:

```
JSON:
{
  "faceRectangle": {
    "width": 109,
    "height": 109,
    "left": 425,
    "top": 254
  },
  "attributes": {
    "age": 27,
    "gender": "Male",
    "headPose": {
      "roll": "-0.8°",
      "yaw": "-1.3°",
      "pitch": "10.0°"
    },
    "facialLandmarks": {
      "mouthLeft": {
        "x": "89.5",
        "y": "188.2"
      },
      "mouthRight": {
        "x": "138.4",
        "y": "181.7"
      },
      ...
    }
  }
}
```



Language Understanding Models



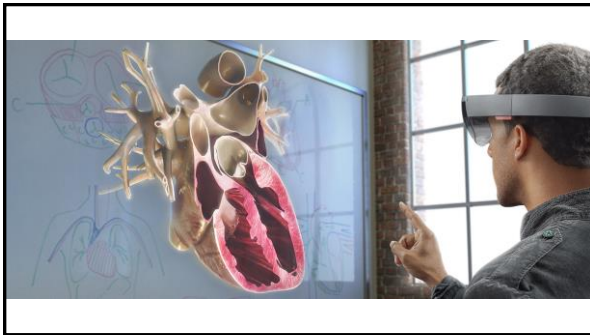
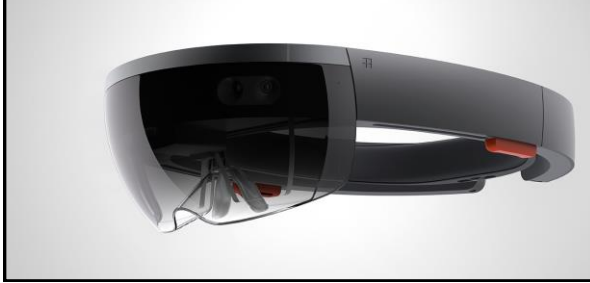
```
{
  "entities": [
    {
      "entity": "flight_delays",
      "type": "Topic"
    }
  ],
  "intents": [
    {
      "intent": "FindNews",
      "score": 0.99853384
    },
    {
      "intent": "None",
      "score": 0.07289317
    },
    {
      "intent": "ReadNews",
      "score": 0.857222627
    },
    {
      "intent": "ShareNews",
      "score": 1.0919299E-06
    }
  ]
}
```

Getting started with Project Oxford

- 1 Visit <https://www.projectoxford.ai> and select "Sign up" from any of the offered services
- 2 The Azure Management portal will launch
- 3 In 'Choose an Application or Service' page, select the service such as "Face APIs" from the list
- 4 Fill in the requested information to purchase a free tier
- 5 Find the service under the 'marketplace' tab
- 6 Select the service, and click on 'Manage'
- 7 You now have your developer keys, ready to use in your applications

You can also subscribe directly from the Azure Management Portal Marketplace

Microsoft HoloLens





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