



# INTRODUCTION TO REALSENSE TECHNOLOGIES

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# RealSense Cameras - 2015

User-facing (F200)

**USB 3.0 devkits**  
available today



Rear-facing (R200)



## Products

some already available  
most are upcoming





Immersive Collaboration  
/Creation



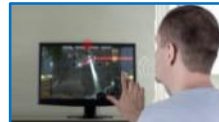
Learning and  
Edutainment



Interact Naturally



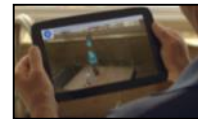
Capture and Share



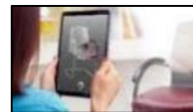
Gaming and Play



Immersive Gaming & Learning & Collaborate



Enhanced Video



Capture the World in 3D



Enhanced Photography



All-in-One



Notebook



Convertible



Detachable



Tablet/Phablet

User Facing  
Camera

**F200**

Interact with users  
And small objects

*Different Usages for  
Each Camera*



World Facing  
Camera

**R200**

Understand the environment

# Intel® RealSense™ SDK

## User-Facing Capabilities

## World-Facing Capabilities

### RealSense™ SDK

Hands Tracking

Gesture Recognition

Speech  
Recognition

3D Object  
Scan/Capture

3D Scene  
Understanding

Computational  
Photography

Background Removal

Object Recognition  
and Tracking

3D Face Tracking

Augmented Reality

## F200 Front-Facing Depth Camera



## R200 Rear-Facing Depth Camera



# DEMOS

opentrack, Windows Hello, 3d scanning, augmented reality

**THE SDK(S)**

# Intel® RealSense™ SDK for Windows\*

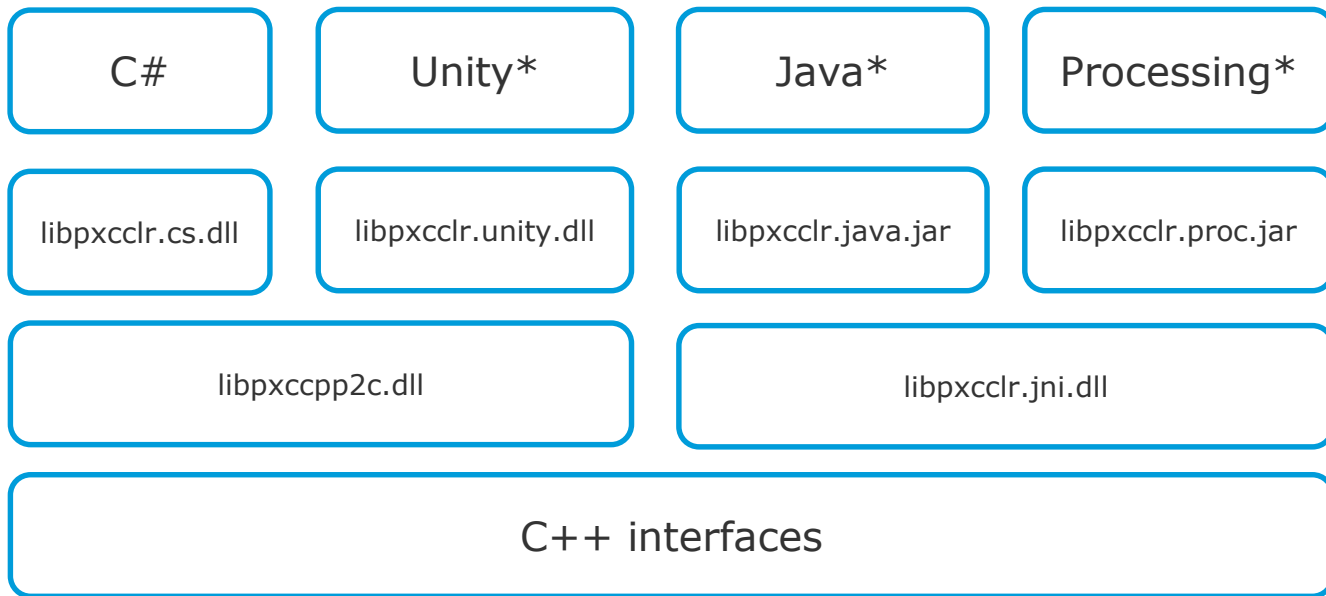
Understands 4 basic types of input - Standalone or various permutations

Categories of Input	Capabilities	Features
Hands	<ul style="list-style-type: none"><li>• Hand and Finger Tracking</li><li>• Gesture Recognition</li></ul>	<ul style="list-style-type: none"><li>• 22-point Hand and Finger Tracking</li><li>• Static Poses and Dynamic Gestures</li></ul>
Face	<ul style="list-style-type: none"><li>• Face Detection and Tracking</li></ul>	<ul style="list-style-type: none"><li>• Multiple Face Detection and tracking</li><li>• 78-point Landmark Detection (facial features)</li><li>• Face Recognition and Facial Expressions</li><li>• Emotion Detection</li><li>• Pulse Estimator</li><li>• Eye tracking</li></ul>
Speech	<ul style="list-style-type: none"><li>• Speech Recognition and Synthesis</li></ul>	<ul style="list-style-type: none"><li>• Command and Control</li><li>• Dictation</li><li>• Text to Speech</li></ul>
Environment	<ul style="list-style-type: none"><li>• Segmentation</li><li>• 3D Scanning</li><li>• Augmented Reality</li></ul>	<ul style="list-style-type: none"><li>• Background Segmentation</li><li>• 3D Object / Face / Room Scanning</li><li>• 2D/3D Object Tracking</li></ul>

\*\*Roadmap Notice: All products, computer systems, dates and figures specified are preliminary based on current expectations, and are subject to change without notice.

\*Other names and brands may be claimed as the property of others.

# Unified Languages/Frameworks Support



**C#/Unity/Java/Processing access to full set of SDK APIs**



# SDK Installation Folder

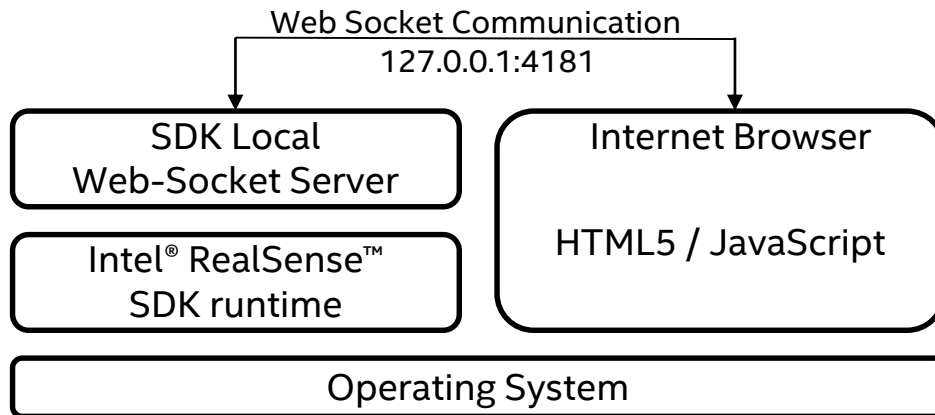
C:\Program Files (x86)\Intel\RSSDK\

- bin: compiled samples
- contrib: metaio\* toolbox and nuance\* language packs
- doc: the documentation
- framework: samples and wrappers for C#/JavaScript/Unity/Java/processing
- props: VS2013 property sheets
- sample: C++ samples

This PC > Local Disk (C:) > Program Files (x86) > Intel > RSSDK			
Name	Date modified	Type	Size
bin	11/11/2014 2:38 PM	File folder	
contrib	11/11/2014 2:39 PM	File folder	
data	11/11/2014 2:38 PM	File folder	
doc	11/11/2014 2:38 PM	File folder	
framework	11/11/2014 2:38 PM	File folder	
include	11/11/2014 2:38 PM	File folder	
lib	11/11/2014 2:38 PM	File folder	
props	11/11/2014 2:38 PM	File folder	
runtime	11/11/2014 2:39 PM	File folder	
sample	11/11/2014 2:38 PM	File folder	
src	11/11/2014 2:38 PM	File folder	
attributions.rtf	10/30/2014 2:57 PM	Rich Text Format	357 KB
Intel RealSense SDK License.rtf	10/30/2014 2:47 PM	Rich Text Format	201 KB
readme.txt	10/30/2014 2:47 PM	Text File	2 KB
redist.txt	10/30/2014 2:47 PM	Text File	2 KB
third_party_programs.txt	10/30/2014 2:47 PM	Text File	30 KB

# HTML5/JavaScript

w/ SDK WebSocket server



Trigger face and gesture events, just like in C# applications

Currently supported:  
Hand, Blob, Face Tracking, and Speech Recognition.

# Using the PXC[M]SenseManager

```
PXCSenseManager *psm = PXCSenseManager::CreateInstance();
psm->EnableXXX(); //XXX can be: 3DScan, 3DSeg, Emotion, Face, Hand, Stream, Tracker... not Speech
PXCXXXModule xxxAnalyzer = psm->QueryXXX();

//for Face and Hand:
PXCXXXData xxxData = xxxAnalyzer->CreateOutput();
PXCXXXConfiguration *xxxConfig = xxxAnalyzer->CreateActiveConfiguration();
xxxConfig->Query/Set/Disable/Enable/SubscribeYYY(...);
xxxConfig->ApplyChanges();

psm->Init();
//if using callbacks set with xxxConfig->SubscribeYYY()
psm->StreamFrames(/*blocking=*/true); //non-blocking will create a thread.
//else, in update loop:
psm->AcquireFrame(/*all=*/false, /*blocking=*/true);
xxxAnalyzer->QueryYYY(); // for Face and Hand: xxxData->Update(); xxxData->QueryYYY(); xxxIsAlertFired();
psm->ReleaseFrame();

//closing:
xxxConfig->Release(); psm->Release();
```



# Q&A

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# Intel® RealSense™ SDK Gold R4 for Windows\*

Required Hardware	A system with a minimum of a 4 <sup>th</sup> /5 <sup>th</sup> generation Intel® Core™ processor including an Intel® RealSense™ 3D camera (or a peripheral camera)
Required OS	Microsoft Windows* 8.1/10 64-bit Desktop Mode
Supported Programming Languages	C++, C#, Java, JavaScript <sup>2</sup>
Supported IDE	Microsoft* Visual Studio 2010–2013 with service pack 1 or newer
Supported Development Tools	<ul style="list-style-type: none"><li>-Microsoft* .NET 4.0 Framework for C# development</li><li>-Unity* PRO 4.1.0 or 5.0 Free/Pro for Unity game development</li><li>-Processing* 2.1.2 or higher for Processing framework development</li><li>-Java* JDK 1.7.0_11 or higher for Java development</li><li>- Chromium/IE/Firefox in their latest version for HTML5 development</li></ul>

The Intel® RealSense™ SDK for Windows does not support Intel® RealSense™ Snapshot, support for that is coming soon.\*\*

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