

# 将Unity游戏移植到Windows Phone 8.1



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# 议程

01 | 准备工作

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02 | 移植流程

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03 | 硬件更改

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04 | API 了解

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# 01 | 准备工作

# 系统需求

Unity 引擎	<ul style="list-style-type: none"><li>• Unity 4.2+有Windows Store Apps及Windows Phone 8.0<ul style="list-style-type: none"><li>• Unity 4.5+开始支持Universal Apps及Windows Phone 8.1</li><li>• 建议用最新的Unity版本</li></ul></li></ul>
Windows PC	<ul style="list-style-type: none"><li>• Windows 8.x Professional+, 64 bit</li><li>• Microsoft Visual Studio Professional, Premium, Ultimate 2013<ul style="list-style-type: none"><li>• Update 2+支持Universal Apps</li></ul></li><li>• Microsoft Visual Studio Express 2013</li><li>• Windows Phone设备</li></ul>
Mac OS X	<ul style="list-style-type: none"><li>• Boot Camp 5+</li><li>• Windows 8.x Professional &amp; up 64-bit ISO</li><li>• Windows 7 USB/DVD download tool</li><li>• Parallels 9+</li></ul>

# 系统安装资料

## Windows PC

Unity:

- [unity3d.com/unity/download](http://unity3d.com/unity/download)

Windows OS:

- [windows.microsoft.com/zh-cn/windows/download-shop](http://windows.microsoft.com/zh-cn/windows/download-shop)

Visual Studio IDE:

- [visualstudio.com/zh-cn/downloads/download-visual-studio-vs](http://visualstudio.com/zh-cn/downloads/download-visual-studio-vs)

## Mac OS X

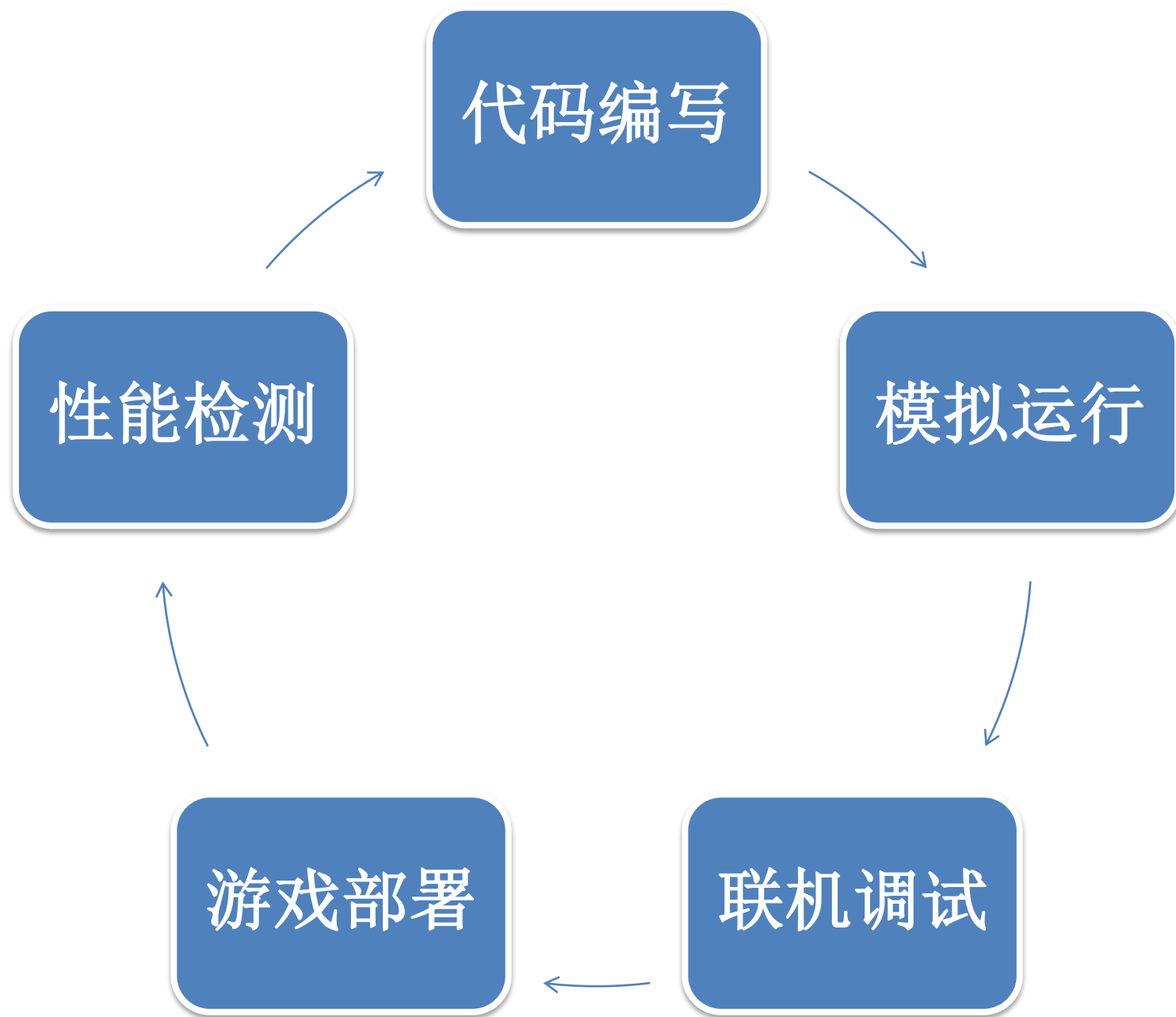
用Boot Camp:

- [microsoftstore.com/store/msusa/html/pbPage.Help\\_Win7\\_usbdvd\\_dwnTool](http://microsoftstore.com/store/msusa/html/pbPage.Help_Win7_usbdvd_dwnTool)
- <http://windows.microsoft.com/zh-cn/windows-8/install-windows-on-mac>
- [help.apple.com/bootcamp/mac/5.0/help](http://help.apple.com/bootcamp/mac/5.0/help)
- [digitaltrends.com/computing/how-to-install-windows-8-on-a-mac/](http://digitaltrends.com/computing/how-to-install-windows-8-on-a-mac/)

用Parallels:

- [download.parallels.com/desktop/v9/ga/docs/zh\\_CN/Parallels%20Desktop%20User's%20Guide](http://download.parallels.com/desktop/v9/ga/docs/zh_CN/Parallels%20Desktop%20User's%20Guide)

# 手游开发过程



# 手游开发过程

## Windows Phone 工具：

Windows Phone

Windows Phone Emulator

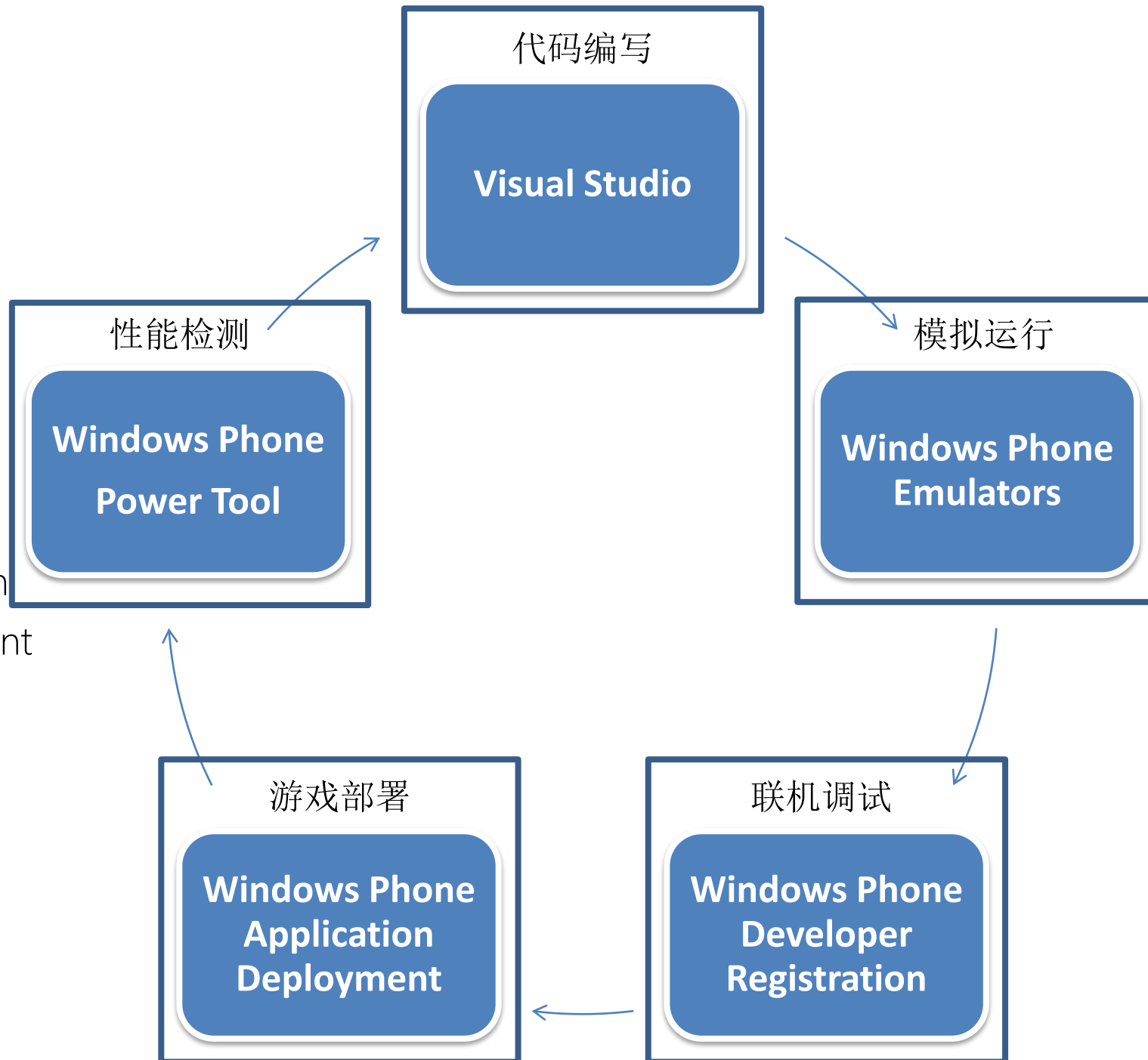
Hyper-V Manager

Dev Center App for WP8

Windows Phone Power Tools

Windows Phone Developer Registration

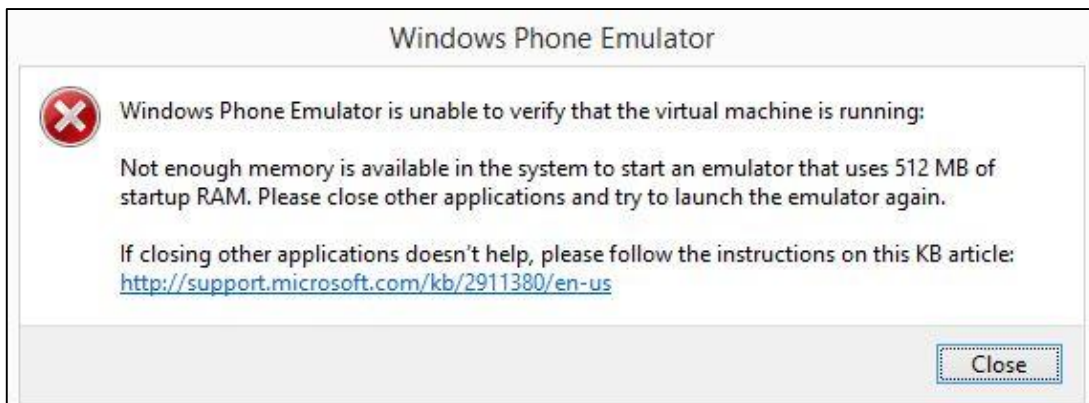
Windows Phone Application Deployment



# 模拟器错误

## • 解决方案：

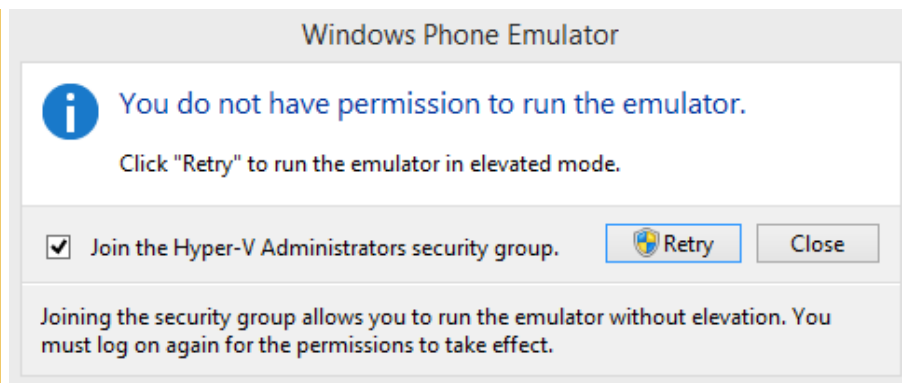
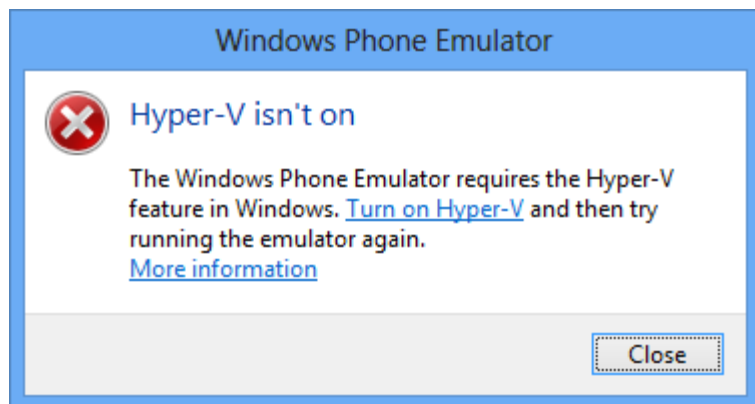
1. 关掉和删除不用的软件
2. 电脑有8GB RAM 内存就减少这个问题
3. 改一下注册表编辑器: <http://support.microsoft.com/kb/2911380/en-us>





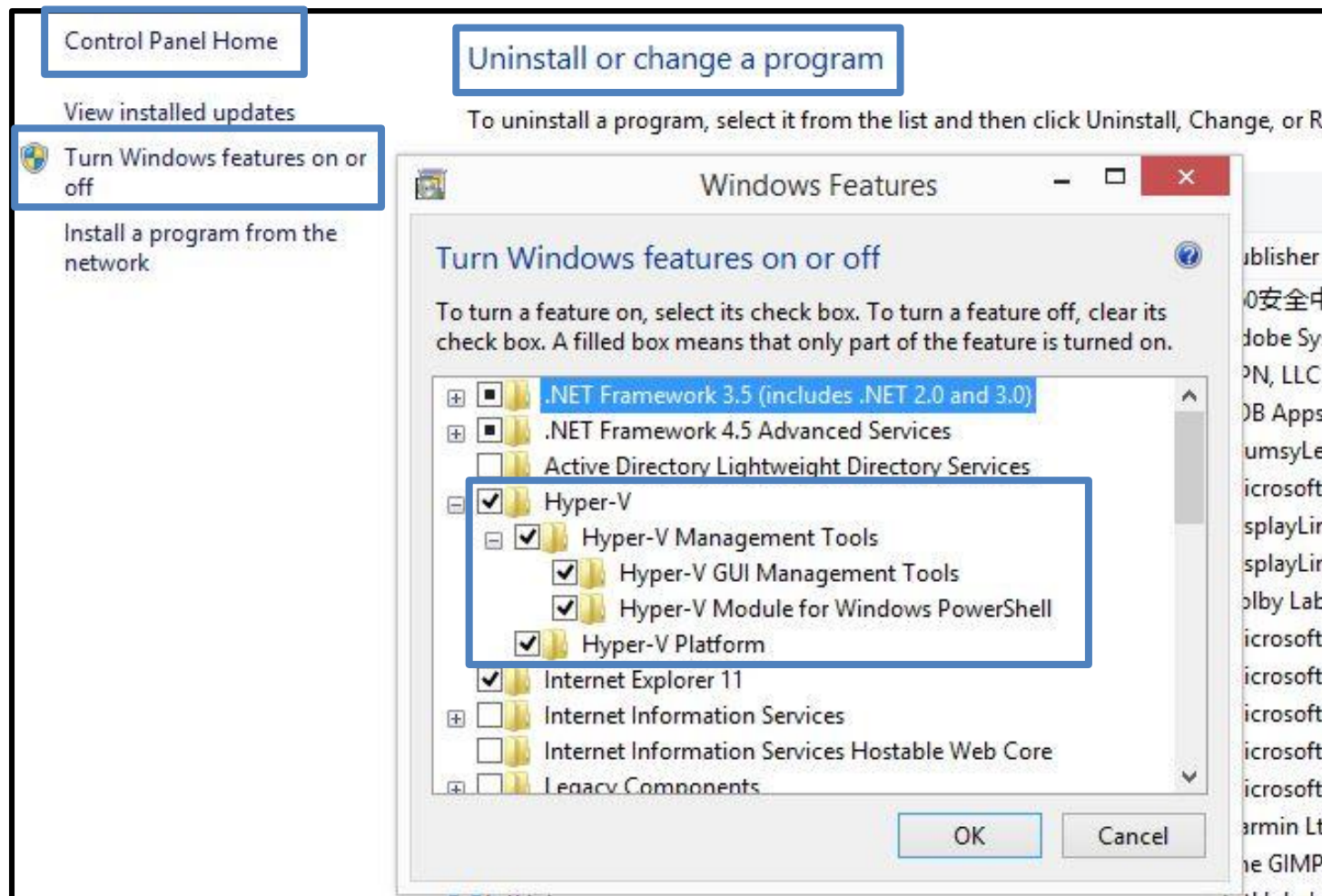
# 模拟器错误

- 关于虚拟化技术Hyper-V
- [http://msdn.microsoft.com/zh-cn/library/windows/apps/jj863509\(v=vs.105\).aspx](http://msdn.microsoft.com/zh-cn/library/windows/apps/jj863509(v=vs.105).aspx)



# Hyper-V

- 第1步：启用Hyper-V



Windows Phone 模拟器本质是：

使用Hyper-V虚拟化技术的虚拟机

# Hyper-V

- 第2步：查询你的电脑是否支持虚拟化技术？
- <http://technet.microsoft.com/enus/sysinternals/cc835722.aspx>

使用工具  
Coreinfo  
查询

```
C:\Users\yimei\Downloads\Coreinfo>Coreinfo.exe
```

```
Coreinfo v3.21 - Dump information on system CPU and memory topology  
Copyright (C) 2008-2013 Mark Russinovich  
Sysinternals - www.sysinternals.com
```

```
Intel(R) Core(TM) i7-3520M CPU @ 2.90GHz
```

```
Intel64 Family 6 Model 58 Stepping 9, GenuineIntel
```

```
HTT          *          Hyperthreading enabled
```

```
HYPervisor   *          Hypervisor is present
```

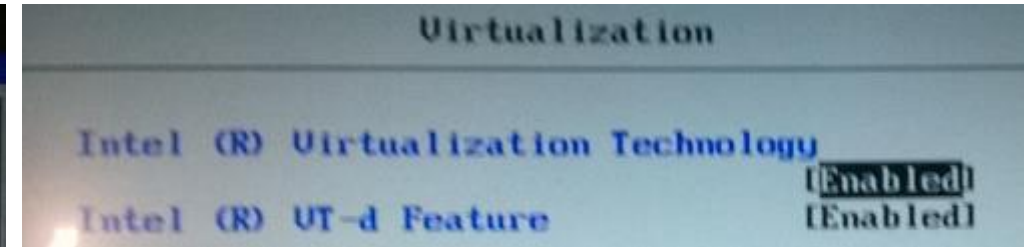
```
VMX          -          Supports Intel hardware-assisted virtualization
```

```
SVM          -          Supports AMD hardware-assisted virtualization
```

```
EM64T        *          Supports 64-bit mode
```

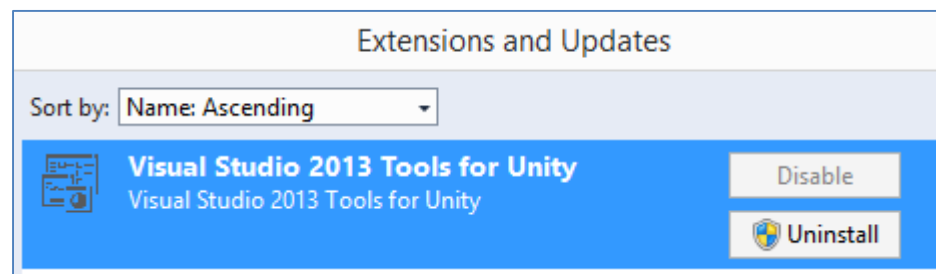
# Hyper-V

- 第3步：在BIOS中打开虚拟化: Virtualization



# Visual Studio 2013 Tools for Unity

- 工具的功能：
  - 可以在Unity C#工程放断点
  - 看到Unity console的调试信息, API: Debug.Log, Debug.LogWarning, etc.
- 安装：
  - 打开Visual Studio , 点击Tools , 选择Extensions and Updates



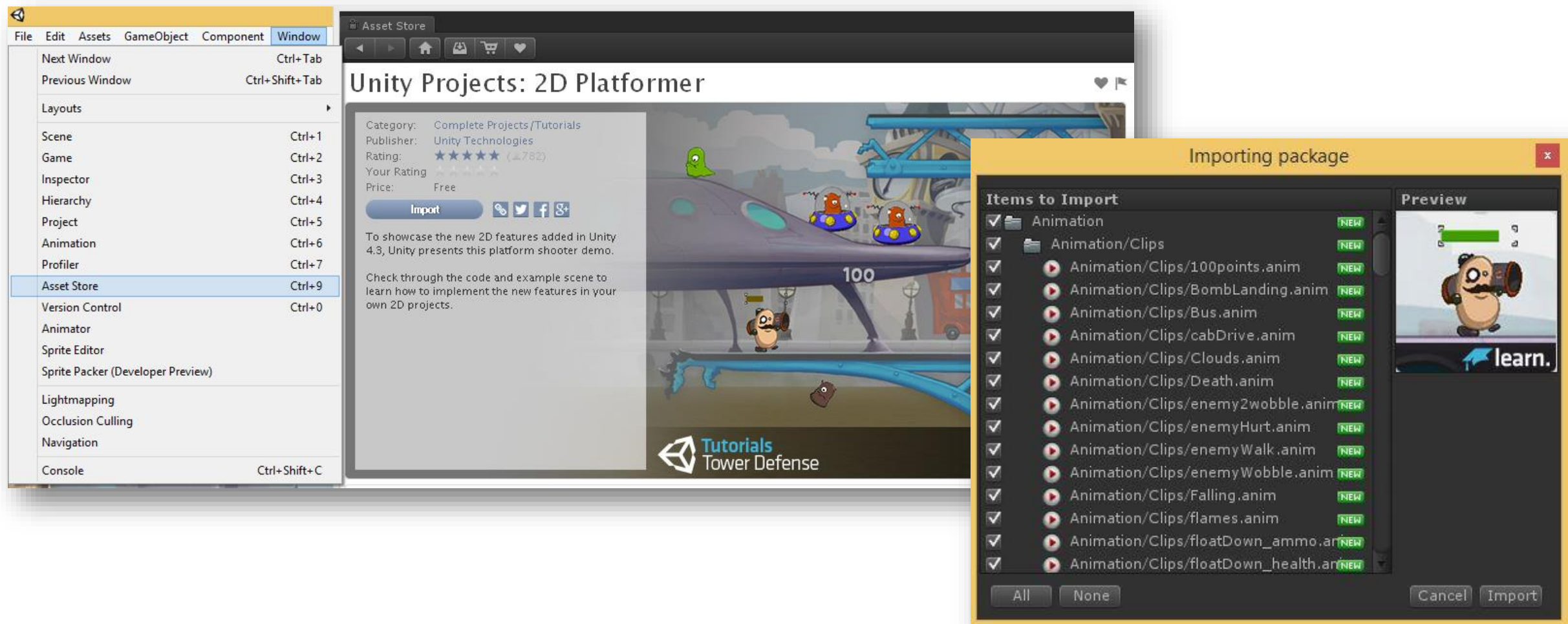
- <http://unityvs.com/>
- <https://visualstudiogallery.msdn.microsoft.com/20b80b8c-659b-45ef-96c1-437828fe7cf2#>

## 02 | 移植流程



# Asset Store 资源商店

## 下载学习课程



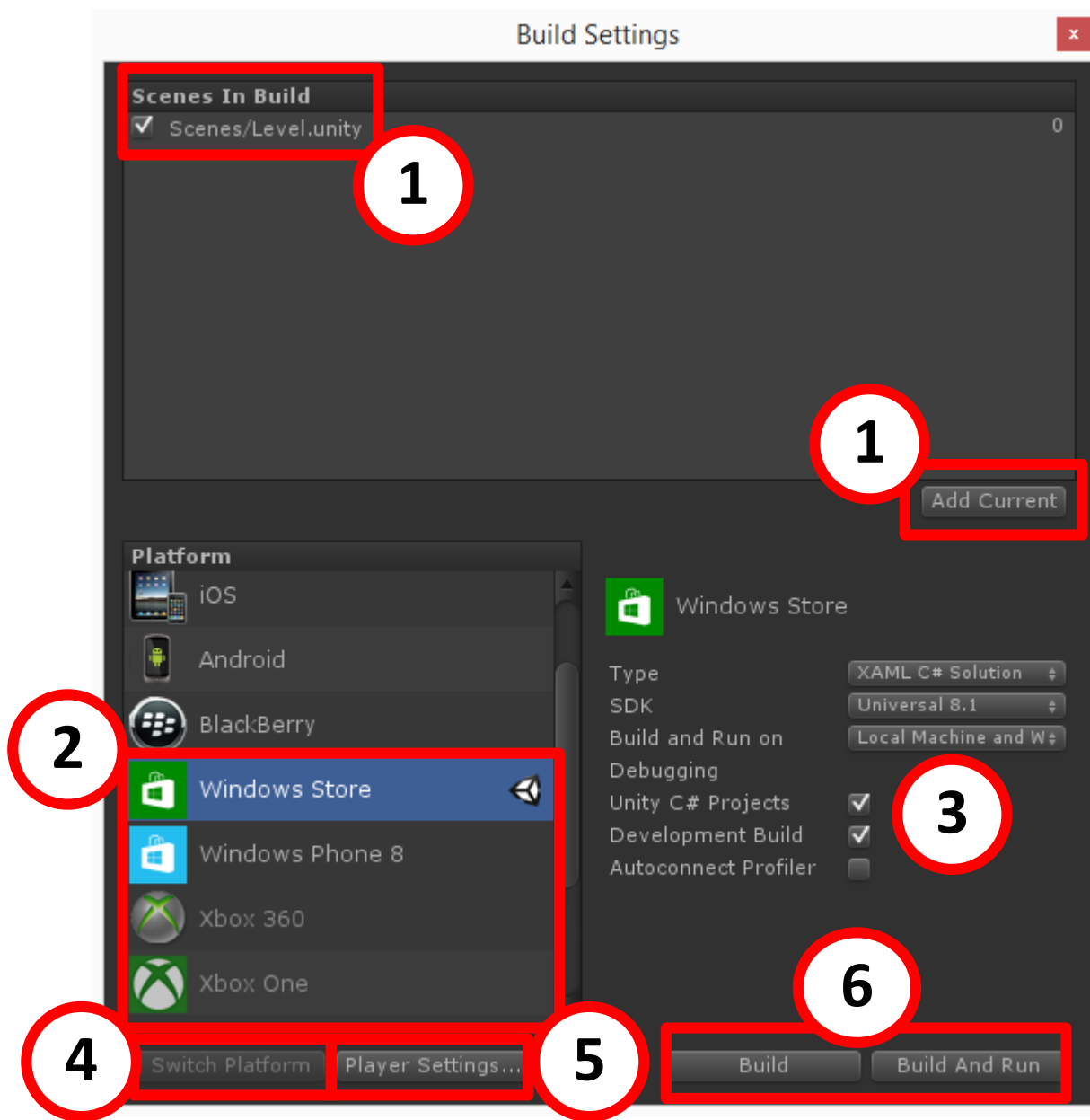
# DEMO

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## 移植流程



# 构建设备



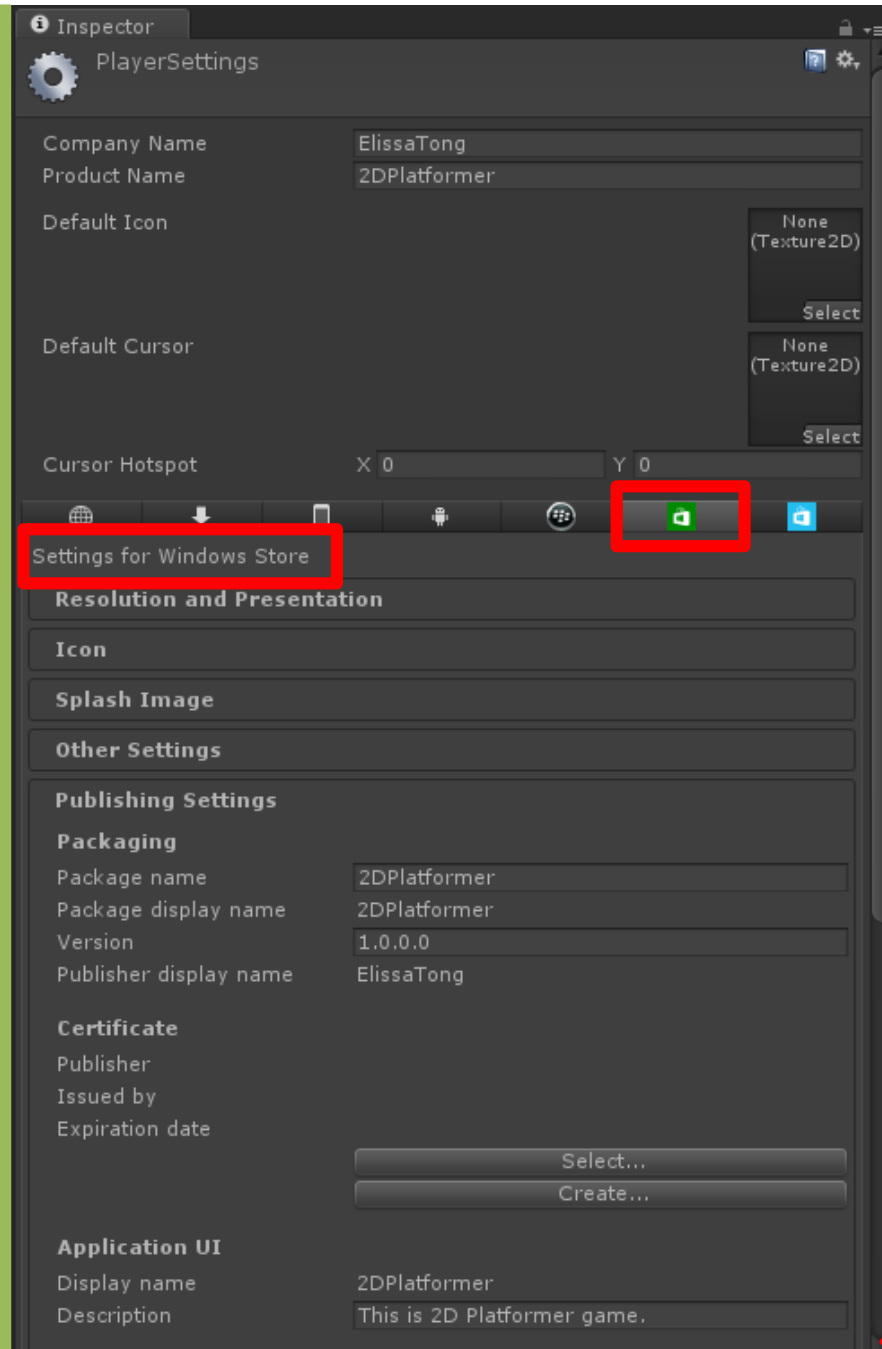
1. 选择你构建的Scene (关卡)
2. 选择平台
3. 选择平台设置
4. 点击Switch Platform
5. (Optional)点击Player Settings
6. 点击Build或者Build And Run

# Player Settings

Player Settings的设置  
在 Visual Studio Solution 的  
Package.appxmanifest

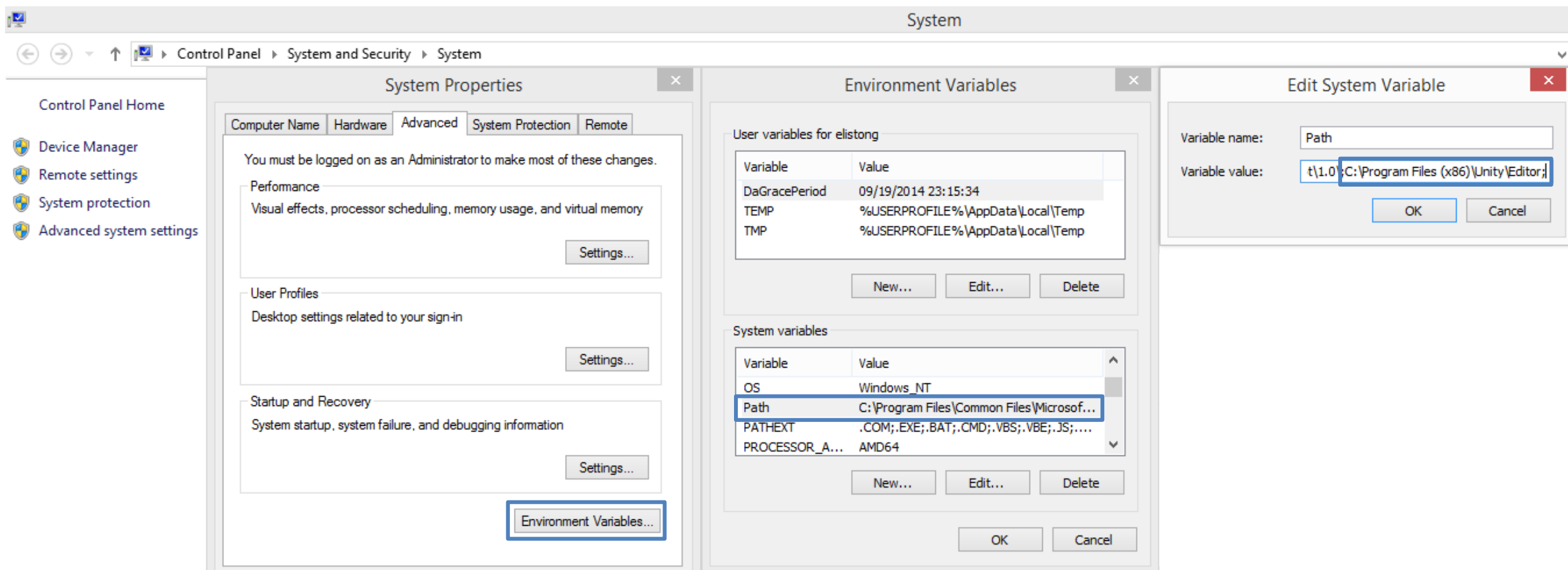
Universal Apps

Windows Store



# 自动构建

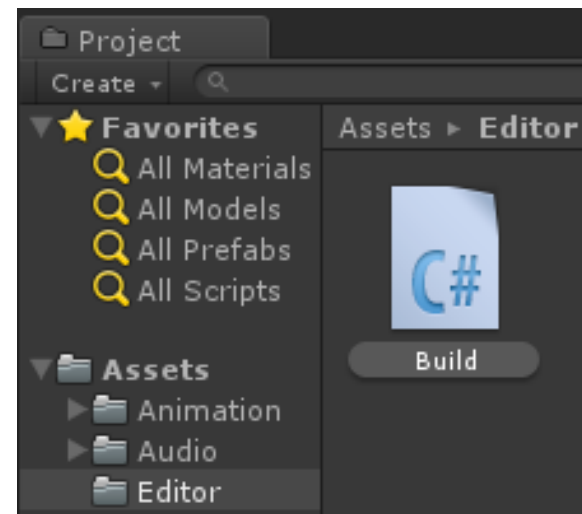
第1步：在环境变量的路径，加Unity.exe



# Unity的构建编辑脚本

## 第2步：加一下的脚本到Unity的Assets/Editor文件夹

```
public class CommandBuild
{
    [MenuItem("Build/Universal Apps 8.1 %U")]
    public static void BuildUniversalApps()
    {
        ArrayList sceneList = new ArrayList();
        foreach (var scene in EditorBuildSettings.scenes)
        {
            sceneList.Add(scene.path);
        }
        string[] levels = (string[])sceneList.ToArray(typeof(string));
        BuildPipeline.BuildPlayer(
            levels,
            "Builds/UniversalApps",
            BuildTarget.MetroPlayer,
            BuildOptions.ShowBuiltPlayer);
    }
}
```

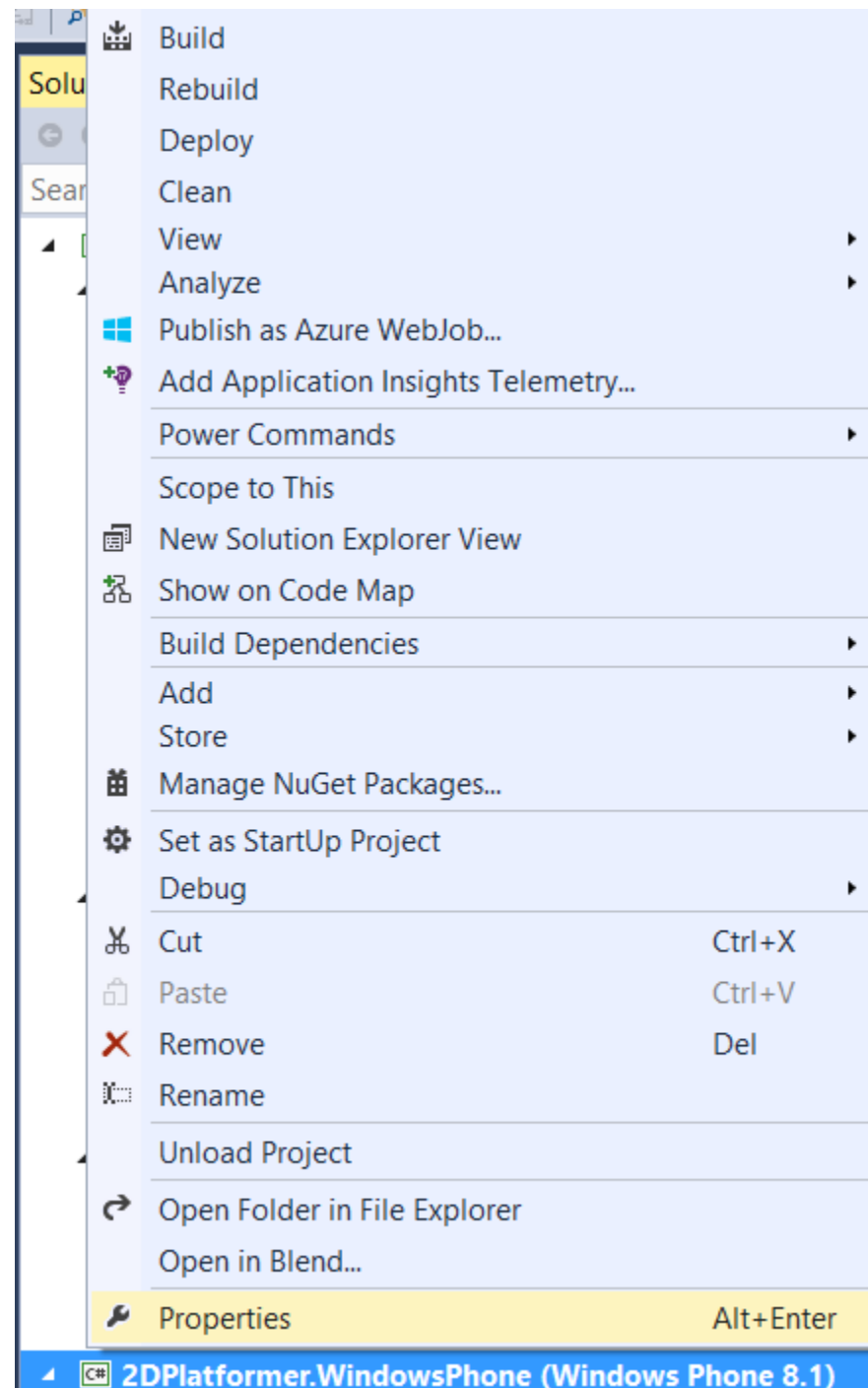
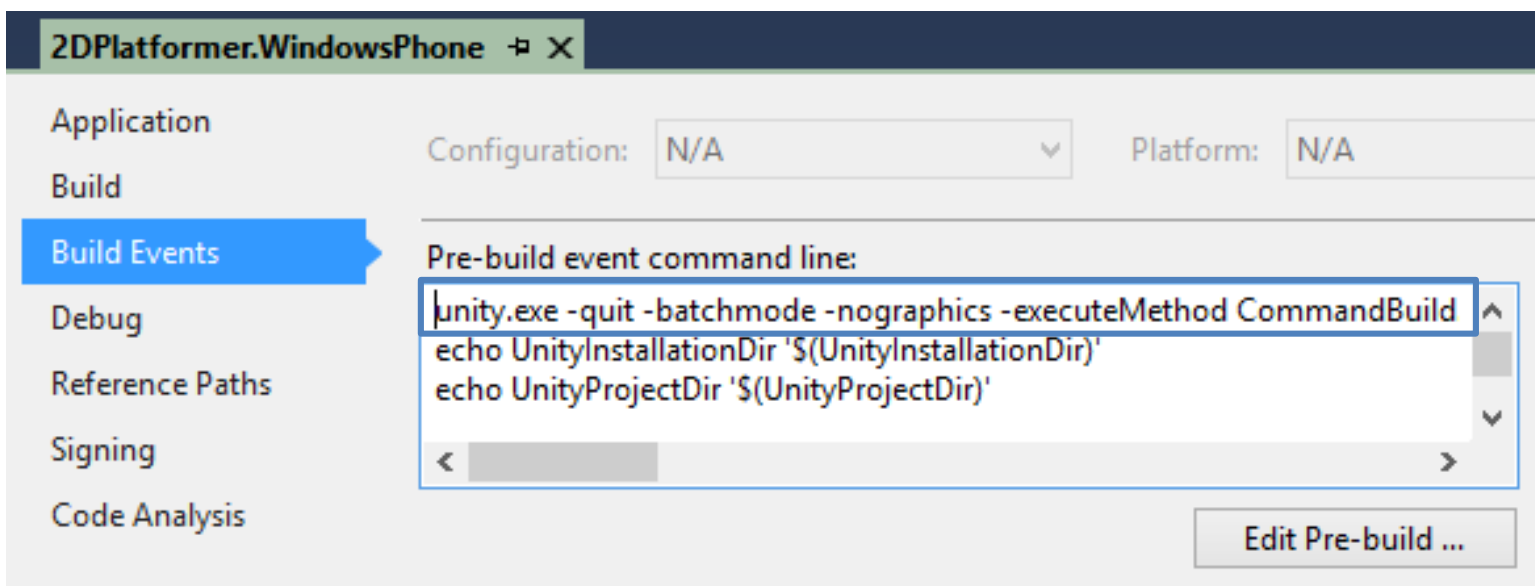


# Visual Studio构建设置

## 第3步：加构建的指令到

## Windows Phone Solution Properties

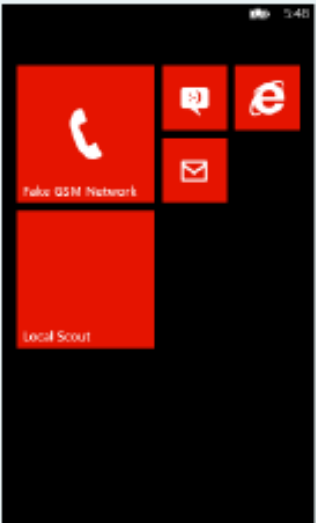
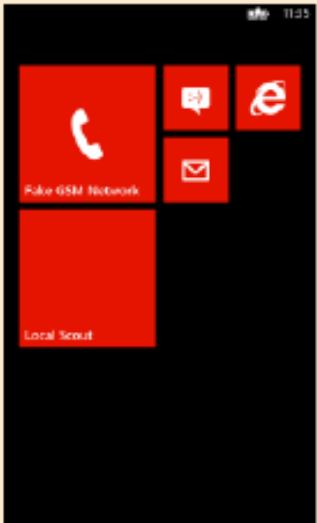


```
unity.exe -quit -batchmode -nographics -executeMethod  
CommandBuild.BuildUniversalApps -projectPath  
C:\Users\mycomputername\Documents\Development\Unity\Pr  
ojects\2DPlatformer
```



## 03 | 硬件更改

# 多种分辨率

- 用模拟器测试每一个分辨率： WVGA, WXGA, 720p, 1080p
- <http://msdn.microsoft.com/zh-cn/library/windows/apps/xaml/hh465349.aspx>
- [http://msdn.microsoft.com/zh-cn/library/windows/apps/jj206974\(v=vs.105\).aspx](http://msdn.microsoft.com/zh-cn/library/windows/apps/jj206974(v=vs.105).aspx)

WVGA	WXGA	720p	1080p
			
480 x 800 15:9	768 x 1280 15:9	720 x 1280 16:9	1080 x 1920 16:9

全屏屏幕大小有效像素分辨率	设备描述
384x640	4.5" 手机 15:9 纵横比
400x711	4.7" 手机 16:9 纵横比
450x800	5.5" 手机 16:9 纵横比
491x873	6" 手机 16:9 纵横比

# 多种分辨率

## 手机宽度和高度是什么？

<http://blogs.windows.com/buildingapps/2013/11/22/taking-advantage-of-large-screen-windows-phones/>

```
string GetBasicScreenInfo()
{
    var width = App.Current.Host.Content.ActualWidth;
    var height = App.Current.Host.Content.ActualHeight;
    var scaleFactor = (double)App.Current.Host.Content.ScaleFactor / 100d;
    return String.Format("{0} x {1}; {2:0.0} scale factor", width, height, scaleFactor);
}

string GetExtendedScreenInfo()
{
    object temp;
    if (!DeviceExtendedProperties.TryGetValue("PhysicalScreenResolution", out temp)) return "not available";

    var resolution = (Size)temp;
    if (!DeviceExtendedProperties.TryGetValue("RawDpiX", out temp) || (double)temp == 0d) return "not available";

    var dpi = (double)temp;
    var screenDiagonal = Math.Sqrt(Math.Pow(resolution.Width / dpi, 2) + Math.Pow(resolution.Height / dpi, 2));
    var width = App.Current.Host.Content.ActualWidth;

    return String.Format("{0} x {1}; {2:0.0#} raw scale; {3:0.0}""",
        resolution.Width, resolution.Height, resolution.Width / width, screenDiagonal);
}
```





# Windows 8.x: 注意屏幕以缩窄

- Windows 8.x 游戏和应用可以改屏幕的大小
- 缩窄的屏幕从500 pixels开始

```
UnityEngine.WSA.Application.windowSizeChanged += WindowSizeChanged;
```

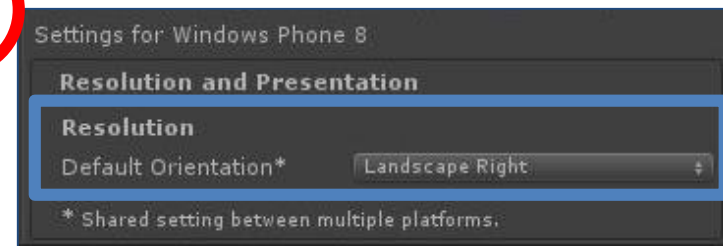
```
public static void WindowSizeChanged(int width, int height)
{
    if(width <= 500)
    {
        GameController.SP.paused();
    }
    else
    {
        GameController.SP.unpaused();
    }
}
```

<http://msdn.microsoft.com/zh-cn/library/windows/apps/xaml/hh465371.aspx>

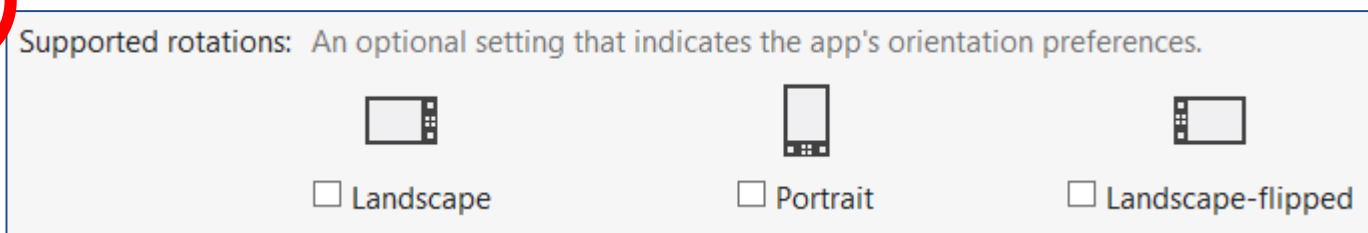
# 方向 Orientation

1. Windows Phone 8 Unity Player Settings

1



2. Package.appxmanifest: 2

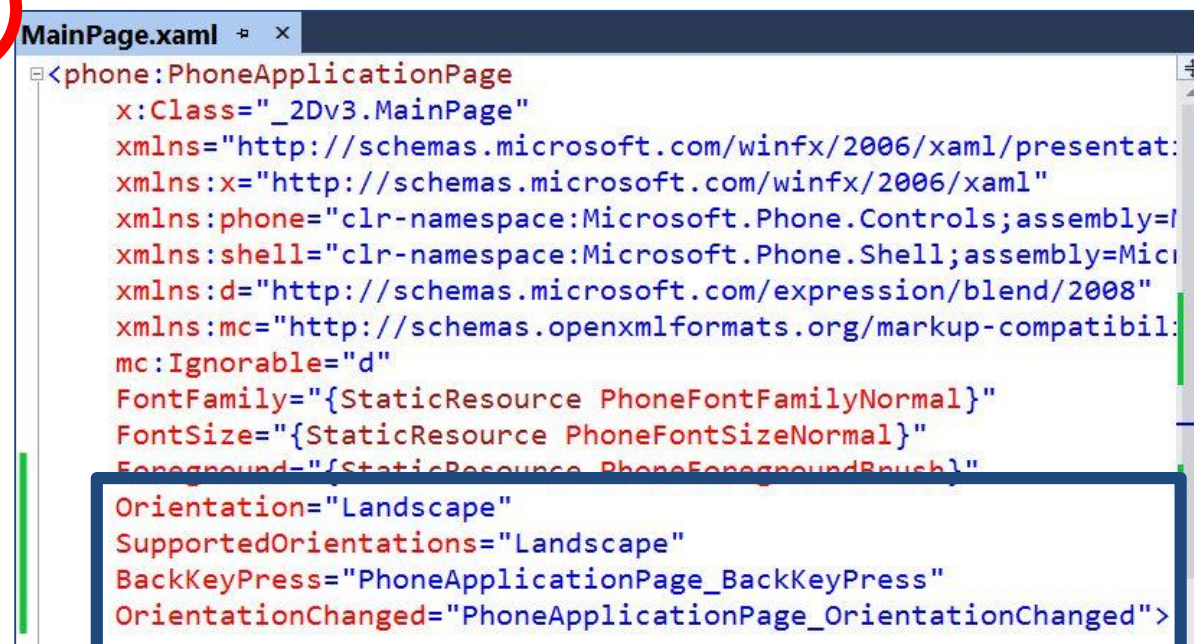


3. MainPage.xaml

4. Unity API 脚本

```
Screen.orientation =  
ScreenOrientation.AutoRotation;
```

3



# 内存

设备	内存	Windows Phone 8.0 <small>* Native最低限制 / Silverlight最低限制 / 最大限制</small>	Windows Phone 8.1
低内存设备WVGA	512 MB	150 MB / 150 MB / 180 MB	185 MB
720p设备	1 GB	150 MB / 300 MB / 380 MB	390 MB
新4.5" WXGA设备	2 GB	150 MB / 450 MB / 780 MB	825 MB

1

## Memory-related manifest entries

2

3

WP8.0	Capabilities	ID_FUNC_EXTENDED_MEM	为设备保留更高的内存分配
WP8.0	Requirements	ID_REQ_MEMORY_300	低内存的手机，则选择完全退出 应用不会出现在低内存手机的WP商店中
WP8.1	Prerequisites	xmlns:m3="http://schemas.microsoft.com/appx/2014/manifest" m3:MinDeviceMemory	限制最低内存的手机 (可选512 MB或者1 GB)

App memory limits for Windows Phone 8

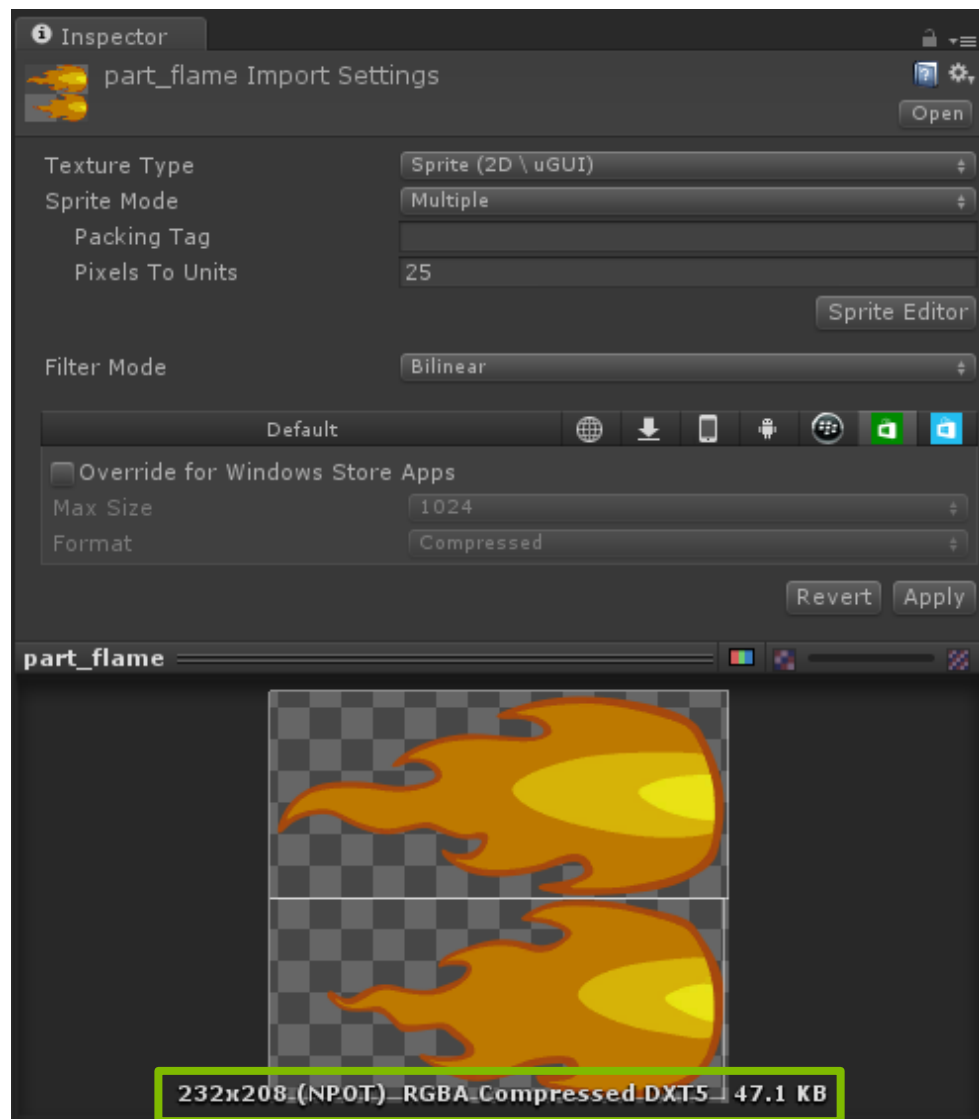
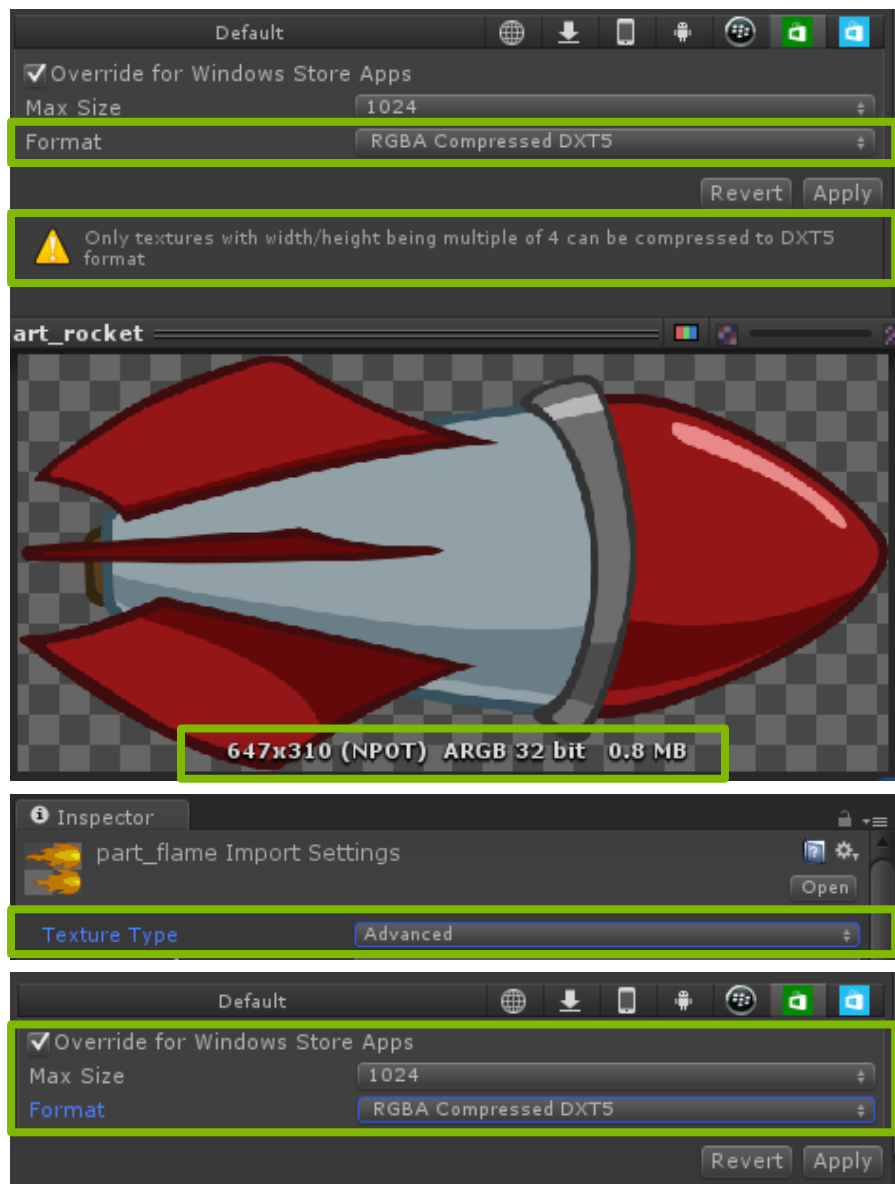
[http://msdn.microsoft.com/en-us/library/windowsphone/develop/jj681682\(v=vs.105\).aspx/html](http://msdn.microsoft.com/en-us/library/windowsphone/develop/jj681682(v=vs.105).aspx/html)

# 内存测试代码

```
// WP8.0.
ulong committedLimit = Windows.Phone.System.Memory.MemoryManager.ProcessCommittedLimit;
ulong committedBytes = Windows.Phone.System.Memory.MemoryManager.ProcessCommittedBytes;
// WP8.1.
ulong usageLimit = Windows.System.MemoryManager.AppMemoryUsageLimit;
ulong currentUsage = Windows.System.MemoryManager.AppMemoryUsage;
MemoryManager.AppMemoryUsageIncreased += OnAppMemoryUsageIncreased;
MemoryManager.AppMemoryUsageDecreased += OnAppMemoryUsageDecreased;

private void OnAppMemoryUsageIncreased(object sender, object e)
{
    switch (MemoryManager.AppMemoryUsageLevel)
    {
        case AppMemoryUsageLevel.High:
            break;
        case AppMemoryUsageLevel.Medium:
            break;
        case AppMemoryUsageLevel.Low:
            break;
    }
}
```

# 内存：纹理压缩

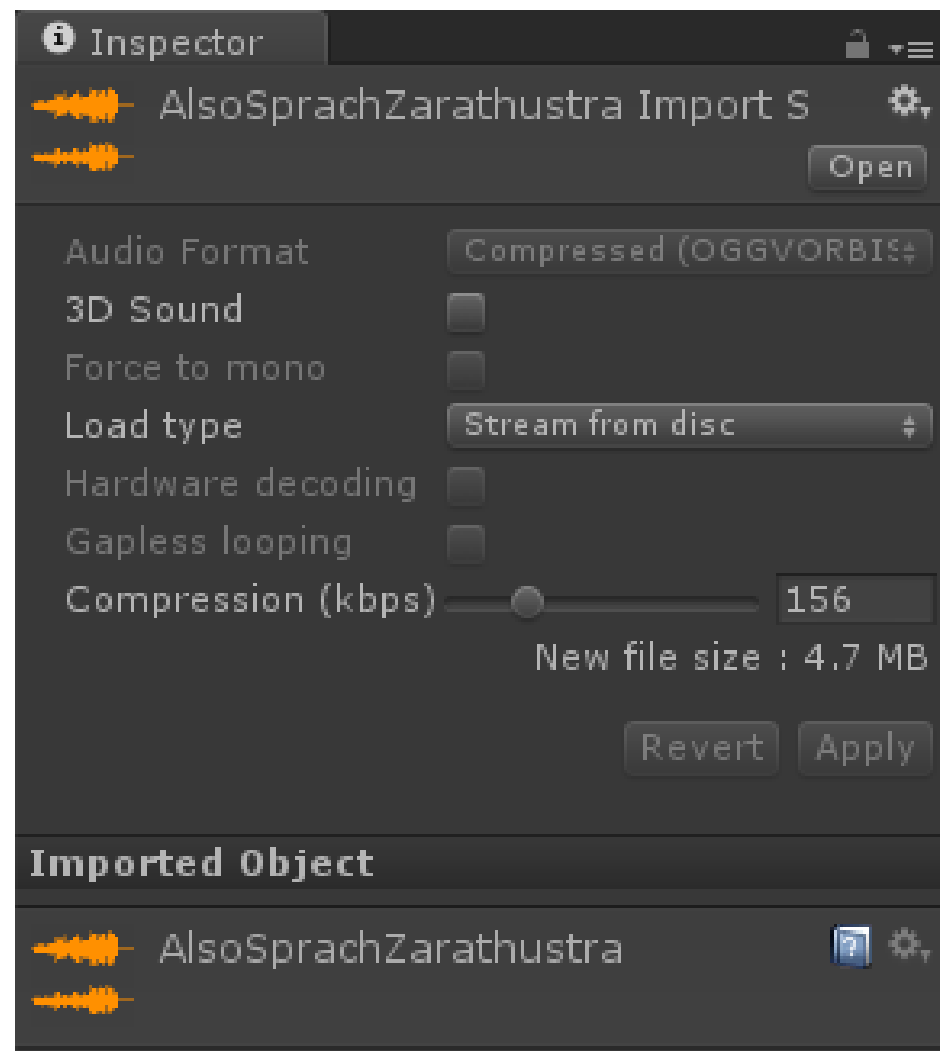


- ☐ RGB Compressed DXT1
- ☒ RGBA Compressed DXT5
- ☐ RGB 16 bit
- ☐ RGB 24 bit
- ☐ Alpha 8
- ☐ ARGB 16 bit
- ☐ ARGB 32 bit

<http://docs.unity3d.com/Manual/class-TextureImporter.html>

# 内存：音效

- Load type = Stream from disc
- 不要用Compressed in memory



# 内存资料

How to disable features in apps for lower-memory phones for WP8

[http://msdn.microsoft.com/en-US/library/windows/apps/hh855083\(v=vs.105\).aspx/html](http://msdn.microsoft.com/en-US/library/windows/apps/hh855083(v=vs.105).aspx/html)

Managing Resource Constraints on Windows Phone

<http://channel9.msdn.com/Events/Build/2014/3-542>

开发面向低内存手机的 Windows Phone 8 应用

[http://msdn.microsoft.com/zh-cn/library/windows/apps/hh855081\(v=vs.105\).aspx/html](http://msdn.microsoft.com/zh-cn/library/windows/apps/hh855081(v=vs.105).aspx/html)

Windows Phone 8的应用内存限制

[http://msdn.microsoft.com/zh-cn/library/windows/apps/jj681682\(v=vs.105\).aspx/html](http://msdn.microsoft.com/zh-cn/library/windows/apps/jj681682(v=vs.105).aspx/html)

Make sure to profile your phone app's memory usage

<http://forum.unity3d.com/threads/202952-tips-and-tricks-make-sure-to-profile-your-phone-app-s-memory-usage!>

# 回退按钮

## Windows Phone的技术认证要求

[http://msdn.microsoft.com/zh-cn/library/windows/apps/hh184840\(v=vs.105\).aspx](http://msdn.microsoft.com/zh-cn/library/windows/apps/hh184840(v=vs.105).aspx)

## WP8.0: MainPage.xaml.cs

```
private void PhoneApplicationPage_BackKeyPress(object s, CancelEventArgs e)
{
    e.Cancel = UnityApp.BackButtonPressed();
    // TO DO。 。 。
}
```

## Unity 脚本

```
if (Input.GetKeyDown(KeyCode.Escape)) {
{
    Debug.Log("ESCAPE Input key down");
    Application.Quit();
}
```



# 角色动作

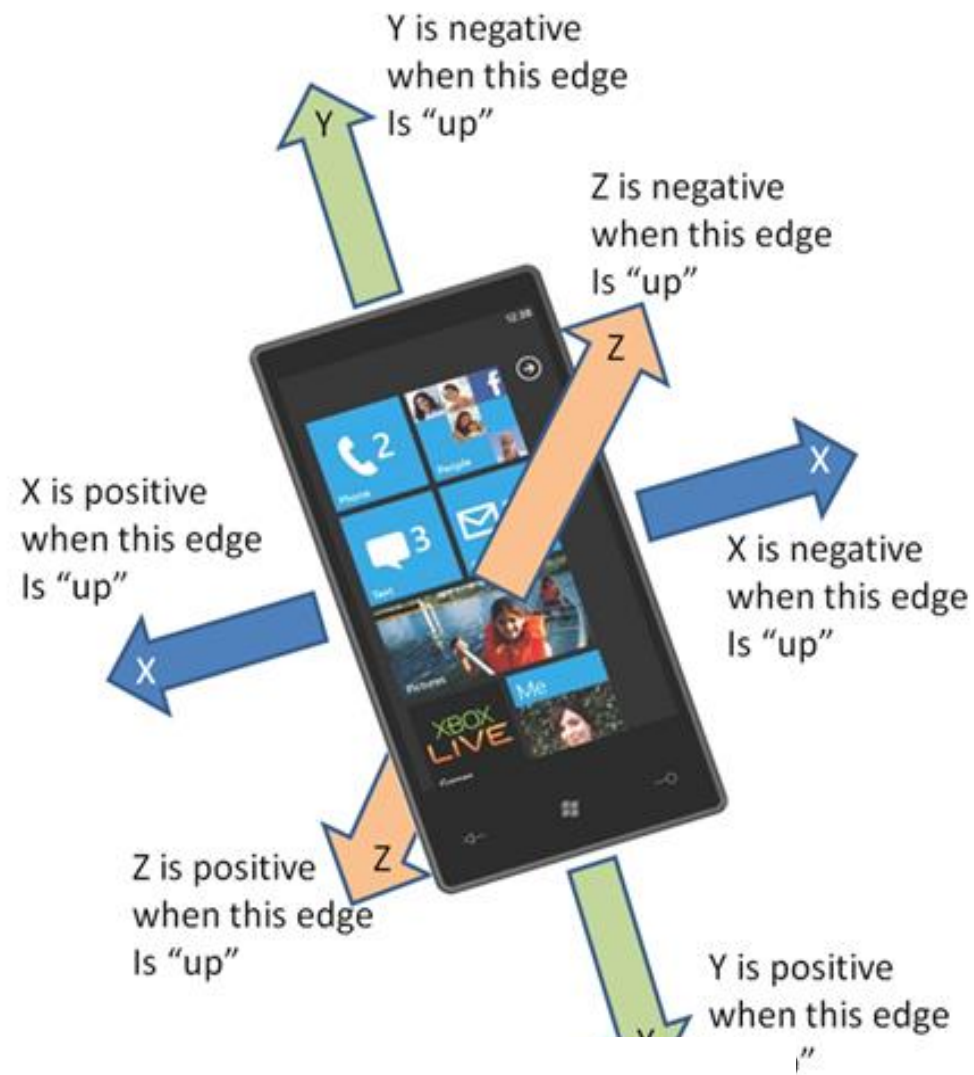
## Unity 脚本

### Accelerometer 加速机

```
if(Application.platform == RuntimePlatform.WP8Player)
{
    MoveAmount = (PlayerSpeed * Input.acceleration.x)
        * Time.deltaTime;
    transform.Translate(Vector3.right * MoveAmount);
    MoveAmount = (PlayerSpeed * ((-Input.acceleration.z
        + 0.5f)*2)) * Time.deltaTime;
    transform.Translate(Vector3.forward * MoveAmount);
}
```

## Touch 触摸

```
if (Application.platform == RuntimePlatform.WP8Player)
{
    if (grounded && Input.touchCount == 1 && Input.GetTouch(0).phase == TouchPhase.Ended)
        jump = true;
}
```



# 键盘

- OnGUI()

- 控制键盘什么时候打开及关掉

```
mKeyboard = TouchScreenKeyboard.Open("", TouchScreenKeyboardType.Default,  
true, false, false, false);
```

- TextField UI能支持键盘

```
mInputUserName = GUI.TextField(  
    new Rect(xTextField, INPUT_OFFSET, TEXTFIELD_WIDTH, INPUT_HEIGHT),  
    mInputUserName, 16, mGUIStyleTextField);
```

- 不能用: mKeyboard.text, mKeyboard.area

```
void Update ():
```

```
if (mKeyboard.active && !string.IsNullOrEmpty(Input.inputString))  
    mInputUserName += Input.inputString;
```

```
void OnGUI ():
```

```
GUI.Label(mRectTextField, mInputUserName, mGUIStyleTextField);
```

# DEMO

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硬件更改

## 04 | API了解

# .NET Framework

## Mono .NET (Unity 3.5 .NET)

<https://github.com/mono/mono/tree/master/mcs/class/System/System.Net>

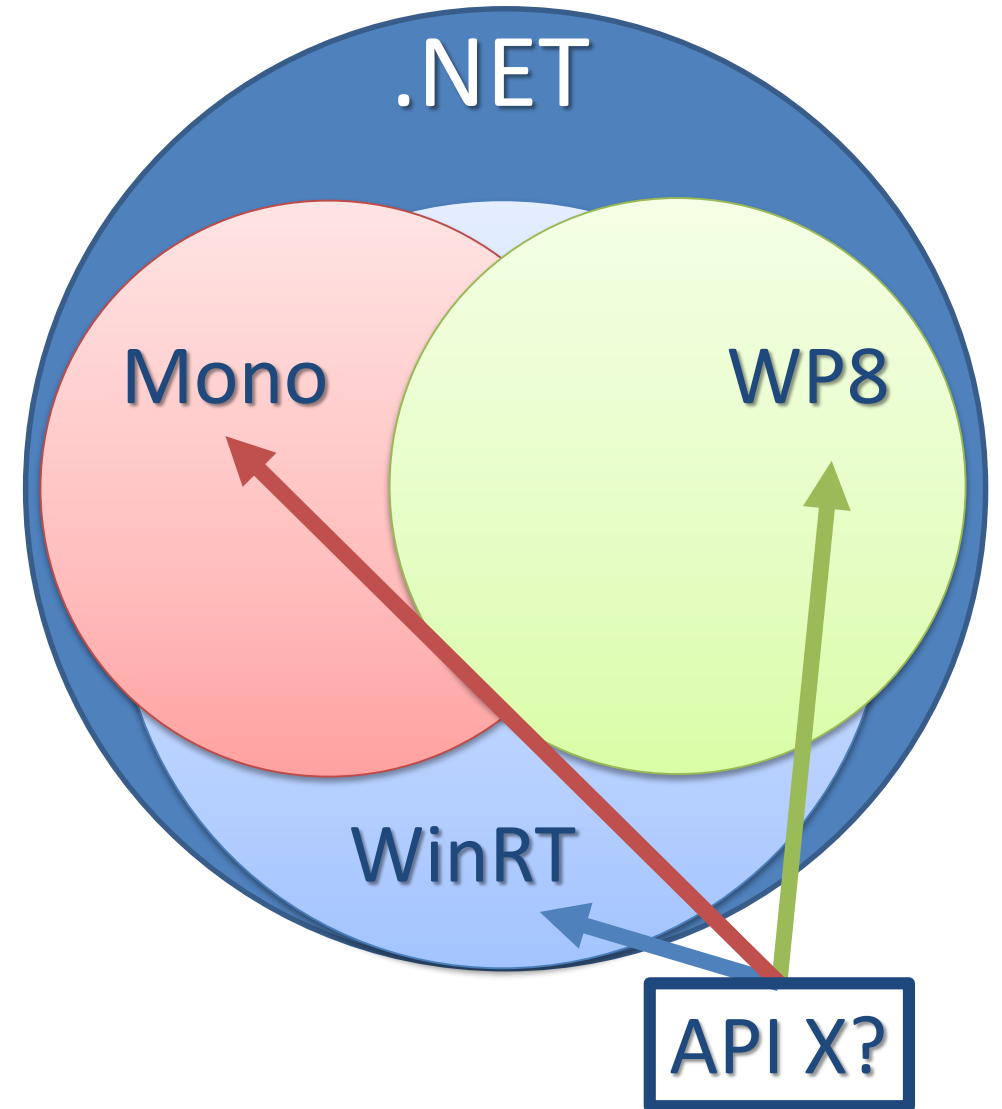
## .NET API for Windows Phone 8.0

[http://msdn.microsoft.com/en-us/library/windowsphone/develop/jj207211\(v=vs.105\).aspx](http://msdn.microsoft.com/en-us/library/windowsphone/develop/jj207211(v=vs.105).aspx)

## .NET API for Windows Runtime

(Windows 8.1 & Windows Phone 8.1)

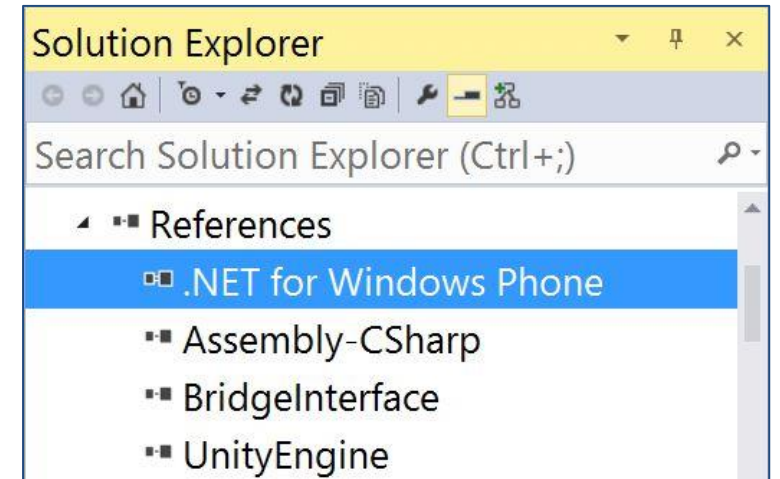
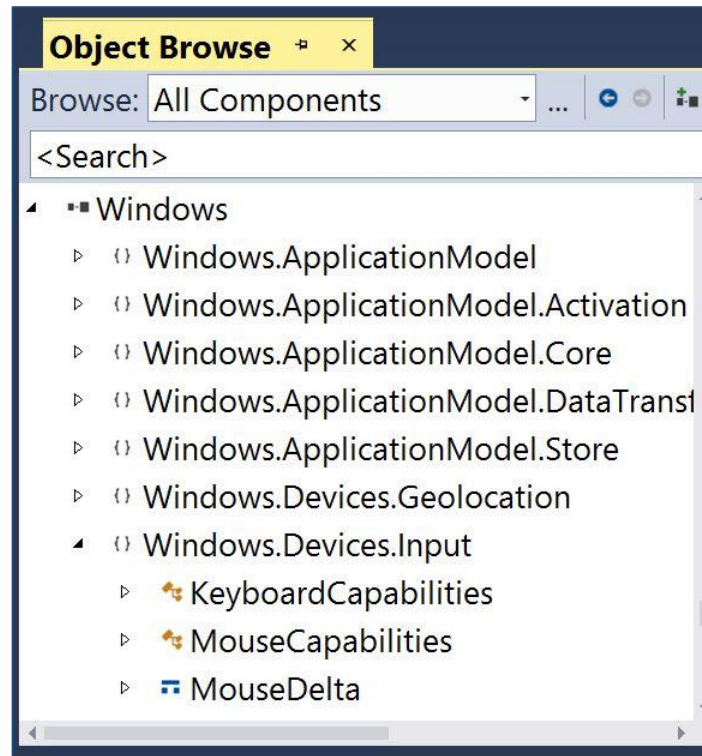
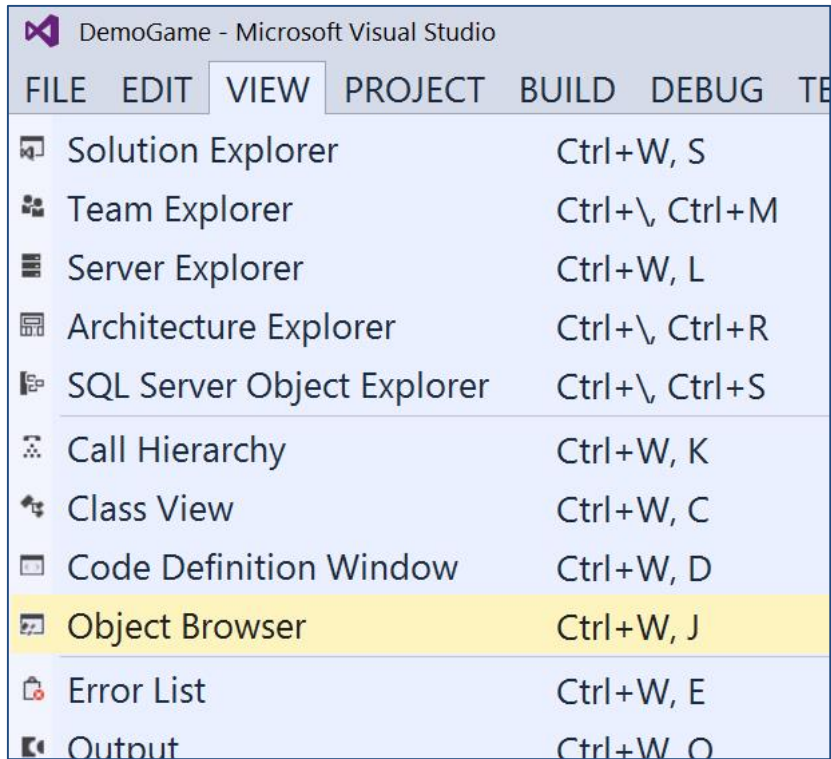
<http://msdn.microsoft.com/en-us/library/windows/apps/br211369.aspx>



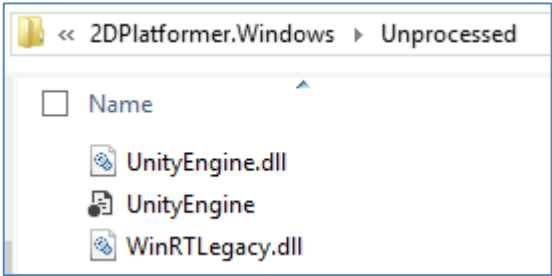
# .NET Framework

怎么知道哪一个.NET版本能支持什么API？

- Visual Studio IDE → View → Object Browser
- 或者打开Solution Explorer里面的References



# 缺少哪些API ?



命名空间	类例子	解决方案
System.Collections	Hashtable, ArrayList, List	Use WinRTLegacy (from Unity)
System.IO	File, StreamReader, TextReader	Write using Windows.Storage
System.Xml	XmlDocument, XmlElement	Use WinRTLegacy for basic coverage
System.Reflection		Write using equivalent WinRT APIs
System.Security.Cryptography	SHA1, TripleDES	Use WinRTLegacy for basic coverage
System.Net System.Net.Sockets	Socket, NetworkStream, WebClient, HttpWebRequest	Use WinRT networking APIs: <a href="#">Windows.Networking.Sockets</a>
System.Threading	Thread	WinRT is async, use Task, use coroutines

# DEMO

---

了解.NET API



# 解决 API 错误

- 方案1: Unity插件

例子: Elissa's GitHub Unity Plugins:

<https://github.com/elissatong/UnityPortingLabs>

例子: 3rd Party GitHub Platformer Plugins:

<https://github.com/windowsgamessamples/UnityPorting>

- 方案2: Action (void delegate)

例子: WindowsGateway.cs

- 方案3: Global instances

例子: GameManager.cs

- 方案4: Proxy Interface

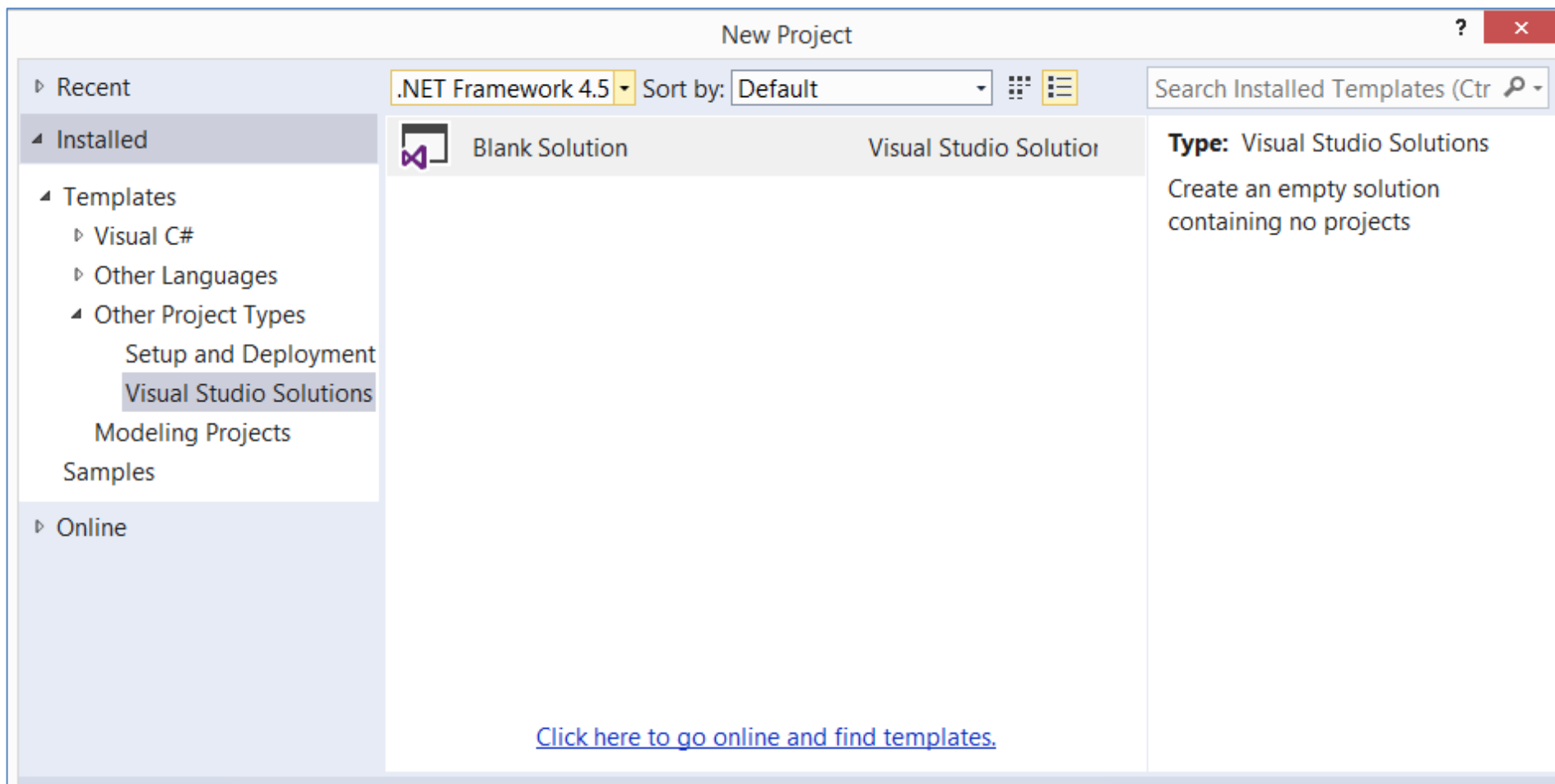
例子: Json.cs

# 平台#defines

#defines	平台支持
UNITY_WP8	Windows Phone 8.0 apps
UNITY_WP_8_1	Windows Phone 8.1 and Universal 8.1 apps on Windows Phone devices
UNITY_METRO	Windows Phone 8.1, Windows Store 8.0, Windows Store 8.1 and Universal 8.1 apps
UNITY_METRO_8_0	Windows Store 8.0 apps
UNITY_METRO_8_1	Windows Store 8.1 and Universal 8.1 apps running on Windows devices
UNITY_WINRT	Both Windows Phone and Windows Store apps, regardless of version
UNITY_WINRT_8_0	Windows Phone 8.0 and Windows Store 8.0 apps;
UNITY_WINRT_8_1	Windows Phone 8.1, Windows Store 8.1 and Universal apps for Windows and Windows Phone devices
NETFX_CORE	Windows Store 8.0, Windows Store 8.1, Windows Phone 8.1 and Universal 8.1 scripts that are compiled using Microsoft C# compiler.

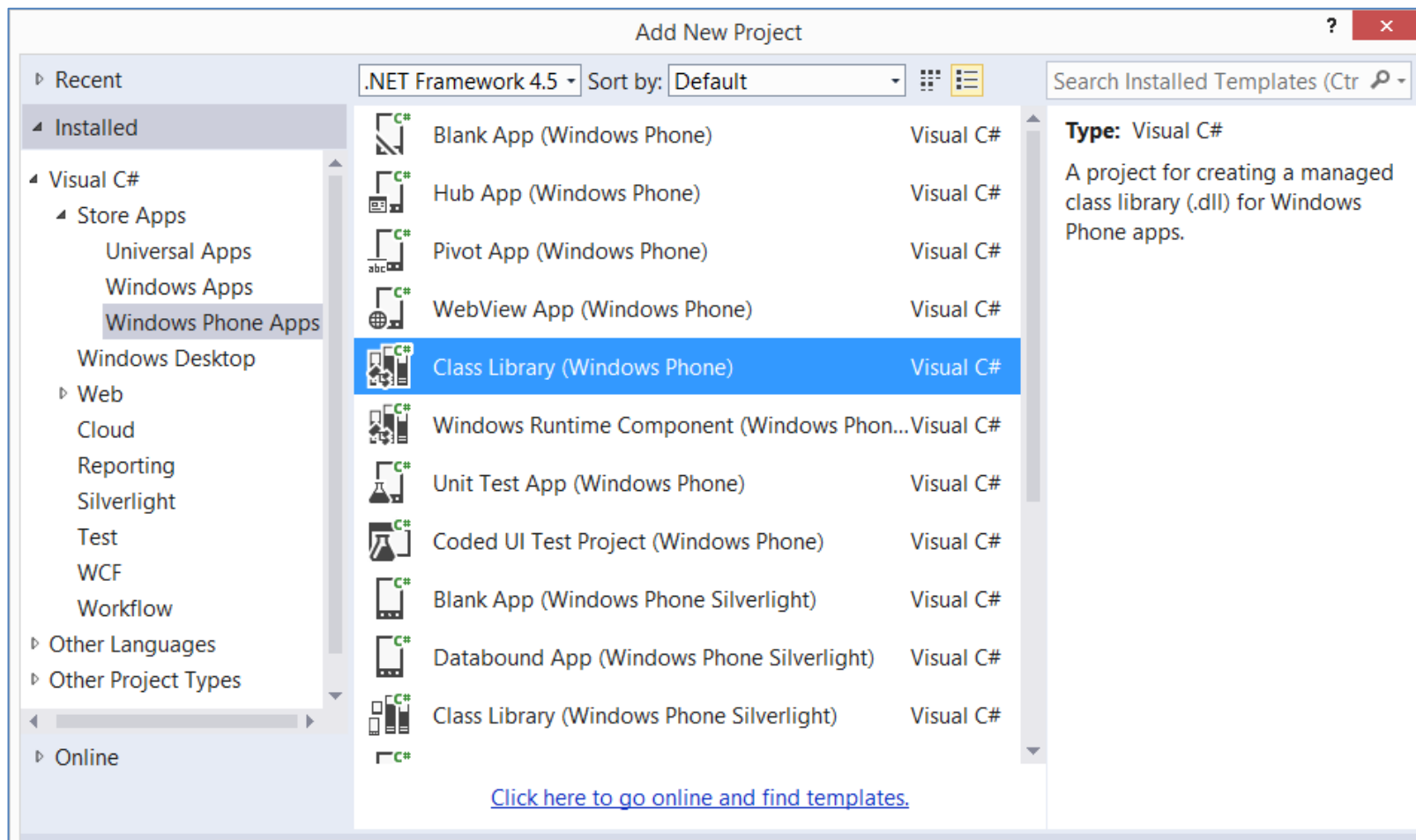
# Unity插件

## 第1步：创建Visual Studio blank solution



# Unity插件

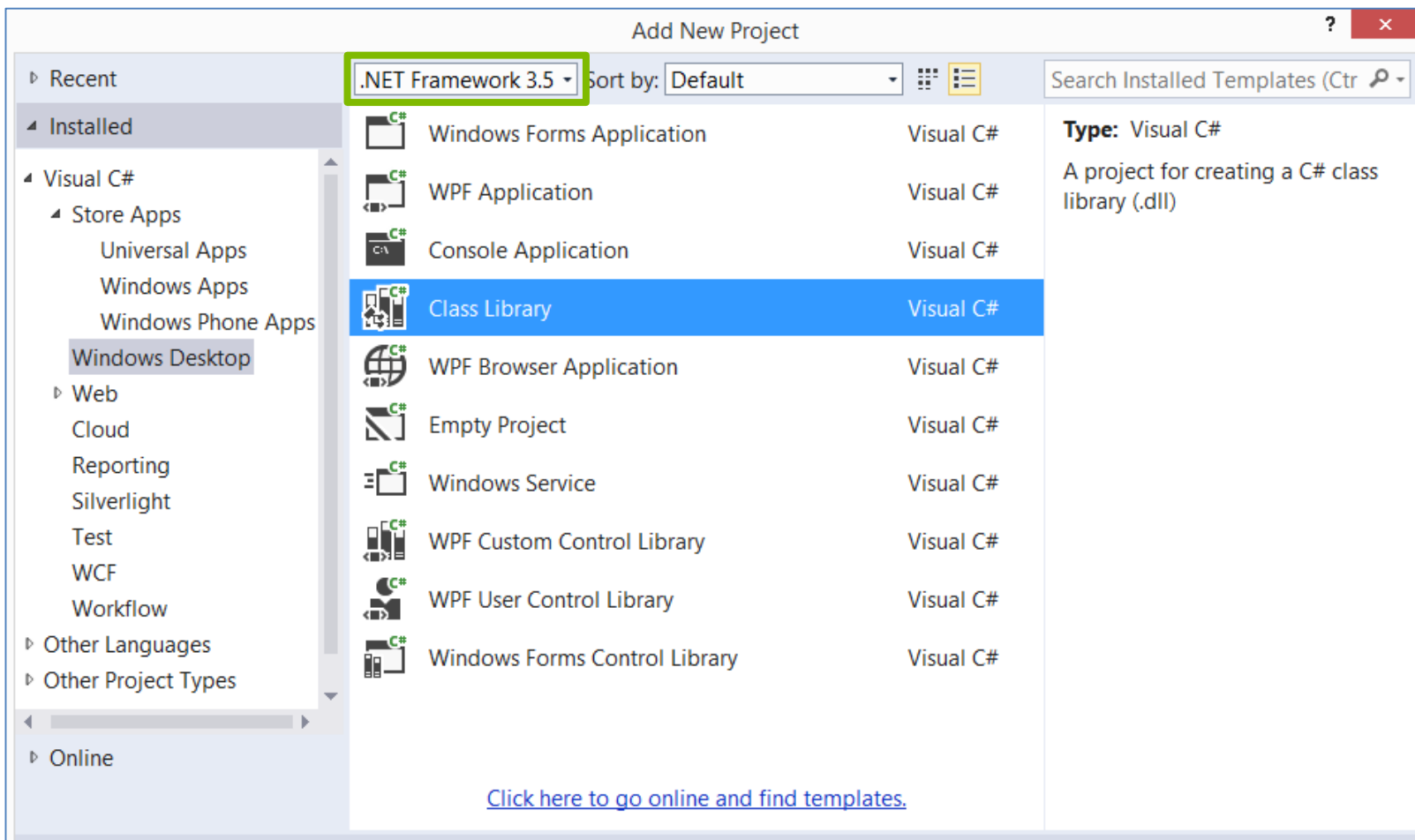
## 第2步：在Solution加一个新项目Class Library (Windows Phone)



# Unity插件

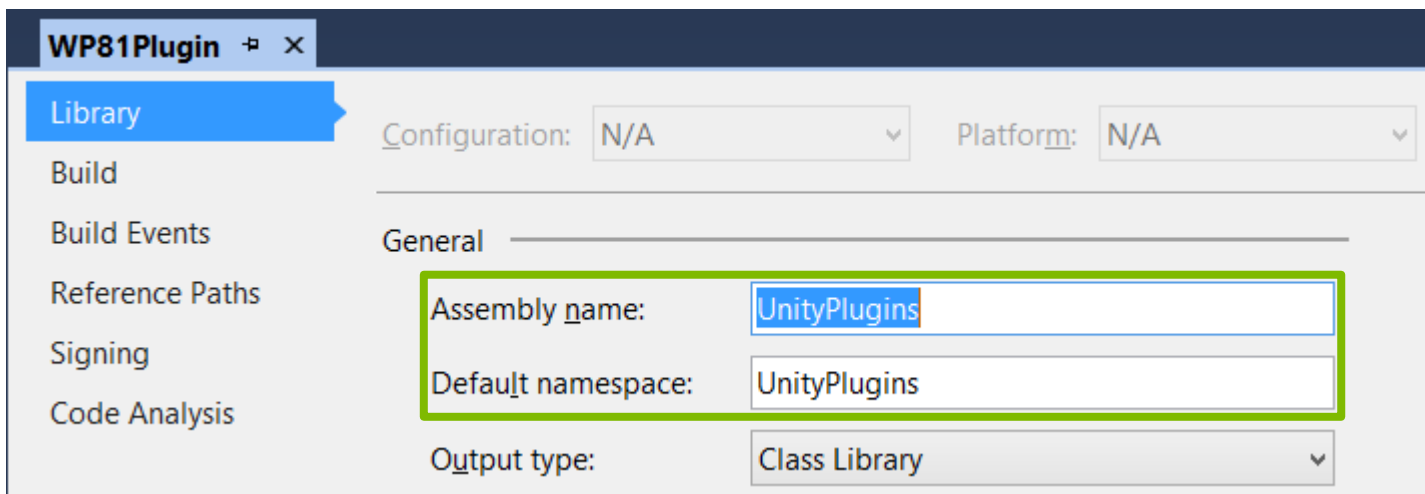
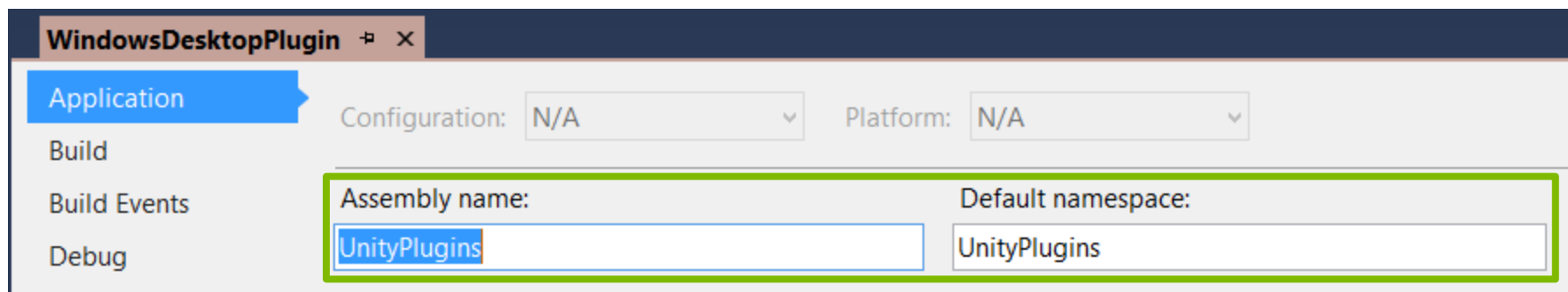
## 第3步：在Solution加一个新项目Windows Desktop: Class Library

Unity使用.NET 3.5  
所以一定改到  
.NET Framework 3.5



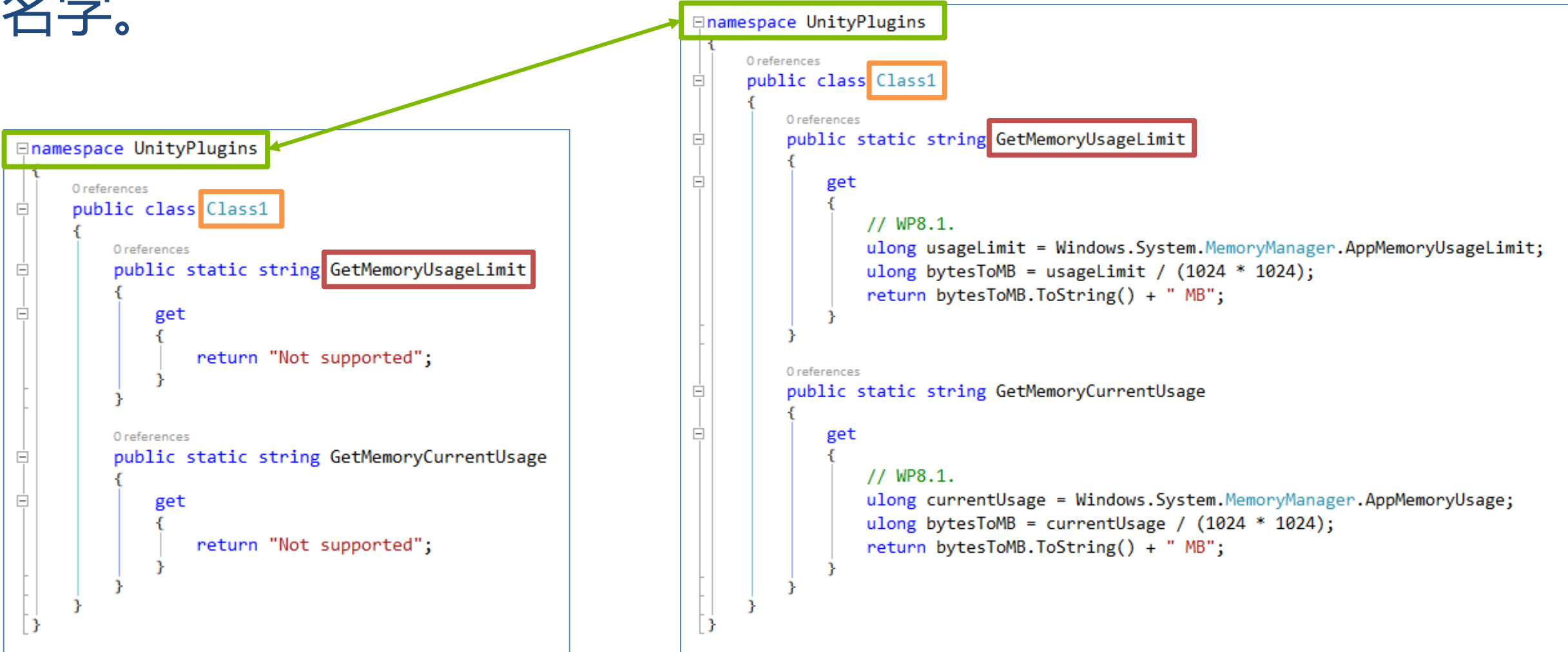
# Unity插件

第4步：在每一个新创建的平台Class Library打开Properties  
改Assembly name及Default namespace为同一个名字



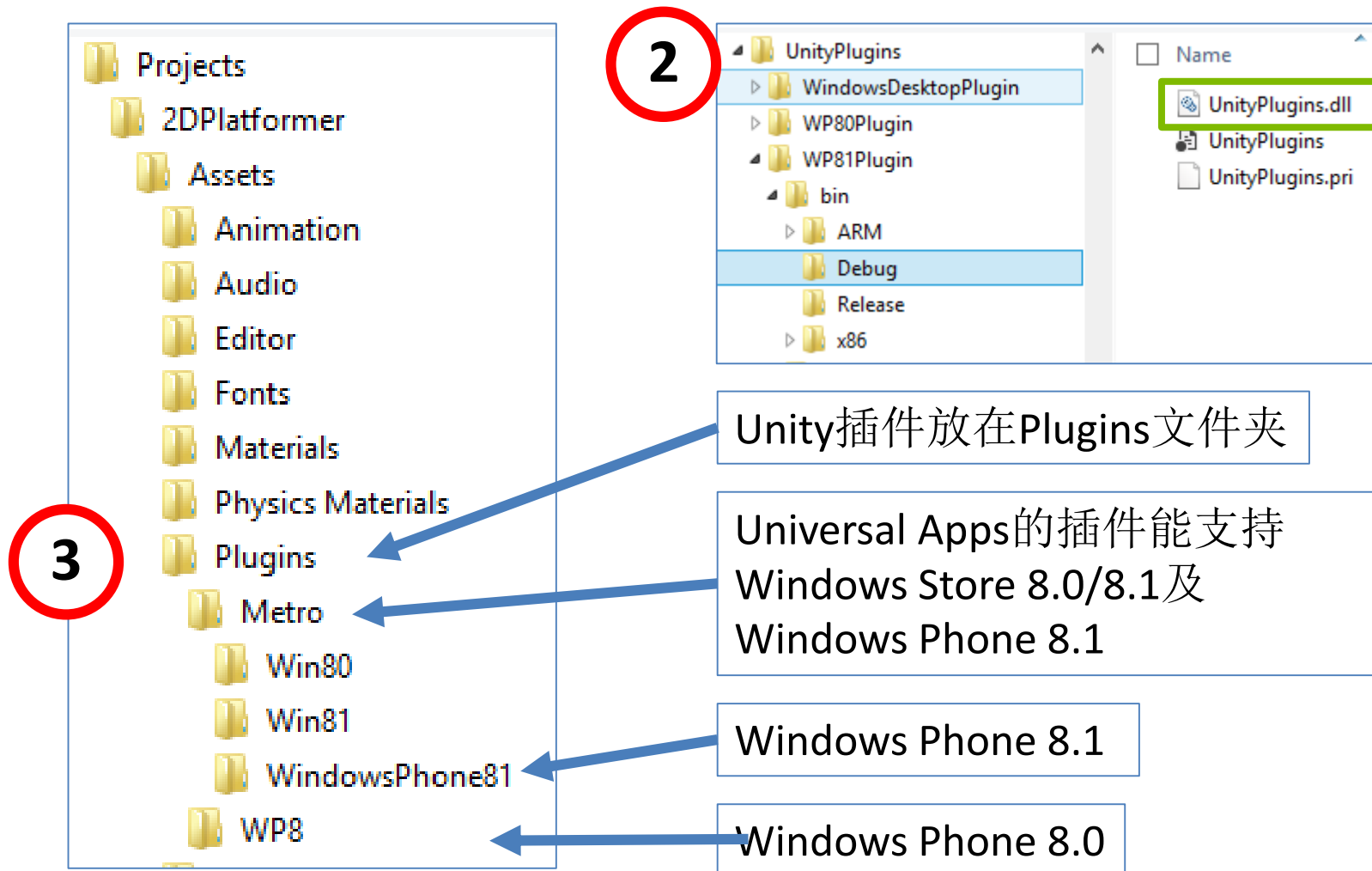
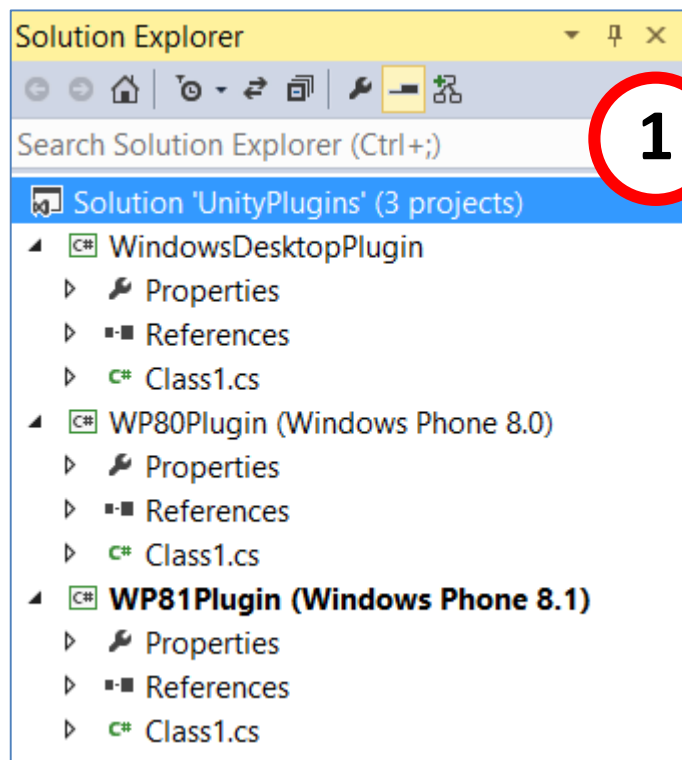
# Unity插件

第5步：类里的代码要改Namespace。类,函数,属性的名字需要同名字。



# Unity插件

## 第6步：构建Solution后，拷贝.dll到Unity的Plugins文件夹





# Unity插件

第7步：要测试插件在Unity：

- 加一个GameObject到一个Scene里
- 加一个脚本到GameObject里
- 构建一个Universal Apps build

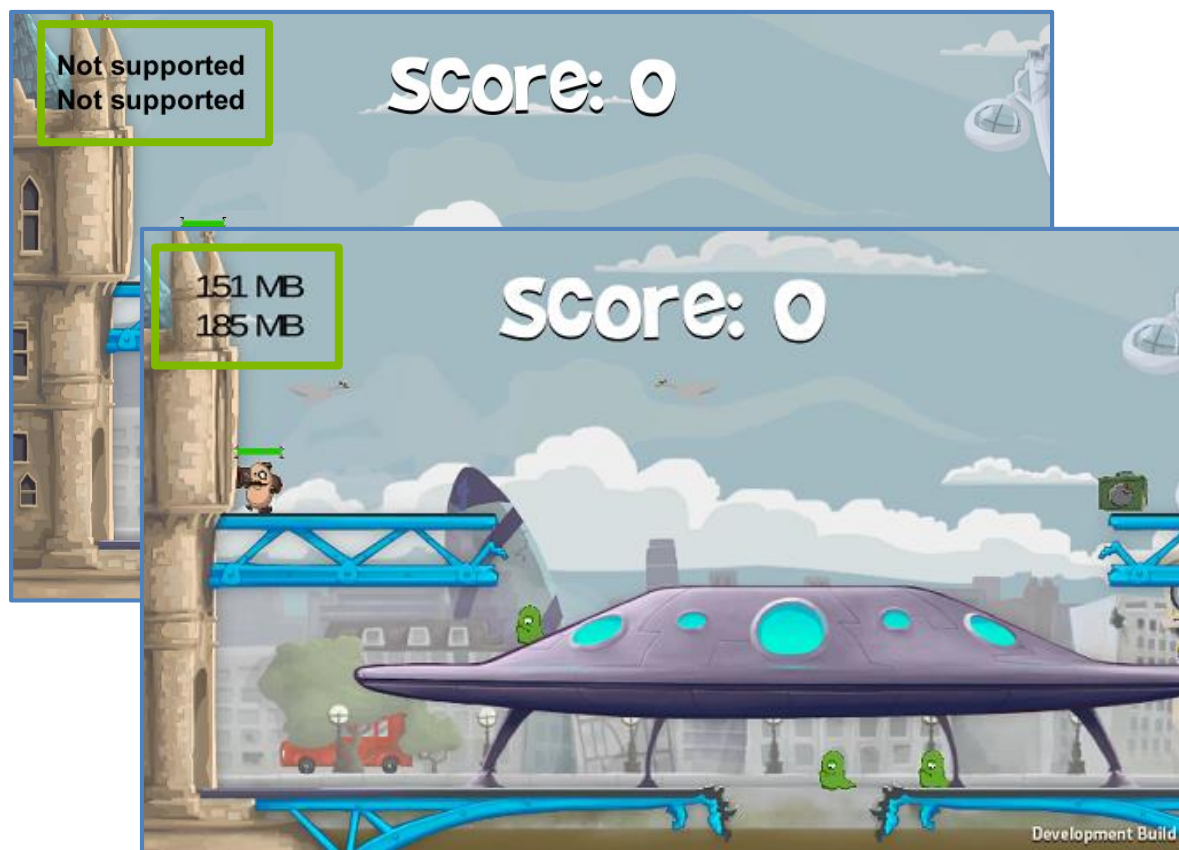


# Unity插件

第7步：打开Visual Studio，写Unity脚本就能有插件里的类，函数，等等。

```
public class GameManager : MonoBehaviour
{
    private GUIStyle mGUIStyleLabel;
    private void SetGuiLabelStyles()
    {
        mGUIStyleLabel = new GUIStyle();
        mGUIStyleLabel.fontSize = 24;
        mGUIStyleLabel.fontStyle = FontStyle.Bold;
        mGUIStyleLabel.alignment = TextAnchor.MiddleLeft;
    }
    void OnGUI()
    {
        GUI.Label(new Rect(40, 20, 250, 50),
            UnityPlugins.Class1.GetMemoryCurrentUsage mGUIStyleLabel);
        GUI.Label(new Rect(40, 50, 250, 50),
            UnityPlugins.Class1.GetMemoryUsageLimit, mGUIStyleLabel);
    }
    void Start()
    {
        SetGuiLabelStyles();
    }
}
```

Unity Editor using Windows Desktop plugin



Windows Phone 8.1 Emulator

# 解决异步编程问题：C# async

- 例子：File IO的Unity插件

<http://msdn.microsoft.com/zh-cn/library/windows/apps/xaml/hh464924.aspx>

```
public static async Task<string> CreateFile(StorageFolder folder, string name, string path, string contents)
{
    folder = await navigateFrom(folder, path);
    StorageFile file = await folder.CreateFileAsync(name, CreationCollisionOption.ReplaceExisting);

    using(IRandomAccessStream stream = await file.OpenAsync(FileAccessMode.ReadWrite))
    {
        using (DataWriter writer = new DataWriter(stream))
        {
            writer.WriteString(contents);
            await writer.StoreAsync();
        }
    }
    return file.Path;
}

public static void CreateFile(string filename, string content, string path = "")
{
    var task = FileHandling.CreateFile(ApplicationData.Current.LocalFolder, filename, path, content);
    task.Wait();
}
```

# 其他资料

Windows Phone Plugins step by step guide (using C#)

<http://docs.unity3d.com/Manual/wp8-plugins-guide-csharp.html>

Windows Phone Plugins step by step guide (using C++)

<http://docs.unity3d.com/Manual/wp8-plugins-guide-cplusplus.html>

Unity Script Reference: Windows File API









<http://docs.unity3d.com/ScriptReference/Windows.File.html>

# prime[31] Unity 插件

- 有 Windows Store 及 Windows Phone 8 插件
  - 应用内购物 IAP
  - 试用版 Trial
  - 社区支持 Social
  - 微软广告 Ads
  - 动态测贴 Live Tiles
  - 推送通知 Push Notifications
  - Flurry 数据分析 Flurry Analytics
  - 等等 & more!
- <https://prime31.com>

# 测试插件

- How mobile is your .NET?
  - <http://scan.xamarin.com/>

Calls	Platform-specific method name	Namespace	Suggestions	Compatibility
<a href="#">+</a> 322	<code>IList CollectionBase.List { get; }</code>	System.Collections		   
<a href="#">+</a> 272	<code>string Control.Name { set; }</code>	System.Windows.Forms		   

Percent of code that can run unmodified on each platform



# 常用的插件

- JSON

- JSON for .NET: \$20 <http://u3d.as/5q2>

- Protobuf

- Protobuf-net: <http://code.google.com/p/protobuf-net/>

- <http://purdyjotut.blogspot.com/2013/10/using-protobuf-in-unity3d.html>

# 方案2: Action

在Unity脚本直接切换到Windows Phone Solution的代码和逻辑

第1步: 创建Unity脚本, WindowsGateway.cs

```
/// Windows specific and interop between Unity and Windows Store or Windows Phone 8
using UnityEngine; using System.Collections; using System;
public static class WindowsGateway
{
    static WindowsGateway()
    {
        UnityLoaded = delegate { };
        OnClickPlay = delegate { };
        OnScoreUpdate = delegate { };
        OnClickBuy = delegate { };
    }
    public static Action UnityLoaded;
    public static Action OnClickPlay;
    public static Action OnScoreUpdate;
    public static Action OnClickBuy;
}
```



# 方案2: Action

第2步：在Unity脚本，需要切换到Windows Phone Solution代码就写下来WindowsGateway里面的Action函数

MainManager.cs:

```
void OnGUI()  
{  
    if (GUI.Button(new Rect(x, yP, BUTTON_SIZE, BUTTON_SIZE), "", mGUIStyle))  
    {  
        WindowsGateway.OnClickPlay();  
        Application.LoadLevel("Level");  
    }  
}
```

# 方案2: Action

第3步：在Windows Phone Solution,创建新函数，写好需要的逻辑，然后连接到Unity里的static WindowsGateway类

MainPage.xaml.cs:

```
public MainPage(SplashScreen splashScreen)
{
    this.InitializeComponent();
    splash = splashScreen;
    GetSplashBackgroundColor();
    OnResize();
    onResizeHandler = new WindowSizeChangedEventHandler((o, e) => OnResize());
    Window.Current.SizeChanged += onResizeHandler;
    WindowsGateway.OnClickPlay = OnClickPlay;
}

private void OnClickPlay()
{
    FlurryAnalytics.LogEvent(Constants.EVENT_PLAY_GAME);
}
```

# 方案3: Global Instance

在Windows Phone Solution直接用Unity脚本的类，函数，属性

第1步：Unity脚本里加个static readonly 类.

GameManager.cs:

```
private static readonly GameManager instance = new GameManager();
```

```
private GameManager() { }
```

```
public static GameManager Instance  
{  
    get  
    {  
        return instance;  
    }  
}
```

```
public bool IsMainMenu = true;  
public static bool IsPaused = false;  
public void EnableMusic() { playMusic = true; }
```

# 方案3: Global Instance

第2步: 在Windows Phone Solution, 直接用Unity脚本的static instances

```
public MainPage(SplashScreen splashScreen)
{
    this.InitializeComponent();
    splash = splashScreen;
    GetSplashBackgroundColor();
    OnResize();
    onResizeHandler = new WindowSizeChangedEventHandler((o, e) => OnResize());
    Window.Current.SizeChanged += onResizeHandler;

    bool isMainMenu = GameManager.Instance.IsMainMenu;
    bool isGamePaused = GameManager.IsPaused;
    if (isGamePaused)
    {
        // Do something
        GameManager.Instance.EnableMusic();
    }
    elseif (isMainMenu) {// Do something}
}
```

# 方案4: Proxy Interface

```
namespace Common {  
    public class Json {  
        public interface IProxy  
        {  
            T Deserialize<T>(string value);  
            string Serialize(object value);  
        }  
        public static IProxy Proxy { get; set; }  
        static Json()  
        {  
#if !UNITY_WP_8_1 || UNITY_EDITOR  
            Proxy = new JsonJsonFx();  
#else  
            Proxy = new JsonJsonNet();  
#endif  
        }  
  
        public static T Deserialize<T>(string value)  
        { return Proxy.Deserialize<T>(value); }  
        public static string Serialize(object value)  
        { return Proxy.Serialize(value); }  
    }  
}
```

# 方案4: Proxy Interface

```
#if !UNITY_WP_8_1 || UNITY_EDITOR
using UnityEngine;
using System.Collections;
```

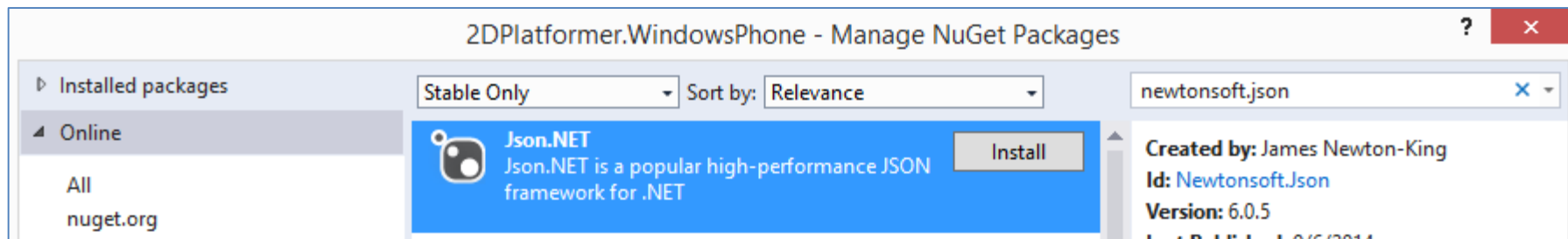
```
namespace Common
{
    class JsonJsonFx : Json.IProxy
    {
        public T Deserialize<T>(string value)
        {
            return JsonFx.Json.JsonReader.Deserialize<T>(value);
        }

        public string Serialize(object value)
        {
            return JsonFx.Json.JsonWriter.Serialize(value);
        }
    }
}
#endif
```

```
#if UNITY_WP_8_1
using UnityEngine;
using System.Collections;
```

```
namespace Common
{
    class JsonJsonNET : Json.Iproxy
    {
        public T Deserialize<T>(string v)
        {
            return Newtonsoft.Json.JsonConvert.DeserializeObject<T>(v);
        }

        public string Serialize(object v)
        {
            return Newtonsoft.Json.JsonConvert.SerializeObject(v);
        }
    }
}
#endif
```



# DEMO

---

解决API错误

# 总结

Windows 8.x  
Pro+

Visual Studio  
2012/2013

PC和Mac  
都支持

Unity 4.2  
Unity 4.5

WP开发工具

Windows  
Store

Windows  
Phone 8.0

多种分辨率

Package  
Appxmanifest

内存限制

Mono .NET vs.  
WinRT .NET

Unity插件

Action

Global

Proxy  
Interface

and more...



# 其他资料

<http://unity3d.com/cn/pages/windows/porting>

## 让您的游戏玩家数量达到数百万。 就是那样。

把您现有的Unity作品带到Windows Store和Windows Phone很容易。利用此页面上的资源将您的内容快速、高效地移植给全新的全球受众。

### 从基础开始

我们的入门指南涵盖了您需要知道的一切：配置、软件开发工具包、一般考虑和开始步骤



[Getting started on Windows Phone \(663 KB\)](#)



[Getting started on Windows Store \(720 KB\)](#)

### 然后了解移植技巧

一旦您掌握了基本知识，请阅读我们的移植技巧，精确掌握在调整您的代码用于Windows Store和Windows Phone时要考虑的因素



[Porting tips for Windows Phone \(819 KB\)](#)



[Porting tips for Windows Store \(813 KB\)](#)

# 其他资料

## MVA: Porting Unity Games to Windows Store & Windows Phone

[microsoftvirtualacademy.com/training-courses/porting-unity-games-to-windows-store-and-windows-phone](http://microsoftvirtualacademy.com/training-courses/porting-unity-games-to-windows-store-and-windows-phone)

## MVA: Developing 2D & 3D Games with Unity for Windows

[microsoftvirtualacademy.com/training-courses/developing-2d-3d-games-with-unity-for-windows-jump-start](http://microsoftvirtualacademy.com/training-courses/developing-2d-3d-games-with-unity-for-windows-jump-start)

## 2014 Building Your First Windows Game with Unity

<http://channel9.msdn.com/Events/Build/2014/2-503>

## MVA: Porting Unity Games to Windows 8.1 & Windows Phone 8

[microsoftvirtualacademy.com/training-courses/porting-unity-games-to-windows-8-1-windows-phone](http://microsoftvirtualacademy.com/training-courses/porting-unity-games-to-windows-8-1-windows-phone)

## Code Kwondo: Closer Look at Unity

<http://channel9.msdn.com/Events/Developer-Movement/UnityAndGaming/Part1>

## Building Windows Games with Unity

<http://channel9.msdn.com/Events/Windows-Camp/Building-Windows-Games-with-Unity>

# Thank you

Elissa Tong

[elistong@microsoft.com](mailto:elistong@microsoft.com)

<https://github.com/elissatong/UnityPortingLabs>

<http://www.microsoftvirtualacademy.com/training-courses/867>





# Microsoft

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