



XAM220

Preparing to publish your application

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Microsoft

Xamarin University

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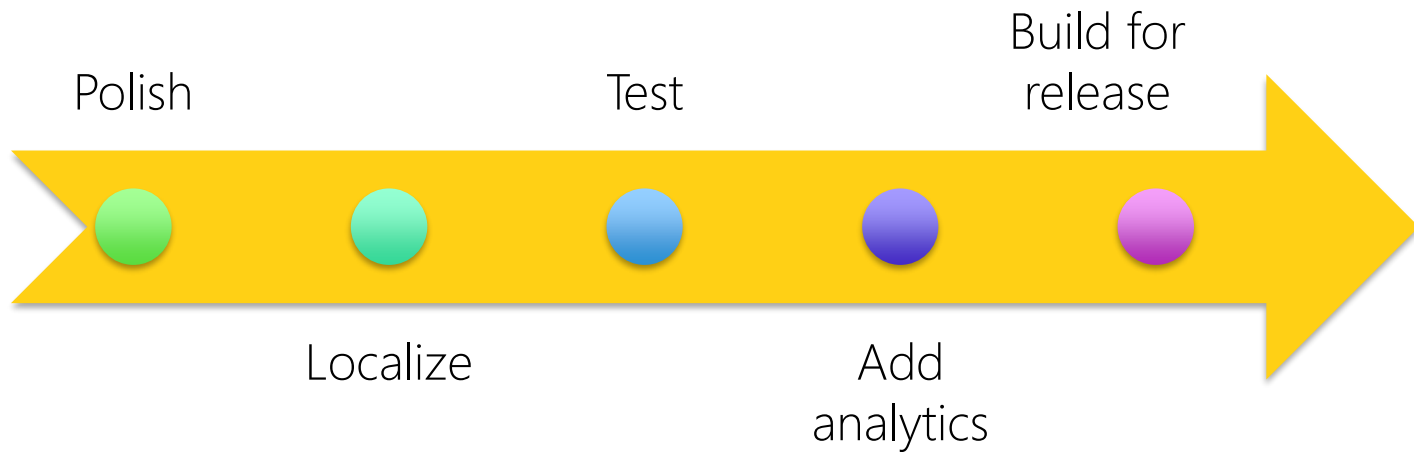
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Tasks

1. Update your app for publishing
2. Choose a distribution strategy
3. Publish to a store

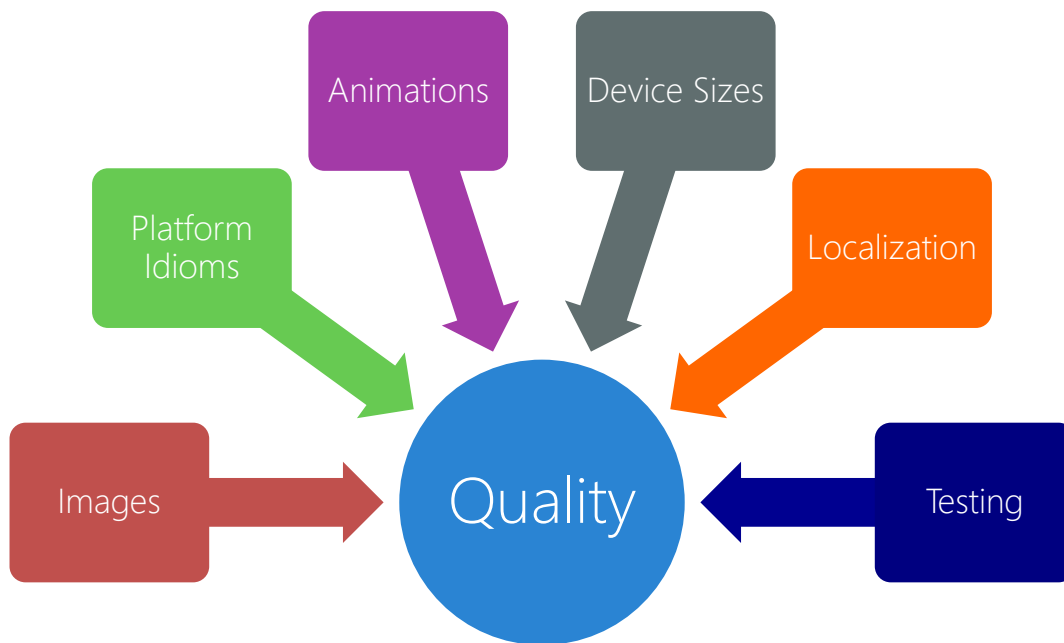


Get ready to publish



Polish your app

- ❖ Pay attention to the details in your application



Localize your app

- ❖ Millions of users cannot read the language your app is written in
- ❖ **56.2%** of consumers say that the ability to obtain information in their own language is more important than price



Test your app completely

❖ Your app will be rejected if it crashes or misbehaves



Dropped Network



Older devices



Bad input



Orientation
Changes

Automated UI Testing

- ❖ Xamarin UI Test lets you create automated UI tests that can be run locally or in the cloud



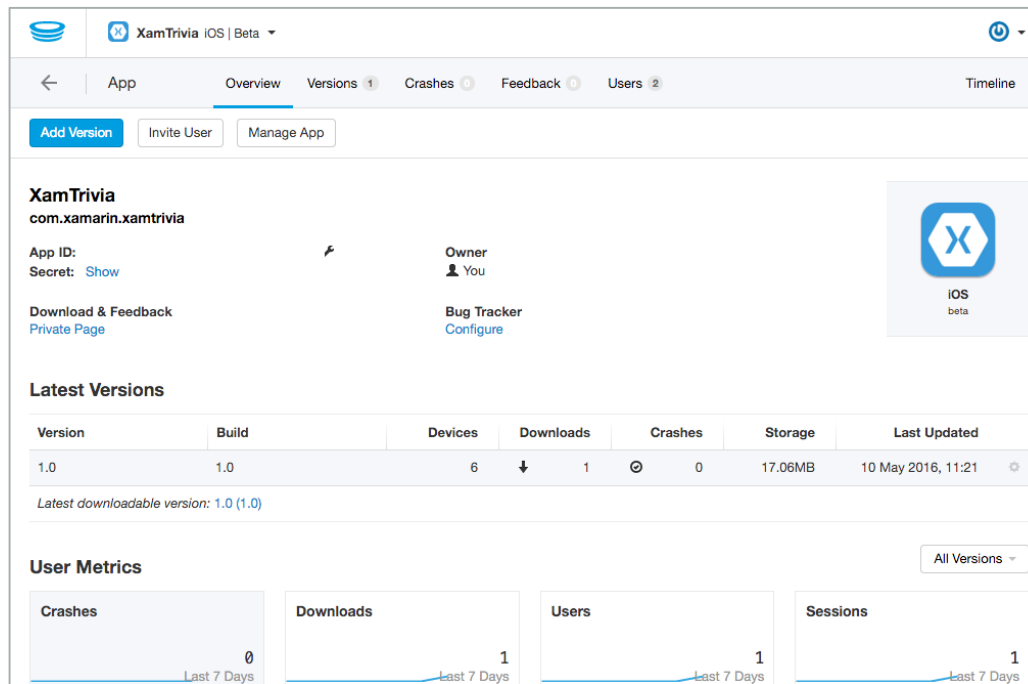
Xamarin Test Cloud



Visual Studio Mobile Center

Consider adding analytics

- ❖ Invest in an analytics solution such as HockeyApp or Mobile Center
 - Identify crashes and live issues
 - Invite beta users and push updates to users
 - Identify features people are using



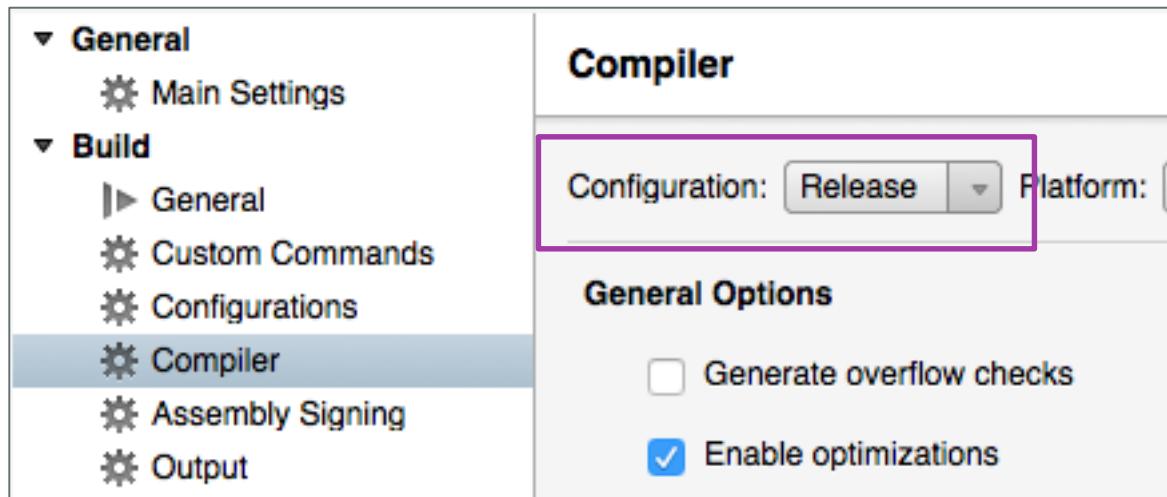
Preparing for release

1. Create a **Release Build**
2. Add icons and splash screen
3. Update version information
4. Configure linker
5. Create distribution package



Create a Release Build

- ❖ Always test your final build (what you plan to submit), and always submit release builds



Add icons and splash screens

- ❖ Icon represents your app on the launch screen so it should be memorable and aesthetically pleasing
 - Follow the vendor guidance for size/shape
 - Supply multiple resolutions
 - Avoid text in the icon



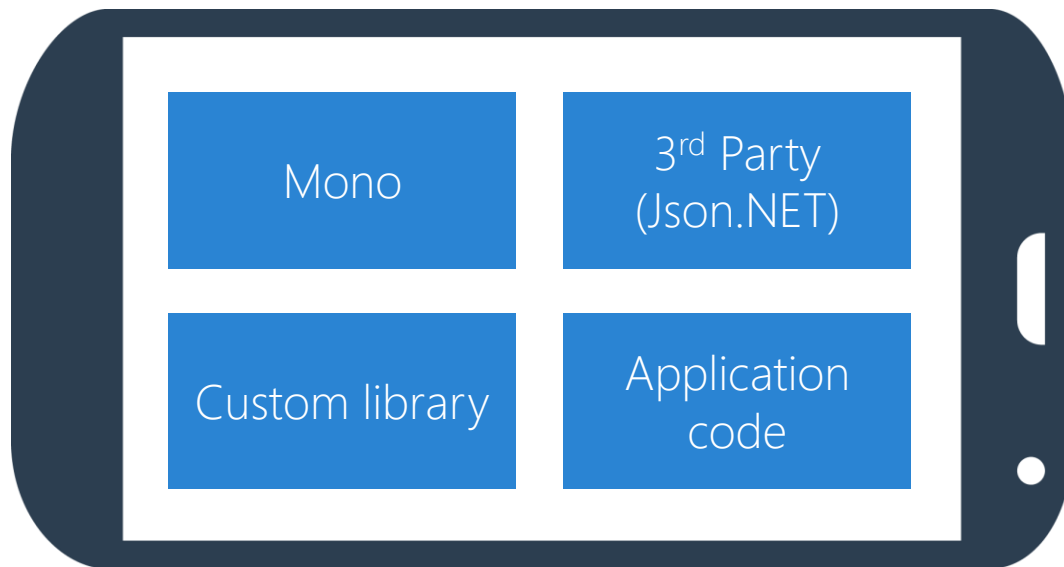
Update version info

- ❖ Versioning is important for maintenance and distribution
 - Increment major version for significant updates
 - Increment minor version for fixes



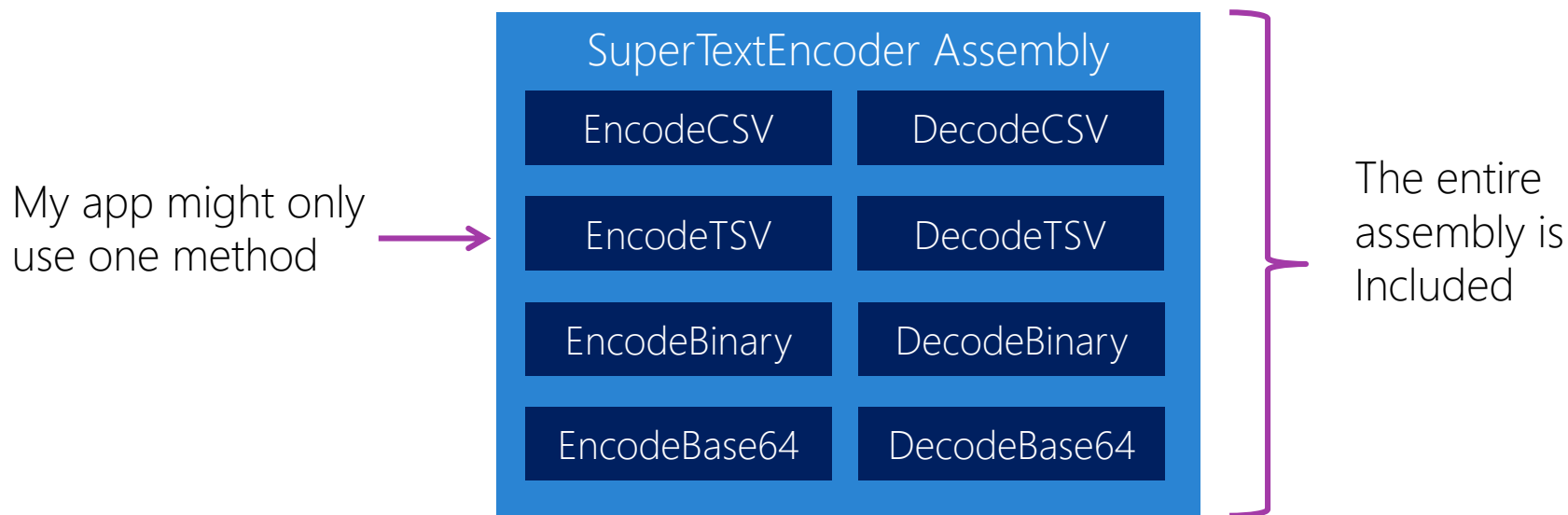
App composition

- ❖ The code that makes up an application typically includes many assemblies as well as the code you've written



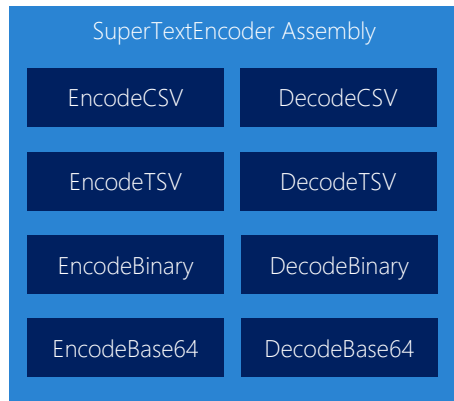
Referencing Assemblies

- ❖ By default, if you reference and use any part of an assembly, the compiler will include the entire assembly in your application



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What is Linking?

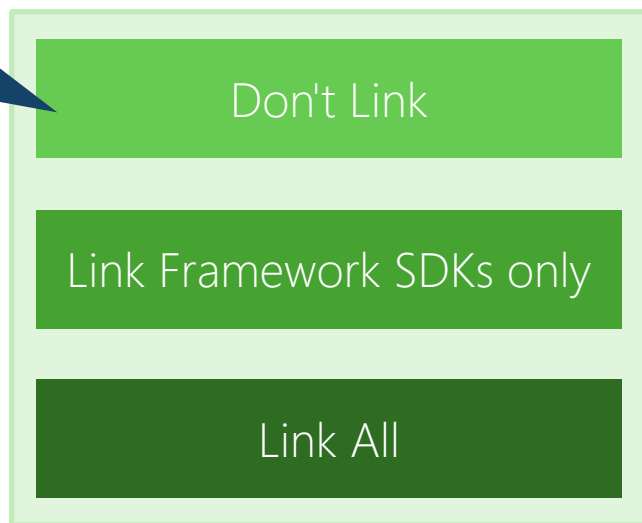
- ❖ Linking is the process of removing unused executable code from assemblies included with your application



Linker settings

- ❖ Linker settings can dramatically reduce the size of the app package, three options available for iOS and Android:

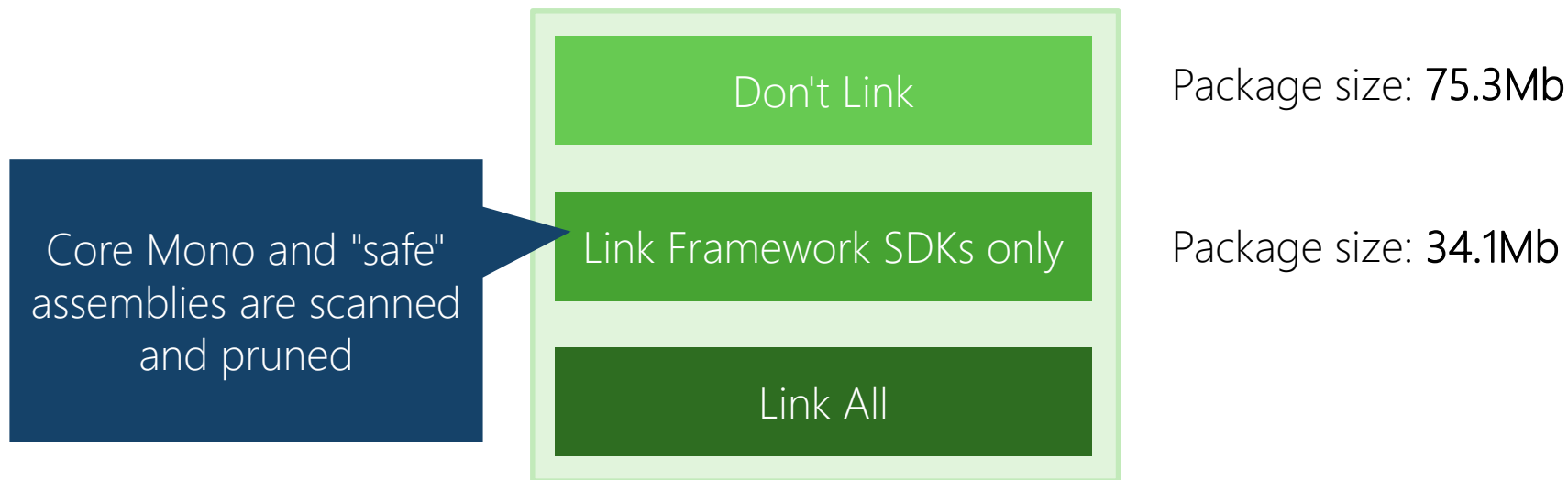
All code is added to application package – even code that is not referenced



Package size: **75.3Mb**

Linker settings

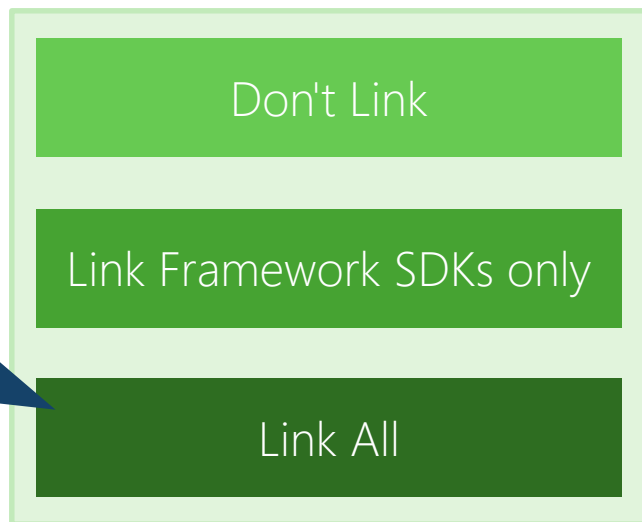
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Linker settings

- ❖ Linker settings can dramatically reduce the size of the app package, three options available for iOS and Android:

All referenced assemblies are examined by the Linker and potentially pruned



Package size: 75.3Mb

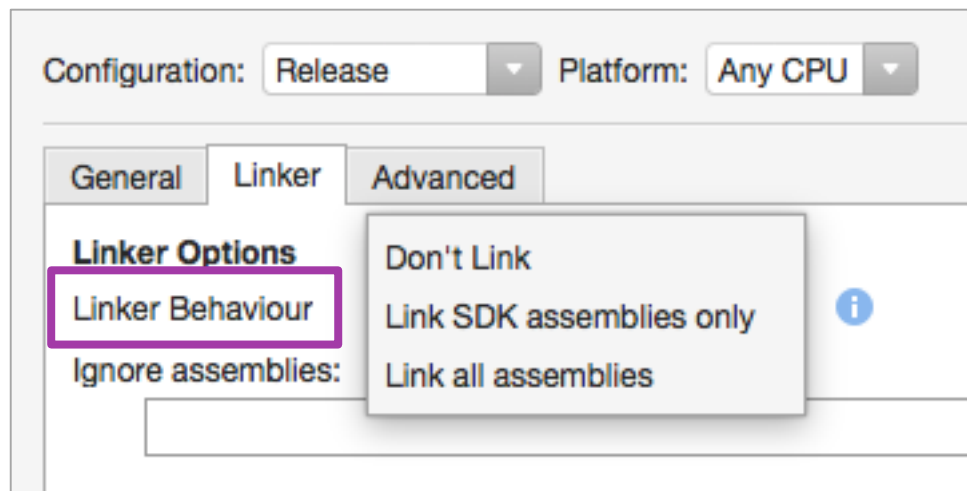
Package size: 34.1Mb

Package size: 22.9Mb

Linker settings

- ❖ Linker settings can dramatically reduce the size of the app package, three options available for iOS and Android:

Project Options >
[iOS | Android] Build



Safe to Link assemblies

- ❖ Can indicate that your custom assemblies are safe to link by adding a custom assembly level attribute:

```
public sealed class LinkerSafeAttribute : Attribute
{ // Can be defined in your PCL code
}
```

```
// Then add in a single source file to tell the
// linker that this assembly should be considered an
// SDK assembly
[assembly: LinkerSafe]
```

Linking all assemblies

- ❖ You can link **ALL** assemblies to further reduce the size of your app package
- ❖ Will often remove things you actually are using
- ❖ Can create a **custom linker XML configuration** to indicate what to preserve (assemblies, types, and operations)



For simple cases, you can tell the linker to exclude specific assemblies from its pruning process

Linker directives

- ❖ Linker might remove things your code actually needs; there are two ways to tell the linker to keep the types and members you need

A blue parallelogram shape, tilted to the right, containing the word 'Code' in white text.

Code

A dark blue parallelogram shape, tilted to the right, containing the text 'Linker XML file' in white text.

Linker XML file

Preserving types in library code

- ❖ Can ensure entire types are preserved by the Linker through the `[Preserve]` attribute applied to the assembly or type itself

```
[Preserve(AllMembers=true)]  
public class TodoTask  
{  
    [PrimaryKey, AutoIncrement]  
    public int ID { get; set; }  
    public string Name { get; set; }  
}
```

```
[assembly: Preserve]
```

Preserving types in library code

- ❖ Can also use **[Preserve]** on fields, properties, delegates and methods which your code doesn't reference directly but are still necessary

```
public class TodoTask
{
    [PrimaryKey, AutoIncrement]
    [Preserve]
    public int ID { get; set; }
    public string Name { get; set; }
    public string Notes { get; set; }
    public bool Done { get; set; }
}
```

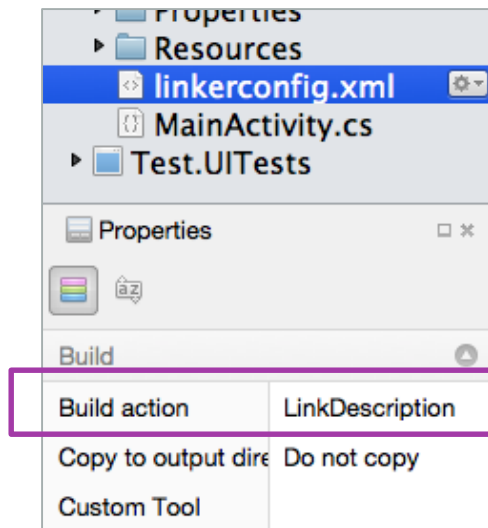
Preserving types in a PCL

- ❖ **PreserveAttribute** is defined in the core Xamarin assembly and not available in PCLs; however linker just looks for *any* attribute named **PreserveAttribute** so you can define one and use it to direct the linker

```
[AttributeUsage(AttributeTargets.All, AllowMultiple=true)]
public sealed class PreserveAttribute : System.Attribute
{
    public bool AllMembers; // Keep all members
    public bool Conditional; // Keep member ONLY if type
                           // itself is kept
}
```

Advanced Linker settings

- ❖ XML linker configuration file must be added to your project



Set build action to
LinkDescription

Preserving an entire assembly

- ❖ Can direct the linker to preserve an entire assembly – all types, methods will be retained in the final binary even if they are not referenced by your code

Assembly
definitions
listed here

```
<?xml version="1.0" encoding="UTF-8" ?>
<linker>
  <!-- preserve entire App.Core assembly -->
  <assembly fullname="App.Core">
    <type fullname="*" />
  </assembly>
</linker>
```

Preserving a specific type

- ❖ Can preserve a complete type (all fields and operations) in an assembly

```
<!-- preserve the App.Core.MainPage type
      in the App.Core assembly -->
<assembly fullname="App.Core">
  <type fullname="App.Core.MainPage" preserve="fields" />
</assembly>
```



Can tell linker to preserve all fields

Preserving all types in a namespace

- ❖ Can preserve all types in a namespace in the assembly

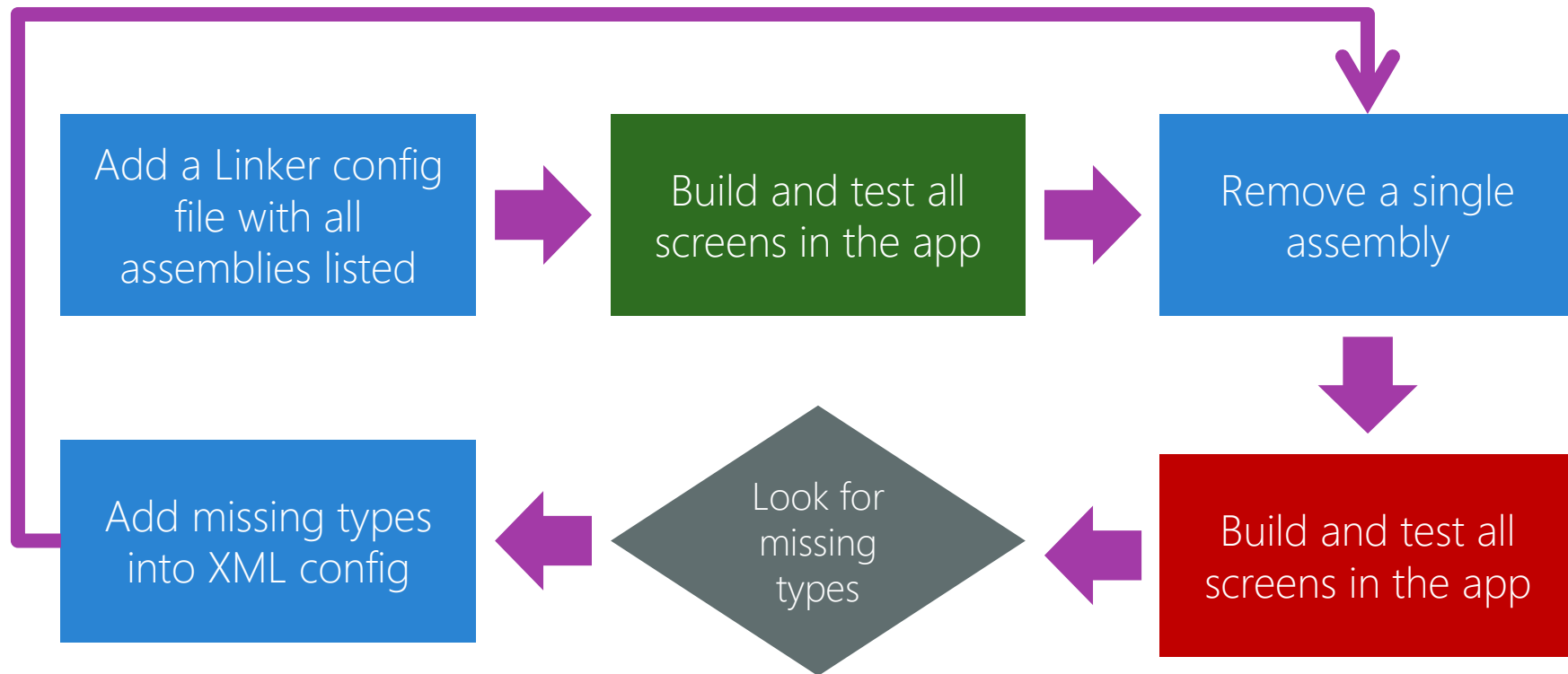
```
<!-- preserve the namespaces in the App.Core assembly -->  
<assembly fullname=" App.Core">  
    <namespace fullname="App.Core" />  
    <namespace fullname="App.Core.Utills" />  
    <namespace fullname="App.Core.ViewModels" />  
</assembly>
```

Preserving a specific type

- ❖ Finally, can preserve specific operations in a type

```
<assembly fullname="App.Core">
  <type fullname="App.Core.MainPage">
    <!-- preserve the ValueChanged event -->
    <method name="add_ValueChanged"/>
    <method name="remove_ValueChanged"/>
    <!-- preserve the Value property -->
    <method name="get_Value"/>
    <method name="set_Value"/>
    <!-- preserve the _value field -->
    <field name="_value"/>
  </type>
</assembly>
```


Steps to link all assemblies



Create a distribution package

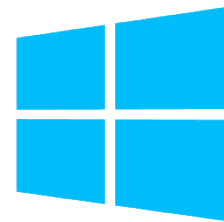
- ❖ Each platform has a signed, packaged format which you must adhere to when submitting or installing apps onto a device



App Bundle (.app)



App Package (.apk)



AppX Package (.appx)

Flash Quiz

Flash Quiz

- ① Which of these components is necessary when preparing an app for release?
- a) Disable debugging
 - b) Specify app icon
 - c) Set packaging properties
 - d) None of the above

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Flash Quiz

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- a) To remove the source code from the app
 - b) To reduce the size of the app package/bundle
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- a) To reduce the size of the app
 - b) To discard unused assemblies, types and members
 - c) To protect your app from outside tampering
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Publishing Styles

- ❖ Three common ways to distribute your applications

A diagram showing a blue parallelogram with the text 'Adhoc / Side-loading' inside. A dark blue speech bubble points from the bottom-right corner of the parallelogram to a dark blue rectangle containing the text 'Direct via email or website, often used for testing'.

Adhoc /
Side-loading

Direct via email or
website, often used
for testing

Publishing Styles

❖ Three common ways to distribute your applications

The diagram consists of two blue parallelogram shapes. The left one is a lighter blue and contains the text 'Adhoc / Side-loading'. The right one is a darker blue and contains the text 'Store'. A dark blue speech bubble points from the 'Store' parallelogram to the right, containing the text 'Most common approach and widest distribution model'.

Adhoc /
Side-loading

Store

Most common approach
and widest distribution
model

Publishing Styles

- ❖ Three common ways to distribute your applications

Adhoc /
Side-loading

Store

Enterprise

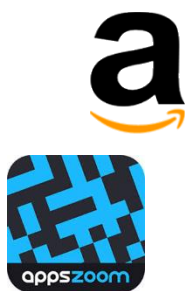
Mostly used for
internal, corporate
apps

Choosing a store / market

- ❖ Vendors operate branded stores where they market and distribute your app for a percentage of the sale



App Store



Google Play



Windows Marketplace



Read the licenses carefully

- ❖ Each public store has different rules you must adhere to, read the license carefully before submitting your app to make sure you are a good citizen

Google Play Apps Policy Center

A central resource for you to learn about Google Play policies and guidelines.



Developer Terms & Policies

Terms you agree to when you publish apps to the Google Play store.



Guidelines & Practices

Learn more about important policy areas, get tips to create policy-compliant apps, and see specific examples of what is and isn't allowed on Google Play.



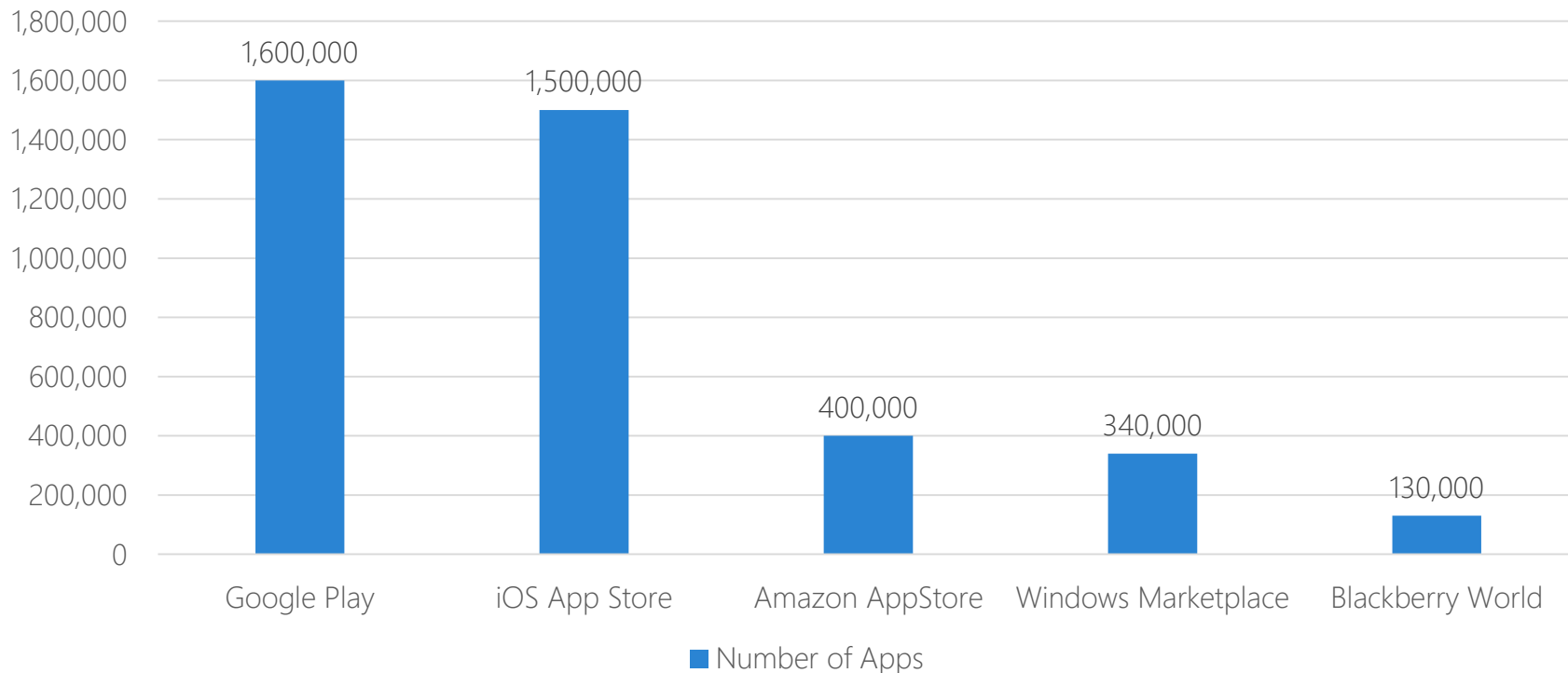
Reporting & Enforcement

Learn how to flag an app with a potential violation, and what happens if an app is found to violate policy.

Most stores publish nice guidelines that are worth checking out

Choosing a store / market

Number of apps available for download (7-2015)



Choosing a store / market

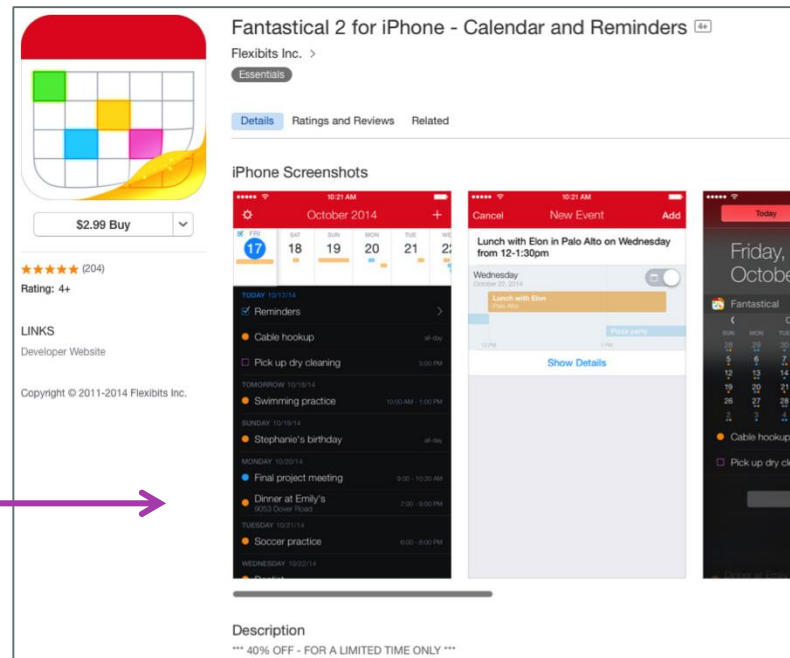


Registration Fee	\$99 / \$299 annual	\$25 one-time	~\$19 / \$99 one-time
app # limits	none	none	100 free
Market Share	~20%	~75%	~5%
Revenue sharing %	70 / 30	70 / 30	70 / 30 sliding
Reasons to put your app here	Higher daily revenue, more \$\$\$	Best searching, new apps found quickly	Less competition = more opportunity

Creating the marketing information

- ❖ All of the app stores allow you to provide screen shots, descriptions, and requirements for your app; use these to help people notice your app

Use video and flashy screenshots to show the best aspects of the app

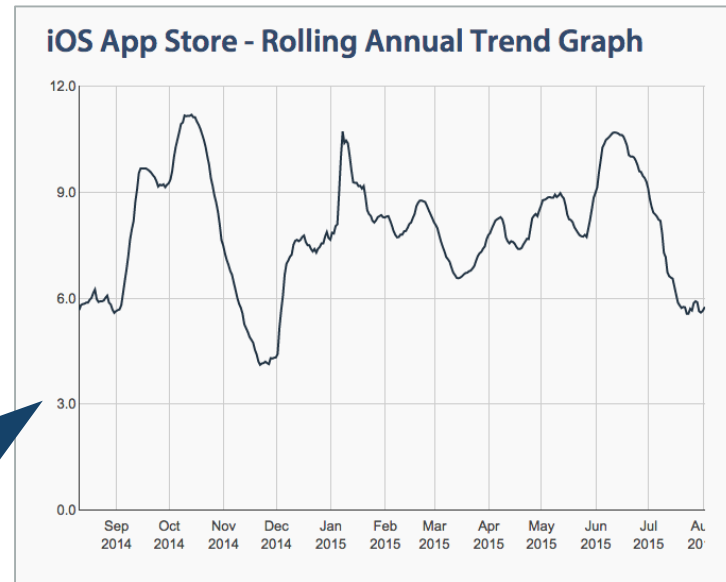


This is one of the *most important* things you will do when publishing your app; keywords, images and descriptions determine how easily users find your app

App review process

- ❖ Each store will review your application prior to making it available to the public – times vary, but it could take a week or more before it goes online
- ❖ Will receive email notification when the app is either accepted or rejected; along with reasons for rejection

Average
review time
in days



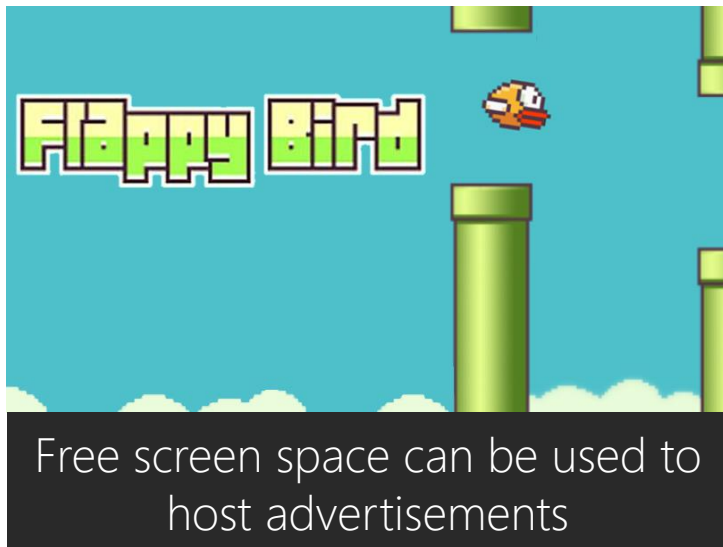
Determine a revenue strategy

- ❖ Have realistic expectations of how much you will make
- ❖ What are similar apps priced?
 - Simple apps often free or \$0.99
 - Higher priced apps need to look good and provide high value or you will get bad ratings
- ❖ Region influences pricing; U.S. tends to pay more for apps



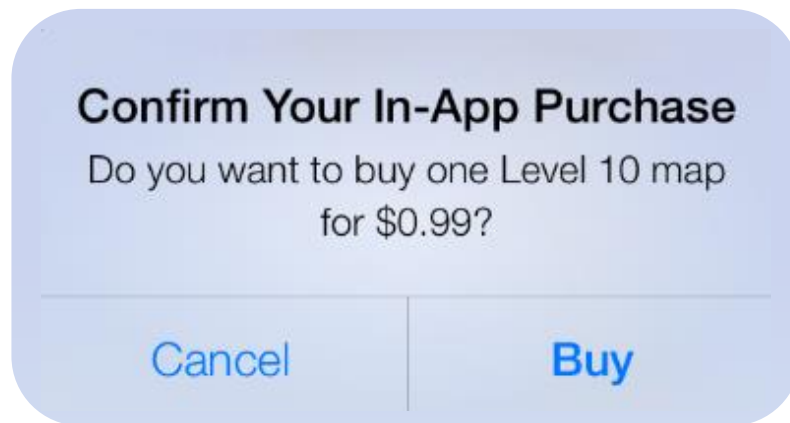
Consider including ads

- ❖ In-app advertisements can generate additional revenue – Flappy Bird was reportedly generating \$50k per day in ads



Consider in-app purchases

- ❖ Use In-App purchases to move from a **free** or **reduced-price** model to a full version of your app, or to add features to the app (try to ensure that users feel they are receiving good value for each purchase)



What's Next?

- ❖ Learn how to package and upload your app to a store
 - iOS App Store
 - Google Play Store (Android)
 - Amazon App Store (Android)
 - Windows Marketplace
- ❖ Watch specific videos for each platform you want to publish!



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