JUST IN MIND

DEVELOPER'S GUIDE

How to develop plug-ins for Justinmind

JUSTINMIND

INDEX

Overview	3
Installing the SDK	4
First example: Print screen names	5
Configuring the Project	5
Building your first integration	8
Methods and Classes	10
Introduction	10
API library description	11
Main classes diagram	12
Components classes diagram	13
Classes referring to events	15
Second example: Translator	16
Extend Prototyper: Plug-ins	18
References	21
Appendix: Debug your plug-ins code	22

OVERVIEW

WHAT IS THIS DOCUMENT ABOUT?

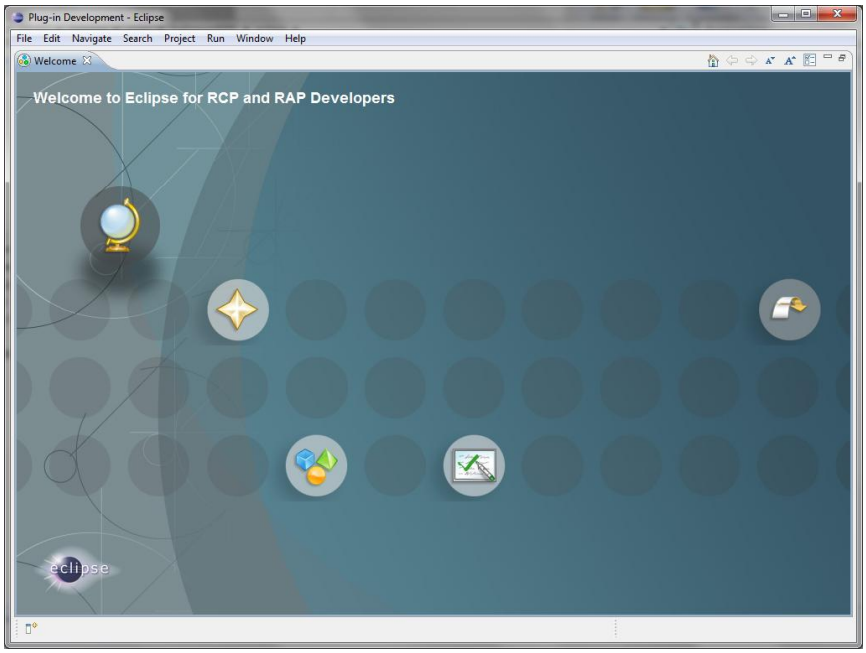
Welcome to the developer documentation for Justinmind tools. If you want to write an add-on for Justinmind, you have come to the right place. Your add-on may be a plug-in or an entirely independent application that uses our APIs. This document covers both aspects: how to make a plug-in for Justinmind and how to build an entirely independent application that is able to read the contents in a .vp file (files made with Justinmind that contain all the information of a prototype).

You can use our APIs to reuse the work you did building your prototypes and generate code. In this document you will find a description of the classes included in our APIs and some examples that will help you to get started. You can find additional documents in our web site.

INSTALLING THE SDK

INSTALLING THE SOFTWARE DEVELOPMENT KIT (SDK)

The first thing you have to do if you want to code an integration with Justinmind is to download our SDK. This SDK is an Eclipse IDE with all the required libraries already included. Once downloaded just unzip it in a folder and launch it. It will request you to set another folder as 'workspace' for all your project files. Choose one and press ok. Then, a screen similar to this one will appear:



This is the typical welcome window for the Eclipse IDE. Just close it and let's build our first integration with Justinmind. Are you excited? I am!

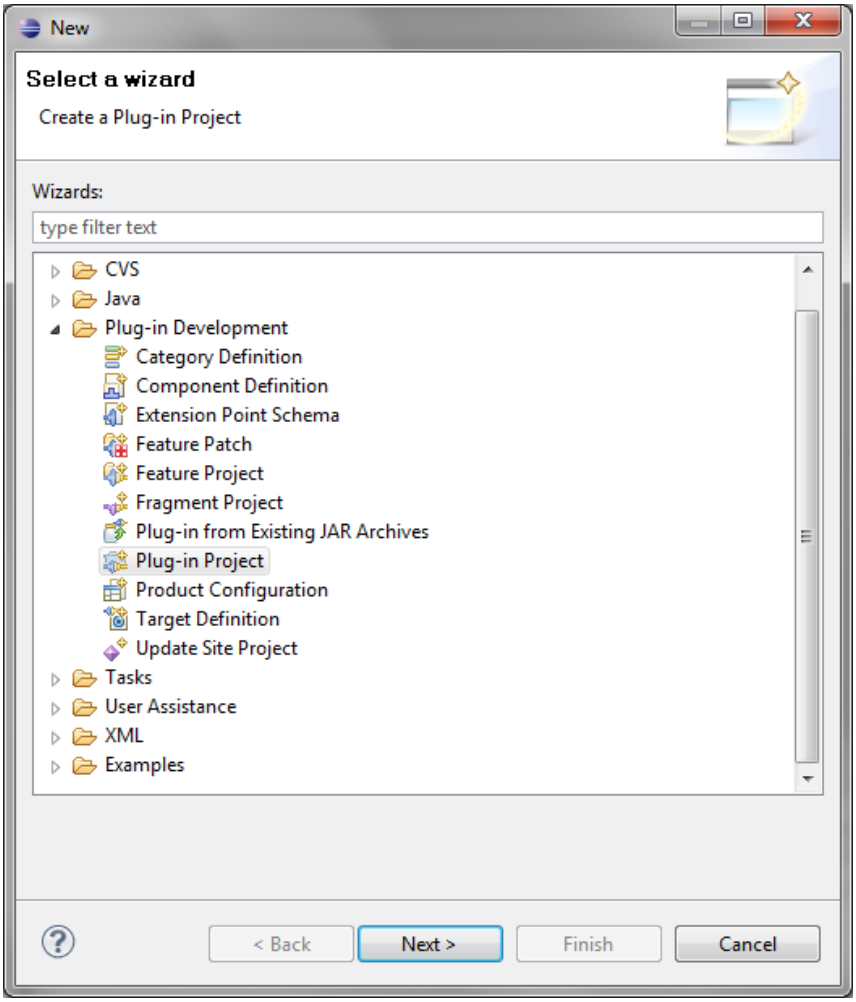
FIRST EXAMPLE: PRINT SCREEN NAMES

FIRST EXAMPLE: PRINT SCREEN NAMES

You are all set and ready to build your first integration with Prototyper. In this case we are going to build a very simple code that reads a .vp file and prints by console the names of all the screens in that prototype. Let's start.

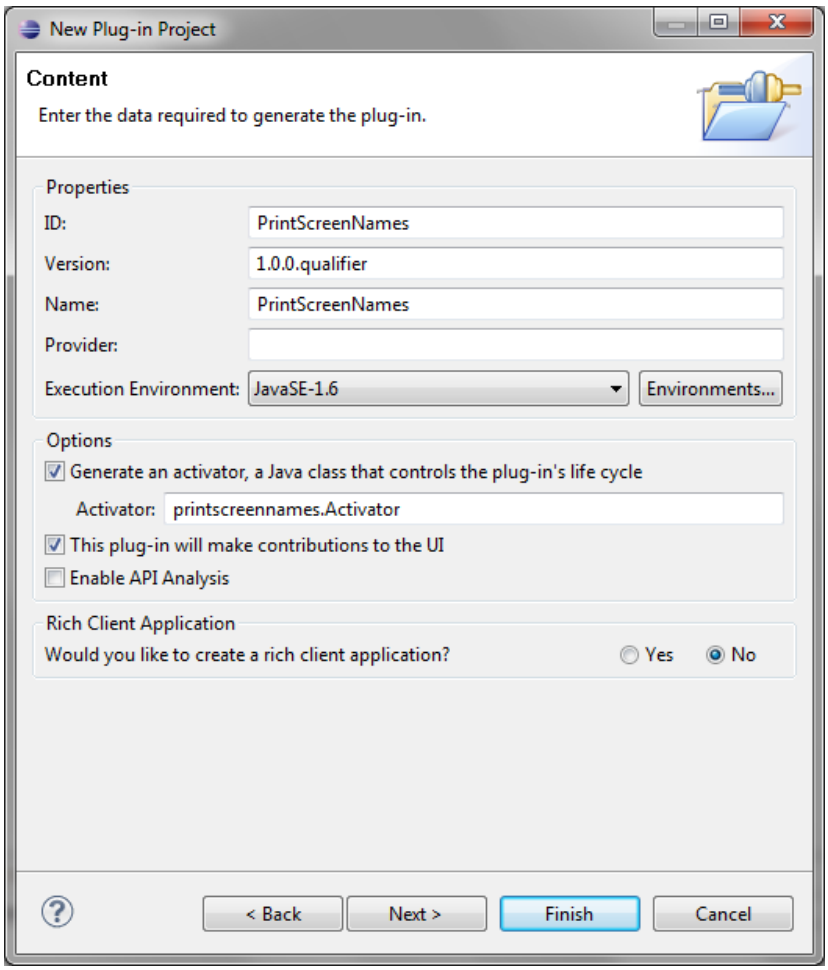
CONFIGURING THE PROJECT

Select File → New → Other... Then choose 'Plug-in Project *(**IMPORTANT NOTE:** all the integrations must be coded in Java, if you don't know how to code in Java, well, you've just found a reason to learn it!. There is plenty of resources, tutorials and stuff to learn how to code in Java. Just google it, is not that hard)*



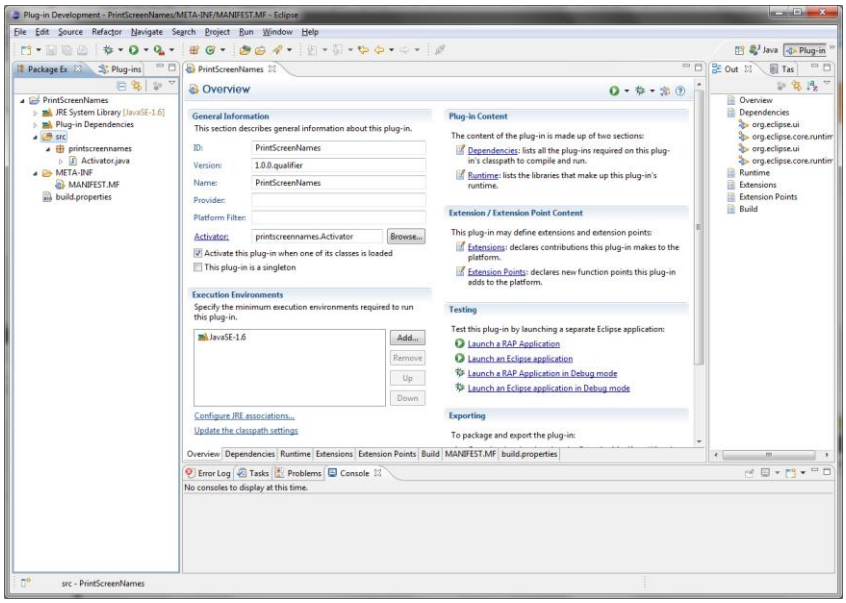
FIRST EXAMPLE: PRINT SCREEN NAMES

Press 'Next' and then choose a name for your project. Press 'Next' again and check the options 'Generate an activator...' and 'This plug-in will make contributions to the UI'



FIRST EXAMPLE: PRINT SCREEN NAMES

Finally push 'Finish'. Your Eclipse IDE will look like this:



Now select the tab called 'Dependencies'. Push the 'add' button and write 'com.justinmind'. Select the three plug-ins listed and press 'ok'. Then select 'File → Save'. Now you have a project configured to access to all the methods in the API.

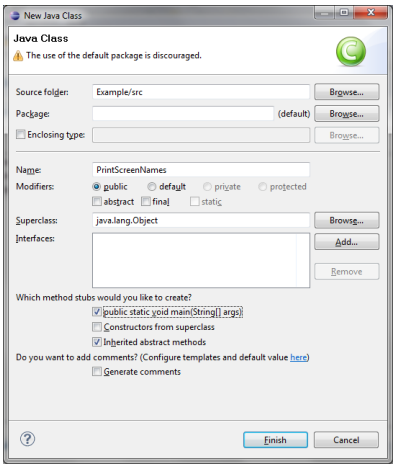
You will need to follow the same steps every time you want to build a new integration for Justinmind.

FIRST EXAMPLE: PRINT SCREEN NAMES

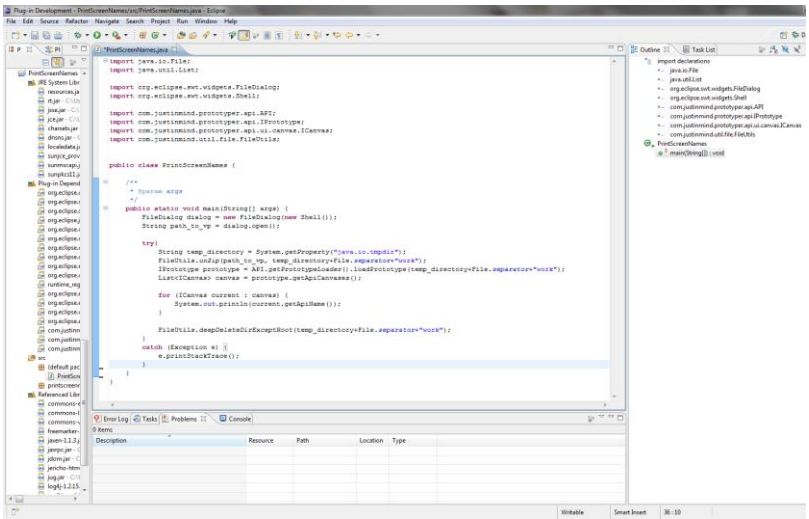
BUILDING YOUR FIRST INTEGRATION

Ok, so you are ready now to build your first integration. This will be a very simple integration but you will see it will be easy to extend it to more complex cases. In this case we are going to create a little java application that reads all the screens inside a .vp file and print their names by console. Let's do it!

First create a class inside your source folder. Right click on the folder called 'src' and select 'New → class'. Give it a name and check the option 'public static void main(String[] args)' like this:



Press the finish button. Then add the actual code for the integration until it looks like this:



FIRST EXAMPLE: PRINT SCREEN NAMES

Save your changes. Then right click on the class file you just created and select 'Run as → Java Application'. The example you just coded will be executed allowing you to select a .vp file and see all its screens listed in the console.

Now let's take a closer look at the code. The first two lines use a file dialog to ask the user for a .vp file. But let's focus on the three lines after those lines of code:

```
String temp_directory = System.getProperty("java.io.tmpdir");
FileUtils.unZip(path_to_vp, temp_directory+File.separator+"work");
IPrototype prototype =
API.getPrototypeLoader().loadPrototype(temp_directory+File.separat
or+"work");
```

These are the lines of code that do all the magic. This piece of code will load all the prototype's information on the selected .vp file into the variable called 'prototype'. Using that variable and the methods in the API you can browse all the information in your prototypes and generate whatever you want with it. In this example we just read all the screens, templates and masters and we print their names by console.

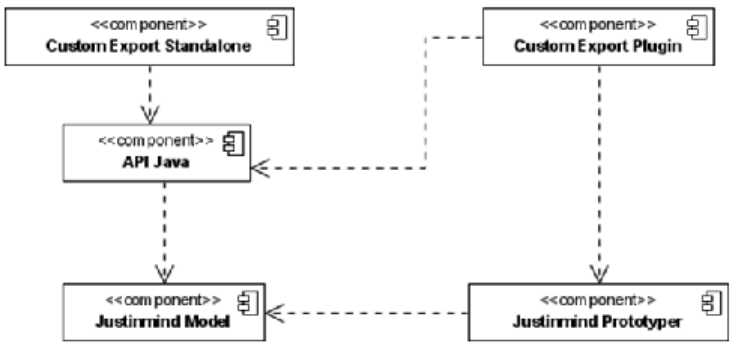
In order to load all the information of a .vp file you need to extract the contents of the file into a folder. That's what the first two lines of this example do. Just remember to clean all those files when you are done with it using this line of code:

```
FileUtils.deepDeleteDirExceptRoot(temp_directory+File.separator+"w
ork");
```

METHODS AND CLASSES

METHODS AND CLASSES

Now let's take a look at the components this API is composed by.



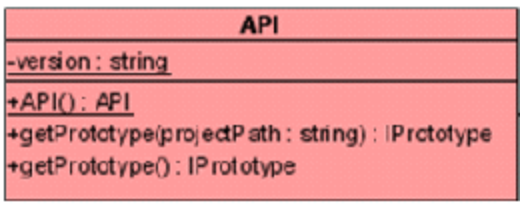
As we have seen in the previous section the API is made of three plug-ins or jars (Java libraries). One is a library of some utilities to handle files and minor stuff. The other two are the ones that hold all the code to load a prototype.

The model are the actual classes that hold the information of the prototype. Those classes are highly complex, that's why another library has been made an placed over it. The API library is the one you must use when you code an integration with Justinmind. The direct access to the model library is highly discouraged because the classes there can change from one update of Justinmind to another. All the documents provided for the developers of plug-ins refer to the classes in the API library, not the ones in the model library.

METHODS AND CLASSES

API LIBRARY DESCRIPTION

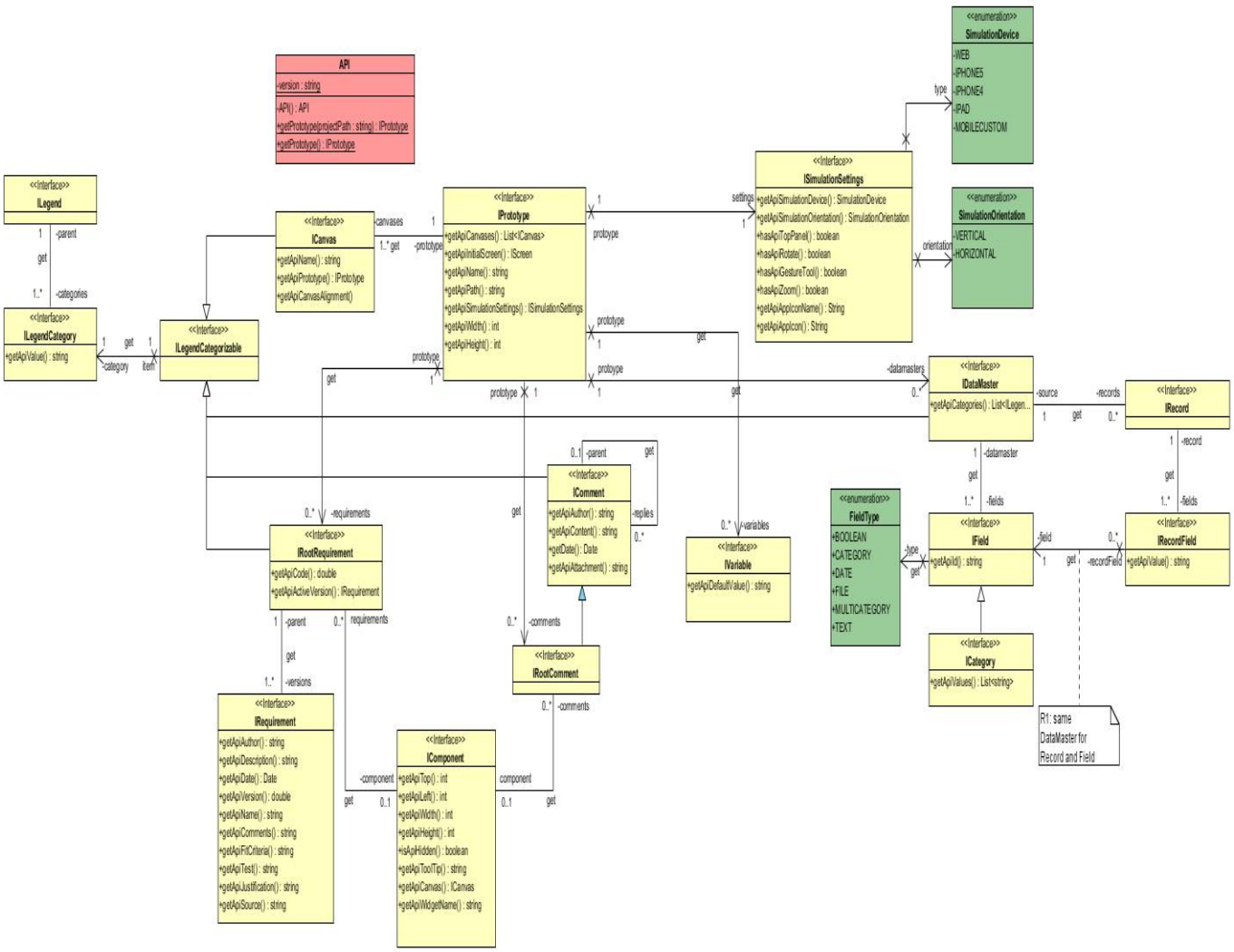
The main entry point to the API library is the class named 'API'. That class has static methods to load a prototype's file. There are two ways to load a prototype, one is using the path to the location of a .vp file. The other one is to load the 'current loaded prototype' and only applies to plug-ins that will be run from within Justinmind.



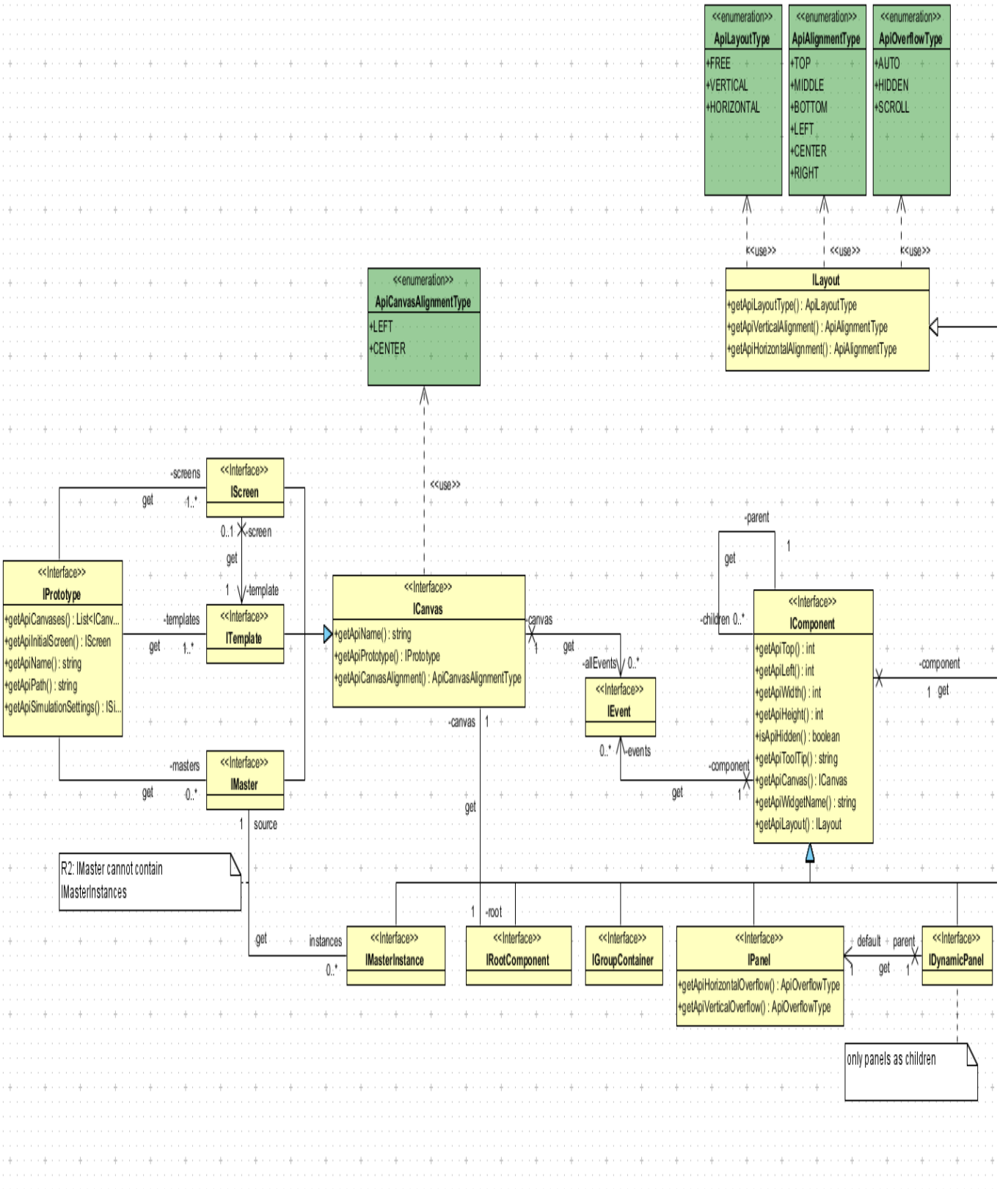
All the classes in the api library are Java Interfaces and they are not intended to be subclassed or implemented by your own classes.

The rest of the classes in the library can be categorized in three groups: the main prototype classes, the classes for the components and the classes for the events. In the next pages you can find the UML diagrams for each of this groups (check the Javadoc documents for a detailed description of each class and method).

MAIN CLASSES DIAGRAM

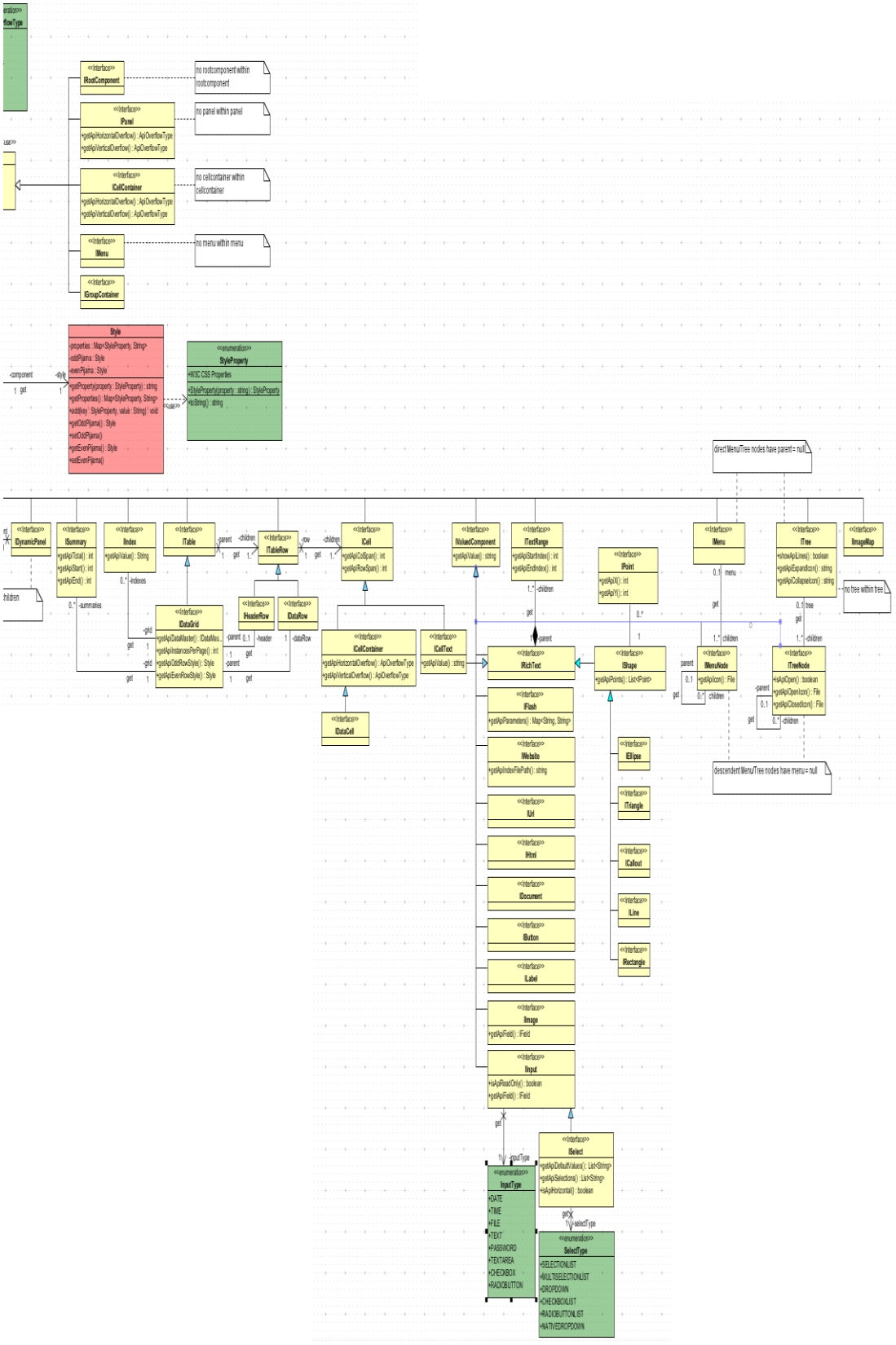


COMPONENTS CLASSES DIAGRAM (1)

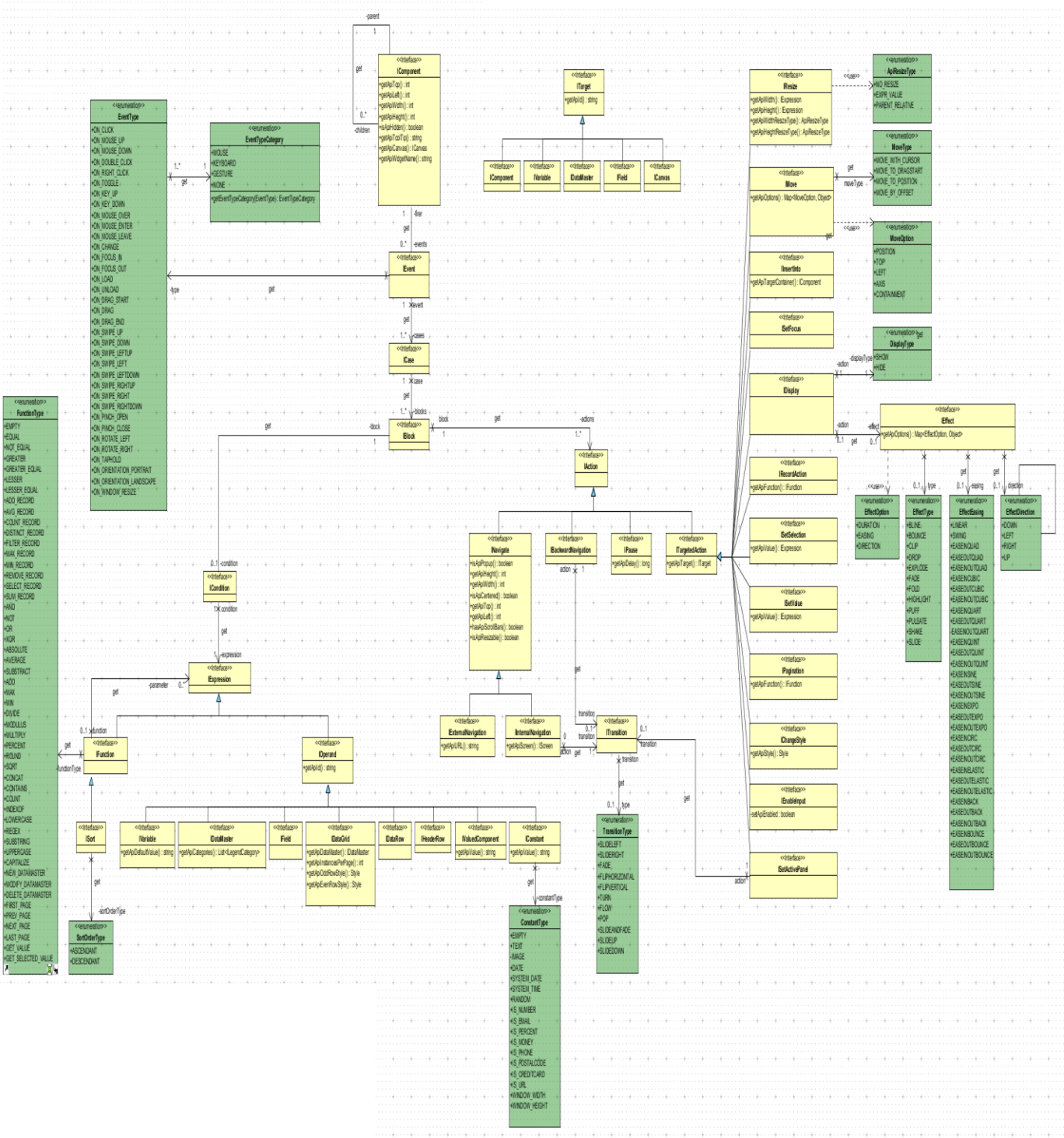


(the diagram continues in the next page)

COMPONENTS CLASSES DIAGRAM (2)



CLASSES REFERRING TO EVENTS



SECOND EXAMPLE: TRANSLATOR

SECOND EXAMPLE: TRANSLATOR

Now that we've seen in detail all the information you can gather from a prototype let's use it to build an example. Imagine we would like to have a MS Excel file with all the texts in your prototype and send it to a translator. We are going to build an example to do exactly that. We will extract all the texts from labels, buttons, links and so on from a prototype and create a MS Excel file with all that information.

First create a plug-in project like the one you did in the first example. Name it 'Translator' and create a main class inside the src folder.
Place this code inside the main method:

```
FileDialog dialog = new FileDialog(new Shell());

String path_to_vp = dialog.open();


String temp_directory = System.getProperty("java.io.tmpdir");
FileUtils.unZip(path_to_vp, temp_directory+File.separator+"work");
IPrototype prototype =
API.getPrototypeLoader().loadPrototype("prototype",temp_directory+File.sep
arator+"work");

  List<ICanvas> canvas = prototype.getApiCanvases();
  String content = "Word in prototype\n\n";
  for (ICanvas current : canvas) {
   content+="Screen: "+current.getApiName()+"\n";
   List<IComponent> components = current.getApiRoot().getApiChildren();
   for (IComponent iComponent : components) {
      content+=addTextsToContent(iComponent);
   }
  }

FileDialog dialog = new FileDialog(Display.getDefault().getActiveShell(),
SWT.SAVE);
dialog.setFilterExtensions(new String[] { "*.csv" });
dialog.setOverwrite(true);

String path = dialog.open();
if (path != null) {
  Writer output = null;
  File file = new File(path);
  FileWriter fw = null;
  try {
    fw = new FileWriter(file);
    output = new BufferedWriter(fw);
    output.write(content);
    output.close();
    Desktop.getDesktop().open(file);
  } catch (IOException e) {
  }
} else {
 // show error
}
```

SECOND EXAMPLE: TRANSLATOR

Select that class, then right click on it and choose run as java application. You will be requested to select a .vp file and where do you want to save the .csv file with all the texts in the selected prototype. How is this code doing that?

The first piece of code loads the information of a .vp file in the IPrototype class. Then there's another piece of code that browse the elements of each screen, template or master using the class hierarchy described in the 'Component classes diagram' described in the previous section of this document. When it founds a text it adds it to a String which will be later used to create the resulting .csv file.

As you see is extremely easy to read the information of a .vp file. You can use this option to generate any kind of things you like. You could even generate your own HTML code if you like.

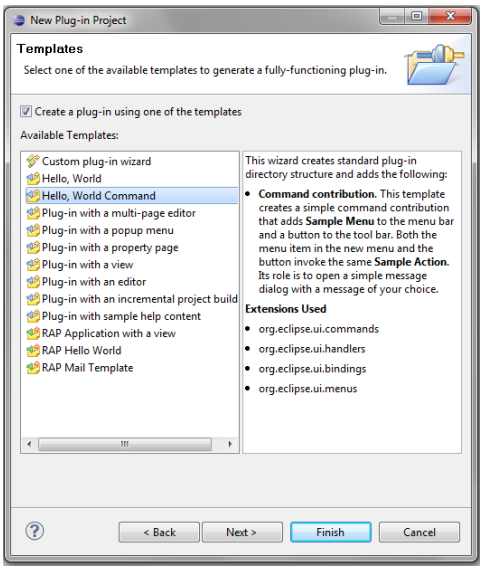
EXTEND JUSTINMIND WITH PLUG-INS

EXTEND JUSTINMIND WITH PLUG-INS

So far we have talked about how to create code that is able to read the contents of a .vp file and do something with them. Now we will see how to add menu and tool bar options inside Prototyper itself.

Justinmind Prototyper has been built using a Eclipse Framework technology called RCP (Rich Client Platform). This technology allows you to extend the application's functionality using plug-ins. There's a lot of information available in the web about how to develop plug-ins for RCP applications like Prototyper. What this document will cover are just the basics to build simple plug-ins for Justinmind Prototyper. We encourage you to go deeper on the plug-ins development if you want to build more complex things.

So, let's start! First we need to create a new plug-in project just like we did in the previous examples. Go to file → Project → Other and select Plug-in Project. Give it a name and push 'next'. Then check the options 'Generate an activator...' and 'This plug-in ...' like in the previous examples but this time instead of the 'Finish' button press 'next'. Then select the 'Hello, World Command' template:



And press 'Finish'. The new project will appear in the project's folder at the left. Open the src folder and look for the class called SampleHandler inside handlers package. That class is the main entry point to your code. Open it and look for the method 'execute'. That it's the equivalent of the 'main' method we had in the previous examples. So write some code there just to test the integration (you can copy and paste the code of one of the examples).

EXTEND JUSTINMIND WITH PLUG-INS

Now you need to configure your plug-in to be able to work in Prototyper. Open the file called 'MANIFEST.MF' that is located inside the META-INF folder. Then select the tab called 'MANIFEST.MF' and add this line at the bottom:

```
Eclipse-RegisterBuddy: com.justinmind.prototyper.api
```

And press 'Save'. Now your plug-in and the API are 'buddies' so they will be able to work together and so on. Don't think too much about it, if you want to know what that sentence really does check the information in www.eclipse.org.

Select the tab called 'Dependencies'. Push the 'add' button and write 'com.justinmind'. Select the three plug-ins listed and press 'ok'. Then select 'File → Save'. Now you have a project configured to access to all the methods in the API.

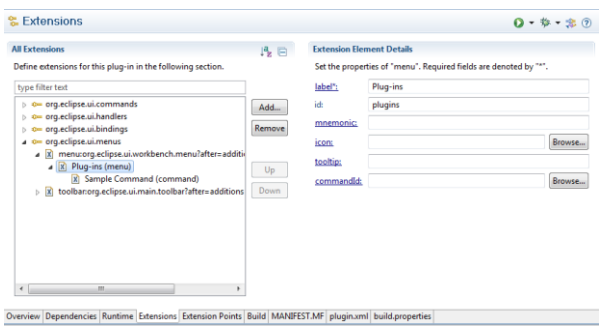
CONFIGURE COMMAND NAME

Open the file named plugin.xml and select the tab 'extensions'. Then select the 'Sample Command' node in the extensions tree (inside org.eclipse.ui.commands branch). There you will be able to define the menu option name that will execute your plug-in inside Justinmind.

ADD TO APPLICATION MENU AND TOOLBAR

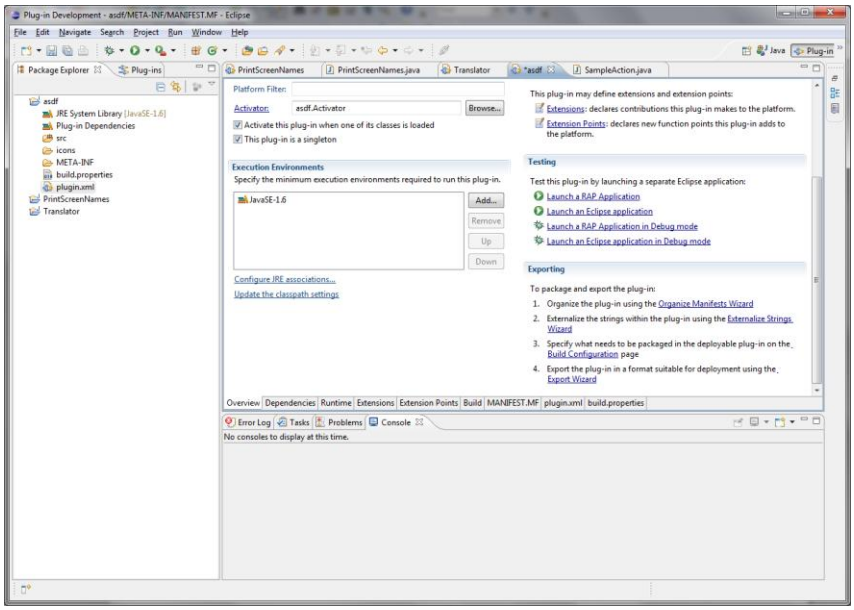
In order to make your plug-in visible inside Justinmind, you need to set its location within the workbench menu and the toolbar of the application: Open plugin.xml and select the tab 'extensions'. Select 'org.eclipse.ui.menus' node and then 'menu:org.eclipse.ui.main.menu'. Replace its locationURI with the following text: **'menu:org.eclipse.ui.workbench.menu?after=additions'.**

We highly recommend you to append your plug-in to the 'plugins' menu already available in Justinmind so the users of your plug-in know where to find it. So if you want your plug-in to be included inside the 'Plug-ins' menu option in Justinmind once the user imports it, then you need to customize the 'org.eclipse.ui.menus' Extension this way: Select 'Sample Menu' node in the extensions tree and set as **id → plugins** and as **label → Plug-ins** just like the screenshot below:



EXTEND JUSTINMIND WITH PLUG-INS

The plug-in is ready now but you need to export it out of the SDK. Select the tab 'overview' and look for the link that says 'Export Wizard':



Then select a destination folder to save your plug-in and press finish. Your plugin will be saved in a folder called 'plugins' inside the one you defined as the destination folder.

You are all set and ready to test your plug-in in Justinmind. Open Justinmind and select the option 'Install a plug-in' that you'll find in the Plug-ins menu. Select the plug-in you've just exported and restart Justinmind. Now you will have a new option available inside the Plug-ins menu that refers to the plug-in you just made.

So that's all folks! Now it's time to build your own plug-ins and share them (or sell them) with all the other Justinminders around there!

REFERENCES

REFERENCES

Eclipse - The Eclipse Foundation open source community website.
http://www.eclipse.org/

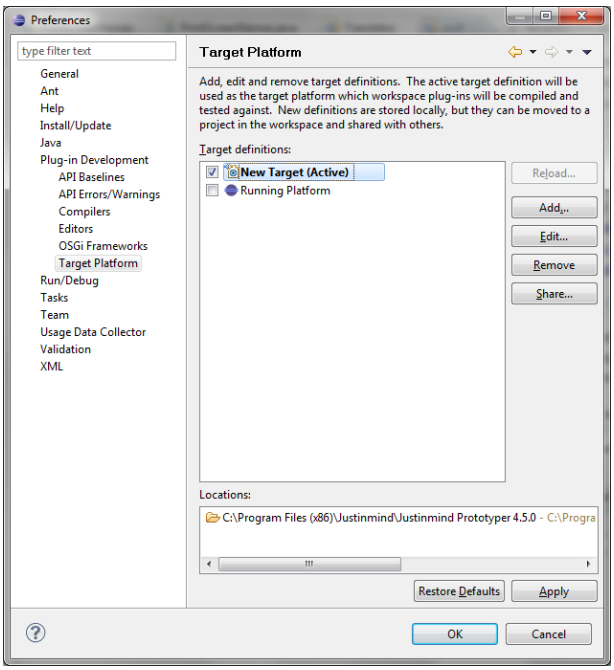
The Java™ Tutorials
http://docs.oracle.com/javase/tutorial/

Stack Overflow : questions about Java development
http://stackoverflow.com/

APPENDIX: DEBUG YOUR PLUG-IN'S CODE

APPENDIX: DEBUG YOUR PLUG-IN'S CODE

There is way, if you are using the SDK for MS Windows, to debug your plug-ins without exporting them. Inside the SDK go to Window → Preferences and open the option 'Plug-in Development'. Select 'Target platform' and push the 'add' button. Then push 'next' and the 'add' button again. Select 'directory' and then 'next'. Push 'browse' and select the folder where you installed Justinmind (typically c:\Program Files\Justinmind\Justinmind Prototyper x.x.x) and then press 'finish'. Press finish again and select 'new target' as the new Target Platform:



Finally press 'ok'. Now you have your SDK configured and ready. Now if you want to run or debug your plug-in you just have to right click on the project and select 'Run as Eclipse Application'. Then your Justinmind Prototyper will be executed with your plug-in already installed.

JUSTINMIND

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