

# **Getting Started with WireFusion**

Demicron

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<b>INTRODUCTION.....</b>	<b>4</b>
<b>GETTING STARTED .....</b>	<b>4</b>
1. Start WireFusion .....	5
2. Loading a Project .....	5
3. Running a Project.....	6
4. Short Summary.....	7
5. New Project.....	8
6. Set Stage dimension .....	8
7. Insert Image.....	9
8. Adjusting Positions .....	13
9. Short Summary.....	16
10. Test.....	16
11. Save Project.....	17
12. Second hand .....	18
13. Make the second hand move .....	20
14. Pushing time.....	22
15. Calculating an angle.....	25
16. Rotating the Second hand.....	29
17. Test again .....	31
18. Connection information.....	31
19. Minute hand.....	32
20. Test and save .....	34
21. Short Summary.....	34
22. Hour hand .....	35
23. Test and Save .....	36
24. Almost correct.....	37
25. Fine tuning.....	42
26. Deploying .....	45
27. Short Summary.....	48

## Introduction

Welcome to 'Getting Started with WireFusion'. Here you will learn the basics of WireFusion through a hands-on example. You will first load an already made WireFusion project, and then preview the presentation. Secondly, we will go through the rather lengthy, but inspiring process of recreating the exact same presentation.

This example shows you different aspects on some of the basic concepts of WireFusion. If you instead would like different samples on the different objects and their behaviours or different WireFusion functions and concepts, then the 'Tutorial exercises' are recommended.

**Note:** No prior knowledge of WireFusion is required for this exercise. However, some acquaintance with names, terminology and general layout of the program are highly recommended. Read about them in the book 'Working in WireFusion'.

## Getting Started

In this Getting Started exercise your will learn how to:

- Load project
- Preview project
- Create a New project
- Set Stage dimension
- Insert objects (Image, System, Time, Math)
- Change image
- Change *Target Area* properties
- Rename objects
- Save project
- Make connections
- Read connection information
- Push parameters
- Set parameters
- Import objects
- Disconnect objects (delete connections)
- Navigate a project using *Folders* view
- Reorder layers
- Use Anti-aliasing
- Publish

To be more specific, we want to recreate the movements of the hands of an ordinary analog watch, but on a web page. To do this we first need pictures of the watch and the hands, then we will instruct WireFusion to rotate the hands after the computer clock. These instructions are what we are going to study next.

## 1. Start WireFusion

Start WireFusion. After installing, you do this by choosing WireFusion from the Start menu in Microsoft Windows. Figure 1 shows how WireFusion looks like when it is started for the first time.

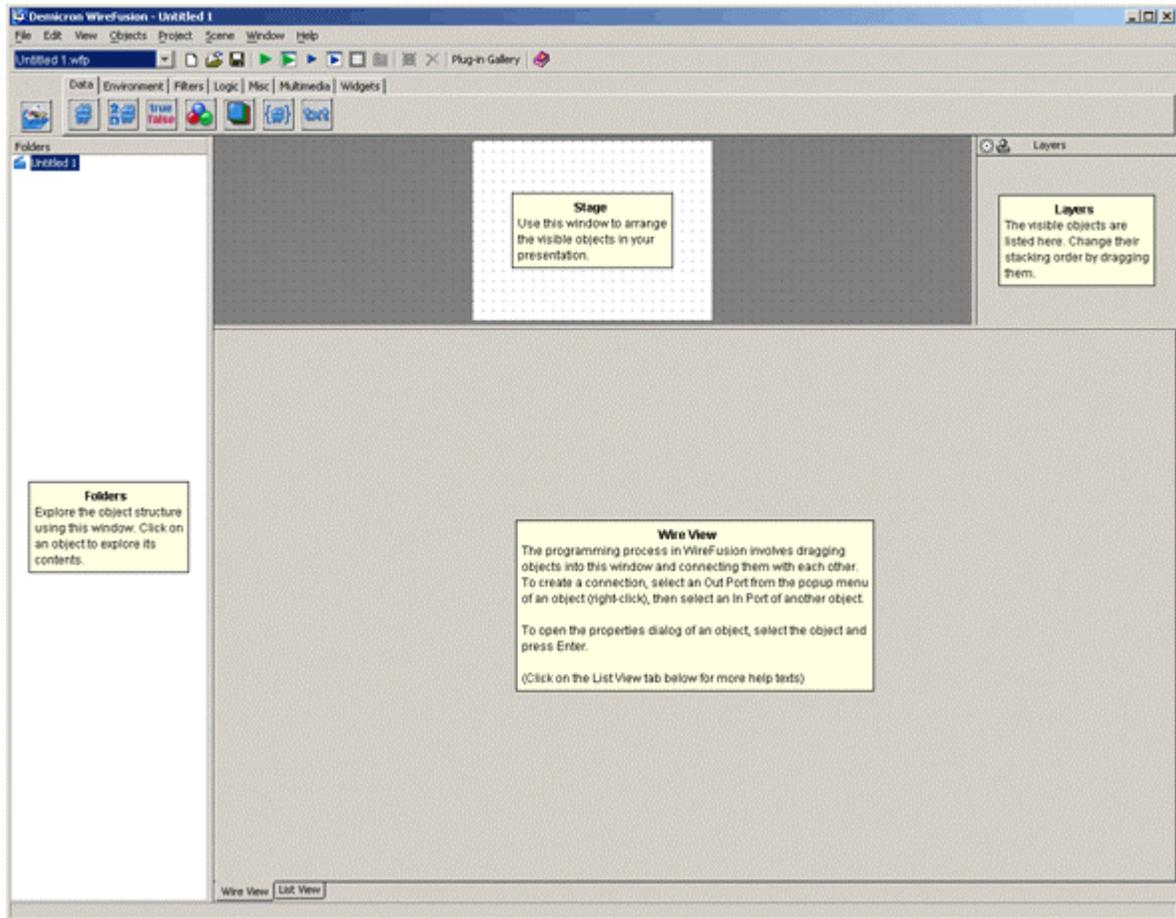


Figure 1. WireFusion after startup

## 2. Loading a Project

To load a project, choose *File > Open Project*. When the file dialog window appears, browse the location of WireFusion on your hard disk and select the project file named '*GettingStarted.wfp*' stored under '*/projects/*':

- *[Path]/WireFusion 3/projects/GettingStarted.wfp*

Click Open to load it (Figure 2.)

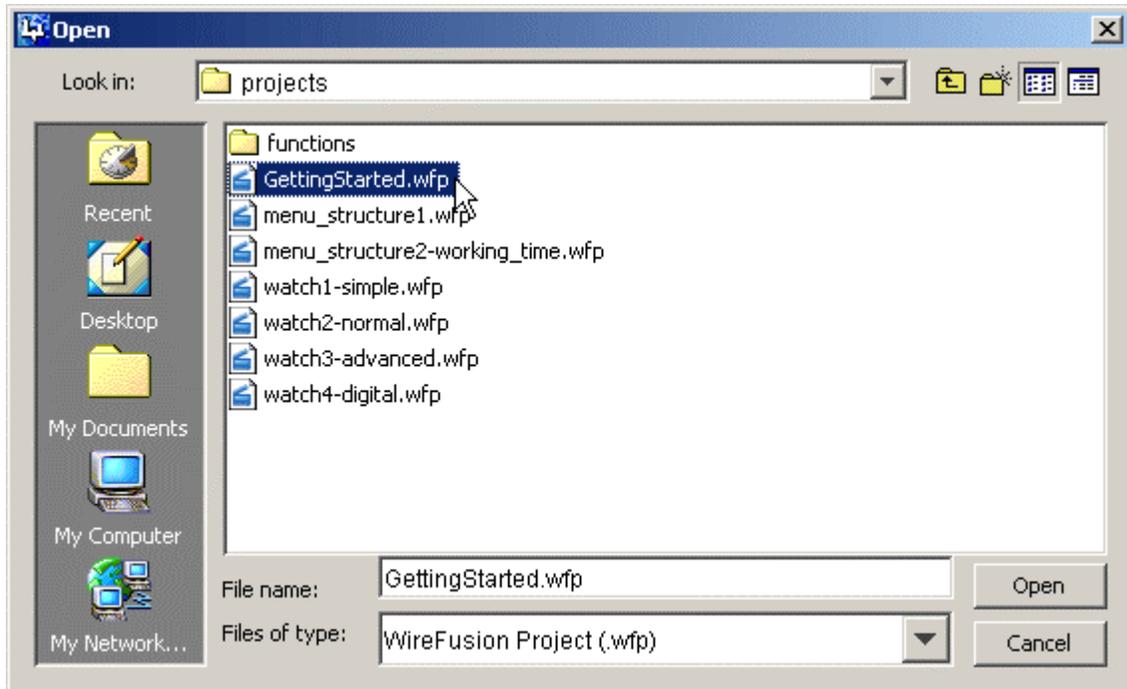


Figure 2. Open project.

### 3. Running a Project

Now you can see some objects in the *Script Area* connected to each other and images and *Target Areas* in the *Work Area* (Figure 3.). Without changing anything, just click the *Preview* button (or press F9) in order to test the presentation (Figure 4.). You should now be able to see the animation of a ticking watch. In fact it is showing the proper time, if you have your computer's system clock set to the right time.

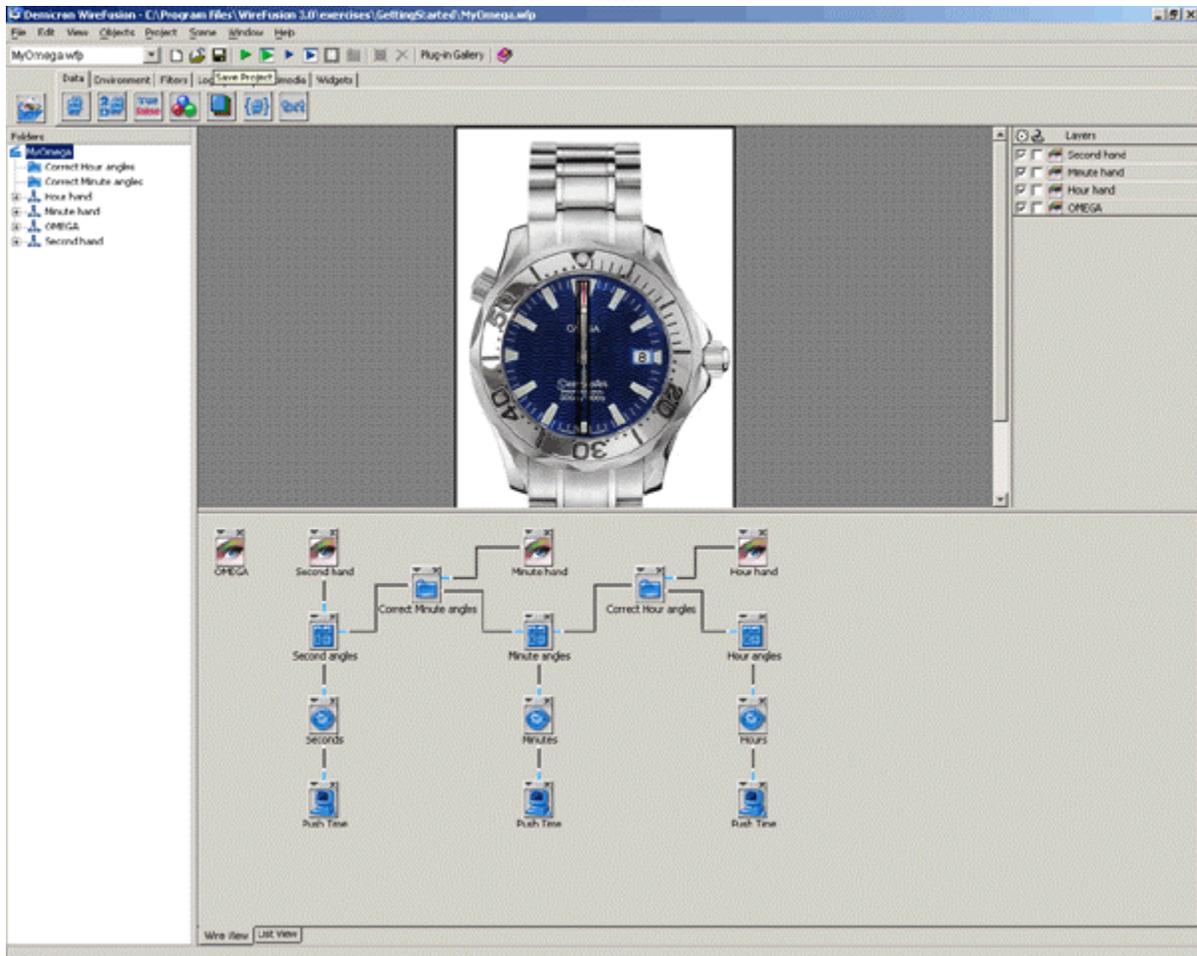


Figure 3. The project opened



Figure 4. The *Preview* button

## 4. Short Summary

In this exercise so far, you have learned to:

- Load an already saved project
- Test the applet in the viewer

## 5. New Project

Now it is time to recreate the previous presentation. To start a new project, either choose *File > New Project* or click the *New Project* button (Figure 5).

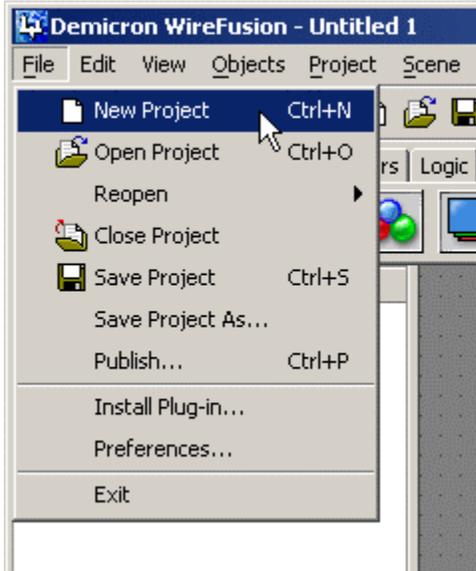


Figure 5. Start a new project

## 6. Set Stage dimension

- Change the *Stage* dimension to 300x510 pixels

The default *Stage* dimension is 240 pixels in width and 180 in height, but for this presentation we want 300 pixels in width and 510 in height. To set the *Stage* dimension for the project, choose *Project > Properties...* (Figure 6).

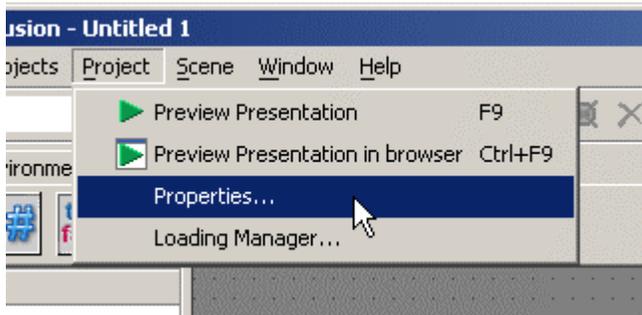


Figure 6. Choosing *Project > Properties*

In the *Scene properties* dialog enter the new *Stage* width (300) and height (510) values, and then press the OK button (Figure 7).

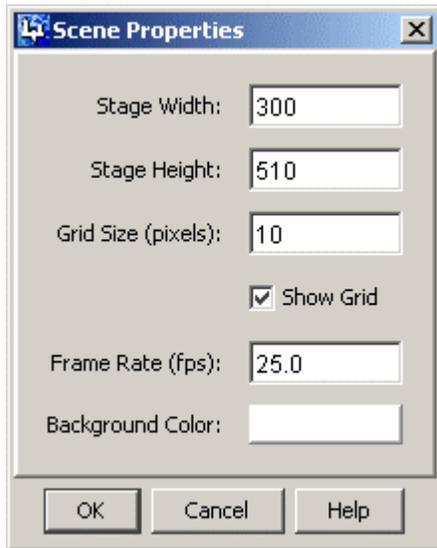


Figure 7. *Scene properties* dialog

**Tip:** Use the windows separator to adjust the different areas so that you can see the whole stage (Figure 8).

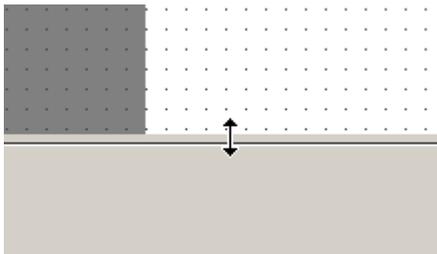


Figure 8. Windows separator

## 7. Insert Image

Now it is time to work with the objects. First we want to insert an image in the project. In the program menu *Objects > Multimedia* you will find an object called *Image* (Figure 9). Alternatively, you will also find *Image* in the Object Bar under the tab called *Multimedia* (Figure 10).



Figure 9. *Objects* menu

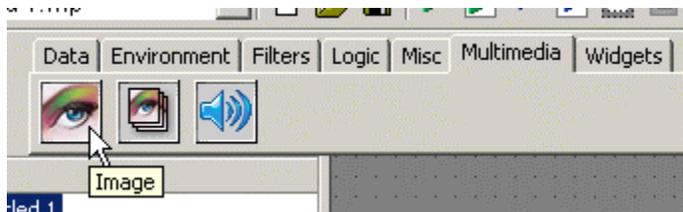


Figure 10. *Object Bar*

Click on the Image object, drag it over the *Script Area* and drop it. The Image object is now placed in the *Script Area* and its properties dialog has opened automatically (Figure 11).

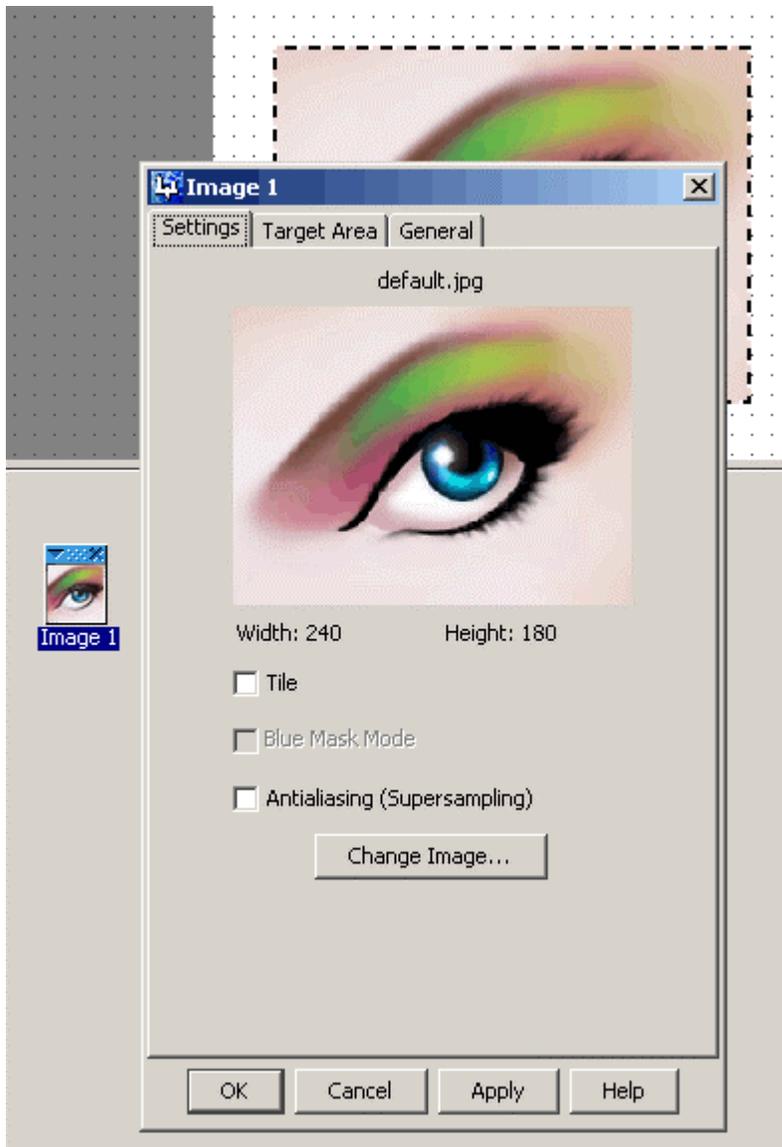


Figure 11. Image properties dialog opened

To load a new image, click the *Change Image...* (Figure 12) button in the dialog and browse (Figure 13) the image named 'watch.jpg' found in the:

- *[Path]/WireFusion 3/exercices/GettingStarted/*

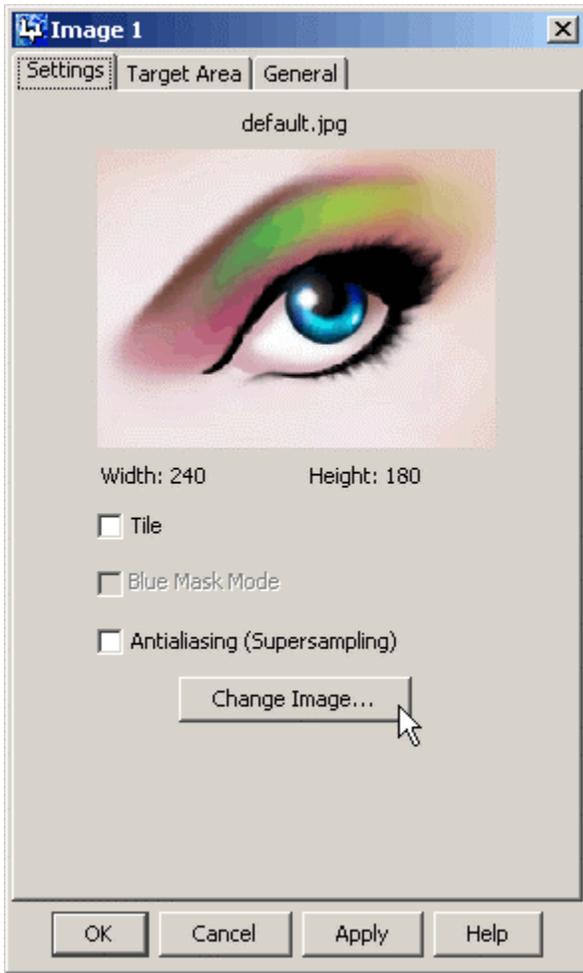


Figure 12. Click the *Change Image...* button

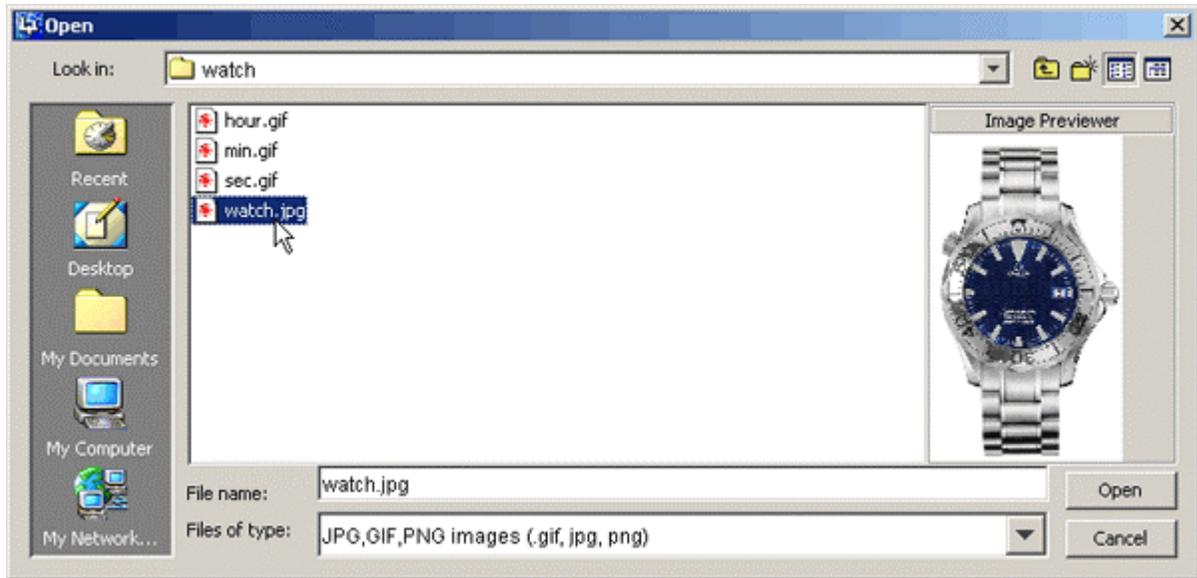


Figure 13. Load dialog

## 8. Adjusting Positions

An image of a watch will now appear behind the properties dialog, inside the Image object's *Target Area*. As you can see, the *Target Area* is a bit displaced compared to the Stage (Figure 14).



Figure 14. The Image *Target Area* a bit displaced

You have several possibilities to displace a *Target Area*. One method is to enter the *Target Area tab* (Figure 15) in the Image properties dialog. There you can, among other things, set the  $x$  and  $y$  position. Set  $X$  to 0 (zero) and  $Y$  to 0 (zero) and leave the width and height to 300 and 510 respectively. Click OK to close the dialog. The watch will now be positioned precisely over the *Stage*.

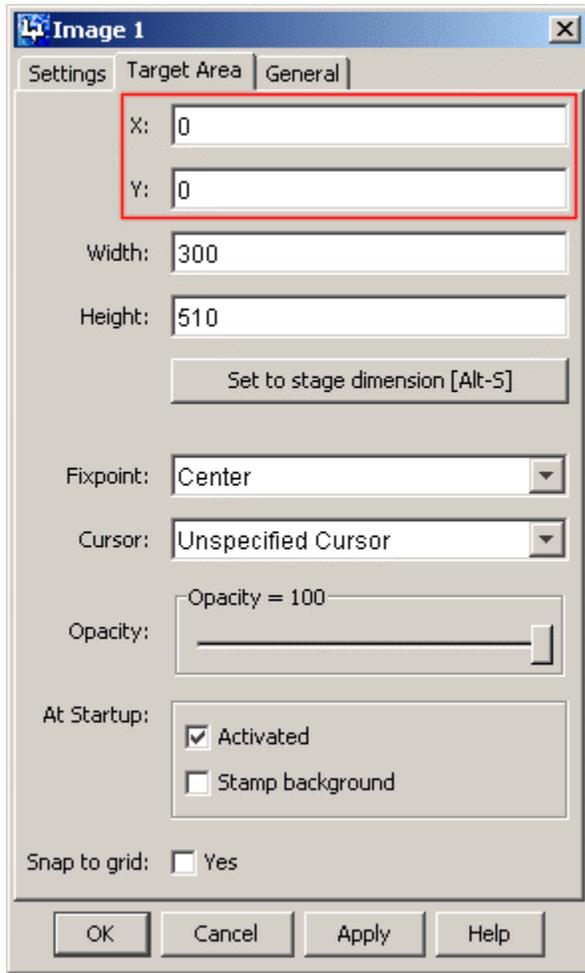


Figure 15. *Target Area* tab

Other methods to move a *Target Area* is to use the mouse directly in the *Work Area* or by using the numpad (2, 4, 6, 8) on your keyboard to move the *Target Area* in relative one-pixel-steps.

To make your project easier to survey, it is recommended to rename the objects. You can for example rename the *Image* object in the *Script Area* to 'OMEGA'. Click on the name under the object and enter the new name (Figure 16).



Figure 16. Renaming the Image object

## 9. Short Summary

In this exercise so far, you have learned to:

- Create a new project
- Set the dimension (size in the web page) of the final presentation
- Insert an Image object, and replace the default picture
- Adjusting some properties in the *Target Area* tab of the Image
- Renaming the Image to 'OMEGA'

## 10. Test

Now we can test the presentation by clicking the *Preview* button (Figure 4). As you remember, it was the green button in the *Menu Bar*. Alternatively, you can also use the shortcut F9 for previewing.

If everything was properly done, the viewer will start and the watch image will be displayed (Figure 17). Close the viewer when done. If it doesn't work, try to redo the previous sections, starting with a new project.

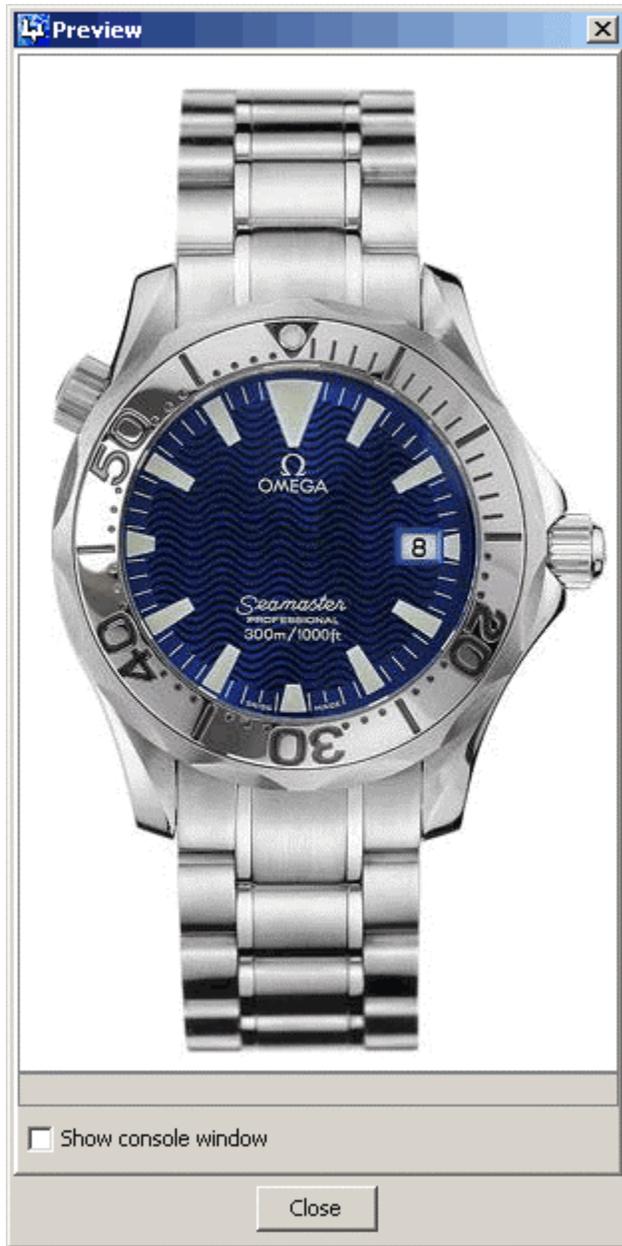


Figure 17. *Preview*

## 11. Save Project

Before continuing, we will save the project. Choose *File > Save Project As...* (Figure 18), then rename your project to e.g. 'MyOmega' and save it in:

- *[Path]/WireFusion 3/exercises/GettingStarted/*



Figure 18. Save the project

## 12. Second hand

Now we want to insert the second hand of the watch. As in step 4, drag and drop a new Image object in the *Script Area*. Load the image called '*sec.gif*'. Press OK and rename 'Image 1' to 'Second hand' (Figure 19).



Figure 19. The second hand inserted

We will now demonstrate the other two methods of adjusting *Target Area* positions. Place your mouse over the 'Second hand' *Target Area*, then press ALT and drag (hold left mouse button and move) the *Target Area* towards the center of the watch dial (Figure 20). The *Target Area* positions (and dimensions) are displayed in the information list above the *Menu Bar* (Figure 21).



Figure 20. Moving the 'Second hand' *Target Area* with ALT+Mouse Drag



Figure 21. *Target Area* position and dimension information

Position the 'Second hand' at the exact position (133, 164), i.e. X:133 and Y:164. Make sure to have the 'Second hand' object selected and use the numpad on your keyboard to move the Target Area. 2=Move Down, 4=Move Left, 6=Move Right and 8=Move Up.

### **13. Make the second hand move**

It is time to give motion to the second hand. Insert from *Objects > Environment* a System object and a Time object (Figure 22). Also insert from *Objects > Logic* a Math object (Figure 23). Close the Math object's properties dialog by clicking the OK button. All objects will now reside in the *Script Area* (Figure 24).

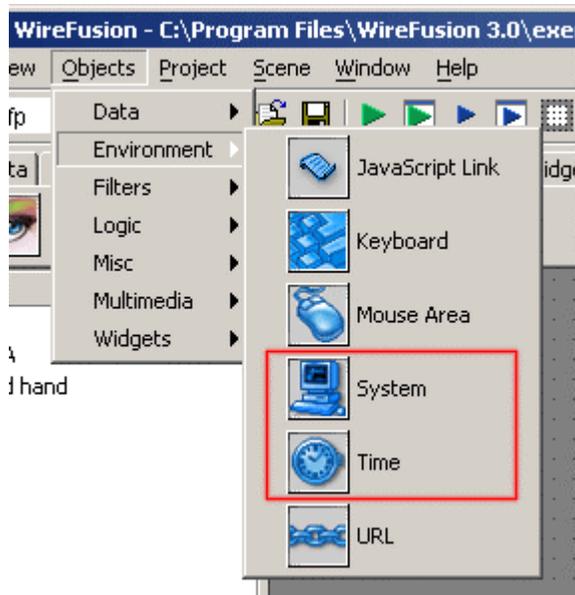


Figure 22. *Objects > Environment*

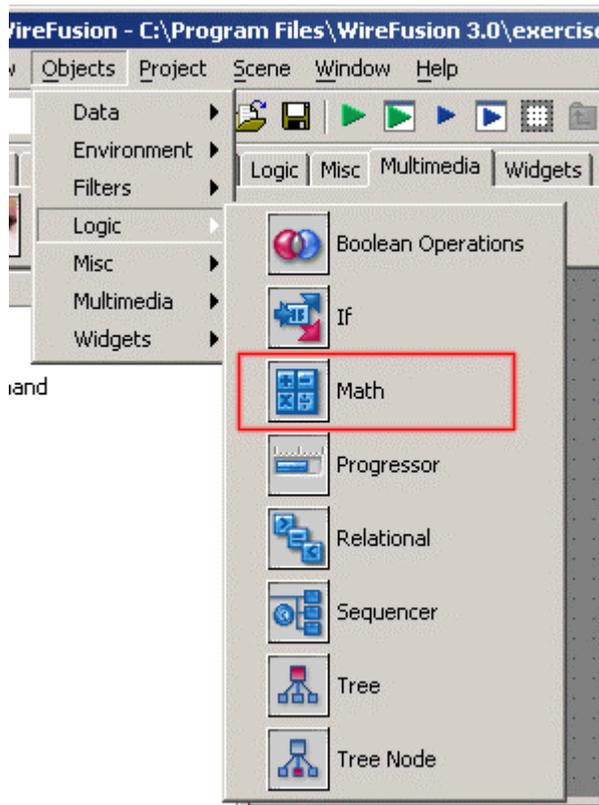


Figure 23. *Objects > Logic*

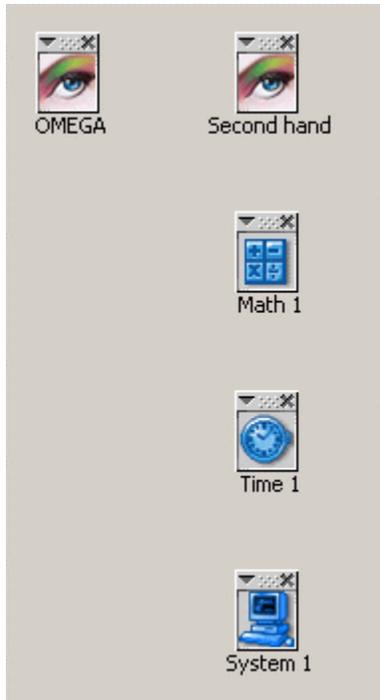


Figure 24. The *Script Area* with new objects

Rename the objects:

- 'System 1' to 'Push Time'
- 'Time 1' to 'Seconds'
- 'Math 1' to 'Second angles'

The next following steps will acquaint you with the most common working procedure in WireFusion, i.e. connecting (or wiring) objects together, where the connections are used for exchanging information and messages (parameters) between the objects. Parameters come into an object through an *In-port* and are sent out through an *Out-port*.

## 14. Pushing time

We will start with the 'Push Time' and the 'Seconds' objects. Open the 'Push Time' local object menu (right click on the object) and select the port *Out-ports > New frame started* (Figure 25).

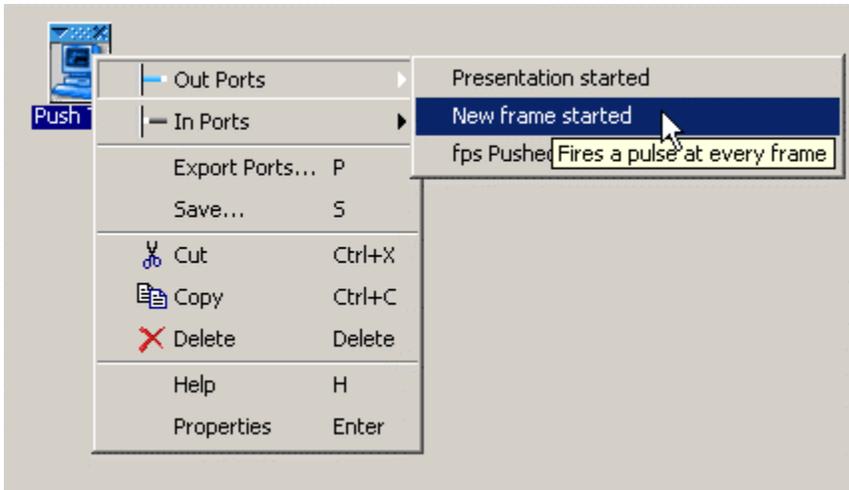


Figure 25. Selecting *New frame started*

The mouse cursor is now changed, which indicates that you are in connection mode (Figure 26).

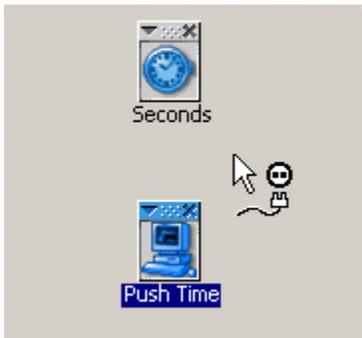


Figure 26. Connection mode cursor

Right click the 'Seconds' object and select the port *In-ports > Push Seconds* (Figure 27).

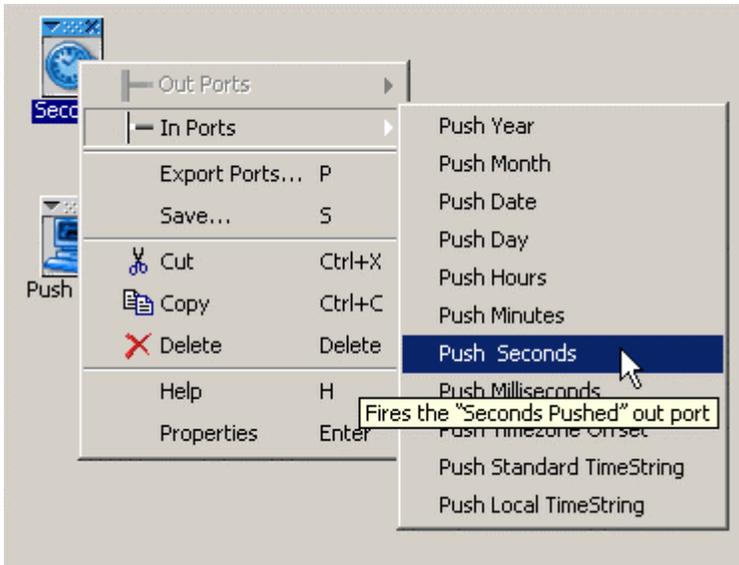


Figure 27. Selecting *Push Seconds*

A connection is now made between the 'Push Time' object and the 'Seconds' object, where the blue end of the connection wire indicates an *Out-port* (Figure 28).

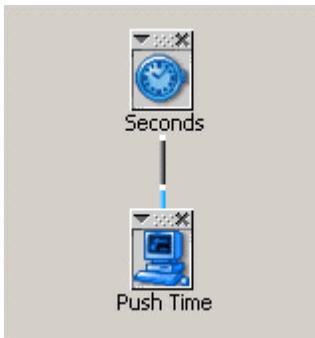


Figure 28. A blue end at the connection wire indicates an out-port

Click with your mouse on the gray connection wire and a connection information will be shown in the *Information Bar* of the program's bottom left (Figure 29).



Figure 29. *Information Bar* displaying connection information

So, what have we accomplished with this connection? While the presentation is running, the object 'Push Seconds' will now, at every frame (i.e. continuously), push out the current second (from the client computer's Date/Time) from the Time object. The seconds will then be pushed out from the Time object's port, *Out-ports > Seconds Pushed*, as a number between 0 and 59.

## 15. Calculating an angle

As the numbers coming out from the 'Seconds' object is between 0 and 59 and the 'Second hand' image is about to rotate 360 degrees we will need to do some calculating. We need to multiply the seconds with a factor of 6 to get 360 degrees, and for this we will use the Math object, here called 'Second angles'.

Connect 'Seconds' with 'Second angles'. Right click 'Seconds' and select *Out-ports > Seconds Pushed [Number]* (Figure 30) and then right click 'Second angles' and select *In-ports > Set a [Number]* (Figure 31).

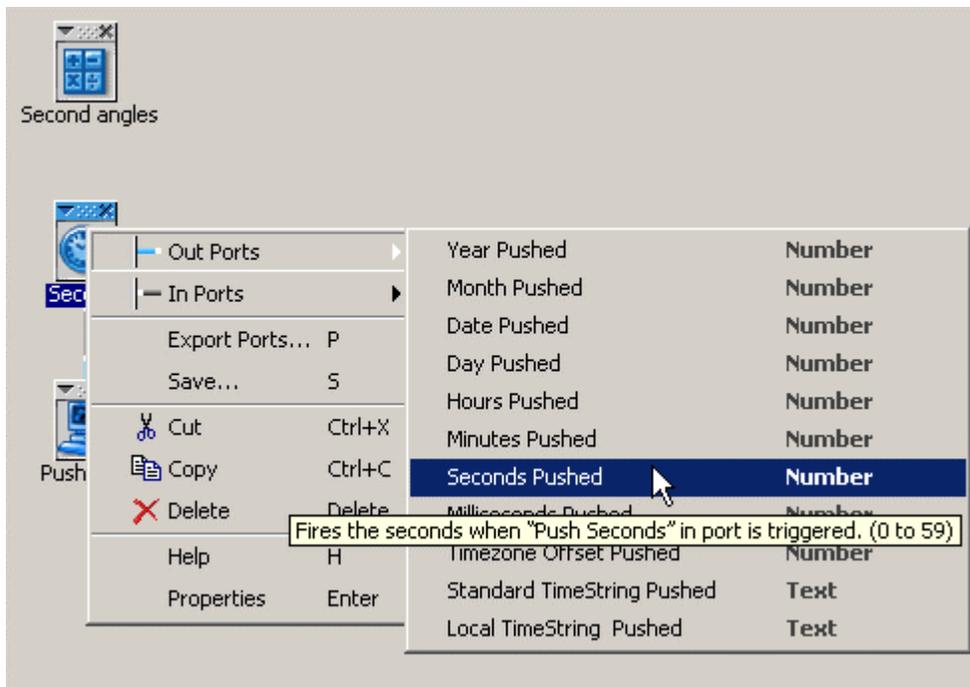


Figure 30. Selecting *Seconds Pushed*

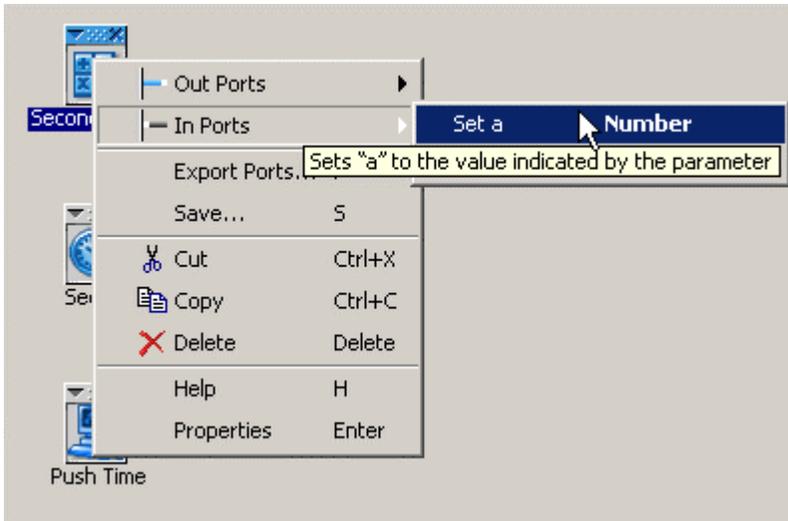


Figure 31. Selecting *Set a*

Now, double click the 'Second angles' object to open its *Properties* dialog (or select the object and press Enter on your keyboard, or open the local object menu and select *Properties*). In the dialog, mark the radiobutton named *double* under the group *Operations*, then select  $a*b$  ( $a$  times  $b$ ) from the drop-down menu (Figure 32).

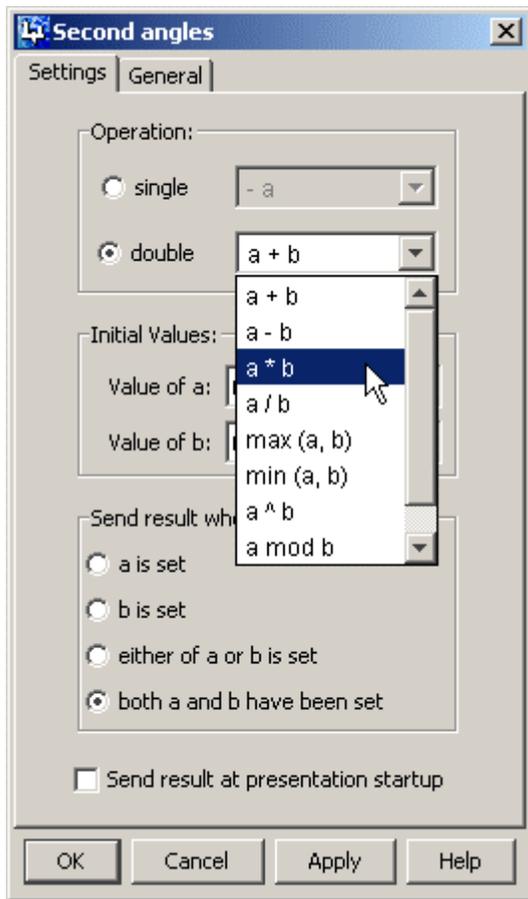


Figure 32. Selecting  $a*b$  from the double drop-down menu

Set the initial value of  $b$  to 6 (Figure 33) and select the radiobutton  $a$  is set (Figure 34). The choice  $a$  is set instructs the Math object to send out the result after the incoming value  $a$  (the seconds) has been set. Click OK to close the dialog.

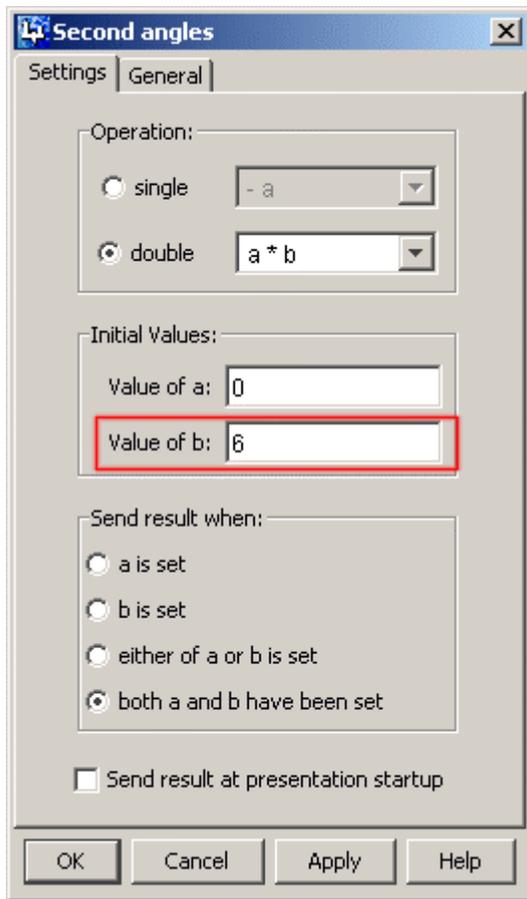


Figure 33. Set initial value of  $b$

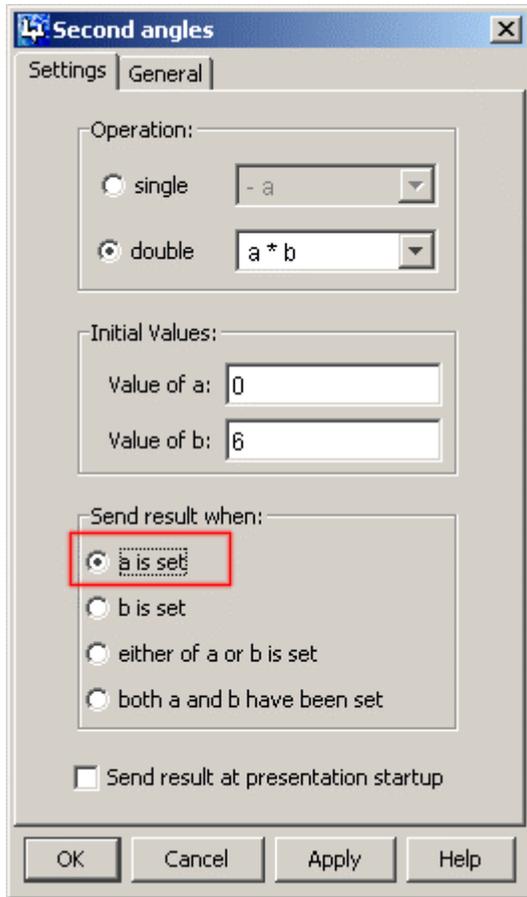


Figure 34. Selecting *a is set*

## 16. Rotating the Second hand

The rotation angle for the 'Second hand' has now been calculated and is sent out through the 'Second angles' port, *Out-ports > Result [Number]*. Right click 'Second angles' and select *Out-ports > Result [Number]* (Figure 35) and then right click 'Second hand' and select *In-ports > Set Rotation Angle [Number]* (Figure 36).

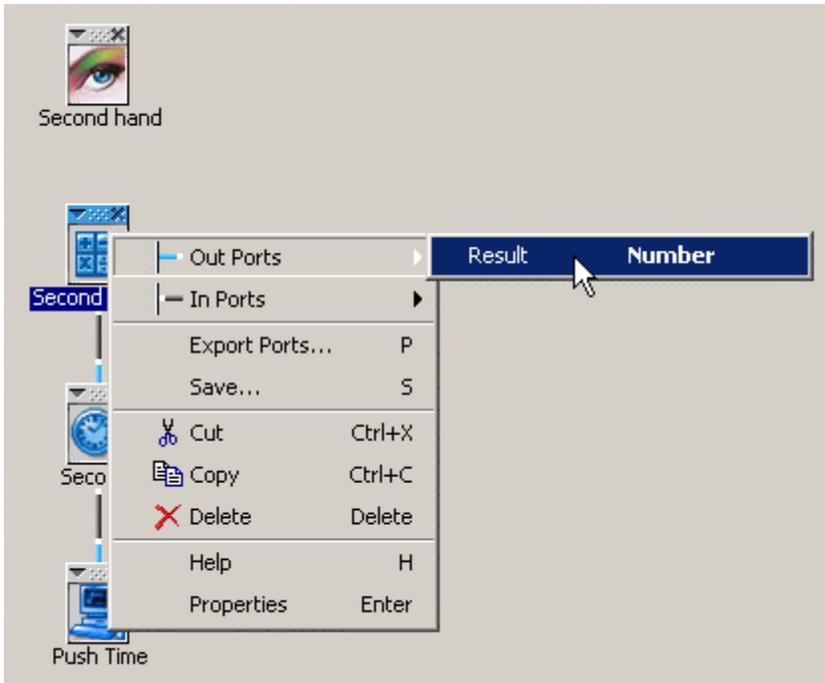


Figure 35. Selecting *Result*

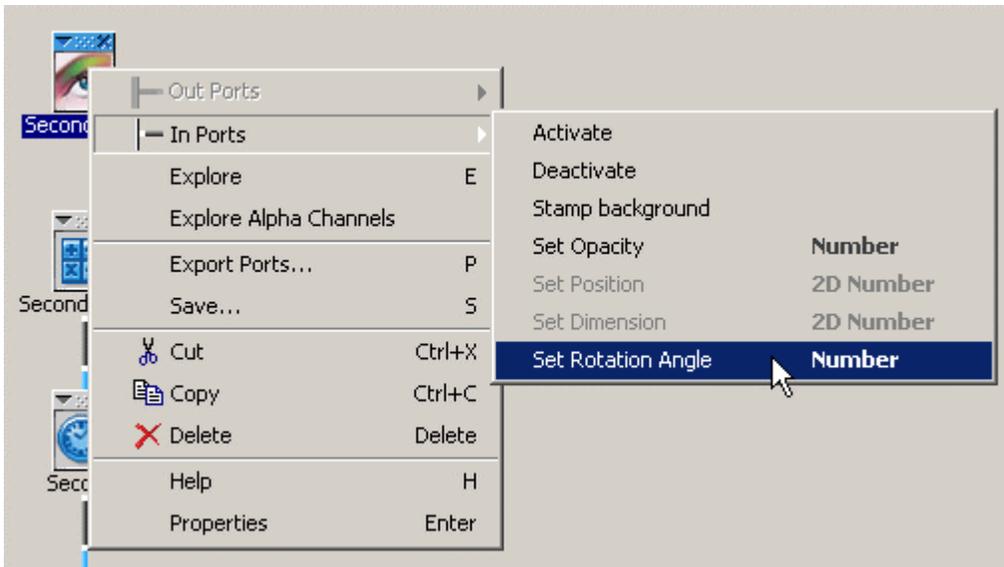


Figure 36. Selecting *Set Rotation Angle*

## 17. Test again

Now press the *Preview* button (or F9) to test what you have accomplished. As you can see the second hand is now moving! Close the viewer when done.

## 18. Connection information

You learned above how to click on a wire to display the information about the connection. But a more thorough method is to switch to the *List View*. In the *List View* all objects and connections are listed in tables.

Click the *List View* tab (Figure 37) and mark the Math object 'Second angles' in the *Object List* (Figure 38). When it is selected, connection informations is displayed to the right, in the *Wire List* (Figure 39). Here you can see how the 'Second angles' *In-port* > *Set a* is connected with 'Seconds' *Out-ports* > *Seconds Pushed [Number]* (Figure 40), and how 'Seconds' *Out-ports* - > *Result* is connected with 'Second hand' *In-ports* > *Set Rotation Angle [Number]* (Figure 41)

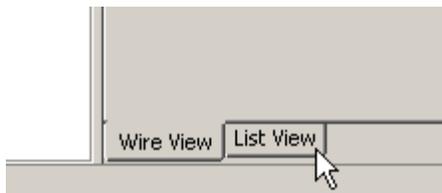
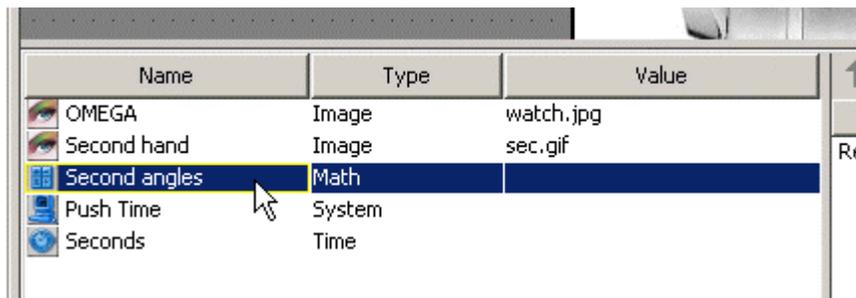


Figure 37. *List View* tab



Name	Type	Value
OMEGA	Image	watch.jpg
Second hand	Image	sec.gif
Second angles	Math	
Push Time	System	
Seconds	Time	

Figure 38. *Object List*

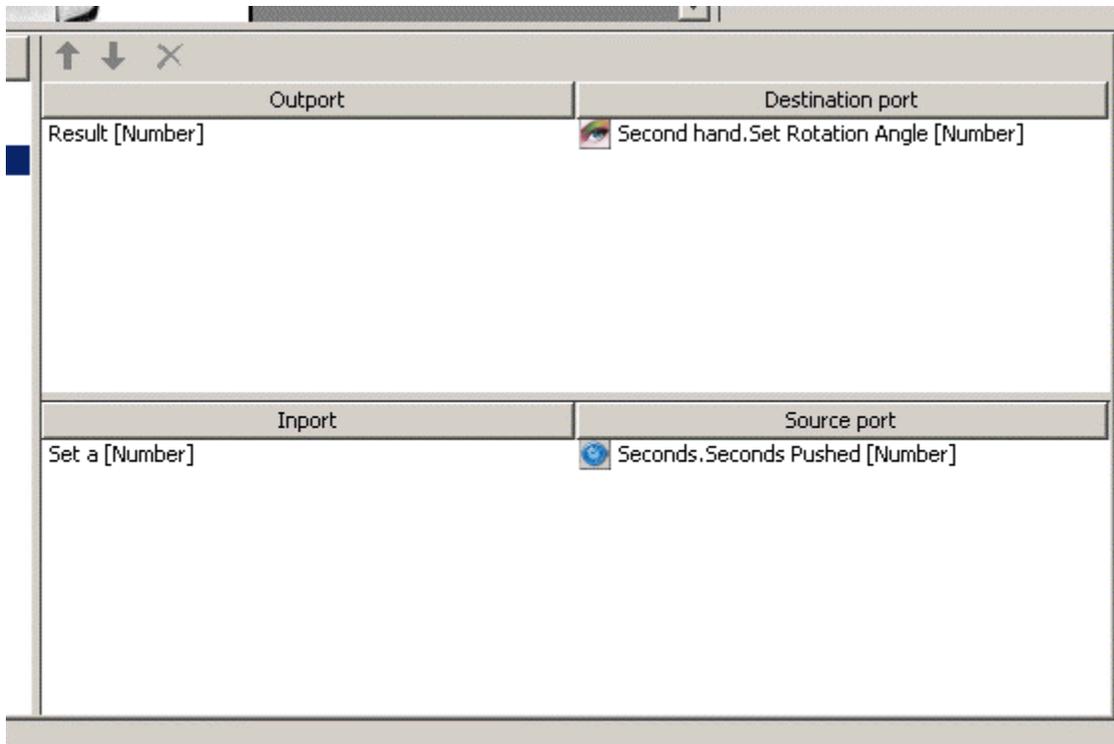


Figure 39. *Wire List*



Figure 40. *Wire List* in-port information



Figure 41. *Wire List* out-port information

## 19. Minute hand

In the exact same way as with the second hand, do the above for the minute hand. Insert an Image, a System, a Time and a Math object (Figure 42).

In the Image dialog:

- load the image called '*min.gif*'
- position its Target Area (in the Target Area tab) at X:130 and Y:164

In the Math dialog:

- choose *double* and select  $a*b$  from the drop-down menu
- set *b* to 6
- select *a is set*

Rename the objects:

- 'Image 1' to 'Minute hand'
- 'System 1' to 'Push Time'
- 'Time 1' to 'Minutes'
- 'Math 1' to 'Minute angles'

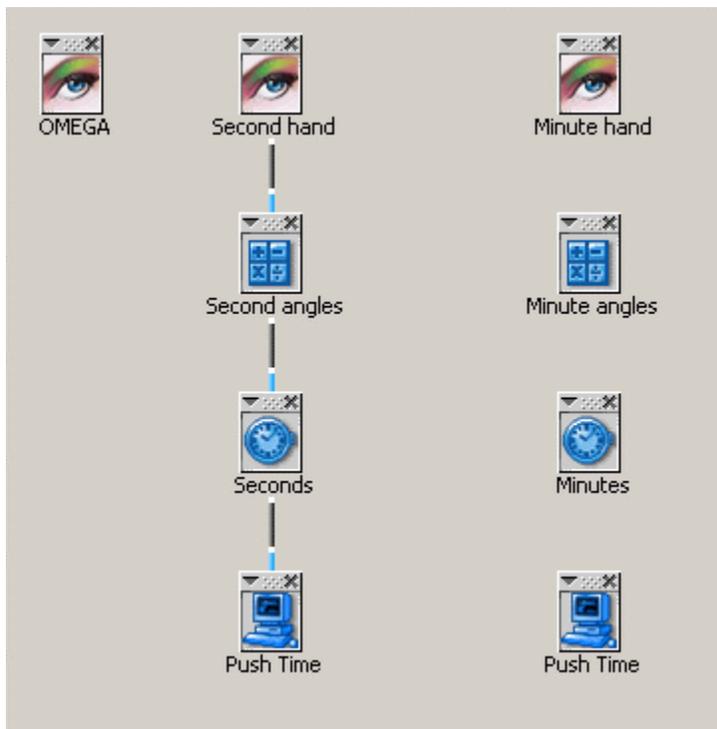


Figure 42. *Script Area* with new objects

Connect:

- From 'Push Time', *Out-ports > New frame started* to 'Minutes', *In-ports > Push Minutes*
- From 'Minutes', *Out-ports > Minutes Pushed [Number]* to 'Minute angles', *In-ports > Set a [Number]*
- From 'Minute angles', *Out-ports > Result [Number]* to 'Minute hand', *In-ports > Set Rotation Angle [Number]*

## 20. Test and save

Make sure to save your project every now and then. Press the Save button (Figure 43).

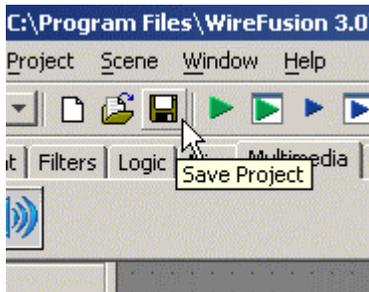


Figure 43. Save button

Then press the *Preview* button again to test your watch.

## 21. Short Summary

In this exercise so far, you have learned to:

- Save and test (preview) a project.
- Push and Set data.
- Connect objects
- Recognize information in the *Information Bar*
- Recognize information in the *List View*

## 22. Hour hand

With the hour hand we do almost the same thing as above. The only difference this time is that we have to multiply the hour by 30, and hence set  $b$  to 30 instead of 6. This is because the hour values from the Time object are in the range from 0 to 23.

Insert an Image, a System, a Time and a Math object (Figure 44).

In the Image dialog:

- load the image called *'hour.gif'*
- position its Target Area (in the Target Area tab) at X:130 and Y:192

In the Math dialog:

- choose *double* and select  $a*b$  from the drop-down menu
- set  $b$  to 30
- select *a is set*

Rename the objets:

- 'Image 1' to 'Hour hand'
- 'System 1' to 'Push Time'
- 'Time 1' to 'Hours'
- 'Math 1' to 'Hour angles'

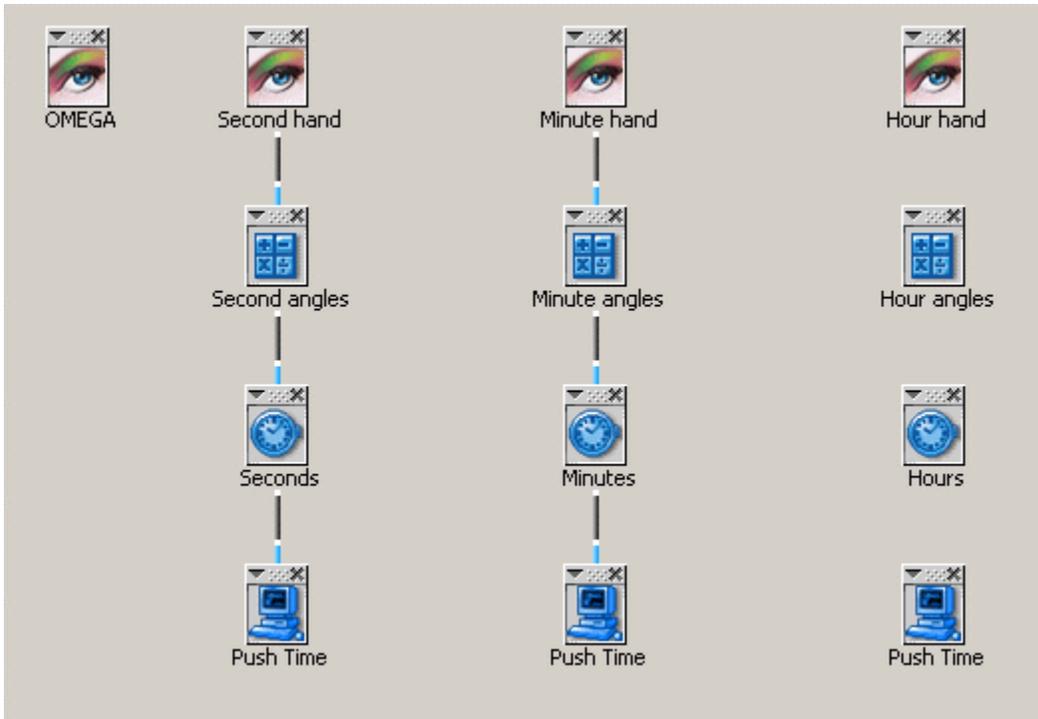


Figure 44. *Script Area* with new objects

Connect:

- From 'Push Time', *Out-ports > New frame started* to 'Hours', *In-ports > Push Minutes*
- From 'Hours', *Out-ports > Hours Pushed [Number]* to 'Hour angles', *In-ports > Set a [Number]*
- From 'Hour angles', *Out-ports > Result [Number]* to 'Hour hand', *In-ports > Set Rotation Angle [Number]*

### 23. Test and Save

Press the Save button and then preview your project. To preview the presentation in the browser, press the *Preview Presentation in browser* button (Figure 45). Make sure to close the browser when done previewing.

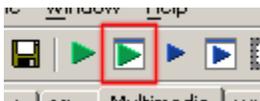


Figure 45. *Preview Presentation in browser*

## 24. Almost correct

When you now tested the watch, you probably noticed that both the minute hand and the hour hand didn't move smoothly between their time positions. The minute hand makes a jump every minute and the hour hand makes a jump every hour. This will now be corrected.

We will import two already configured and saved `Folder` objects, named 'Correct Minute angles' and 'Correct Hour angles'.

In the *Object Bar*, at the far left position, you will find an object called `Import`, insert it into the project in the exact same manner you have done before (Figure 46).



Figure 46. Import object

When you drop it in the *Script Area* a dialog window will appear. Find the object called 'Correct Minute angles.wob', mark it and load it by pressing the Open button. Now do the same thing again, but this time load the 'Correct Hour angles.wob' object instead (Figure 47).

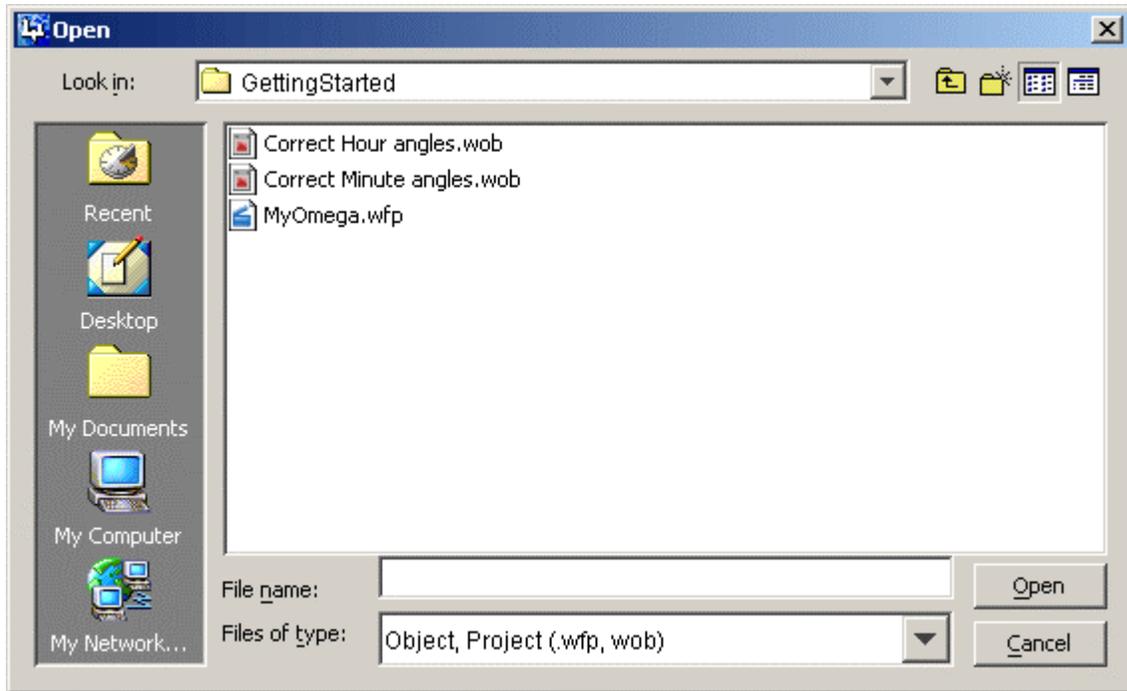


Figure 47. Import object dialog

Place the 'Correct Minute angles' object and the 'Correct Hour angles' object as the Figure shows (Figure 48).

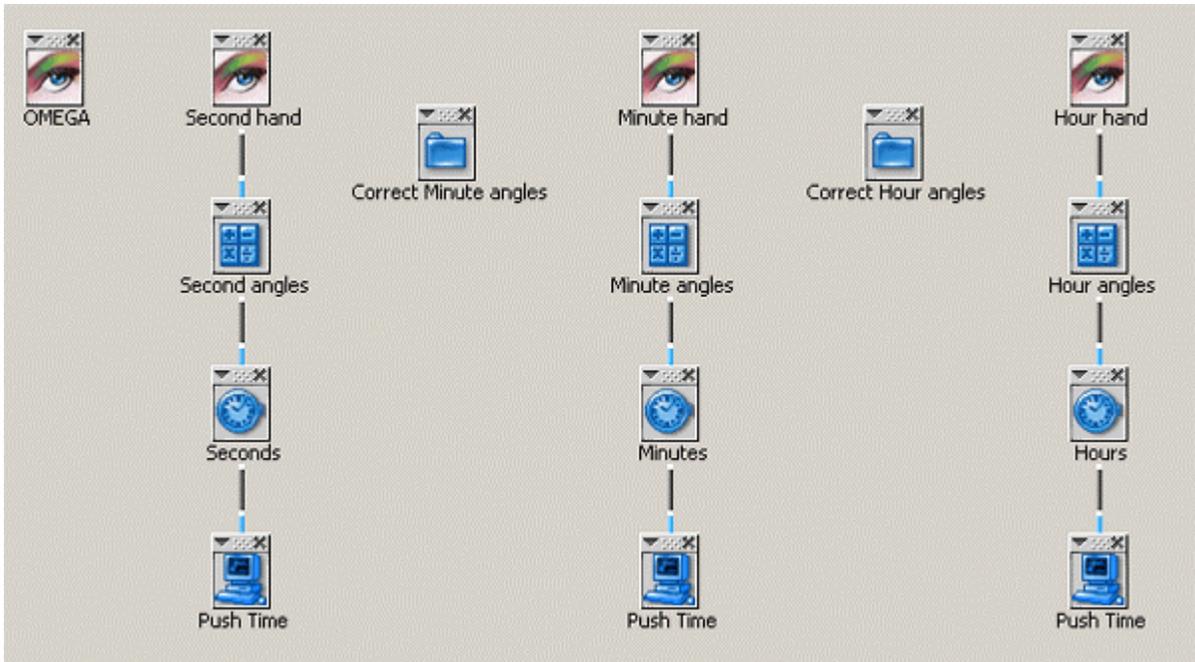


Figure 48. 'Correct Minute angles' and 'Correct Hour angles'

The Folder objects have some other objects grouped within them, doing some calculations we won't explain here. To see what the object looks like, click the 'Correct Minute angles' icon the *Folders* view to open up the Folder (Figure 49 and Figure 50).

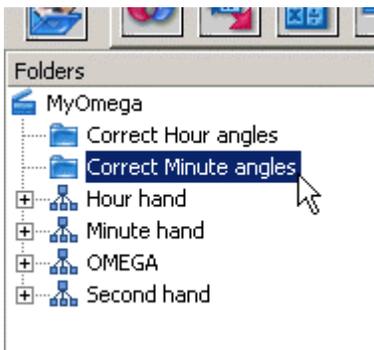


Figure 49. Clicking the Folder icon in the *Folders* view

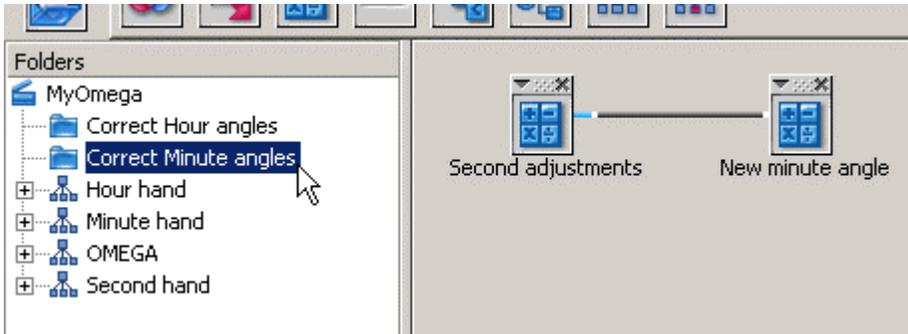


Figure 50. The objects in the 'Correct Minute angles'

To close the Folder, click the project icon 'MyOmega' in the *Folders* view (Figure 51) or click the *Up* button (Figure 52) in the *Menu Bar*.

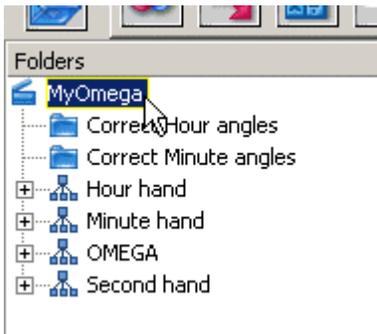


Figure 51. Closing 'Minute angle 2' using the *Folders* view



Figure 52. Closing 'Minute angle 2' using the *Up* button

We will replace the previous calculated angles with these new angles and we start with the minute hand. Mark the connection between 'Minute angles' and 'Minute hand' so it turns light blue. Delete the connection by pressing the *Delete* key on your keyboard. Now we will do three connections.

Connect:

- From 'Second angles', *Out-ports > Result [Number]* to 'Correct Minute angle' *In-ports > Set second angle [Number]*
- From 'Minute angles', *Out-ports > Result [Number]* to 'Correct Minute angle' *In-ports > Set minute angle [Number]*
- From 'Correct Minute angle', *Out-ports > New Minute angle [Number]* to 'Minute hand', *In-ports > Set Rotation Angle [Number]*

OK, done with the minute hand. Let us do the same thing with the hour hand. Mark the connection between the 'Hour angles' and 'Hour hand', so it turns light blue. Delete the connection by pressing the *Delete* key on your keyboard. Now we will do three more connections.

Connect:

- From 'Minute angles', *Out-ports > Result [Number]* to 'Correct Hour angle' *In-ports > Set minute angle [Number]*
- From 'Hour angles', *Out-ports > Result [Number]* to 'Correct Hour angle' *In-ports > Set hour angle [Number]*
- From 'Correct Hour angle', *Out-ports > New Hour angle [Number]* to 'Hand hand', *In-ports > Set Rotation Angle [Number]*

Now all the connections are done (Figure 53). Save the project and then preview it to see if the hands are moving as they should.

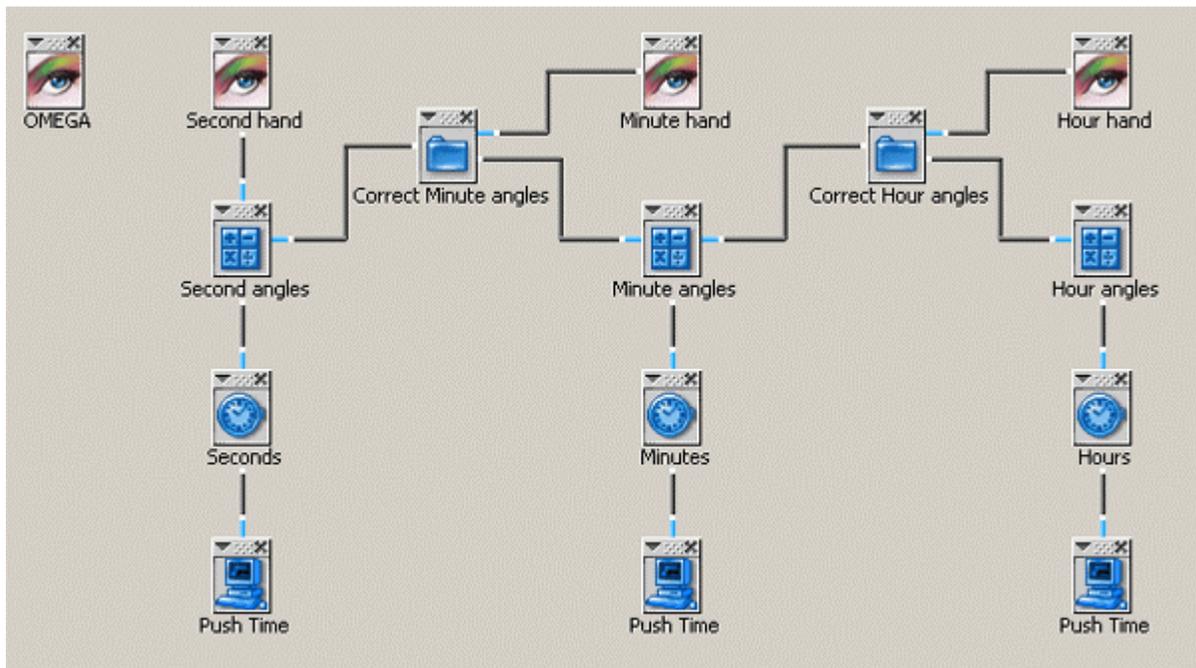


Figure 53. Connections completed

## 25. Fine tuning

We are almost finished. We need some final adjustments before we will publish this watch as an HTML file.

To start with, we will adjust the layer order of the hands (if needed). All objects in WireFusion with a *Target Area*, as for example the Image object, are placed in a layer hierarchy.. Layer 1 is in the back, layer 2 is in front of 1, and layers 3 is in front of 2 and so on. In the *Layers* view, you can see how the layers are ordered (Figure 54).



Figure 54. *Layers* view

In the example, we want the second hand to be placed at the front (at the top) so we will need to re-order it. The minute hand will be placed below the second hand and the hour hand below the minute hand. At the bottom we will have the watch image. To change the layer order, simply drag the layers to the desired position in the *Layers* view (Figure 55).



Figure 55 The layers in order

If you now preview the presentation, the hands will be displayed in a correct layer order.

Maybe you have noticed that the watch hands are a bit jagged on the edges when rotated? Using the anti-aliasing option found in the Image object's properties dialog can eliminate this. Double click the 'Second hand' object and mark the checkbox *Antialiasing (Supersampling)*. Press OK. Now do the same thing with the 'Minute hand' and the 'Hour hand' (Figure 56).

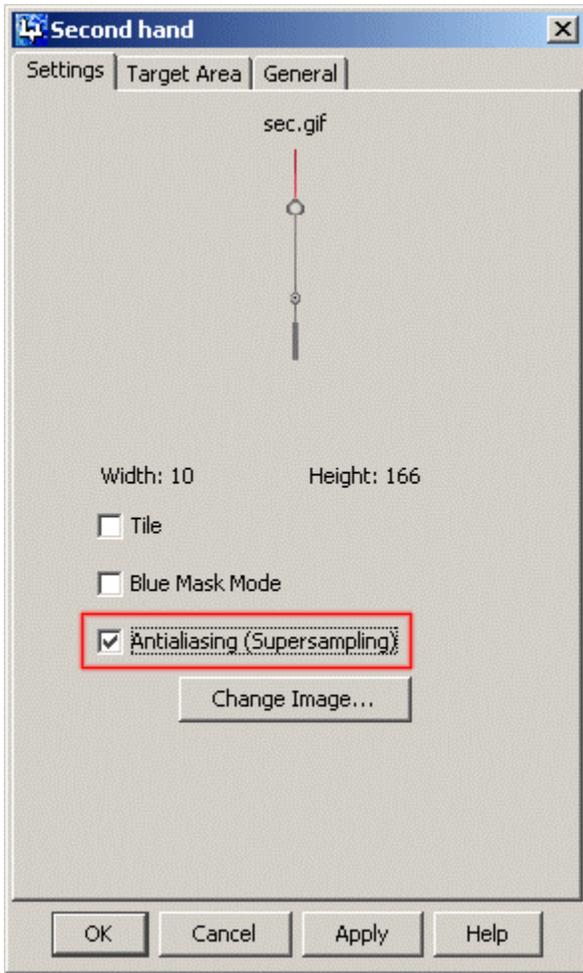


Figure 56. Marking the *Antialiasing (Supersampling)* checkbox



Figure 57. The difference between using antialiasing (left) or not (right)

To make the project easier to survey, you can change the connection color. Right click on a connection and choose a new color from the menu (Figure 58). Make all connections related to the second hand green, the minute hand red and finally the hour hand yellow (Figure 59).

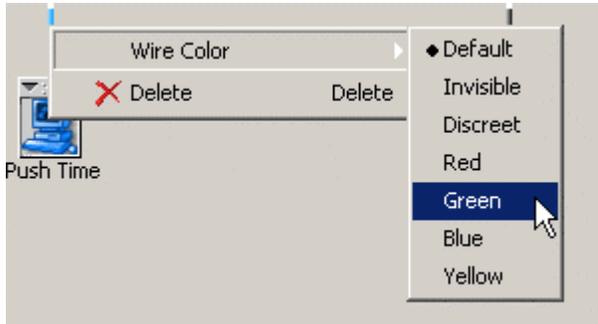


Figure 58. The connection color menu

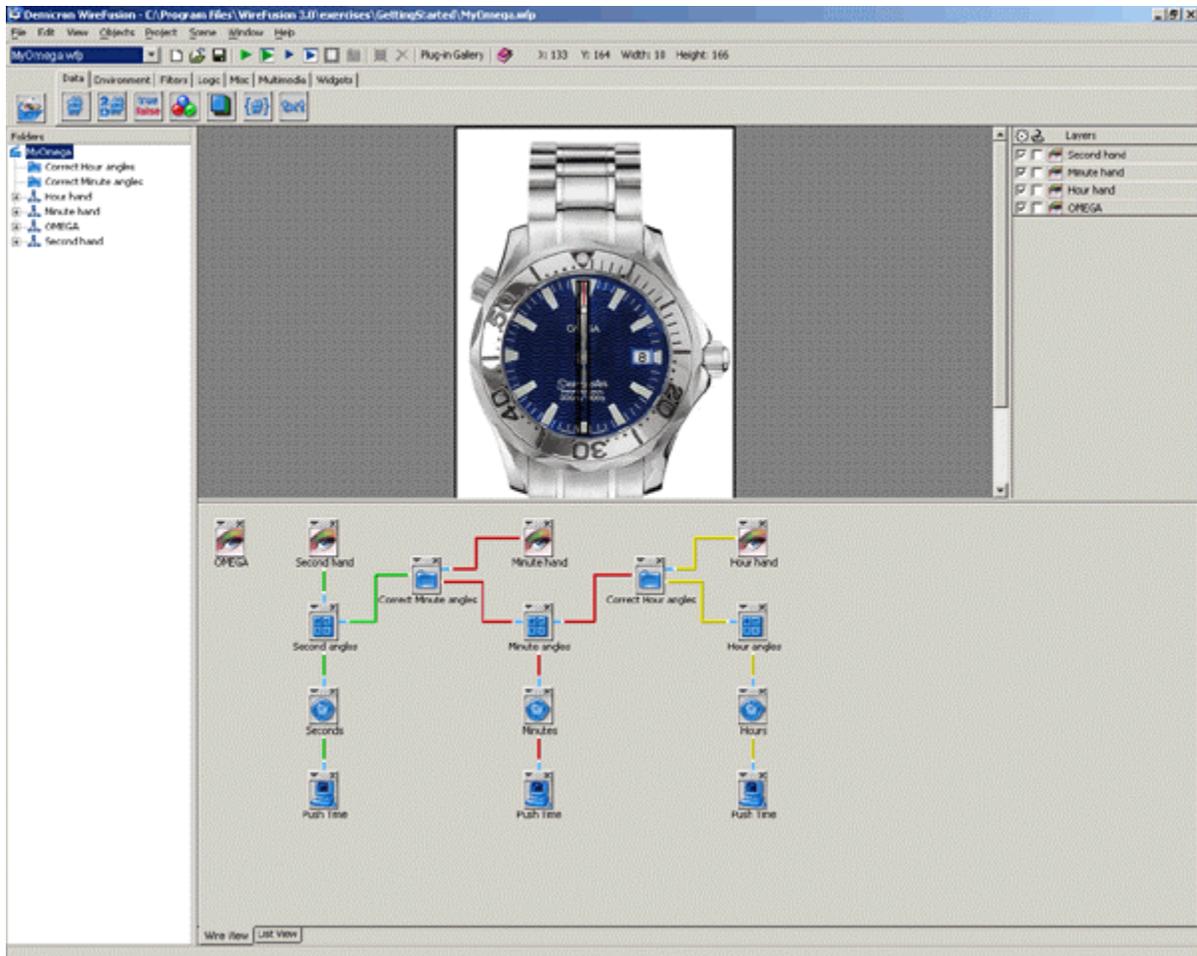


Figure 59. Colored connections

## 26. Deploying

Now it is time to publish your watch to an HTML page. Choose *File > Publish...* (Figure 60) in order to open the publish dialog window (Figure 61).

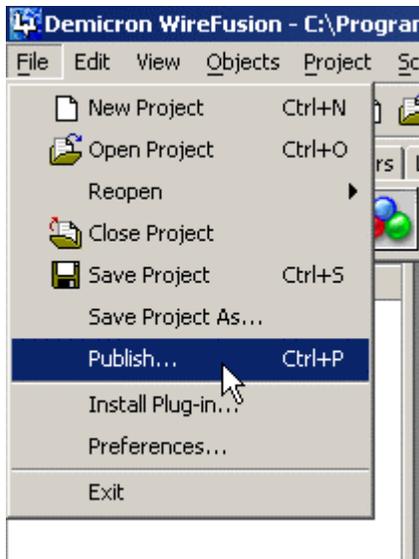


Figure 60. Opening the *Publish* dialog

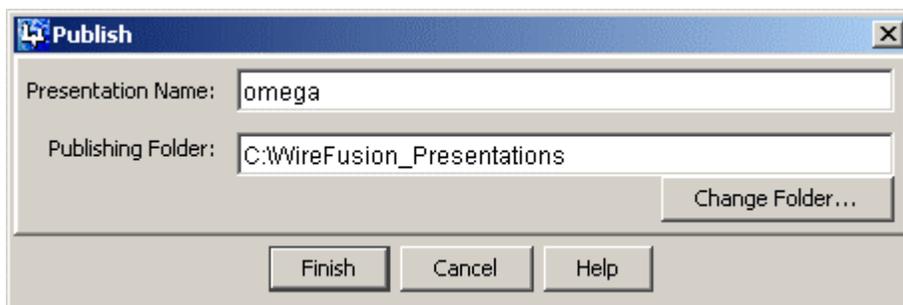


Figure 61. The *Publish* dialog

- In the *Presentation Name* field, write the name for your presentation, e.g. 'omega'
- In the *Publishing Folder* field, write a path to the folder you want to save your presentation in, e.g. 'c:\WireFusion\_Presentations\omega'. If these folders don't exist, then the program will create them for you.
- Press *Finish* to deploy.

If you now go to 'c:\WireFusion\_Presentations\omega' you will find an HTML file named 'omega.html' and a folder called 'resources' which contains all the files needed for the presentation to work. Double click the 'omega.html' to test the browser in your default browser (Figure 62).

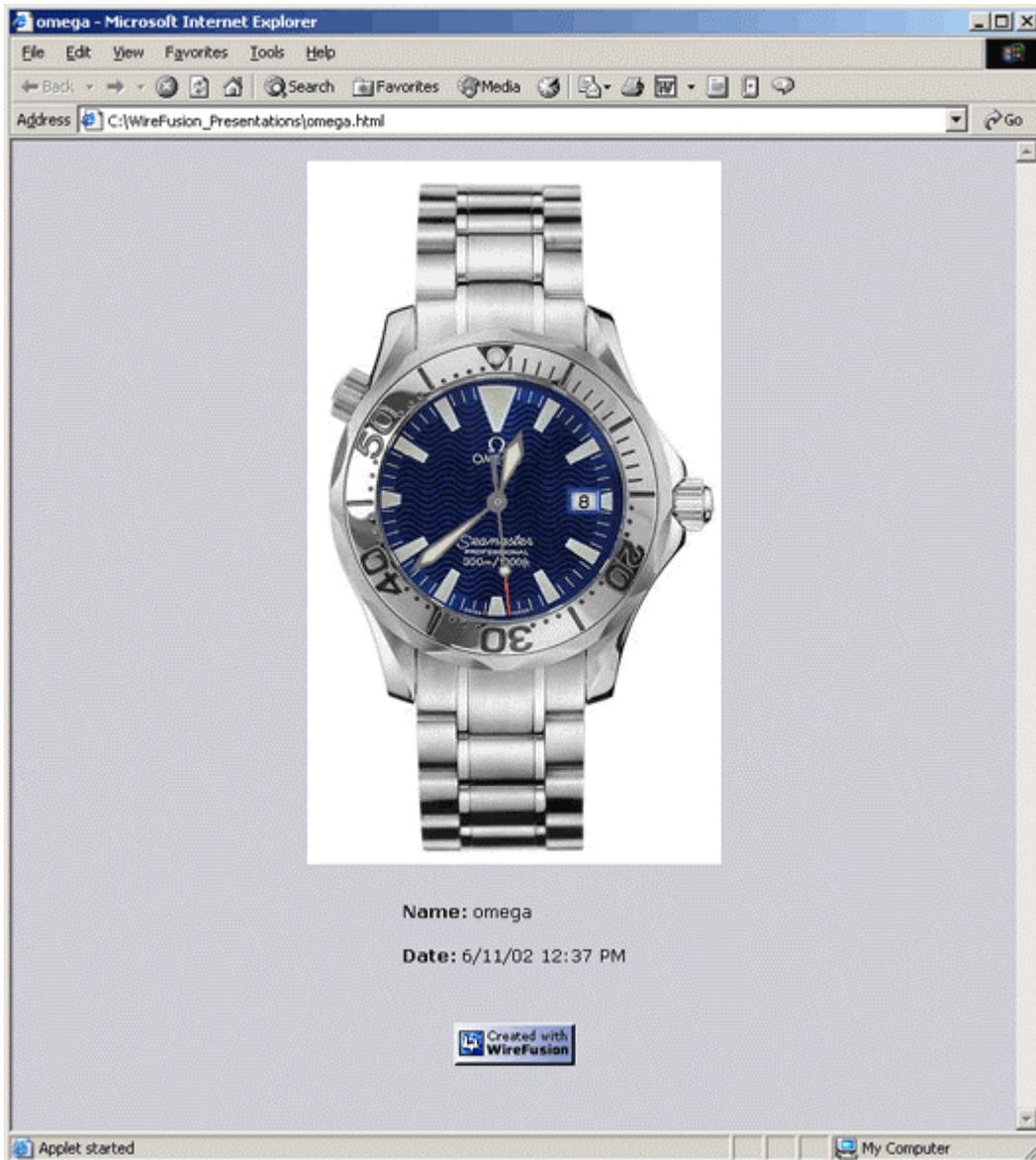


Figure 62. The final watch viewed in the browser

**Tip:** Use a third party HTML authoring program to insert your presentation into another HTML page. Just make sure to have the 'resources' folder in the same directory as your HTML file. Upload everything to your server and you are done!

## **27. Short Summary**

The final things you have learned in this exercise:

- Import object
- Delete connections
- Re-order layers
- Get smooth edges using anti-aliasing
- Deploy a presentation