

December 27, 2017

Orion Scimitar Software Application Note

New Advanced Device Outline Creation

Two new advanced wizards were added in Release 2.0, which allow creation of a package by either using the image recognition algorithm or the system's motion mechanism to measure the part. The latter can be used when a package's dimensions are not readily available.

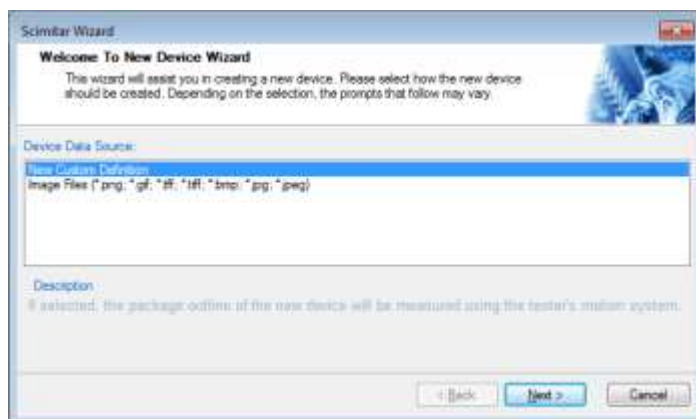
Note: The wizards are not accessible when a testplan is running, as they both require pin alignment to be performed to complete the process. Alignment is done once the package definition is complete and before a document is created. Pin targets can be verified as well prior to creating a document.

Select the create "New (advanced)" device from the Home tab of the Main application



This will open the New Device Wizard, which allows the user to select the Device Data Source to use to create a new device.

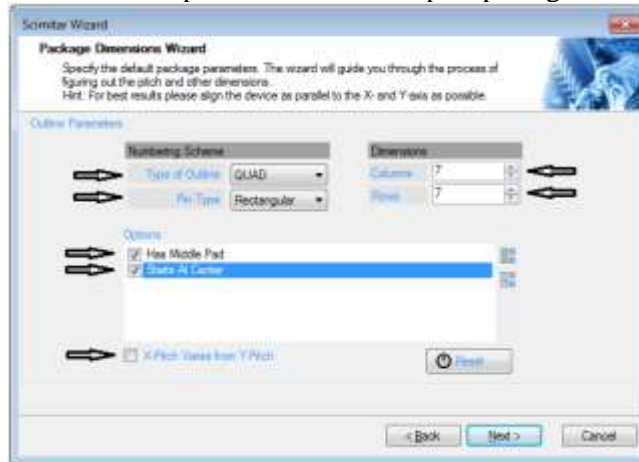
- Selecting "New Custom Definition" will allow creation of a package using the system's motion mechanism to measure the part. Limited device mechanical information is required.
- Selecting "Image Files" will allow creation of a package using the image recognition algorithm. This feature allows images, such as a photo of the device captured on a cell phone to be used to create the device outline.



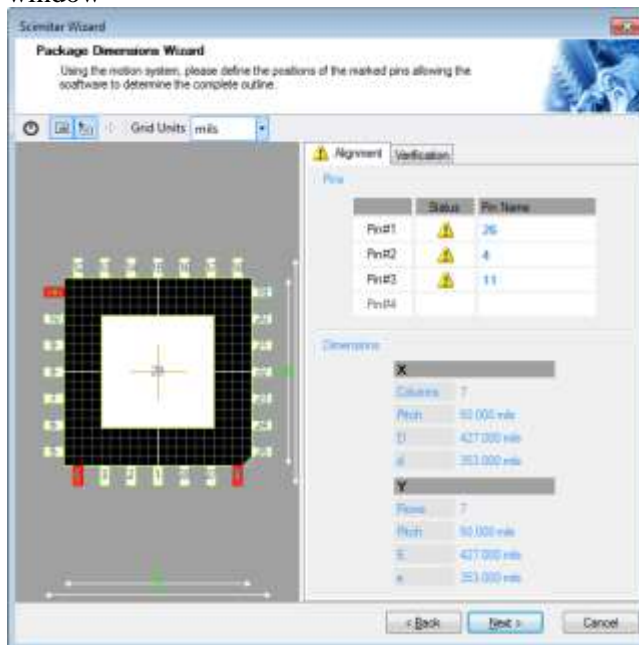
Selecting to create using “New Custom Definition”

On the Package Dimensions Wizard window, a number of default device parameters must be selected before moving to the alignment process for configuring the device.

- For instance, in the screen shot below the “Type of Outline” has been selected as a *Quad*, with a “Pin Type” of *Rectangular*.
 - Based on the “Quad” outline, the following needs to be entered
 - values for “Columns” and “Rows”
 - selection of whether the package has a Middle Pad
 - selection of whether the pin numbering Starts at the Center (rather than the corner)
 - If pin spacing is not symmetrical, select “X-Pitch Varies from Y-Pitch” which will allow independent selection of pin spacing on the sides of the package



- Once the above selections are made, select Next which will open the Alignment window



- On the Alignment window, there are a number of parameters which can be used during the alignment process



Reset Alignment removes any previous alignment values



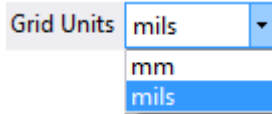
Display Names will add the pin numbers to the device display



Show Tooltips

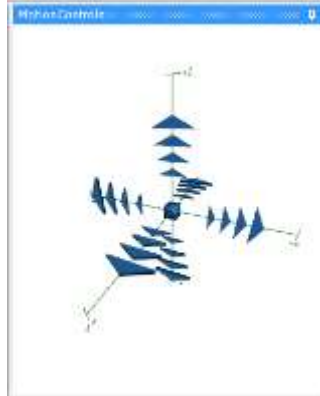


Show Crosshairs will show crosshairs attached to the mouse when over the device view



Selection of the appropriate Grid Units is important, as these units will be used during the alignment and creation of the package

- As shown above on the Alignment plane window screen shot, the required Alignment Pins are listed in the Alignment tab (right pane) and are highlighted in red on the device display. Aligning the required pins will provide the coordinates required to calculate the devices pin pitch and pin locations for all remaining pins.
 - Alignment of the required pins is done using the normal alignment process within the Orion Scimitar software. Using the Motion Controls and front and side cameras, align the required pins (either 3 or 4 depending on the package type).

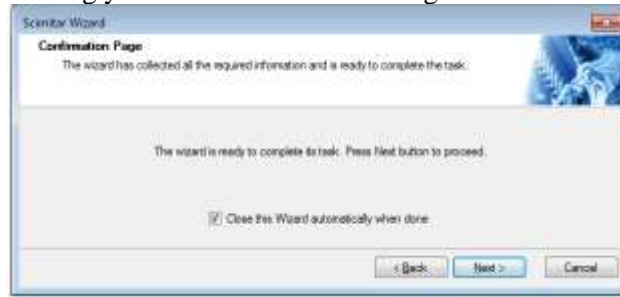


- Once the pogo is positioned (aligned) on the required Alignment pin, select the alignment Pin# and this will change the Pin#'s Status to green

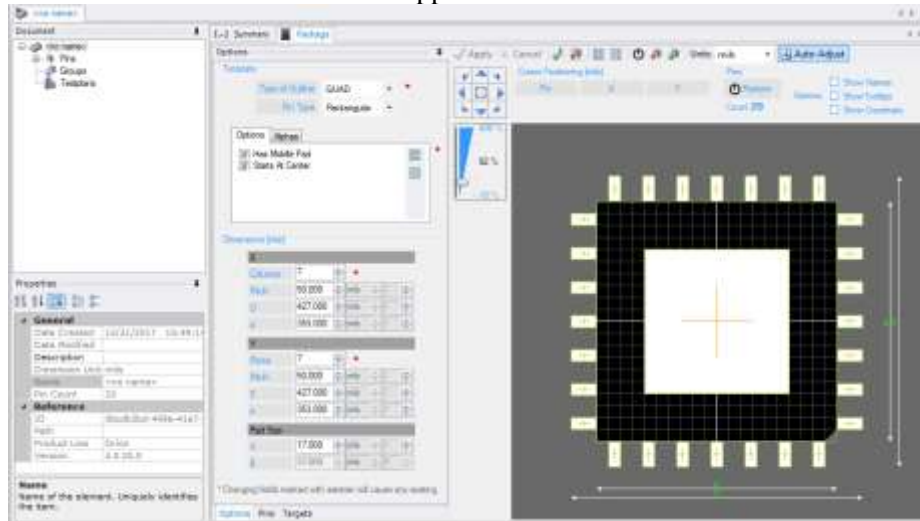
| Alignment | | |
|--------------|--------|----------|
| Verification | | |
| Pins | | |
| | Status | Pin Name |
| Pin#1 | ✓ | 26 |
| Pin#2 | ⚠ | 4 |
| Pin#3 | ⚠ | 11 |
| Pin#4 | | |

- As pins are aligned, the X and Y dimensional information will update accordingly
 - NOTE: To achieve better accuracy during the alignment process, position the pogo pins as close to the designated target as possible. The target is indicated by a cross in the UI.

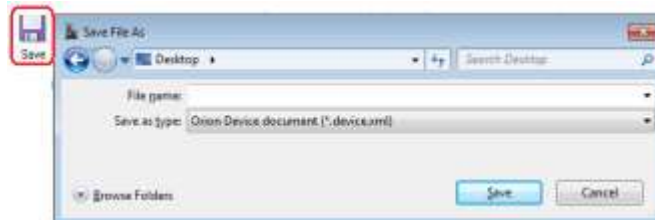
- Once all required pins have been aligned and optionally verified, select Next which will bring you to the Confirmation Page



- Selecting Next will finalize the creation of the package and open the device as <No Name> in the Orion Scimitar application



- Save the device, providing the appropriate File Name and storage location. File will be stored in the selected location as a .device.xml file



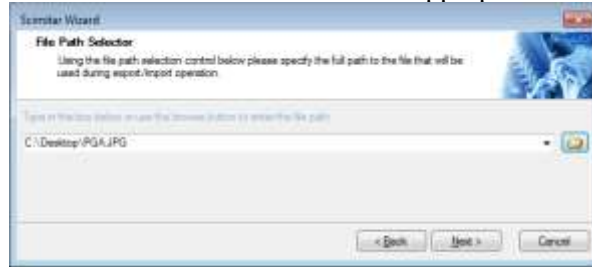
Selecting to create using “Image Files”

- First, take a photo of a device saving it on the system PC. It’s recommended to crop the photo using a photo editor, like Paint so that only the device is visible in the image file. It is also recommended to retain high contrast when taking the photo.

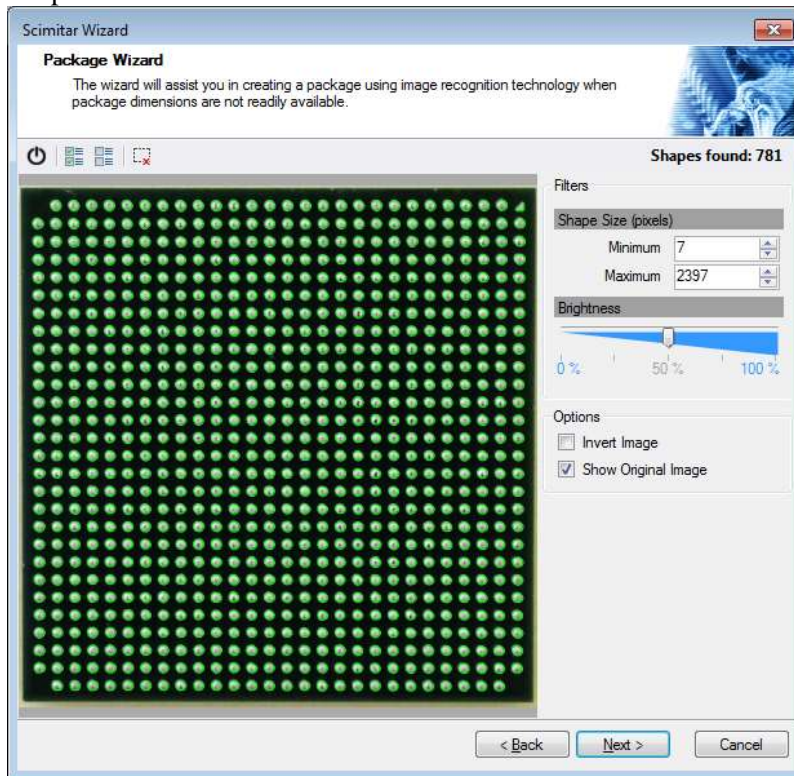


Photo taken using a cell phone, with the photo cropped to size

- Next, on the File Path Selector window select the appropriate file and select Next



- The Package Wizard window will appear, showing the device image as “Show Original Image” under Options is the default. An indication of the number of Shapes found: # is also shown



- On the Package Recognition window, there are a number of parameters which can be used during the package recognition process



Reset Recognition Parameters will revert to the initial parameters



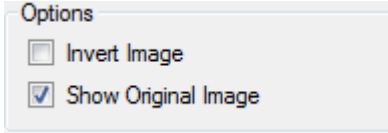
Select All Shapes will highlight all shapes recognized by the software




Clear Selection will unselect any shapes that were selected

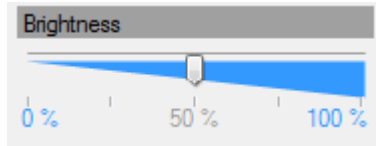


Delete Selected Shape(s) will delete any selected shape which the user doesn't want to become part of the package during the recognition process



Selecting *Invert Image* will reverse the color scheme of the view
Deselecting *Show Original Image* will remove the original image, showing only what the recognition algorithm has determined to be part of the package

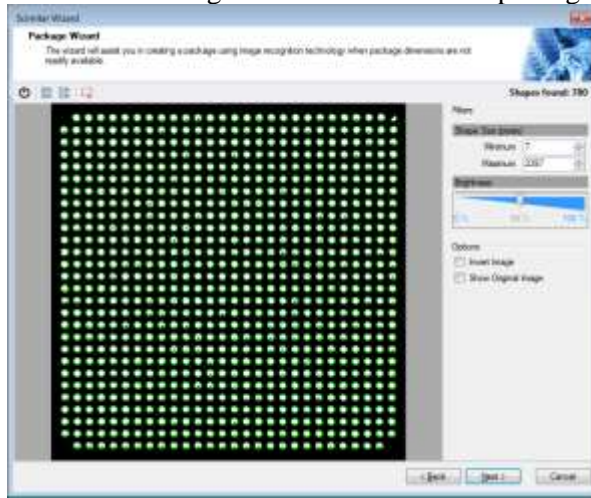
- Prior to performing the package alignment, any unwanted shape(s), such as a Pin A1 marker on a BGA should be removed from image file. Shapes can be removed by selecting the individual shape using the mouse, by selecting multiple shapes while holding down the CTRL or SHIFT key. Once selected, press the  Delete Selected Shape(s) button to remove all selected pins.
- Pins can be added at a arbitrary position by creating a shape. This can be achieved by holding down the ALT key and dragging the mouse across the package. Once the key is released, a new pin shape will be created and displayed.
- Package Recognition
Depending on the quality of the image being used, it may be necessary to improved the clarity of the image by increasing or decreasing the brightness using the Brightness slide bar in the Filters section. Some of the unwanted shapes can be eliminated by specifying the minimum and maximum size threshold as well.



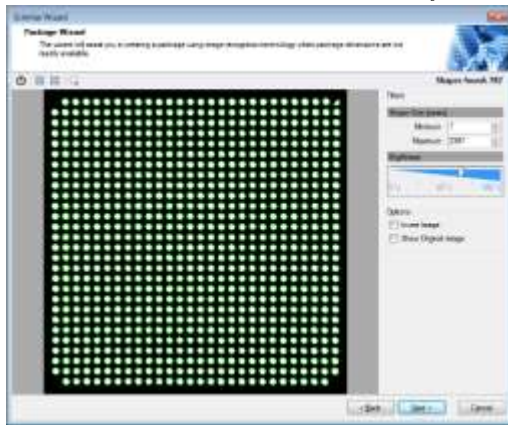
Note: Scrollbar can be moved using arrow keys, once it is selected

- Please note that the pin recognition algorithm assigns pin names based on the order in which shapes are being recognized. This may not always correspond to the actual order of pins on the package. A sort and rename feature will be added in future revisions to assist with quickly renaming rows and columns of pins to match the recognized numbering to the actual package.

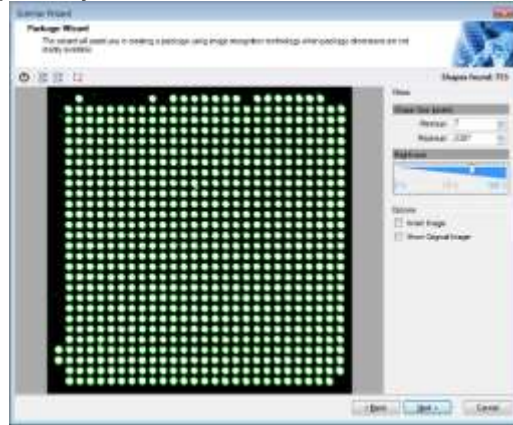
The images below show how the Brightness scale affects the package clarity



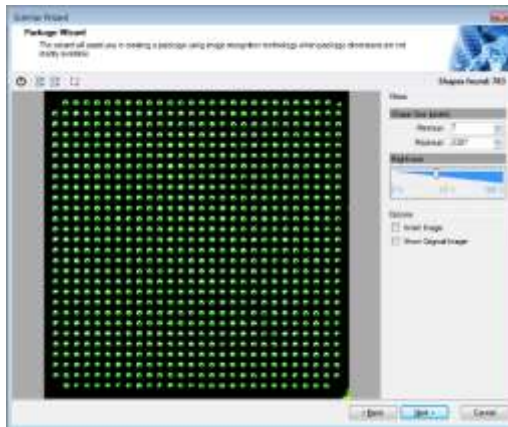
Default Brightness of 50%



*Brightness adjusted to 65%
clarity is degrading*



*Brightness adjusted to 70%
shapes are being lost, brightness is too high*

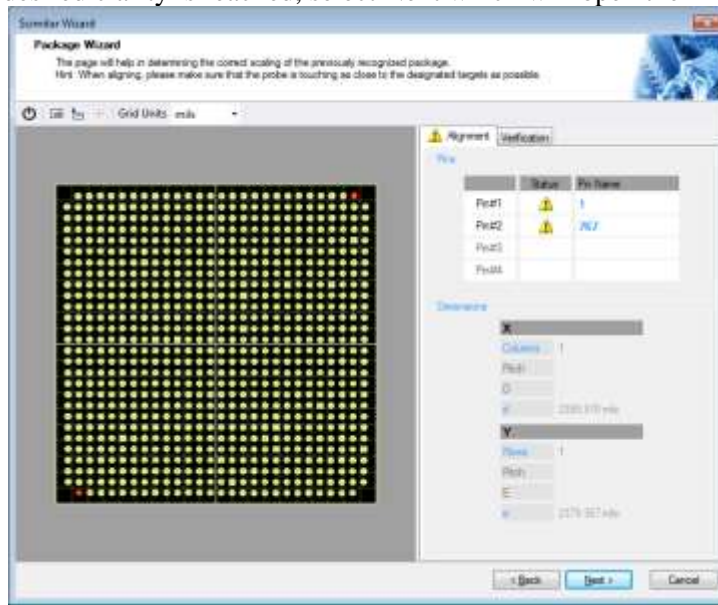


*Brightness adjusted to 40%
clarity is degrading, a new image appears
in bottom right corner*



*Brightness adjusted to 35%
shapes are distorted, a new image
appears in upper left corner*

- Once the desired clarity is reached, select Next which will open the Alignment window



- On the Alignment window, there are a number of parameters which can be used during the alignment process



Reset Alignment removes any previous alignment values



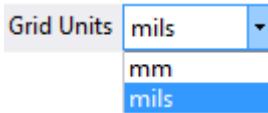
Display Names will add the pin numbers to the device display



Show Tooltips

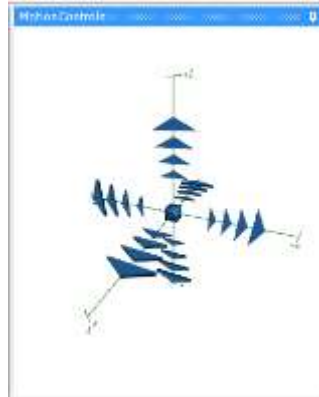


Show Crosshairs will show crosshairs attached to the mouse when over the device view



Selection of the appropriate Grid Units is important, as these units will be used during the alignment and creation of the package

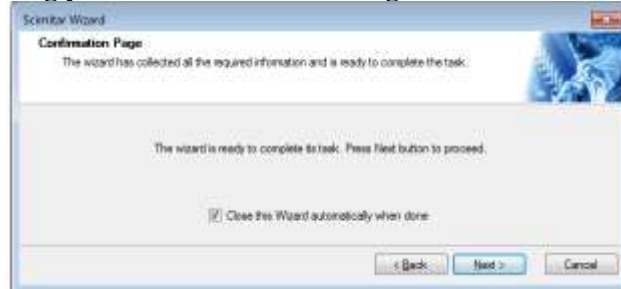
- As shown above on the Alignment plane window screen shot, the required Alignment Pins are listed in the Alignment tab (right pane) and are highlighted in red on the device display. Aligning the required pins will provide the coordinates required to calculate the devices pin pitch and pin locations for all remaining pins.
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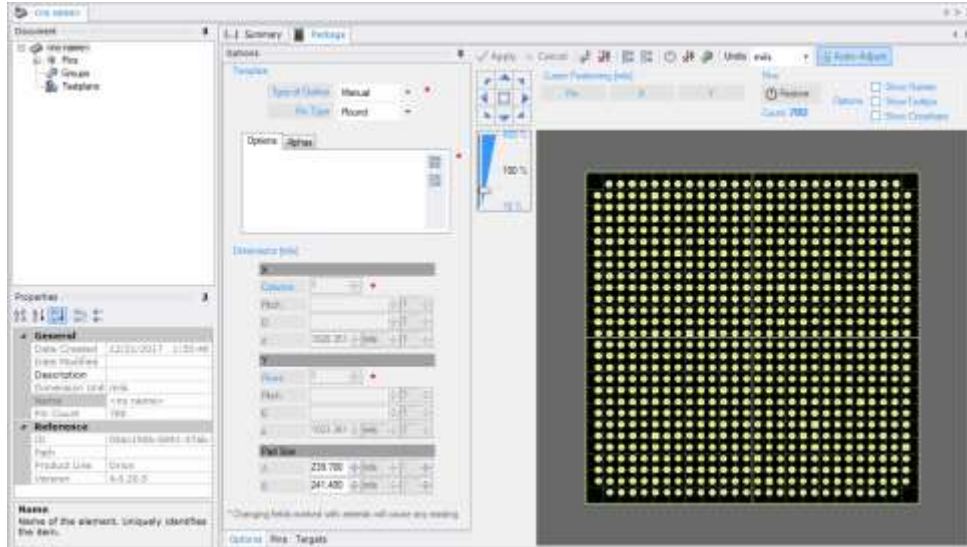
- Once the pogo is positioned (aligned) on the required Alignment pin, select the alignment Pin# and this will change the Pin#'s Status to green

| Pin# | Status | Pin Name |
|-------|--------|----------|
| Pin#1 | ⚠ | 1 |
| Pin#2 | ⚠ | 767 |
| Pin#3 | | |
| Pin#4 | | |

- As pins are aligned, the X and Y dimensional information will update
- Once all required pins have been aligned and optionally verified, select Next which will bring you to the Confirmation Page



- Selecting Next will finalize the creation of the package and open the device as <No Name> in the Orion Scimitar application



- Save the device, providing the appropriate File Name and storage location. File will be stored in the selected location as a .device.xml file

