

**Image Engineer**

**COLLABORATORS**

	<i>TITLE :</i> Image Engineer		
<i>ACTION</i>	<i>NAME</i>	<i>DATE</i>	<i>SIGNATURE</i>
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# Chapter 1

# Image Engineer

## 1.1 Image Engineer Documentation

Image Engineer V2.1

by

Simon Edwards

Freely Distributable

2/10/95

Copyright © 1995 by Simon Edwards  
All rights reserved

This program uses reqtools.library  
by Nico François, & superview.library  
by Andreas R. Kleinert

Introduction & Features

Copyrights

Disclaimer

Distribution

Motivation

System Requirements

Installation & Starting Up

Tutorials

Menus

Arexx Commands

---



Use with VMM  
Author Info  
Reporting Bugs  
Thanks and Greetings  
On-line Support  
The Future  
History  
Bibliography

## 1.2 Introduction

Introduction  
~~~~~

Image Engineer is a freely distributable image processing application. Image Engineer can be used for tasks varying from converting images between different file formats, rendering 24 bit images down to standard Amiga screen modes, and enhancing badly scanned images. What you can use it for is basically limited by what you can think of.

Features  
~~~~~

- \* Coded in 100% 68020 Assembler
  - \* Multiple image editing
  - \* Colour or grey dithered preview images.
  - \* All processing is done in 8 bit grey or 24 bit colour
  - \* Fully integrated Arexx support, 74 Arexx commands.
  - \* Uses superview.library for loading and saving. superview.library currently supports IFF-ILBM, IFF-ACBM, PCX, GIF, BMP (W\*nd\*ws), JPEG, PhotoCD, TIFF, EPS, FBM (\*nix), PNM (\*nix), WPG (W\*rdP\*rf\*ct), IMG (GEM), MAC (M\*cPaint), C64 (Koala,Doodle), Targa, Pictor/PCPaint, SunRaster, IFF-YUVN, WinIcon, QRT, PICT-2, IFF-DEEP, SGI, SVO and all OS3-Datatypes.
  - \* Can display images using superview.library. superview.library currently supports ECS, AGA, EGS7, OpalVision, Retina, CyberGraphics, PicassoII, Merlin.
  - \* Supports AGA where available.
  - \* Render images to standard Amiga screen modes including HAM6 and HAM8.
  - \* Dither images using Floyd-Steinberg, Burkes, Stucki, Sierra, Jarvis and Stevenson-Arce error diffusion algorithms.
  - \* Image Composition with Alpha channels.
  - \* User Definable Convolves
  - \* Image balance control, brightness, contrast, gamma, hue and saturation.
  - \* Extensive filtering control, lowpass (blur), highpass, sharpen, median, maximum & minimum.
  - \* Image Scaling, Crop, Autocrop, Reflect, Rotate, Negative, Contrast Stretch, False Colour, Convert to Colour, Convert to Grey, Local Contrast Stretch.
-

- \* Remove feature effect
- \* Halftone effects
- \* Twirl effect
- \* Bulge effect
- \* Displace Pixels using Alpha channels effect
- \* It's Free! (The money you save on software you can spend on hardware ;-)

## 1.3 Copyrights

Copyrights

~~~~~

Image Engineer is © 1995 Simon Edwards. All rights reserved.

ReqTools is © 1991-94 Nico François. All rights reserved.

SuperView Library is © 1993-95 by Andreas R. Kleinert. All rights reserved. SuperView Library is Freeware (product-specific Licenseware). Any usage from and by other programs of SuperView Library without an explicit license is strictly forbidden. (See SuperView Library documentation for more information).

Also, some of the names mentioned in this document may be copyrighted or trademarks of companies. Big deal.

## 1.4 Disclaimer

Disclaimer

~~~~~

The author neither assumes nor accepts any responsibility for the use or misuse of this software. He also will not be held liable for damages or any compensation due to loss of profit or any other damages arising out of the use, or inability to use this software.

The author will not be liable for any damage arising from the failure of this software to perform as described, or any destruction of other programs or data residing on a system attempting to run this software. The user of this software uses it at his or her own risk.

Have a nice day. :)

## 1.5 Distribution

Distribution

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Image Engineer V2.1 is freely distributable. It is *\*not\** public domain, as all copyright remains with the author. This means that you may copy and distribute Image Engineer provided the following conditions are met.

- \* All parts of the distribution are included in an unmodified form.
- \* No profit is made beyond minimal copy and posting fees.
- \* Image Engineer may be included in public domain software libraries like the excellent Fred Fish collection.
- \* Image Engineer may *\*not\** be commercially distributed without the author's written permission.

By using or distributing this software you automatically agree to the above terms.

Also, if you're using Image Engineer in a commercial setting (i.e. as part of a business), then some sort of 'donation' would be appreciated. Finally, if you like IE and you would like to show some appreciation for my work things like mail, money, postcards or beer from your country, spare hardware, registered versions of any programs you may have written, etc etc are most welcome. ;-)

## 1.6 Motivation (or

Motivation (or "Why did I bother?")

~~~~~

About half way through last year I read the book "Digital Image Processing" by Gonzalez & Woods. After that I wanted to try out some of the techniques and algorithms (I was also looking for some sort of programming project to do) so I sat down with the intention of writing a small program to do some basic image processing on 8 bit grey scale images. I also had the idea of releasing something as freely distributable planted in my mind. So once I had my little program up and running (even though it couldn't do much), my summer break (December-February, for the benefit of those in the northern hemisphere) was coming up. It was about now that I decided to write a full blown 24 bit colour image processing program, I figured that would keep me busy over the long months stuck at home in the middle of nowhere. The rest is pretty well history.

## 1.7 System Requirements

System Requirements

~~~~~

- \* 68020 or higher processor.
  - \* OS V2.04+, Image Engineer was developed under OS V3.0 and is therefore fully compatible.
  - \* 2Mb of RAM bare minimum, at least 4Mb recommended, infinity is best.
  - \* Reqtools.library to be installed.
-

(available on aminet:/util/libs/ReqTools22\_us.lha)  
 \* superview.library to be installed. (The latest version can be found in  
 with the SuperView distribution available on aminet:/gfx/show/SView470.lha)  
 The current version can also be downloaded from the Image Engineer Support  
 Page on the World Wide Web. See  
     On-line Support  
 .

## 1.8 Installation & Starting Up

### Installation & Starting Up

~~~~~

Once you have decompressed that archive (which you obviously already have),  
 click on the installer script, the script will then install Image Engineer  
 on to your hard disk, and check your system to make sure that all of the  
 needed files are in the right place.

Image Engineer (IE) can be started by clicking on its icon from the  
 workbench or entering "IE" from the Shell. Important! If you're starting  
 IE from the Shell make sure you've set the stack to at least 32768. IE  
 currently takes no arguments from the Shell. When starting up IE will try  
 and load it's Prefs from S:IE.config. It will then put up a screen mode  
 requester allowing you to choose the screen mode and dimensions that you  
 want IE to operate in. (IE can be made to open its screen without asking,  
 see

#### Prefs

. Once it has finished opening it's screen you'll be left  
 looking at a very unexciting screen. The Project menu will be the only menu  
 currently available.

If you're not familiar with IE I suggest that you work through (or at least  
 skim through) the

#### tutorials

section to acquaint yourself with how IE does

things. Once you've gone through the tutorials, to learn more I recommend  
 that you simply play and experiment. Don't be intimidated by some of the  
 technical sounding menu items. ;)

## 1.9 Tutorials

### Tutorials

~~~~~

#1 Loading, Rendering and Saving an Image

#2 Scaling and Locking an image to a palette

#3 Filtering and Removing Noise from an Image

## #4 Applying a Vignette effect using an Alpha channel

## 1.10 Loading, Rendering and Saving an Image

Loading, Rendering and Saving an Image

~~~~~

Loading, rendering and saving are the three operations that you'll be doing with Image Engineer more than anything else.

1. IE distinguishes between two types of images, grey (8 bit) and colour (24 bit) images. Images loaded as 8 bit grey are automatically converted and stored in memory using 8 bits per pixel. Images loaded as 24 bit colour are automatically converted and stored in memory using 24 bits per pixel, 8 bits for each colour component (Red, green, blue). It pays to make sure that you load grey images as 8 bit, as they will take up less memory and all operations on them will be faster.

What images are treated as when loading is set on the Open submenu on the Project menu.

```
+-----+
|File...  |
|Clipboard|
+-----+
|  8 bit Grey  | <-- These two options control whether images are
|  24 bit Colour| <-- loaded as 8 bit grey or 24 bit colour.
+-----+
```

The image we're going to use is in colour, so now is the time to set IE to load images as 24 bit colour. Just select "24 bit colour" so that it now has a tick beside it.

2. Select the "File..." menu item on the Open submenu. The file requester will now appear. Select the file molecules.gif which should be in the Pics directory. IE will now identify, load, and convert the image to 24 bit colour. A window will now be opened on IE's screen and a grey preview image will be drawn.

This window is referred to as the project window, and the image is referred to as a project. The title bar of the project window shows the name of the project (each project has a unique name), followed by the x and y coordinates that the mouse pointer is currently over followed by the grey level at that point for grey images, or the Red Green Blue (RGB) value at that point for colour images.

Note: The co-ords are only shown if that window is the active one. In IE when a project window is opened it is \*not\* made the active one, unlike most programs. The active window's title bar is generally darker than an inactive window's.

3. Each project has its own set of information associated with it that describes how it should be rendered.

Select the "Render Control..." menu item from the Screen menu. The render control requester will now appear. From here you can everything about how this project should be rendered. What screenmode to use, how many colours to use, how to choose the palette, what dithering to use etc. For this tutorial we want to render it down to 32 colours Low-Res using Jarvis dithering. To do this, click on the "Device:" gadget till it displays "Amiga", now click on the "Choose..." button, a screen mode requester will come up, select a Low Res screenmode, (like "NTSC:Low Res" for example) then click on "Ok" to return to the render control requester. Move the "Colours" slider so that it says 32. Set the "Colours to use:" slider to 32 also. And finally, click on the "Quantize:" gadget so that it says "Median Cut" and the "Dither" gadget so that says "Jarvis". When you're finished hit the "Ok" button.

Now all of the render options have been set up. Thankfully you can set what default values should be used for new grey and colour projects, so that you don't have set up the render options to something intelligent every time you load in a new image.

4. Select "Render" from the screen menu. This tells IE to actually render the image. An indicator entitled "Rendering..." will appear. When it says that it's half way through rendering, a new screen will open and IE will draw the image.

This screen is referred to as the project's render screen.

If you press the right mouse button, IE's screen will reappear. The project's render screen has not been closed, just moved behind all of the other screens (like the Workbench screen and IE's screen). To bring it to the front of the display again, select "Show Render" from the Screen menu.

5. Once a project has been rendered it can then be saved to disk.

Select "Render" from the save submenu on the project menu. A file requester will appear, allowing you to enter the file name to save the rendered image as, use molecules32col.iff. Next is the Save Format Requester, this is where you select what save format you would like the image saved as. Select "ILBM CmpByteRun1", this the standard Amiga image format, used by DPaint, Brilliance, and every other Amiga graphics program. Click on "Ok" once you've made your selection. IE will now save the image.

Well, that's that. If you don't want to render the image down to a displayable screen mode, but instead wanted to save the 8 bit grey or 24 bit colour image data. You would use the "8 bit grey/24 bit colour" on the Save submenu. This basically works the same way as the save render item, except that there is no need to render the image first.

To close the render screen use "Close Render" on the Screen menu.

## 1.11 Scaling and Locking an image to a palette

---

### Scaling and Locking an image to a palette

~~~~~

In this tutorial will be how to scale an image down to the size of an icon and then render it using the Workbench palette.

1. Open up the picture molecules.gif as 24 bit colour.
2. Make the molecules.iff project window the active one. (Just click on the window's title, it's the active one if title has a darker background.) Now go to the Edit menu and select the Scale item. The scale requester will now appear. Click on the "Lock Aspect" check box (so that it shows a tick). The two sliders control the percentage scale for each dimension. Now drag the slider beneath the "Width:" gadget all the way to the left. The slider towards the bottom of the requester will also move to stay at the same level as the one above, in order to preserve the aspect ratio. Click on the "Method:" gadget once, it should now say "Colour Average". This means that the Colour Average method will be used to scale the image, this is slower than the fast method (also known as "Nearest Neighbour"), but produces better results in most cases. Now click on "Ok" to let it go to work.
3. Go to the "Render Control" requester for the small image and set the Device to "Amiga" and select a High Res screen mode. Set the "Colours" and "Colours to use" to 4. Set "Quantize" to "Lock Palette Best", this forces to IE to use this project's current palette when rendering. Specify that you want "Floyd-Steinberg" dithering. Just click on the dither gadget until it says "Floyd-Steinberg" (should be one click after "None"). Hit "Ok" when finished.
4. Before we can render the image we need to load in the palette that we want it locked to. Choose the menu item "Load..." on the palette submenu under the screen menu. A file requester will let you choose the palette file you want to load. Load the file WB.palette which should be in the palettes directory.
5. Render the image.

Save the rendered image as molecules.icon.iff.

The saved image could now be imported into an icon editor (like IconEdit supplied with Workbench).

## 1.12 Filtering and Removing Noise from an Image

### Filtering and Removing Noise from an Image

~~~~~

In this due I'll demonstrate how Image Engineer's filtering functions can be used to remove noise from a corrupt image.

1. Open up the picture NoiseU2.gif from the Pics directory as 8 bit grey.
  2. As you can see the image has been corrupted such that it looks like U2
-

are in a snow storm. Go to the "Filter" menu and select "3x3" from the "Lowpass" submenu. This blurs the image. The resulting image now looks worse than what we had at the beginning. There is a better way.

3. Close the blurry project (just click on the project window's close gadget). Go to the "Filter" menu and select "3x3" from the "Median" submenu. This applies a 3x3 sized median filter to the image. Notice how the filter has removed about all of the noise instead of just blurring it.
4. Make the filtered active and then select "View Histogram" from the process menu. This shows the histogram of the image. Notice how grey levels are clustered towards the dark left end of the graph and that it doesn't use the full range. Click on the Histogram window's close gadget.
5. Select "Contrast Stretch" from the "Process" menu. This will increase the contrast of the image. Now go back to the histogram. The histogram will now be stretched to cover the whole range.

Now you could render and save the enhanced image to disk.

When trying to enhance, remove noise and bring out detail in an image, it pays to try several approaches and then seeing which one gave the best result, as some images respond well to some filters, while others are simply degraded more. There are no hard rules.

## 1.13 Applying a Vignette effect using an Alpha channel

Applying a Vignette effect using an Alpha channel

~~~~~  
Have you ever noticed that effect that photographers sometimes use that makes images appear blurred around the edges. This tutorial shows you how the same effect can be created using IE.

1. Open up the picture Face.HAM8.iff as 24 bit colour.
  2. Apply a 7x7 lowpass (blurring) filter to the image. To do this just select "7x7" on the Lowpass submenu under the Filter menu. After a delay the new image will be displayed.
  3. Open the picture Spherical2.alpha which should be in the Alpha directory, as 8 bit grey.
  4. Make the blurred image active and select info from the Edit menu. Now take note of the width and height of the blurred image.
  5. Go to the Spherical image and scale it to the same size as the blurred image.
  6. Now it's time to composite the images. We're going to use the original face image as the primary image, the blurred image as the secondary image, and the scaled grey image as the alpha channel. First make the original image active and select "Primary" from the "Composite" menu. There should be a 'P' just before the image's title on the project
-



window. Now go to the blurred image and select "Secondary" from the "Composite" menu. This time there should be a 'S' before it's title. Finally, go to the scaled grey image and select "Alpha" from the "Composite" menu. There will be a 'A' in front of it's title. By doing all of this you will have specified which images are going to be used for what when we go to create the composite image.

7. Select "Composite..." from the "Composite" menu. The "Composition Control" requester should now pop up. We want to combine the images using the Alpha channel, so click on the radio button to the left of the words "Alpha Channel". Now click on "Ok". It will go to work and produce the composite image.
8. You might want to render the image now to get a good look at it. Notice how the image is blurred around the edges, since the alpha channel was dark around the edges it meant that more of the blurred image should be used in those regions. While at the parts of the image that correspond to the light parts in the alpha channel were mostly like the original image.

By using alpha channels to combine images, it's possible to create 1000's of interesting effects that would otherwise not be possible. (Instead of blurring the image, try converting it to grey, false colour etc.)

## 1.14 Menus

```
~~~~~
      Menu
      Project
      Edit
      Screen
      Process
      Filter
      Alpha
      Arexx
```

## 1.15 Project Menu

```
      Project
      About...
      -----
```

---

```

Open          »

Save Render   »

Save Data     »
-----

Prefs        »

Screen Mode...<A>M

Re-calc Palette
-----

Quit         <A>Q

```

## 1.16 About

About  
~~~~~

This just brings up a small requester giving some information like the name of the program, it's version, who the author is etc.

## 1.17 Open Submenu

Open Submenu  
~~~~~

```

+-----+
|File...   <A>O|
|Clipboard <A>V|
+-----+
|_/ 8 bit Grey      |           "_/" is meant to be a checkmark. BTW.
| 24 bit Colour    |
+-----+

```

The "File..." item lets you open an image from disk. A file requester will appear, letting you choose the file to open. Image Engineer will automatically identify the image format, load it and convert it to either 8 bit grey or 24 bit colour.

The "Clipboard" item opens an image from the system clipboard if it currently contains graphics.

"8 bit Grey" and "24 bit Colour" determine whether images will be loaded, converted and stored internally as either 8 bit grey or 24 bit full colour images. The check mark indicates what images will currently be loaded as.

Note: When IE is loading an image it may appear that the loading indicator is broken. This is normal. Unfortunately, due to technical constraints it's

currently impossible to make it work "properly". Sorry.

Arexx Equivalent:

```
OPEN
,
OPEN_CLIPBOARD
,
TYPE
```

## 1.18 Save Submenu

Save Render Submenu

~~~~~

```
+-----+
|File...  <A>S|
|Clipboard  |
+-----+
```

Provided the current project has been rendered, this submenu will let you save it to a file or the system clipboard. When saving to a file you will be presented with a file requester from where you can enter the file name to save the project as. Next a small requester entitled "Select Save File Type" will let you select the file format that you want the project to be saved as. (If you're unsure as to what file format you should use, use "ILBM CmpByteRun1", the standard Amiga image format). The "Options..." button lets you edit any available options associated with a SVOject/file type.

Note: If the rendered image is in HAM or HAM8, only use ILBM. As most other formats do not support the saving of Amiga HAM modes, even if they do appear to work.

ARexx Equivalent:

```
SAVE
,
SAVE_CLIP
```

## 1.19 Save Data Submenu

Save Data Submenu

~~~~~

```
+-----+
|File...  |
|Clipboard |
+-----+
```

This lets you save the an image's 8 bit or 24 bit data to a file or the system

---

clipboard directly without having to render it to an displayable screen mode. It works in the same way as the menu items on the "Save Render" submenu.

Note: Not all formats will support the writing of 8 bit or 24 bit data. (ie the C64 format Doodle doesn't support 24 bit images, (surprise, surprise) :)

ARexx Equivalent:

```
SAVE_DATA
'
SAVE_DATA_CLIP
```

## 1.20 Preferences submenu

```
Preferences submenu
~~~~~
```

```
Prefs... <A>?
```

```
Arexx...
```

```
SVObject...
```

## 1.21 Preferences

```
Preferences
~~~~~
```

This lets you setup defaults for Image Engineer. The options are as follows.

Default Grey Render Prefs:-

Clicking on the "Choose..." button on the right will bring up a "Render Control" requester where you set what the default render options to use for 8 bit grey images. When IE opens an image as 8 bit grey, these defaults will be used. This basically saves you the hassle of having to set up the render options for every grey image that you open.

Default Colour Render Prefs:-

This is the same as above except for 24 bit colour images.

Default Load Type:-

This sets which of "8 bit Grey" or "24 bit Colour" on the Project/Open menu will be set initially after start up.

Flush Memory:-

If this is checked IE will flush the memory just after startup (flushing all svobjects) and just before exiting. Same as the DOS

command "Avail flush".

Convolves:-

This sets the default directory for the file requester will start in on the Convolve requester.

Palettes:-

This sets the default directory for the Palette Load/Save requester on the Screen/Palette menu.

Images:-

This sets the default directory for the Open/Save image requester.

Clicking on "Ok" will use the new Prefs without saving them to disk.

Clicking on "Save" will save the Prefs to disk (in file "S:IE.config") and use them. "Cancel" will close the Preferences requester without changing the Prefs.

## 1.22 ARexx Preferences

ARexx Preferences

~~~~~

This lets you set up the Arexx user menu. The requester looks vaguely like this:-

```

+-----+
|ARexx Preferences                                     [|]
+-----+
|          +-----+ +-----+ |
|  Scripts: |                                     ||Choose...| |
|          +-----+ +-----+ |
| +-----+ +-----+ +-----+ |
	Macro1          F1	#		Insert		Delete			
	Macro2          F2	#	+-----+ +-----+						
	Macro3          F3	#	+-----+ +-----+						
	Macro1          F4	#		Up		Down			
	Macro2          F5	#	+-----+ +-----+						
	~~~~~          F6								
	<Blank>        F7			[] Blank		[] Bar			
	<Blank>        F8								
	<Blank>        F9								
	<Blank>        F10+--+ Name:	Macro1							
	<Blank>        Sft F1 +--+ +-----+								
+-----+ +-----+									
+-----+ +-----+									
Command:			Choose...						
+-----+ +-----+									
+-----+ +-----+ +-----+									
	Ok			Save			Cancel		
+-----+ +-----+ +-----+									
+-----+

```

The Scripts gadget at the top of the requester lets you enter the directory where your Arexx scripts for Image Engineer are stored. By clicking on the "Choose..." gadget lets you select the Scripts directory via a standard directory requester. The Scripts directory is used as the initial directory for the file requester used by the Execute Arexx Script command.

The scrolling list to the left side of the requester contains 30 'slots' that can be used for a Arexx script or a bar separator. Each slot has a function key short cut (sometimes in combination with the shift or alt key). Blank slots don't show up on the user menu.

To modify the contents of a given slot, select it in scrolling list. The gadgets will be updated to show the contents of the selected slot. The "Blank" check box, toggles the slot between being Blank and in use. A slot that's not blank can be toggled between a bar separator and an Arexx script, by clicking on the "Bar" checkbox.

The "Name" gadget lets you edit the text that will appear on the menu. The "Command" gadget lets you enter the path and filename of the ARExx script that should be executed when this menu item is selected. The "Choose..." gadget to the right of the "Command" gadget lets you select the ARExx script to use via a file requester.

The "Up" and "Down" buttons simply let you move the current menu item up and down in the list. The "Insert" button inserts a blank slot and pushes all of the other entries down one. The "Delete" button, deletes the current slot and moves all of the entries below it up to fill the deleted slot.

Clicking the "Save" button will save the changes to disk, while the "Ok" will use the changes without saving to disk. Click on "Cancel" to cancel all changes.

## 1.23 SVOBJECT Prefs

SVOBJECT Prefs  
~~~~~

This lets you view the list of SVOBJECTS that are used to load images into IE. The "Options..." button lets you edit any available options associated with a SVOBJECT. When editing a SVOBJECT's prefs, click on "Ok" to use the new settings or click on "Save" to use and save the settings to disk.

Normally to edit a SVOBJECT's prefs you need to edit a text file (known as a ControlPad file by superview.library) called <objectname>.controlpad stored in the ENV: directory. This allows you to edit a SVOBJECT's controlpad file in a more user friendly manner.

Note:- For 'SVOBJECT Prefs' to work you need to be using at least version 11.7 of the superview library. If your not, then you won't be able to edit anything here.

## 1.24 Screen Mode

---

## Screen Mode

~~~~~

This lets you change the screen mode and dimensions of IE's screen. IE's screen will be closed and a screen mode requester will appear on the Workbench screen. If you change your mind and select Cancel, IE will reopen it's screen using the previous screen mode.

## Colour/Grey:-

These radio buttons let you choose between IE drawing the preview images in shades of grey or colour. A colour screen uses more memory than a grey one and requires a few moments to initialise when opening the work screen, but is just as fast in use as a grey screen.

## Choose at Start:-

If this option is checked then IE will put up a screen mode requester at start up for you to choose the what screen mode you would like it to operate in. If this option is not checked then IE will open its screen using the current screen mode.

## Dither Previews:-

If this is checked, IE will use dithering to render the preview images. Resulting in vastly improved image quality. When using colour previews, having dithering turned on uses more memory and takes a few moments to initialise when opening the work screen, but once it's been initialised preview drawing is just as fast.

## 1.25 Recalculate Palette

## Recalculate Palette

~~~~~

This makes IE calculate a new palette for the preview screen based on the images that are currently open. This results in the preview screen using a palette that's best suited for the current images, giving better preview image quality. This is available only if you're using a colour screen.

## 1.26 Quit

## Quit

~~~~~

This closes all render screens and projects and exits the program completely. It does *\*not\** ask if you're sure, and does *\*not\** check to see if you have unsaved work. Make sure that you've saved all of your work before using this menu item. You will not get a 2nd chance. So make sure you mean it.

## ARexx Equivalent:

QUIT

## 1.27 Edit Menu

```
Edit
Info...          <A>I
History...       <A>H
Project Name...
Close Project
-----
Enter co-ords...<A>E
Cut              <A>X
Autocrop        <A>A
-----
Reflect X
Reflect Y
Resize...
Scale...
Rotate...
-----
Remove Feature...
Bulge...
Twirl...
```

## 1.28 Project Info

```
Project Info
~~~~~
```

This displays a requester detailing the Width and Height of the image, the project's name and the name of the file that the image was loaded from originally and the image's memory usage.

## 1.29 Project History

```
Project History
~~~~~
```

---



Each project carries with it information about which file (or clipboard) it came from and what operations have been carried out on it. This is useful if like me you have a 10 second memory and can't remember what your up to (or if your just having a play around, discover some great effect that you can't remember how you did it).

### 1.30 Project Name

Project Name  
~~~~~

This lets you edit the name of a project to something more meaningful. Project names mustn't contain spaces, if it does the spaces will be changed to underscores. Project names must also be unique, if it's not unique a number will be prepended to it.

### 1.31 Close Project

Close Project  
~~~~~

This closes a project and removes it from memory completely. Like the "Quit" menu item is doesn't check to see if the project has been saved or not. Does the same as thing as clicking on a project's window's close gadget.

ARexx Equivalent:  
CLOSE

### 1.32 Enter Co-ordinates for the Crop Box

Enter Co-ordinates for the Crop Box  
~~~~~

This lets you enter co-ords for a project's crop box, instead of having to dragging one out in the project's window. The X and Y gadgets specify where the top left corner of the box is. The Width and Height gadgets let you enter the width and height of the box (surprise, surprise). Initial values for the X, Y, width and height are taken from where the current crop box is. "Ok" accepts the new values, and "Cancel" returns you to where you were before you opened for requester.

### 1.33 Cut or Crop

Cut or Crop  
~~~~~

This cuts out the boxed part of the current project to create a new project. Before you can use this menu item, the current project needs to have a crop box marked out. You can do this by just holding down the left mouse button and dragging out a box in the project's window, or by entering co-ords by hand. The new project will have the same render options as the project it was cut from.

ARexx Equivalent:

CROP

## 1.34 Autocrop

Autocrop

~~~~~

This crops out all of the background surrounding an image.

ie. 

|                                    |                 |                                    |
|------------------------------------|-----------------|------------------------------------|
| ****<br>*<br>***<br>*<br>*<br>**** | would become... | ****<br>*<br>***<br>*<br>*<br>**** |
|------------------------------------|-----------------|------------------------------------|

  
~~~~~

ARexx Equivalent:

AUTOCROP

## 1.35 Reflect X

Reflect X

~~~~~

This effectively "flips" an image along the y axis (left-right).

ARexx Equivalent:

REFLECT\_X

## 1.36 Reflect Y

Reflect Y

~~~~~

This effectively "flips" an image along the x axis (up-down).

ARexx Equivalent:

REFLECT\_Y

## 1.37 Resize

Resize

~~~~~

This lets you change the size of an image by padding it out with black (ie by *not* scaling it). The resize requester will appear allowing you to set the new size of the image and where the current image should be positioned in the new one. The "Width" and "Height" gadget and sliders allow you to specify the dimensions of the new image. The "X Offset" and "Y Offset" gadget and slider control where the top left hand corner of the current image will be positioned with respect to the new image. The diagram in the recessed box to the left of the sliders, shows diagrammatically the two images relative to each other with the current image in black the new image size as an outline. The "Centre" button centres the current image over the new image. The "Even X" and "Even Y" buttons round the Width and Height of the new image up to the next multiple of 8.

Also, by checking the "Tile" checkbox, IE will tile the image to fill the resulting image instead of filling it with black.

Resize is particularly useful if you're trying to import an image into a program that's very picky about what size images it will take.

ARexx Equivalent:

RESIZE

## 1.38 Scale

Scale

~~~~~

This lets you scale an image to a new size. The "Width" and "% Width" gadgets let you enter the new width or new percentage width. The slider below the width gadgets lets you change the percentage width from 25% to 200% (although greater values can be entered into the "% Width" gadget. Below is the "Height" and "% Height" gadgets and corresponding slider. The "Lock Aspect" checkbox forces the Width and Height to be scaled by the same amount. This preserves the aspect ratio and stops images from becoming stretched or shrunk too much in any direction. The "Method" gadget controls whether the image should be scaled using a "Fast" algorithm or the better (but slower) "Colour Average" algorithm. The "Colour Average" algorithm helps prevent images from becoming too "blocky" when scaled up.

ARexx Equivalent:

---

SCALE

## 1.39 Rotate

Rotate

~~~~~

This lets you rotate an image. The box in the middle diagrammatically shows the resulting rotated image. The degree gadget lets you enter the degrees to rotate the image clockwise by. The slider lets you change the number of degrees from 0 to 359. The "Method" gadget controls whether the image should be rotated using a "Fast" algorithm or the better (but slower) "Colour Average" algorithm.

ARexx Equivalent:

ROTATE

## 1.40 Remove Feature

Remove Feature

~~~~~

This allows you to remove a circle out of the image. There will be a short delay before the Remove Feature requester is opened. This is to create the small preview image that's shown to the left of the requester. On the preview image, the area that is to be affected is diagrammatically shown. To the right of the requester are sliders and integer gadgets for "X", "Y", "Radius" and "Remove". "X" and "Y" specify where the center of the area to be removed is. The center can be changed by clicking on the preview image. "Remove" is the radius of the area to be removed. "Radius" is the radius of the region that will be stretched to fill removed area. The "Method" gadget determines whether the remove should be done using a fast "Nearest Neighbour" algorithm or the better (but slower) "Colour Average" algorithm.

ARexx Equivalent:

REMOVE\_FEATURE

## 1.41 Twirl

Twirl

~~~~~

This lets you twirl or twist if you like, part of an image. There will be a short delay before the twirl requester is opened. This is to create the small preview image that's shown on the left of the requester. On the preview image, the area that is to be affected is diagrammatically shown. To the right on the requester are sliders and integer gadgets for "X", "Y", "Radius" and "Degrees".

"X" and "Y" specify where the center of the twirl is to be. The center can be changed by clicking on the preview image. "Radius" is simply radius of the twirl. "Degrees" determines how many degrees the image should be twirled around by, ranging from 360 anticlockwise to 360 degrees clockwise. The "Method" gadget determines whether the twirl should be done using a fast "Nearest Neighbour" algorithm or the better (but slower) "Colour Average" algorithm.

ARexx Equivalent:

TWIRL

## 1.42 Bulge

Bulge

~~~~~

This lets you 'bulge' part of an image so that it looks like it's been reflected in a spoon. There will be a short delay before the twirl requester is opened. This is to create the small preview image that's shown on the left of the requester. On the preview image, the area that is to be affected is diagramatically shown. To the right of the requester are sliders and integer gadgets for "X", "Y", "Radius" and "Degrees". "X" and "Y" specify where the center of the twirl is to be. The center can be changed by clicking on the preview image. "Radius" is simply radius of the area to be 'bulged'. "Amount" determines how much the area should be affected, ranging from -100 to make the image appear like it's been reflected on the inside of a spoon, to 100 to make it appear like it's been reflected on the outside. The "Method" gadget determines whether the twirl should be done using a fast "Nearest Neighbour" algorithm or the better (but slower) "Colour Average" algorithm.

ARexx Equivalent:

BULGE

## 1.43 Screen Menu

Screen

Render <A>R

Render Control...<A>P

Palette >>  
-----

Show Render <A>F

Close Render <A>C

## 1.44 Render

Render

~~~~~

This renders the project using the settings defined on the Render Control requester.

ARexx Equivalent:

RENDER

## 1.45 Render Control

Render Control

~~~~~

This allows you to set up how you want the given project rendered. Choosing this menu item brings up the "Render Control" requester.

```

+-----+
|Render Control                               [|]|
+-----+
|      +-+-----+                          |
| Device:  |@|                Amiga         |
|      +-+-----+                          |
|                Screen Mode                |
| +-----+                                  |
| |DBLPAL:High Res No Flicker                |
| +-----+                                  |
| Colours: 256 [_____**] |Choose...|
|                                     +-----+
| [] Autoscroll
|      +-+-----+                          |
| Overscan: |@|                Text Size    |
|      +-+-----+                          |
|
| Colours to Use: 256 [_____**]
|      +-+-----+                          |
| Quantize: |@|                Median Cut    |
|      +-+-----+                          |
|      +-+-----+                          |
| Dither:  |@|                None           |
|      +-+-----+                          |
|
| +-----+                                +-----+
| |  Ok   |                                | Cancel |
| +-----+                                +-----+
+-----+

```

Device:-

The "Device" cycle gadget at the top of the requester, determines

how the image should be rendered. It may be one of the following.

- Amiga - Renders the image using the standard Amiga colour mapped screen modes.
- SVDriver - Renders the image using the default SVDriver. This allows you to render images using 24bit graphics boards provided you have a SVDriver that supports it. (See the superview.library documentation for more information about SVDrivers).
- HAM8 - Renders the image using Amiga HAM8 mode (where available). This is only available for 24 bit colour images.
- HAM6 - Renders the image using Amiga HAM6 mode.

#### Screen Mode:-

Below the "Device" gadget is a gadget showing the name of the currently selected render screen mode. To select a new screen mode click on the "Choose" button, this will bring up a screen mode requester from where you can choose a new mode.

#### Colours:-

The "Colours" sliders determines how many colours the render screen should have (not to be confused with the number of colours that should be used). This slider is only relevant when using the Amiga as the display device

#### Autoscroll:-

The Autoscroll check box determines whether the render screen should scroll when the mouse reaches the edge of the screen if it bigger than the display.

#### Colours to Use:-

The "Colours to Use" slider determines how many colours should be used to render the image.

#### Quantize:-

The "Quantize" cycle gadget specifies what palette should be used. For 24 bit colour images, the Quantize gadget may be one of the following.

- Median Cut - The Median Cut algorithm is used to choose a palette for the image. The images palette is changed to this new palette.
- Lock Palette Fast - The image's palette is used. This is option renders the image quickly, but is a bit inaccurate (5 bits per colour component as opposed to 8 bits per colour component. This is only noticeable if your palette consists on a many similar shades).
- Lock Palette Best - The image's palette is used. This is slower than the fast lock to palette but is 100% accurate.

For grey images you have a choice of two.

- Lock Palette - Locks to current palette.
- Best Palette - Chooses the best palette.

#### Dither:-

The "Dither" cycle gadget lets you specify a dithering algorithm

---

to be used when rendering the image. The dithering algorithms available in order of complexity are Floyd-Steinberg, Burkes, Stucki, Sierra, Jarvis and Stevenson-Arce. Floyd-Steinberg is generally good for most things, the effectiveness of each is a subjective thing, I recommend that you try all of them and see what you think of each.

The "Ok" button accepts the changes, while the "Cancel" button forgets the whole thing.

ARexx Equivalent:

```

GET_RENDER
,
RENDER_AUTOSCROLL
,
RENDER_COLOURS
,

RENDER_DEPTH
,
RENDER_DEVICE
,
RENDER_DITHER
,

RENDER_QUANTIZE
,
RENDER_SCREENMODE
,
SET_RENDER

```

## 1.46 Palette Submenu

```

                Palette Submenu
~~~~~

                Edit...

                Load...

                Save...

```

## 1.47 Edit Palette

```

                Edit Palette
~~~~~

```

The "Edit..." menu options opens up a palette requester. If you have a AGA Amiga, you will be able to edit 256 colours, else you'll be limited



to 32. The palette requester shows the palette at the top of the screen, below this are the following gadgets.

```

+-----+
+-----+	_____		
		R [ _____* ]	
+-----+	_____		
Colour	0	G [ _____* ]	
+-+----+	_____		
	@	RGB	B [ _____* ]
+-+-----+			
+-----+ +-----+ +-----+			
	Copy		Swap
+-----+ +-----+ +-----+			
+-----+ +-----+ +-----+			
	Restore		Load...
+-----+ +-----+ +-----+			
+-----+		+-----+	
	Ok		
+-----+		+-----+	
+-----+

```

In the top left hand corner the current colour is shown. Below that is it's pen number. The cycle gadget below that lets you choose which colour model you would like the sliders to be, out of a choice of standard Red, Green, Blue (RGB) colour model, the Cyan, Magenta, Yellow (CMY) model, and Hue, Saturation, Brightness (HSB) model. The rest of the buttons work in the same way as most palette requesters. The "Copy" button allows you to copy the current colour. "Swap" lets you exchange two colours. "Spread" will create a smooth colour range. "Restore" restores the palette to the state that it was in before any changes were made. "Load.." lets you load in a palette from disk. (BTW, you can also load in a palette from any IFF ILBM picture, not just palette files). "Save..." saves the current palette to file on disk.

ARexx Equivalent:

```

LOAD_PALETTE
,
SAVE_PALETTE

```

## 1.48 Load Palette

Load Palette

~~~~~

This lets you load a palette in from disk. (Same as the "Load..." button on the palette requester).

ARexx Equivalent:

```

LOAD_PALETTE

```

## 1.49 Save Palette

```
~~~~~
                Save Palette
~~~~~
```

This lets you save the project's palette to disk. (Same as the "Save..." button on the palette requester).

```
ARexx Equivalent:
                SAVE_PALETTE
```

## 1.50 Show Render

```
~~~~~
                Show Render
~~~~~
```

This merely brings a project's render screen to the front of the display.

```
ARexx Equivalent:
                RENDER_TO_FRONT
```

## 1.51 Close Render

```
~~~~~
                Close Render
~~~~~
```

This closes a project's render screen. To open the screen again it has to be rendered again.

```
ARexx Equivalent:
                CLOSE_RENDER
```

## 1.52 Process Menu

```
Process
View Histogram      »
Brightness...
Contrast...
Gamma...
Hue...
Saturation...
-----
```

```

Negative

Contrast Stretch

Histogram Equalization

Threshold...

Transform...
-----

Convert to Colour
/
Convert to Grey

False Colour

```

### 1.53 View Histogram

```

View Histogram
~~~~~

This displays the image's
    histogram
    , along with the number of
unique values in the histogram, the mode value (ie the most common value),
what the lowest value is and what the highest value is. For colour
projects you can view the intensity, hue or saturation histograms for the image or
the histograms for each of the three primary colour components (Red, Green, Blue).

```

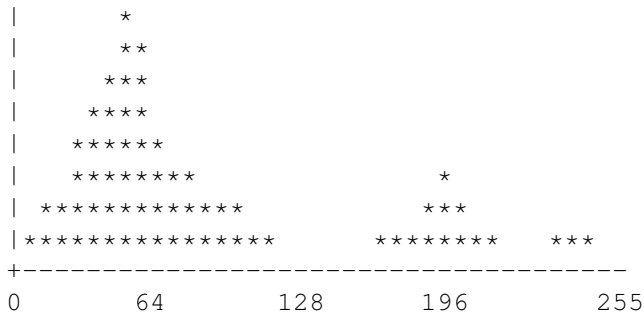
### 1.54 What's a Histogram anyway?

```

What's a Histogram anyway?
~~~~~

```

A histogram is just a graph showing the relative frequency of each grey level in an image. It typically looks something like this.



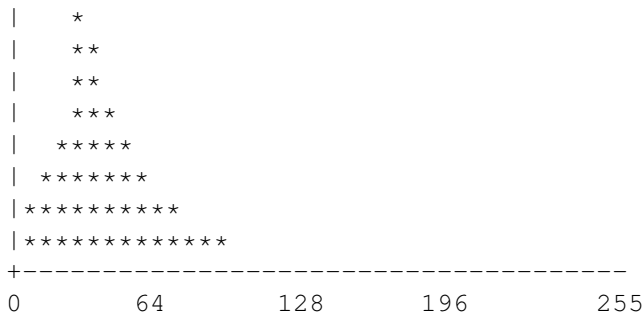
The grey levels are in the range of 0 to 255 inclusive. The axis along the bottom is the grey value axis. The y axis shows the relative frequency. The higher the column graph for a given grey level, the greater frequency it has in the image relative to the other grey levels (In the graph above we can see the most frequent grey level is approximately 60, meaning that the grey level of 60 occurs more often than any other in the image).

In colour images each colour is converted to a grey value and that value is used to form the graph. It's also possible to create the histogram using the values of a single component (ie one of red, green or blue).

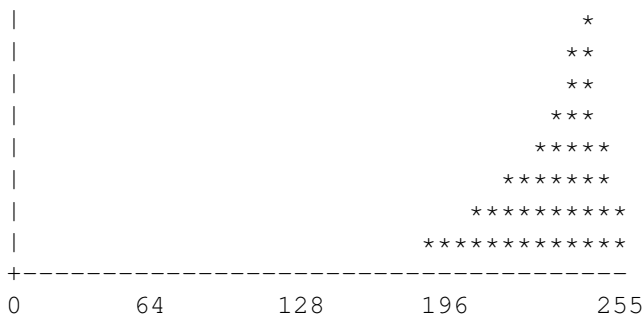
What's the good in it?

~~~~~

Although it says nothing about the content of an image, the histogram does give important information about the global characteristics of an image. Information from the histogram comes in very useful when adjusting the brightness and contrast of an image, and when affecting the overall balance of an image.

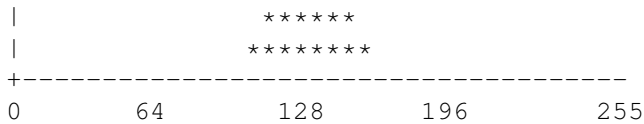


The histogram above shows that the grey values in this image are clustered towards the lower end. This corresponds to a dark image. While the histogram below corresponds to a bright image.

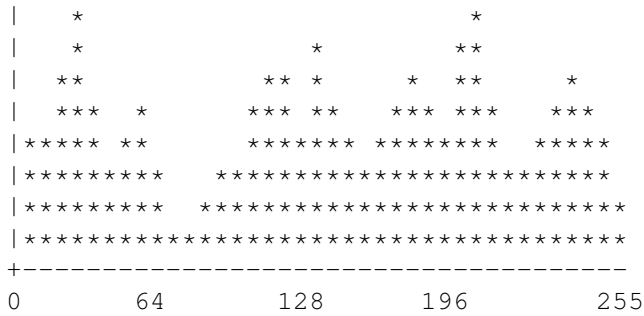


Since the grey levels are clustered together in the histogram below, it therefore corresponds to an image with low contrast. This image would appear a murky grey.

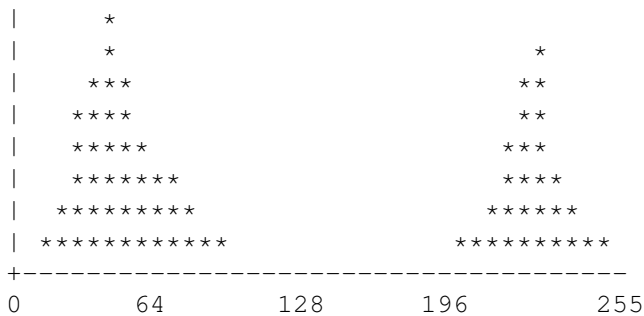




The histogram below corresponds to an image with high contrast, as the grey levels are well spread.



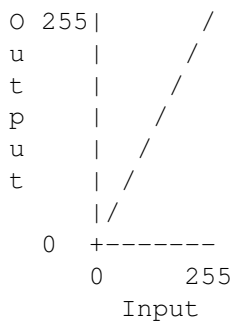
The histogram below corresponds to an image of a white object with a black background. In this case the histogram would be useful in choosing a threshold to use to turn the image into a real black and white image. (BTW, you would choose the threshold to be at about 150).



## 1.55 Function Graphs

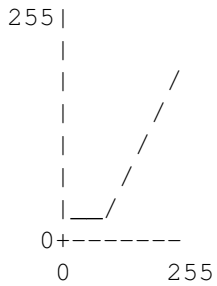
### Function Graphs

These graphs show how an input value is "mapped" on to an output value.

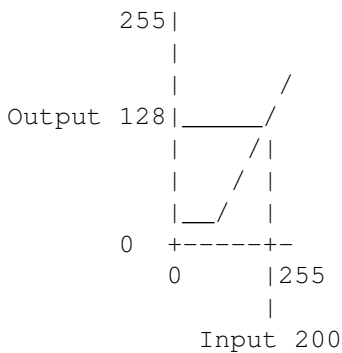


The input values are along the x axis while the output values are along the y axis. In the graph above, each input value maps onto the same output value (ie it has no effect).

Below is a graph showing a function for reducing the brightness of an image.



To find out what an input value of 200 would become you would read it of the graph like so.



Here an input value of 200 would map to an output 128.

### 1.56 Brightness

Brightness

~~~~~

This lets you alter the brightness of an image. The brightness requester looks something like this (if you use your imagination a bit).

```

+-----+
|Change Brightness                                     [|]
+-----+
+-----+	+-----+			
			Unique Values: 250	
	*		Mode       : 25	
	*		Lowest Value :  0	
	* [New Histogram]		Highest Value: 250	
	*	+-----+		
	***	+-----+		
	****		/	
	***** ** **		/	
	***** ***** **		/	
	***** *****		[Graph]	
	***** *****		/	
	***** *****		/	
	***** *****		/	

```

```

|+-----+          +-----+ |
|0      64      128      196      255 |
|          +----+ _____ |
| Brightness: | 0| [ _____ * _____ ] |
|          +----+ |
|  Intensity       Red       Green  Blue |
| |
|+-----+          +-----+ |
||   Ok   |          | Cancel  ||
|+-----+          +-----+ |
+-----+

```

The Histogram shows what the new histogram will look like, along with some qualitative information about it to the top right. The slider controls the number of grey levels that the brightness should be changed by. The graph shows the

function

that is used to produce the new image.

Click on "Ok" to make the change, "Cancel" cancels the whole requester.

The Intensity, Red, Green and Blue checkboxes control whether the brightness of the intensity component should be affected (what you would normally use), or if the brightness of the RGB components should be affected individually. This ability is useful in situations where you have to correct an image (perhaps a scan) that has one (or more) of its RGB components too bright with respect to the others components.

ARexx Equivalent:

BRIGHTNESS

## 1.57 Contrast

Contrast

~~~~~

This lets you alter the contrast of an image. The contrast requester looks a bit like this.

```

+-----+
|Change Contrast                                     |
+-----+
|+-----+          +-----+ |
			Unique Values: 250	
	*		Mode           : 25	
	*		Lowest Value  :  0	
	* [New Histogram]		Highest Value: 250	
	*			
	***			
	****			
	*****      **      **			
	*****      ***** ***			
	*****      *****			
	*****      *****			
	*****      *****			
	*****      *****			
	*****      *****			

```

```

||*****|          | / |          |
|+-----+          +-----+      |
|0      64    128    196    255    |
|          +----+ _____ |
| Contrast: | 0| [ _____ * ] |
|          +----+      |
|  Intensity       Red     Green  Blue |
|          |          |          |          |
|+-----+          +-----+      |
||   Ok   |          | Cancel |    |
|+-----+          +-----+      |
+-----+

```

The Histogram shows what the new histogram will look like, along with some qualitative information about it to the top right. The slider controls how much the contrast should be increased on decreased. The graph shows the

function

that will currently be used to produce the new image.

Click on "Ok" to make the change, "Cancel" cancels the requester.

The Intensity, Red, Green and Blue checkboxes control whether the contrast of the intensity component should be affected (what you would normally use), or if the contrast of the RGB components should be affected individually.

ARexx Equivalent:

CONTRAST

## 1.58 Gamma

Gamma

~~~~~

This lets you alter the gamma of an image. The gamma requester looks like this.

```

+-----+
|Change Gamma                                |
+-----+
|+-----+          +-----+      |
			Unique Values: 250		
	*		Mode      : 25		
	*		Lowest Value : 0		
	* [New Histogram]		Highest Value: 250		
	*		+-----+		
	***		+-----+		
	****			/	
	*****			/	
	*****			/	
	*****			/	
	*****			[Graph]	
	*****			/	
	*****			/	
	*****			/	
	*****			/	

```



```

|+-----+          +-----+ |
|0      64      128      196      255 |
|          +----+ _____ |
| Contrast: | 0| [ _____ * _____ ] |
|          +----+ |
|                [] Red   [] Green [] Blue |
|
|+-----+          +-----+ |
||  Ok   |          | Cancel  ||
|+-----+          +-----+ |
+-----+

```

The Histogram shows what the new histogram will look like, along with some qualitative information about it to the top right. The slider controls how the gamma content should be affected. The graph shows the

function

that will currently be applied to create the new image. Click on ←

"Ok" to

make the change, "Cancel" cancels the requester.

Increasing the gamma content of an image has the effect of darkening the mid-grey values. While decreasing the gamma does the opposite. The main use for changing the gamma (or Gamma Correction as it is known) is to correct effects caused by the non-linear way in which monitors respond to inputs.

The best way to see this is open the image Gradient.alpha which is in the Alpha directory. Now render it using as many shades of grey as possible. Notice how the perceived intensity decreases slowly from left to right until it gets to the right where it drops off quickly to black. Now apply gamma correction of +47. Render the new image. Notice how the intensity decreases more uniformly across the image.

ARexx Equivalent:

GAMMA

## 1.59 Hue

Hue

~~~

This lets you alter the hue of an image. The hue requester looks like this.

```

+-----+
|Change Hue                                     []|
+-----+
|+-----+          +-----+ |
			Unique Values: 250	
	*		Mode           : 25	
	*			
	* [New Histogram]			
	*	+-----+		
	***	+-----+		
	****          *	/		

```

```

	*****      **      **		/														
	*****      ***** ***		/														
	*****      *****		[Graph]														
	*****      *****		/														
	*****      *****		/														
	*****      *****		/														
	*****      *****		/														
+-----+																	
Red   Green   Blue   Red																	
Hue      :	0	[ _____ * _____ ]															
+-----+																	
	Ok																
+-----+																	
+-----+																	

```

The Histogram shows what the new histogram will look like, along with some qualitative information about it to the top right. The slider controls how the hue should be affected. The graph shows the function that will currently be applied to create the new image. Click on "Ok" to make the change, "Cancel" cancels the requester.

ARexx Equivalent:  
HUE

### 1.60 Saturation

```

Saturation
~~~~~

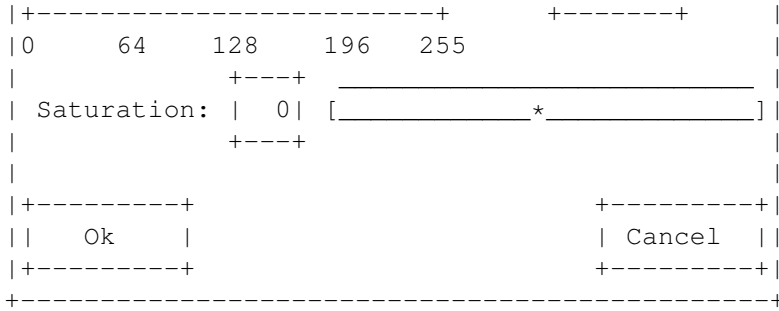
```

This lets you alter the saturation of an image. The saturation requester looks like this.

```

+-----+
|Change Saturation                [|]
+-----+
|+-----+ | | | | | | | | | | | | | | | | |
|| | | | | | | | | | | | | | | | |
|| * | | | | | | | | | | | | | | |
|| * | | | | | | | | | | | | | | |
|| * [New Histogram] | | | | | | | |
|| * | | | | | | | | | | | | | | |
|| *** | | | | | | | | | | | | | |
|| **** | | | | | | | | | | | | | |
|| ***** ** ** | | | | | | | | |
|| ***** ***** *** | | | | | | | |
|| ***** ***** | | [Graph] | | |
|| ***** ***** | | / | | | |
|| ***** ***** | | / | | | |
|| ***** ***** | | / | | | |
|| ***** ***** | | / | | | |

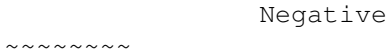
```



The Histogram shows what the new histogram will look like, along with some qualitative information about it to the top right. The slider controls how the saturation should be affected. The graph shows the function that will currently be applied to create the new image. Click on ← "Ok" to make the change, "Cancel" cancels the requester.

ARexx Equivalent:  
SATURATION

### 1.61 Negative



This merely takes the negative of an image.

ARexx Equivalent:  
NEGATIVE

### 1.62 Contrast Stretch



This increases an image's contrast so that it uses the full dynamic range available. This generally improves the appearance of an image and helps bring out detail.

ARexx Equivalent:  
CONTRAST\_STRETCH

### 1.63 Histogram Equalization

### Histogram Equalization

~~~~~

This tries to change an image so that each grey level is represents an equal number of pixels in the image. Or to put it in other words, it tries to make the histogram of the image flat. Due the discrete nature of the whole operation the resulting histogram will not be flat, but only an approximation. This has the effect of increasing the contrast of an image and brings out detail.

ARexx Equivalent:

HISTOGRAM\_EQUALIZATION

## 1.64 Threshold

### Threshold

~~~~~

This allows you to turn a project into black and white image by applying a threshold to the intensity of each pixel. The threshold requester looks like the histogram requester, by clicking on the histogram graph you can a position a vertical line which determines the threshold. The exact position is given on the right hand side as "Threshold:". Clicking on "Ok" applies the threshold, everything that's below will be come black, else it'll become white.

ARexx Equivalent:

THRESHOLD

## 1.65 Transform

### Transform

~~~~~

This allows you to apply a function to the intensity of an image. The transform requester looks like this.

```
+-----+
|Transform          []|
+-----+
|255 +-----+ +-----+ |
|   |           /| | Initial | |
|   |          / | +-----+ |
|   |         /  | | Negate  | |
|   |        /   | +-----+ |
|   |       /    | |Monotonic| |
|   |      /     | +-----+ |
|128 |     /      | | Smooth  | |
|   |    /       | +-----+ |
|   |   /        | | + Bright | |
```

```

|      | /          | +-----+ | | |
|      | /          | | - Bright| |
|      |/          | +-----+ |
|  0  +-----+    |          |
|      0      128   255    |
|          |          |
| +-----+          +-----+ |
| |  Ok  |          |Cancel| |
| +-----+          +-----+ |
+-----+

```

The graph shows the function that will be used, with the input values along the bottom and the out put values along the left. The shape of the function can be edited by using the left mouse button to draw straight onto the graph.

The buttons do the following.

Initial:-

Restores the function to the initial straight line.

Negate:-

Negates the function (turns it upside down, in other words).

Monotonic:-

This fixes the function so that each value is greater than or equal to the one to its left.

Smooth:-

This smooths the function. (Useful if you drew part of the function in freehand, and you want to smooth some of your mistakes a bit).

+ Bright:-

This increases the brightness (effectively moves the graph up a bit).

- Bright:-

This decreases the brightness (effectively moves the graph down a bit).

As usual, "Ok" applies the function and "Cancel" forgets the whole thing.

One of the main uses for this feature is for creating a black and white image using only range of greys.

## 1.66 Convert to Colour

Convert to Colour

~~~~~

This converts a grey image to a colour image. Each pixel will be replaced with the corresponding colour from the project's palette. (ie a pixel with grey level 25 will be replaced with the colour number 25 in the project's palette).

ARexx Equivalent:

CONVERT\_TO\_COLOUR

## 1.67 Convert to Grey

Convert to Grey

~~~~~

This merely converts an image to grey.

ARexx Equivalent:

CONVERT\_TO\_GREY

## 1.68 False Colour

False Colour

~~~~~

This applies a False Colour effect to an image. If the image is grey then the resulting project will be colour.

ARexx Equivalent:

FALSE\_COLOUR

## 1.69 Local Contrast Stretch

Local Contrast Stretch

~~~~~

This applies a Local Contrast Stretch to an image. This is like a normal contrast stretch except that instead of using the whole image to calculate what the new pixel value should be, only a small neighbourhood around the pixel is used. This effectively brings out local detail.

ARexx Equivalent:

LOCAL\_CONTRAST\_STRETCH

## 1.70 Filter Menu

Filter

Convolve...

-----

---

```

Lowpass          »
Maximum          »
Median           »
Minimum          »
-----
Highpass...
Highboost       »
Sharpen         »
Local Contrast Stretch »

```

### 1.71 Convolve

```

Convolve
Convolve

```

~~~~~

The convolve requester looks like this.

```

+-----+
|Convolve                                     [|] |
+-----+
|      +-----+                             | | |
| Name:|Untitled                             | |
|      +-----+                             | |
|
|          Convolve Matrix:
|
| +-----+ +-----+ +-----+ +-----+ +-----+ +-----+
| |  0| |  0| |  0| |  0| |  0| |  0| | New |
| +-----+ +-----+ +-----+ +-----+ +-----+ +-----+
| +-----+ +-----+ +-----+ +-----+ +-----+ +-----+
| |  0| |  0| |  0| |  0| |  0| |  0| | Load... |
| +-----+ +-----+ +-----+ +-----+ +-----+ +-----+
| +-----+ +-----+ +-----+ +-----+ +-----+ +-----+
| |  0| |  0| |  0| |  0| |  0| |  0| | Save... |
| +-----+ +-----+ +-----+ +-----+ +-----+ +-----+
| +-----+ +-----+ +-----+ +-----+ +-----+ +-----+
| |  0| |  0| |  0| |  0| |  0| |  0| | Divisor: | 1|
| +-----+ +-----+ +-----+ +-----+ +-----+ +-----+
| +-----+ +-----+ +-----+ +-----+ +-----+ +-----+
| |  0| |  0| |  0| |  0| |  0| |  0| | Bias: | 0|
| +-----+ +-----+ +-----+ +-----+ +-----+ +-----+
|
| +-----+
| |  Ok  |
| +-----+
|
| +-----+
| |  Cancel  |
| +-----+
+-----+

```

The name gadget holds the name given to this convolve. The number gadgets below the "Convolve Matrix:" hold the values of the matrix elements. (BTW, to get to the next one you don't have to click in the next one with the mouse, you can just press tab). The divisor and bias gadgets hold the values for divisor and bias respectively (funny that).

The "New" button will clear the matrix and the divisor and bias values. The "Load..." button opens a filerequester, allowing you load in a convolve from disk. While the "Save..." button will let you save the current convolve to disk. Finally "Ok" applies the convolve, while "Cancel" cancels the entire operation.

ARexx Equivalent:

CONVOLVE

## 1.72 What the smeg is a convolve?

What the smeg is a convolve?

~~~~~

A convolve is just a matrix of elements, a number for the divisor, and one for the bias.

That's great, what do you do with it?

~~~~~

A convolve works like this. To calculate the new value of each pixel, the matrix is centered over the source pixel and each matrix element is multiplied by the value beneath it, the values summed then divided by the divisor and finally the bias is added.

For example.

If the convolve matrix looks like this.

```
0 -1 0
-1 4 -1
0 -1 0
```

Divisor = 8

Bias = 0

Applying it to pixel e in the diagram below.

```
a b c
d e f
g h i
```

The new value for pixel e would be.

$$(0xa + -1xb + 0xc + -1xd + 4xe + -1xf + 0xg + -1xh + 0xi) / \text{Divisor} + \text{Bias}$$

Simple, eh? Convolves can be used to create 100s of different effects.



Examples of convolves

~~~~~

A 3x3 lowpass filter merely averages the pixel values in a 3x3 neighbourhood, therefore it's convolve matrix looks like this.

```
1 1 1
1 1 1
1 1 1
```

Divisor = 9

Bias = 0

A blur that's not as heavy as a 3x3 lowpass filter would be done using a convolve like this.

```
0 1 0
1 4 1
0 1 0
```

Divisor = 8

Bias = 0

## 1.73 LowPass (aka Blur)

LowPass (aka Blur)

~~~~~

This applies a

lowpass

filter to an image. A lowpass filter removes the high frequencies (edges, sharp intensity transitions) in an image, thus effectively blurring it. This very useful for removing noise from an image.

ARexx Equivalent:

LOWPASS

## 1.74 How exactly does it work?

How exactly does it work?

~~~~~

The values for each new pixel is calculated by averaging the values of its surrounding neighbours. So for a 3x3 lowpass filter the new value of each pixel is just the average of the nine surrounding neighbours.

```
a b c
d e f
g h i
```

In this diagram the new value of pixel e will be  $(a+b+c+d+e+f+g+h+i)/9$ .

The larger the filter the "heavier" and more blurred it is.

Also, by using a long thin filter, you can sort of fake a motion blur.

## 1.75 HighPass

HighPass

~~~~~

This applies a highpass filter to an image. The highpass filter removes the low frequencies in an image, leaving the high ones that correspond to edges and sharp intensity transitions etc.

Since we can have negative transitions in an image the result from the highpass filter will be in the range of  $[-255,255]$  and therefore has to be converted back into the range  $[0,255]$ . There are four different ways that can be used to "normalize" it.

- Absolute - The absolute value is used. In the result the edges will be surrounded by a double white line.
- Scale - It's scaled into the range  $[0,255]$ . The result doesn't look entirely unlike some sort emboss effect.
- Clip Negative - All negative values simply become zero.
- Clip Positive - All positive values become zero and the negative values are negated.

ARexx Equivalent:

HIGHPASS

## 1.76 HighBoost

HighBoost

~~~~~

This is effectively the same as a highpass filter except that a fraction of the original image is added back in to the highpass result.

This can be useful in that the resulting image looks more like the original except that the high frequencies have been highlighted.

The percentage refers to how much of the original to add back in.

ARexx Equivalent:

HIGHBOOST

## 1.77 Sharpen

Sharpen

~~~~~

This sharpens a blurred image. This is extremely useful for bring out detail in a bad blurry image. The larger the percentage used, the greater the effect. (BTW, the sharpened image is calculated by taking the original and adding a fraction of the highpass result to it. The percentage actually refers to the fraction of the highpass result to add in.)

I find that this used in conjunction with a lowpass filter is very good at removing high frequency noise, by first applying a small (3x3) sized lowpass filter to the image and then sharpening it to bring out the detail again.

ARexx Equivalent:

SHARPEN

## 1.78 Maximum Filter

Maximum Filter

~~~~~

This filter replaces each pixel in the image with maximum value of its neighbouring pixels. This size of the filter determines the size of the neighbourhood of surrounding pixels to be considered.

ARexx Equivalent:

MAXIMUM

## 1.79 Median Filter

Median Filter

~~~~~

This filter is extremely good at removing noise and preserving edges in an image. It works by replacing each pixel in an image with the median value of the its neighbouring pixels.

ARexx Equivalent:

MEDIAN

## 1.80 Minimum Filter

Minimum Filter

~~~~~

This filter replaces each pixel in the image with minimum value of its neighbouring pixels. This size of the filter determines the size of the neighbourhood of surrounding pixels to be considered.

ARexx Equivalent:

MINIMUM

### 1.81 Alpha Menu

Alpha

Primary

Secondary

Alpha

-----

Composite...

LMB Drag

-----

Displace...

Halftone

### 1.82 Composite

Composite

~~~~~

This simply allows you to create composite images. Before this menu item can be used you need to mark an image for use the the primary image and one for the secondary image. The Composite requester looks vaguely like this.

```

+-----+
|Composition Control                                     [|]
+-----+
|+-----+      Primary   Width: | 320|   Height: | 256|   | | | |
|| +-----+      |      |      |      |      |      |
|| |          |      |      |      |      |      |
|| | *****  | Secondary Width: | 200|   Height: | 200|   |
|| | *****  |      |      |      |      |      |

```



As always, hitting the "Ok" button will set it into operation, while cancel will forget the whole thing.

ARexx Equivalent:

COMPOSITE

### 1.83 Mark as Primary, Secondary or Alpha

Mark as Primary, Secondary or Alpha

~~~~~

Before the "Composite..." function can be used, you need to specify which images are to be used as the secondary, primary and sometimes alpha. To mark an image for use as the primary, secondary or alpha, you simply check these menu items. A marked image will have anyone of the letters P, S & A in front of its title depending on what it has been marked as. The letters simply indicate that the image has been marked as Primary, Secondary or Alpha.

ARexx Equivalent:

MARK

### 1.84 Left Mouse Button Drag

Left Mouse Button Drag

~~~~~

This allows you to use the LMB to drag an image from it's window and place it on the image it should be composited with, in much the same way that you manipulate icons on the Workbench. Just drag the image you want to use as the primary image, onto the image you want to use as the secondary image and release the LMB, making sure that the pointer is over the secondary image. The dragged image will then be marked as the Primary, image that you released the LMB over will be marked as the Secondary image and "Composition Control" requester will be invoked. This facility is very useful when you want to carefully position an image when compositing.

### 1.85 Displace

Displace

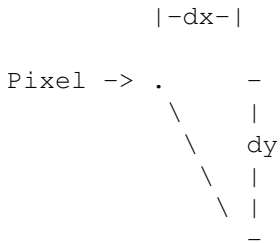
~~~~~

This displaces the pixels in the primary image using the values of the pixels in the alpha image.

It works like this, you specify the number of pixels to displace in the x and y direction first. Each pixel in the resulting image is determined by taking its cooresponding value from the alpha channel. If the value from the alpha is

white then the pixel is displaced by given amount. If the value from the alpha channel is black then the pixel displaced by by the given amount in the negative direction. While if the alpha value is mid grey then the pixel doesn't move at all.

Example. For when the value from the alpha channel is white. The resulting pixel is displaced by (dx,dy).



Arexx Equivalent:

DISPLACE

## 1.86 Halftone

~~~~~ Halftone

This halftones the Primary image. The alpha channel image is used to specify the halftone pattern to be used. It works by using each pixel in the alpha channel to threshold the corresponding pixel in the Primary image. If the alpha channel image isn't as large as the Primary image then it's simply tiled to cover.

The resulting image is created by taking each pixel in the source, getting the corresponding pixel in the alpha image, and it (alpha pixel) to threshold the source pixel.

ARExx Equivalent:

HALFTONE

See also the supplied halftone Arexx script which provides a simple interface

to many common halftone patterns.

## 1.87 Arexx Menu

ARExx

Execute...

-----

Macro1 F1

```
Macro2  F2
...     F3
```

## 1.88 Execute ARexx script

```
Execute ARexx script
~~~~~
```

This menu item lets you select an ARexx script from disk to execute. A filerequester will appear letting you select a script.

## 1.89 ARexx User Menu

```
ARexx User Menu
~~~~~
```

The rest of the ARexx menu contains configurable menu items that allow you to execute ARexx scripts by selecting a menu item or by pressing the corresponding key combination. These menu items can be configured using the ARexx preferences requester, which is on menu

```
Project/Prefs/ARexx
.
```

## 1.90 ARexx

```
ARexx
~~~~~
```

Image Engineer's has an ARexx port called IMAGEENGINEER. Most menu items have a corresponding ARexx command. You'll find that function and input descriptions are usually quite brief, read the corresponding menu description for a more in-depth view of how a particular operation works and what the inputs are.

```
Script Writing Tips
  <- Please Read
```

```
Supplied Scripts
```

```
Command List
```



## 1.91 Script Writing Tips

### Script Writing Tips

~~~~~

- \* Options Results should be turned on to get results from commands. (Use the line "Options Results" at the start of your scripts).
- \* Image Engineer's commands return 0 in RC on success, 5 when the user aborts or cancels a command (by clicking on the "Abort" button or selecting cancel if it's a requester). If the commands fails due to bad parameters, out of memory etc 10 is returned. Use the command  

```
LAST_ERROR
```

to get a string describing the error.
- \* ARexx scripts can be invoked from inside by using the "Execute..." menu item on the ARexx menu, or by choosing a user defined menu item from the ARexx menu. Scripts started this way automatically have their command host set to IMAGEENGINEER. They're also called with argument one containing the name of the currently active project, or nothing if the script was invoked with no project active (ie before the user has even opened an image).

It's worth checking to see if your script has been passed a project name to operate on, with a line like this:-

```
if arg()==0 then
do
/* If we need a project to operate on we could now */
/* open a file requester and let the user choose an */
/* image from disk, or put up a message saying that we */
/* need a project, or we could just quietly exit now. */
end
```

- \* Be aware of how ARexx interprets quotes in command clauses. For example.

```
CLOSE 'bono.iff' & 'CLOSE bono.iff'
```

will send the string

```
CLOSE bono.iff
```

to IE, as ARexx interprets the outside quotes. This is important to keep in mind when you're trying to send a command with a file name that contains a space.

For example.

```
'OPEN "sys:pics/bono pic"'
```

which would send the string

```
OPEN "sys:pics/bono pic"
```

to IE.

If you've got a file name stored in a string (that you may have requested from the user) and you want to use it with a command, you should make sure that the name is enclosed in quotes when it's send to IE, as you can't be sure that it contains no spaces.  
For example.

```
MyFile='sys:pics/bono pic'
```

```
'OPEN "||MyFile||"'
```

this would send

```
OPEN "sys:pics/bono pic"
```

to IE. Doing it like this

```
'OPEN '||MyFile
```

would not work if the file name contains a space.

\* IE also has several special commands for use in ARexx scripts.

Screen Commands:-

IE\_TO\_FRONT

WB\_TO\_FRONT

Error Command:-

LAST\_ERROR

User Input Commands:-

GET\_DIR

GET\_FILE

GET\_FILES

GET\_FILE\_TYPE

GET\_NUMBER

GET\_PERCENT

GET\_STRING

REQUEST

Task Priority Commands:-

GET\_PRI

SET\_PRI

GET

---

## 1.92 Supplied Scripts & Macros

### Supplied Scripts & Macros

~~~~~

Note: For the example scripts to find the files they need to work on, IE: needs to be assigned to the directory containing IE and the Convolves and Alpha directories. Add the following line to your user-startup.

```
assign IE: <path to IE directory goes here>
```

To start any of the scripts RexxMast needs to be running as well as Image Engineer.

The following scripts and macros can be found in the IE's ARexx directory and can be invoked by using the Execute menu item on the ARexx menu.

#### Anitique.rexx

Changes the colours in the image so that it looks like one of those old yellow photos that you usually find at your grandparent's place. IYKWIM ;-)

#### BatchConvert.rexx

This takes a list of files, loads each file, renders it to a given screenmode and then saves the rendered image in a given file format. By telling it to render in the background, it's possible to go do other work while it loads, renders and saves the images at reduced priority.

#### BulgeAnim.rexx

Creates animation frames of the bulge effect.

#### ContStretchRegion.rexx

Drag out a box on a project, and call this script to contrast stretch the marked out region.

#### ExplodeAnim.rexx

Creates animation frames of the image being displaced with itself. Usually resulting in the image looking like it's been blown up.

#### ExtractComponent.rexx

Extracts a primary colour component from a colour image.

#### FadeInAnim.rexx

This script takes an image of a title over a black background and composites it over another image, fading it in over a given number of frames. By compiling the resulting frames you can create an animation of your title fading in.

#### FitAlpha.rexx

This loads and scales the image Spherical.alpha to the same dimensions as the current image, then marks it for use as an alpha channel. The new alpha channel image can be used to seamlessly composite the original onto another image.

#### FitAlpha2.rexx



This is the same as above except the image appears in grey around the edges.

#### WetInk.rexx

This takes a black on white image, and makes it appear that the black ink has run, by using a convolve.

#### ZoomBlur.rexx

Makes an image appear as though you're moving towards the image at speed. (Try it on a space image using MAX as the mix method, for that jump-to-lightspeed effect (for the Star Wars fans)).

## 1.93 ARexx Commands

### Arexx Commands

~~~~~

AUTOCROP

BRIGHTNESS

BULGE

CLOSE

CLOSE\_RENDER

COMPOSITE

CONTRAST

CONTRAST\_STRETCH

CONVERT\_TO\_COLOUR

CONVERT\_TO\_GREY

CONVOLVE

CROP

DISPLACE

FALSE\_COLOUR

GAMMA

GET

GET\_DIR

GET\_FILE

GET\_FILES

---

GET\_FILE\_TYPE  
GET\_NUMBER  
GET\_PERCENT  
GET\_PRI  
GET\_RENDER  
GET\_STRING  
HALFTONE  
HIGHBOOST  
HIGHPASS  
HISTOGRAM\_EQUALIZATION  
HUE  
IE\_TO\_FRONT  
LAST\_ERROR  
LOAD\_PALETTE  
LOCAL\_CONTRAST\_STRETCH  
LOWPASS  
MARK  
MAXIMUM  
MEDIAN  
MINIMUM  
NEGATIVE  
OPEN  
OPEN\_CLIPBOARD  
PROJECT\_INFO  
QUIT  
REMOVE\_FEATURE  
RENDER  
RENDER\_AUTOSCROLL

---

RENDER\_COLOURS  
RENDER\_DEPTH  
RENDER\_DEVICE  
RENDER\_DITHER  
RENDER\_QUANTIZE  
RENDER\_SCREENMODE  
RENDER\_TO\_FRONT  
REFLECT\_X  
REFLECT\_Y  
REQUEST  
RESIZE  
ROTATE  
SATURATION  
SAVE  
SAVE\_CLIP  
SAVE\_DATA  
SAVE\_DATA\_CLIP  
SAVE\_PALETTE  
SCALE  
SET\_PRI  
SET\_RENDER  
SHARPEN  
THRESHOLD  
TWIRL  
TYPE  
WB\_TO\_FRONT

## 1.94 Autocrop

---

## Autocrop

~~~~~

## Synopsis:

AUTOCROP &lt;ProjectName&gt;

## Function:

Crop out all of the background surrounding an image.

## Inputs:

ProjectName - Name of the project to autocrop.

## Result:

Returns the name of the newly created project in RESULT.

## Example:

```
options results
...
MyProject='bono.iff'
...
AUTOCROP MyProject /* Autocrop MyProject */
say 'Autocropped project name is' RESULT
```

## Menu equivalent:

Edit/Autocrop

See also:

## 1.95 Brightness

## Brightness

~~~~~

## Synopsis:

BRIGHTNESS &lt;ProjectName&gt; &lt;Value&gt; [INTENSITY | [RED] [GREEN] [BLUE] ]

## Function:

Change the brightness of an image.

## Inputs:

ProjectName - Name of the project.

Value - Value to change brightness by.

INTENSITY - Specifies that the intensity component should be affected (default).

RED - Specifies that the red colour component should be affected.

GREEN - Specifies that the green colour component should be affected.

BLUE - Specifies that the blue colour component should be affected.

## Result:

Returns the name of the newly created project in RESULT.



Example:

```
BRIGHTNESS MyProject 50 /* Increase brightness by 50 */
BRIGHTNESS MyProject 50 INTENSITY /* as above */
...
BRIGHTNESS MyProject -50 GREEN /* Reduce the brightness of the */
/* green component by 50 */
...
BRIGHTNESS MyProject 10 RED BLUE /* Slightly increase the */
/* brightness of the red and blue components */
```

Menu equivalent:

```
Process/Brightness
See also:
```

## 1.96 Bulge

Bulge

~~~~~

Synopsis:

```
BULGE <Project> <X> <Y> <Radius> <amount> <FAST | BEST/COLOUR_AVERAGE>
```

Function:

Bulge part of an image.

Inputs:

```
Project          - Name of the project.
X                - X position of the center of the bulge.
Y                - Y position of the center of the bulge.
Radius           - Radius of the bulge.
Amount           - Amount to bulge by.
FAST             - Use fast nearest neighbour algorithm.
BEST/COLOUR_AVERAGE - Use colour average algorithm.
```

Result:

Returns the name of the newly created project in RESULT.

Example:

Menu equivalent:

```
Edit/Bulge
See also:
```

## 1.97 Close

---

Close

~~~~~

Synopsis:

CLOSE <ProjectName>

Function:

Close a project. Same as clicking on the project's close box.

Inputs:

ProjectName - Name of the project.

Result:

None.

Menu equivalent:

Edit/Close Project

See also:

## 1.98 Close Render

Close Render

~~~~~

Synopsis:

CLOSE\_RENDER <ProjectName>

Function:

Close a project's render screen.

Inputs:

ProjectName - Name of the project.

Result:

None.

Menu equivalent:

Edit/Close Render

See also:

## 1.99 Composite

Composite

~~~~~

Synopsis:

COMPOSITE <X Offset> <Y Offset> <ALPHA|MAX|MIN|<MIX <%> [GENLOCK]>>

---

**Function:**

Create a composite image from the marked Primary and Secondary images by mixing the images or using an alpha to combine them.

**Inputs:**

ProjectName - Name of the project.  
 X Offset - X Offset of the Primary image with respect to the Secondary image.  
 Y Offset - Y Offset of the Primary image with respect to the Secondary image.  
 ALPHA - This keyword specifies that the two images should be combined using an alpha channel.  
 MAX - This keyword specifies that the two images should be combined by taking the greater pixel value.  
 MIN - This keyword specifies that the two images should be combined by taking the smaller pixel value.  
 MIX - This keyword specifies that the images should be mixed together at <%> percent.  
 % - Percentage of the Primary image to use when mixing.  
 GENLOCK - This keyword specifies that all black in the primary image should be made transparent.

**Result:**

Returns the name of the newly created project in RESULT.

**Example:**

```
/* Mix the BackgroundProject with the LogoProject using 50% mix */
/* with black being transparent */
MARK BackgroundProject SECONDARY
MARK LogoProject PRIMARY
COMPOSITE 0 0 MIX 50 GENLOCK
...

/* Combine the BackgroundProject with LogoProject using */
/* LogoAlphaProject as an alpha channel */
MARK BackgroundProject SECONDARY
MARK LogoProject PRIMARY
MARK LogoAlphaProject ALPHA
COMPOSITE 0 0 ALPHA
...
```

**Menu equivalent:**

Alpha/Composite  
 See also:  
 MARK

**1.100 Contrast**

Contrast

~~~~~

**Synopsis:**

```
CONTRAST <ProjectName> <Value> [INTENSITY | [RED] [GREEN] [BLUE] ]
```

**Function:**

Change the contrast of an image.

**Inputs:**

ProjectName - Name of the project.

Value - Value to change contrast by.

INTENSITY - Specifies that the intensity component should be affected (default).

RED - Specifies that the red colour component should be affected.

GREEN - Specifies that the green colour component should be affected.

BLUE - Specifies that the blue colour component should be affected.

**Result:**

Returns the name of the newly created project in RESULT.

**Examples:**

```
CONTRAST MyProject 50 /* Increase contrast */
CONTRAST MyProject 50 INTENSITY /* same as above */
...
```

```
CONTRAST MyProject -50 GREEN /* Reduce the contrast of the */
... /* green component by 50 */
```

```
CONTRAST MyProject 10 RED BLUE /* Slightly increase the */
/* contrast of the red and blue components */
```

**Menu equivalent:**

Process/Contrast

See also:

## 1.101 Contrast Stretch

Contrast Stretch

~~~~~

**Synopsis:**

```
CONTRAST_STRETCH <ProjectName>
```

**Function:**

Contrast stretch an image.

**Inputs:**

ProjectName - Name of the project.

**Result:**

Returns the name of the newly created project in RESULT.

Menu equivalent:

Process/Contrast Stretch  
See also:

## 1.102 Convert to Colour

~~~~~  
Convert to Colour  
~~~~~

Synopsis:

CONVERT\_TO\_COLOUR <ProjectName>

Function:

Convert a 8 bit grey image to 24 bit colour.

Inputs:

ProjectName - Name of the project.

Result:

Returns the name of the newly created project in RESULT.

Menu equivalent:

Process/Convert to Colour  
See also:

## 1.103 Convert to Grey

~~~~~  
Convert to Grey  
~~~~~

Synopsis:

CONVERT\_TO\_GREY <ProjectName>

Function:

Convert a 24 bit colour image to 8 bit grey

Inputs:

ProjectName - Name of the project.

Result:

Returns the name of the newly created project in RESULT.

Menu equivalent:

---

Process/Convert to Grey  
See also:

## 1.104 Convolve

Convolve

~~~~~

Synopsis:

```
CONVOLVE <ProjectName> <ConvolveFilename>
```

Function:

Apply a convolve to an image.

Inputs:

ProjectName - Name of the project.  
ConvolveFileName - Path and filename of the convolve to use.

Result:

Returns the name of the newly created project in RESULT.

Example:

```
options results
...
MyProject='bono.iff'
...
CONVOLVE MyProject "Convolve/Raise_Low" /* Convolve MyProject*/
/* with Raise_Low */
say 'Convolved project name is' RESULT
```

Menu equivalent:

Filter/Convolve  
See also:

## 1.105 Crop

Crop

~~~~

Synopsis:

```
CROP <ProjectName> <x1> <y1> <x2> <y2>
```

Function:

Crop the given rectangle out of the given project

Inputs:

ProjectName - Name of the project to crop.  
x1 - X co-ord of the top left corner of the crop  
rectangle.

y1 - Y co-ord of the top left corner of the crop rectangle.  
x2 - X co-ord of the bottom right corner of the crop rectangle.  
y2 - Y co-ord of the bottom right corner of the crop rectangle.

**Result:**

Returns the name of the newly created project in RESULT.

**Example:**

```
/* Cut out the rectangle from (10,10) to (20,20) from the image */  
/* MyProject */  
...  
CROP MyProject 10 10 20 20  
...
```

**Menu equivalent:**

Edit/Cut  
See also:

## 1.106 Displace

Displace

~~~~~

**Synopsis:**

DISPLACE <x displacement> <y displacement>

**Function:**

Displaces the pixels in the primary image using the alpha channel.

**Inputs:**

x displacement - Number of pixels to displace by on the x axis.  
y displacement - Number of pixels to displace by on the y axis.

**Result:**

Returns the name of the newly created project in RESULT.

**Menu equivalent:**

Alpha/Halftone  
See also:

MARK

## 1.107 False Colour

---

False Colour

~~~~~

Synopsis:

FALSE\_COLOUR <ProjectName>

Function:

Apply a false colour effect to an image.

Inputs:

ProjectName - Name of the project.

Result:

Returns the name of the newly created project in RESULT.

Menu equivalent:

Process/False colour  
See also:

## 1.108 Gamma

Gamma

~~~~~

Synopsis:

GAMMA <ProjectName> <Value>

Function:

Change the Gamma content of an image.

Inputs:

ProjectName - Name of the project.  
Value - Value to change gamma by.

Result:

Returns the name of the newly created project in RESULT.

Menu equivalent:

Process/Gamma  
See also:

## 1.109 Get

Get

~~~

Synopsis:



```
GET <PRIMARY|SECONDARY|ALPHA>
```

Function:

Get the name of the image currently marked as being primary, secondary or alpha.

Input:

PRIMARY - Get the name of the primary image.  
 SECONDARY - Get the name of the secondary image.  
 ALPHA - Get the name of the alpha image.

Result:

Returns the name of the requested image in RESULT. If no image as been marked as the given image type, then a null string will be returned in RESULT.

Menu equivalent:

None.

See also:

## 1.110 Get Dir

```
Get Dir
```

```
~~~~~
```

Synopsis:

```
GET_DIR <Title> [<Ok Text> [<Initial Dir>] ]
```

Function:

Get a directory from the user.

Inputs:

Title - Title of the directory requester.  
 Ok Text - Optional text to use for the Ok button.  
 Initial Dir - Optional directory that the requester should start in.

Result:

Returns name of the chosen directory in RESULT.  
 If the user cancels the requester, 5 will be returned in RC.

Example:

```
/* This example shows how to get a directory from the user and */
/* how to fix it to make it ready to append filename to. */
/* ie 'sys:t' needs to become 'sys:t/' before we can use it to */
/* build complete pathnames. */

Options Results /* We want to receive results */

'GET_DIR "Select Destination Dir" "Go!!!"' /* Get destination */
if RC=5 then exit /* Exit if we were cancelled */
destdir=RESULT

endpart=right(destdir,1) /* Fix it so that it ends in ':' or '/' */
```

```

if endpart~=":" & endpart~/="/" then destdir=destdir||"/"
/* Now destdir is ready to append file names to it */
...

```

Menu equivalent:  
None.

See also:

```

GET_FILE
'
GET_FILES

```

## 1.111 Get File

Get File

~~~~~

Synopsis:

```
GET_FILE <Title> [<Ok Text> [<Initial Dir>] ]
```

Function:

Get a path and filename from the user.

Inputs:

Title - Title of the file requester.  
Ok Text - Optional text to use for the Ok button.  
Initial Dir - Optional directory that the requester should start in.

Result:

Returns the complete path and file name in RESULT.  
If the user cancels the requester, 5 will be returned in RC.

Example:

```

'GET_FILE "Select an Image to process" "Go!!!" /* Get a file */
if RC=5 then exit /* Exit if we were cancelled */
MyFile=RESULT
...

```

Menu equivalent:  
None.

See also:

```

GET_DIR
'
GET_FILES

```

## 1.112 Get Files

## Get Files

~~~~~

## Synopsis:

```
GET_FILES <Title> [<Ok Text> [<Initial Dir>] ]
```

## Function:

Get multiple path and filenames from the user.

## Inputs:

```
Title           - Title of the file requester.
Ok Text         - Optional text to use for the Ok button.
Initial Dir     - Optional directory that the requester should start in.
```

## Result:

Returns a list of the path and file names separated by a ';' in RESULT. If the user cancels the requester, 5 will be returned in RC.

## Example:

```
'GET_FILES "Select Images to process" "Go!!!"' /* Get a files */
if RC=5 then exit /* Exit if we were cancelled */
MyFileList=RESULT /* MyFileList now contains the list of files */
/* in the form "sys:pics/File1;sys:pics/File2" */

do while MyFileList~="" /* Keep going while we still have files left */
parse var MyFileList FileName ';' MyFileList

... /* Do something with the image in file FileName */

end

/* See the script batch_convert.rexx for a full example */
```

## Menu equivalent:

None.

## See also:

```
GET_DIR
,
GET_FILE
```

**1.113 Get File Type**

## Get File Type

~~~~~

## Synopsis:

```
GET_FILE_TYPE [<Title>]
```

## Function:

Get a save file format name from the user.



```

    /* Ask the user how many frames they want generated */
    'GET_NUMBER "Enter the number of Frames" 1 100 "Ok|Cancel" 10'
    if RC=5 then exit
    NumberOfFrames=RESULT

    say 'Number to frames to generate:' NumberOfFrames
    ...

```

Menu equivalent:  
None.

See also:

```

    GET_PERCENT
    '
    GET_STRING

```

## 1.115 Get Percent

Get Percent

~~~~~

Synopsis:

```
GET_PERCENT <Title>
```

Function:

Get a percentage in the range of 0% and 100% from the user.

Inputs:

Title - Title of the requester.

Result:

Returns the percentage in RESULT.

If the user cancels the requester, 5 will be returned in RC.

Example:

```

    /* Ask the user how many frames they want generated */
    'GET_PERCENT "Enter the % to mix by"'
    if RC=5 then exit
    MixPercent=RESULT

    say 'Mix Percentage :' MixPercent
    ...

```

Menu equivalent:

None.

See also:

```

    GET_NUMBER
    '
    GET_STRING

```

## 1.116 Get Task Priority

Get Task Priority

~~~~~

Synopsis:

GET\_PRI

Function:

Get Image Engineer's task priority.

Inputs:

None.

Result:

Returns IE's task priority in RESULT.

Example:

```
/* Ask the user how many frames they want generated */
'GET_PRI'
TaskPri=RESULT

say 'Image Engineers task priority currently is ' TaskPri
...
```

Menu equivalent:

None.

See also:

SET\_PRI

## 1.117 Get Render Options

Get Render Options

~~~~~

Synopsis:

GET\_RENDER <GREY/8/8BIT | COLOR/COLOUR/24/24BIT> <title> [<Render Options>]

Function:

Get render settings from the usr.

Inputs:

GREY/8/8BIT - Specifies that the render options should be  
- for an 8 bit grey image.  
COLOR/COLOUR/24/24BIT - Specifies that the render options should be  
- for a 24 bit colour image.

Title - Title to use for the requester.  
 Render Options - Optional string describing the initial  
 - render settings.

**Result:**

Returns a string of numbers describing render setting to use, suitable for passing to SET\_RENDER. If the user cancels the requester, 5 will be returned in RC.

**Example:**

```
'TYPE COLOUR' /* We're working in colour */

/* Find out how the user would like us to render the image */
'GET_RENDER COLOUR "How would like it rendered?"'
RenderOptions=RESULT

'OPEN "bono.iff"' /* Open the image */
BonoProject=RESULT

'SET_RENDER' BonoProject RenderOptions
'RENDER' BonoProject
```

**Menu equivalent:**

Screen/Render Control  
 See also:

SET\_RENDER

## 1.118 Get String

Get String

~~~~~

**Synopsis:**

GET\_STRING <Title> [<Ok Text>] [<Initial>]

**Function:**

Get a string from the user.

**Inputs:**

Title - Title of the requester.  
 Ok Text - Optional text to use for the buttons. The text for the ok and cancel button should be separated by a | . ie "Ok|Cancel" If only text for one button is supplied, it will be used as the cancel button text, and there will be no ok button.  
 Initial - Optional string to initially place in the requester.

**Result:**

Returns the string in RESULT.  
 If the user cancels the requester, 5 will be returned in RC.

Example:

```
/* Ask the user what file extension should be added */
'GET_STRING "Enter file extension to add" "Ok|Cancel" ".new"'
if RC=5 then exit
FileExt=RESULT

say 'File extension set to' FileExt
...
```

Menu equivalent:

None.

See also:

```
GET_NUMBER
'
GET_STRING
```

## 1.119 Halftone

Halftone

~~~~~

Synopsis:

```
HALFTONE
```

Function:

Halftones the primary image using the alpha image as the halftone pattern.

Inputs:

Result:

Returns the name of the newly created project in RESULT.

Menu equivalent:

```
Alpha/Halftone
See also:
```

## 1.120 HighBoost

HighBoost

~~~~~

Synopsis:

```
HIGHBOOST <Project> <%>
```

Function:

Apply highboost to an image.

---



**Inputs:**

Project - Name of the project.  
 % - Percentage to the original to add to the highpass result.

**Result:**

Returns the name of the newly created project in RESULT.

**Menu equivalent:**

Filter/Highboost  
 See also:

**1.121 HighPass**

HighPass

~~~~~

**Synopsis:**

HIGHPASS <Project> <Width> <Height> [ABSOLUTE|SCALE|CLIPNEG|CLIPPOS]

**Function:**

Apply a highpass filter to an image.

**Inputs:**

Project - Name of the project.  
 Width - Width of the mask to use. Currently must be an odd number.  
 - (ie 1,3,5...) An even number will be rounded down to an odd number.  
 Height - Height of the mask to use. Currently must be an odd number.  
 (ie 1,3,5...) An even number will be rounded down to an odd number.  
 ABSOLUTE - Normalize by using the absolute value.  
 SCALE - Normalize by scaling the values into range.  
 CLIPNEG - Normalize by clipping negative values.  
 CLIPPOS - Normalize by clipping positive values.

**Result:**

Returns the name of the newly created project in RESULT.

**Menu equivalent:**

Filter/Highpass  
 See also:

**1.122 Histogram Equalization**

Histogram Equalization

~~~~~

**Synopsis:**

HISTOGRAM\_EQUALIZATION <Project>

**Function:**

Apply histogram equalization to an image.

**Inputs:**

Project - Name of the project.

**Result:**

Returns the name of the newly created project in RESULT.

**Menu equivalent:**

Process/Histogram Equalization  
See also:

## 1.123 Hue

Hue

~~~

**Synopsis:**

HUE <ProjectName> <Value>

**Function:**

Change the hue of an image.

**Inputs:**

ProjectName - Name of the project.  
Value - Value to change hue by.

**Result:**

Returns the name of the newly created project in RESULT.

**Menu equivalent:**

Process/Hue  
See also:

## 1.124 Image Engineer to Front

Image Engineer to Front

~~~~~

**Synopsis:**

IE\_TO\_FRONT

**Function:**

Move IE's screen to the front of the display.

---

Inputs:

None.

Result:

None.

Menu equivalent:

None.

See also:

WB\_TO\_FRONT

## 1.125 Last Error

Last Error

~~~~~

Synopsis:

LAST\_ERROR

Function:

Get a string describing why the last error occurred. This is useful in error handler routines.

Inputs:

None.

Result:

Returns an error string in RESULT.

Example:

```

/* Example showing use of LAST_ERROR */
/* I recommend that you use this code in your scripts */

Options Results
Signal On Error /* Tell Rexx that we have an error routine */

... /* Do work here... */

exit

/*****
/* This is our error handling routine. When an error occurs */
/* program execution goes here. This routine gets the error */
/* string from IE and displays a message saying that an */
/* error has occurred, what the error message is and on what */
/* line of the script it occurred on. */
*****/
Error:

IE_TO_FRONT /* Move IE to the front of the display */
LAST_ERROR /* Get the error string */

```

```

        /* Display an error message */
        'REQUEST "Error detected!!!' ||D2C(10)||'Error message is as follows' ||D2C ←
          (10)||result||D2C(10)||'Script failed on line ' ||SIGL||'" 'Doh!'
        Exit

```

Menu equivalent:  
None.

See also:

## 1.126 Load Palette

Load Palette

~~~~~

Synopsis:

```
LOAD_PALETTE <Project> <FileName>
```

Function:

Load a palette into a project.

Inputs:

```
Project    - Name of the project.
FileName   - File name of the palette to load.
```

Result:

None.

Example:

```

    /* Ask the user for a new palette */
    'GET_FILE "Select New palette"
    NewPalette=RESULT

    /* Load the new palette for MyProject */
    'LOAD_PALETTE' MyProject ' ' ||NewPalette|| ' '

    ...

```

Menu equivalent:

Screen/Palette

See also:

## 1.127 Local Contrast Stretch

Local Contrast Stretch

~~~~~

Synopsis:

```
LOCAL_CONTRAST_STRETCH <Project> <Width> <Height>
```

**Function:**

Apply a local contrast stretch to an image.

**Inputs:**

Project - Name of the project.

Width - Width of the mask to use. Currently must be an odd number.  
(ie 1,3,5...) An even number will be rounded down to an odd number.

Height - Height of the mask to use. Currently must be an odd number.  
(ie 1,3,5...) An even number will be rounded down to an odd number.

**Result:**

Returns the name of the newly created project in RESULT.

**Menu equivalent:**

Filter/Local Contrast Stretch  
See also:

## 1.128 LowPass

LowPass

~~~~~

**Synopsis:**

LOWPASS <Project> <Width> <Height>

**Function:**

Apply a lowpass filter to an image.

**Inputs:**

Project - Name of the project.

Width - Width of the mask to use. Currently must be an odd number.  
(ie 1,3,5...) An even number will be rounded down to an odd number.

Height - Height of the mask to use. Currently must be an odd number.  
(ie 1,3,5...) An even number will be rounded down to an odd number.

**Result:**

Returns the name of the newly created project in RESULT.

**Menu equivalent:**

Filter/Lowpass  
See also:

## 1.129 Mark As

---

### Mark As

~~~~~

#### Synopsis:

```
MARK <ProjectName> <PRIMARY|SECONDARY|ALPHA>
```

#### Function:

This marks a project for use with the Composite command.

#### Inputs:

```
ProjectName - Name of the project.
PRIMARY     - This keyword specifies that this project should be
              used as the Primary image when compositing.
SECONDARY   - This keyword specifies that this project should be
              used as the Secondary image when compositing.
ALPHA       - This keyword specifies that this project should be
              used as an Alpha channel when compositing.
```

#### Result:

None.

#### Example:

```
/* Combine the BackgroundProject with LogoProject using */
/* LogoAlphaProject as an alpha channel */
MARK BackgroundProject SECONDARY
MARK LogoProject PRIMARY
MARK LogoAlphaProject ALPHA
COMPOSITE 0 0 ALPHA
...
```

#### Menu equivalent:

Alpha/Primary,Secondary,Alpha

See also:

COMPOSITE

## 1.130 Maximum Filter

### Maximum Filter

~~~~~

#### Synopsis:

```
MAXIMUM <Project> <Width> <Height>
```

#### Function:

Apply a maximum filter to an image.

#### Inputs:

```
Project - Name of the project.
Width   - Width of the mask to use. Currently must be an odd
          number. (ie 1,3,5...) An even number will be rounded down
```

to an odd number.  
Height - Height of the mask to use. Currently must be an odd number. (ie 1,3,5...) An even number will be rounded down to an odd number.

Result:

Returns the name of the newly created project in RESULT.

Menu equivalent:

Filter/Maximum

## 1.131 Median Filter

Median Filter

~~~~~

Synopsis:

MEDIAN <Project> <Width> <Height>

Function:

Apply a median filter to an image.

Inputs:

Project - Name of the project.  
Width - Width of the mask to use. Currently must be an odd number. (ie 1,3,5...) An even number will be rounded down to an odd number.  
Height - Height of the mask to use. Currently must be an odd number. (ie 1,3,5...) An even number will be rounded down to an odd number.

Result:

Returns the name of the newly created project in RESULT.

Menu equivalent:

Filter/Median

## 1.132 Minimum Filter

Minimum Filter

~~~~~

Synopsis:

MINIMUM <Project> <Width> <Height>

Function:

Apply a minimum filter to an image.

---

**Inputs:**

Project - Name of the project.  
Width - Width of the mask to use. Currently must be an odd number. (ie 1,3,5...) An even number will be rounded down to an odd number.  
Height - Height of the mask to use. Currently must be an odd number. (ie 1,3,5...) An even number will be rounded down to an odd number.

**Result:**

Returns the name of the newly created project in RESULT.

**Menu equivalent:**

Filter/Minimum

## 1.133 Negative

Negative

~~~~~

**Synopsis:**

NEGATIVE <Project>

**Function:**

Negate an image.

**Inputs:**

Project - Name of the project.

**Result:**

Returns the name of the newly created project in RESULT.

**Menu equivalent:**

Process/Negative

See also:

## 1.134 Open

Open

~~~~

**Synopsis:**

OPEN <FileName>

**Function:**

Open an image from disk, and convert to 8 bit grey or 24 bit colour.

---



**Inputs:**

FileName - Complete path and filename of the image to load.

**Result:**

Returns the name of the newly created project in RESULT.

**Example:**

```

/* Ask the user what image they want to process */
'GET_FILE "Select an Image to process" "Go!!!"' /* Get a file */
if RC=5 then exit /* Exit if we were cancelled */
MyFile=RESULT

'OPEN "||MyFile||"'
MyProject=RESULT

```

**Menu equivalent:**

Project/Open

See also:

TYPE

## 1.135 Open Clipboard

Open Clipboard

~~~~~

**Synopsis:**

OPEN\_CLIPBOARD

**Function:**

Open an image from the clipboard, and convert to 8 bit grey or 24 bit colour.

**Inputs:**

FileName - Complete path and filename of the image to load.

**Result:**

Returns the name of the newly created project in RESULT.

**Menu equivalent:**

Project/Open

See also:

TYPE

## 1.136 Get Project Info

Get Project Info

~~~~~

Synopsis:

PROJECT\_INFO <Project> <W/WIDTH | H/HEIGHT | TYPE | BOX>

Function:

Get information about a project.

Inputs:

Project - Name of the project.  
 W/WIDTH - Get project's width.  
 H/HEIGHT - Get project's height.  
 TYPE - Get project's type.  
 BOX - Get the dimensions of the project's crop box.

Result:

Returns the project's width/height or type. If type was specified, the string "GREY" or "COLOUR" will be returned. If box was specified then a string of 4 numbers will be returned in the form "x1 y1 x2 y2", suitable for passing to

CROP

.

Example:

```
...
/* Get MyProjects width */
'PROJECT_INFO' MyProject 'WIDTH'
ProjectWidth=RESULT

/* Get MyProjects height */
'PROJECT_INFO' MyProject 'HEIGHT'
ProjectHeight=RESULT
...
/* Crop the project */
'PROJECT_INFO' MyProject 'BOX'
BoxSize=RESULT
CROP MyProject BoxSize
CroppedProject=RESULT
...
```

Menu equivalent:

Edit/Info

See also:

## 1.137 Quit

Quit

~~~~~

Synopsis:

QUIT

Function:

This closes all projects and render screens and quits Image Engineer completely.

Inputs:

None.

Result:

None.

Example:

```
...
QUIT /* Finished work, exit IE */
say 'See you later.'
```

Menu equivalent:

Project/Quit  
See also:

## 1.138 Remove Feature

Remove Feature

~~~~~

Synopsis:

```
REMOVE_FEATURE <Project> <X> <Y> <Radius> <Remove> <FAST | BEST/ ←
COLOUR_AVERAGE>
```

Function:

Remove part of an image.

Inputs:

```
Project      - Name of the project.
X            - X position of the center of the area.
Y            - Y position of the center of the area.
Radius       - Radius of the area to be stretched.
Remove       - Radius of the area to be removed.
FAST        - Use fast nearest neighbour algorithm.
BEST/COLOUR_AVERAGE - Use colour average algorithm.
```

Result:

Returns the name of the newly created project in RESULT.

Example:

Menu equivalent:

Edit/Remove Feature  
See also:

## 1.139 Render

Render

~~~~~

### Synopsis:

```
RENDER <Project> [QUIET]
```

### Function:

Render a project.

### Inputs:

Project - Name of the project to render.

QUIET - This keyword forces IE to open the screen at the back of the display and not to interrupt the user by stealing the input focus.

### Result:

None.

### Example:

```

        /* Find out how the user would like us to render the image */
        'GET_RENDER COLOUR "How would like it rendered?"'
        RenderOptions=RESULT

        ...

        /* Set up the project's render options */
        'SET_RENDER' MyProject RenderOptions

        /* Render the image quietly */
        'RENDER' MyProject 'QUIET'
```

### Menu equivalent:

Screen/Render

See also:

CLOSE\_RENDER

## 1.140 Render Autoscroll

Render Autoscroll

~~~~~

### Synopsis:

```
RENDER_AUTOSCROLL <Project> <YES/TRUE | NO/FALSE>
```

**Function:**

Set a whether a project's render screen should autoscroll.

**Inputs:**

Project - Name of the project.  
YES/TRUE - Turn autoscroll on.  
NO/FALSE - Turn autoscroll off.

**Result:**

None.

**Menu equivalent:**

Screen/Render Control

See also:

RENDER\_COLOURS  
,  
RENDER\_DEPTH  
,  
RENDER\_DEVICE  
,  
RENDER\_DITHER  
,  
RENDER\_QUANTIZE  
,  
RENDER\_SCREENMODE

## 1.141 Render Colours

Render Colours

~~~~~

**Synopsis:**

RENDER\_COLOURS <Project> <Colours>

**Function:**

Set the number of colours a project's render screen should use.

**Inputs:**

Project - Name of the project.  
Colours - The number of colours to use.

**Result:**

None.

**Menu equivalent:**

Screen/Render Control

See also:

RENDER\_AUTOSCROLL

---

```

    /
    RENDER_DEPTH
    /
    RENDER_DEVICE
    /
    RENDER_DITHER
    /

    RENDER_QUANTIZE
    /
    RENDER_SCREENMODE

```

## 1.142 Render Depth

Render Depth

~~~~~

### Synopsis:

```
RENDER_DEPTH <Project> <Depth>
```

### Function:

Set a whether the number of colours a project's render screen should use.

### Inputs:

Project - Name of the project.  
 Depth - The maximum number of colour the screen should have.  
         ie 2, 4, 8, ... 2<sup>n</sup>, ...256.

### Result:

None.

### Menu equivalent:

Screen/Render Control  
 See also:

```

    RENDER_AUTOSCROLL
    /
    RENDER_COLOURS
    /
    RENDER_DEVICE
    /
    RENDER_DITHER
    /

    RENDER_QUANTIZE
    /
    RENDER_SCREENMODE

```

## 1.143 Render Device

Render Device

~~~~~

### Synopsis:

```
RENDER_DEVICE <Project> <AMIGA|SVDRIVER|HAM8|HAM6>
```

### Function:

Set a what device should be used to render a project.

### Inputs:

```
Project - Name of the project.
AMIGA   - Use the standard Amiga register based display.
SVDRIVER - Use the current SVDriver.
HAM8    - Use Amiga HAM8 (AGA only of course!).
HAM6    - Use Amiga HAM6.
```

### Result:

None.

### Menu equivalent:

Screen/Render Control

See also:

```
RENDER_AUTOSCROLL
```

```
,
RENDER_COLOURS
```

```
,
RENDER_DEPTH
```

```
,
RENDER_DITHER
```

```
RENDER_QUANTIZE
```

```
,
RENDER_SCREENMODE
```

## 1.144 Render Dither

Render Dither

~~~~~

### Synopsis:

```
RENDER_DITHER <Project> <NONE|FLOYD|BURKES|STUCKI|SIERRA|JARVIS|STEVENSON>
```

### Function:

Set a what dithering should be used to render a project.

### Inputs:

```
Project - Name of the project.
NONE    - none.
```

FLOYD - Use Floyd-Steinberg dithering.  
 BURKES - Use Burkes dithering.  
 STUCKI - Use Stucki dithering.  
 SIERRA - Use Sierra dithering.  
 JARVIS - Use Jarvis dithering.  
 STEVENSON - Use Stevenson-Arce dithering.

Result:

None.

Menu equivalent:

Screen/Render Control

See also:

RENDER\_AUTOSCROLL

,

RENDER\_COLOURS

,

RENDER\_DEPTH

,

RENDER\_DEVICE

,

RENDER\_QUANTIZE

,

RENDER\_SCREENMODE

## 1.145 Render Quantize

Render Quantize

~~~~~

Synopsis:

RENDER\_QUANTIZE <Project> <LOCK|BEST|LOCK\_FAST|LOCK\_BEST|MEDIAN\_CUT>

Function:

Set a how a project should be quantized when rendering.

Inputs:

Project - Name of the project.  
 LOCK - Lock to palette. 8 bit Grey only.  
 BEST - Choose Best palette. 8 bit grey only.  
 LOCK\_BEST - Lock to palette using the best algorithm.  
 LOCK\_FAST - Lock to palette using the fast algorithm.  
 MEDIAN\_CUT - Choose palette using the Median Cut algorithm.

Result:

None.

Menu equivalent:

Screen/Render Control

See also:



```
RENDER_AUTOSCROLL
/
RENDER_COLOURS
/
RENDER_DEPTH
/
RENDER_DEVICE

RENDER_DITHER
/
RENDER_SCREENMODE
```

## 1.146 Render Screen Mode

Render Screen Mode

~~~~~

### Synopsis:

```
RENDER_SCREENMODE <Project> <ModeID>
```

### Function:

Set a how a project should be quantized when rendering.

### Inputs:

Project - Name of the project.  
ModeID - Screen mode ID.

### Result:

None.

### Menu equivalent:

Screen/Render Control  
See also:

```
RENDER_AUTOSCROLL
/
RENDER_COLOURS
/
RENDER_DEPTH
/
RENDER_DEVICE
/

RENDER_DITHER
/
RENDER_QUANTIZE
```

## 1.147 Render to Front

---

Render to Front

~~~~~

Synopsis:

RENDER\_TO\_FRONT <Project>

Function:

Move a project's render screen to the front of the display.

Inputs:

Project - Name of the project.

Result:

None.

Menu equivalent:

Screen/Show Render  
See also:

## 1.148 Reflect X

Reflect X

~~~~~

Synopsis:

REFLECT\_X <ProjectName>

Function:

Reflect a project on the x axis (ie left-right).

Inputs:

ProjectName - Name of the project.

Result:

Returns the name of the newly created project in RESULT.

Menu equivalent:

Edit/Reflect X  
See also:

## 1.149 Reflect Y

Reflect Y

~~~~~

Synopsis:

```
REFLECT_Y <Project>
```

Function:

Reflect a project on the y axis (ie up-down).

Inputs:

Project - Name of the project.

Result:

Returns the name of the newly created project in RESULT.

Menu equivalent:

```
Edit/Reflect Y
See also:
```

## 1.150 Request

Request

```
~~~~~
```

Synopsis:

```
REQUEST <Message> [<Buttons>]
```

Function:

Put up a requester to the user and get a response.

Inputs:

Message - Message to put in the requester. The message may contain newline characters (ASCII 10).

Buttons - String of button labels separated by a |.

Result:

Returns 1 for the left most button and 0 for the rightmost. Buttons in the middle will return one more than the button to it's left.

(ie Buttons: Brilliance, Ok, Average, Crap.

return 1, 2, 3, 0.)

Example:

```
/* Tell the user that we've finished */
'REQUEST "All done"
...

/* Tell the user what this script does */
'REQUEST "This shows how to put up' D2C(10),
'requesters that may be' D2C(10),
'split over several lines." "I understand"

... /* Find out what the user thinks */
'REQUEST "What do think about this script" "Great|Ok|Crap"
reply=RESULT
if reply=1 then 'REQUEST "I am glad you like it!"'
if reply=2 then 'REQUEST "That is good to hear."'
```

```
if reply=0 then 'REQUEST "oh well, you gets what you pays for."'
...
```

Menu equivalent:  
None.

See also:

## 1.151 Resize

~~~~~  
~~~~~  
Resize

Synopsis:

```
RESIZE <Project> <Width> <Height> <X Offset> <Y Offset> [TILE]
```

Function:

Resize an image.

Inputs:

Project - Name of the project to resize.  
Width - New width of image.  
Height - New height of image.  
X Offset - X offset of the image into the new size.  
Y Offset - Y offset of the image into the new size.  
TILE - If this keyword is given, then the image is tiled to fill the new image.

Result:

Returns the name of the newly created project in RESULT.

Menu equivalent:

Edit/Resize  
See also:

## 1.152 Rotate

~~~~~  
~~~~~  
Rotate

Synopsis:

```
ROTATE <Project> <Degrees> <FAST | BEST/COLOUR_AVERAGE>
```

Function:

Scale an image to a new size.

Inputs:

Project - Name of the project to scale.  
Degrees - Degrees to rotate clockwise by.  
FAST - Use fast nearest neighbour algorithm.

---

BEST/COLOUR\_AVERAGE - Use colour average algorithm.

Result:

Returns the name of the newly created project in RESULT.

Example:

```
/* Rotate image 45 degrees fast*/  
'ROTATE' MyProject '45 FAST'  
MyProject45=RESULT
```

Menu equivalent:

Edit/Rotate  
See also:

## 1.153 Saturation

Saturation

~~~~~

Synopsis:

SATURATION <ProjectName> <Value>

Function:

Change the saturation of an image.

Inputs:

ProjectName - Name of the project.  
Value - Value to change saturation by.

Result:

Returns the name of the newly created project in RESULT.

Menu equivalent:

Process/Saturation  
See also:

## 1.154 Save

Save

~~~~

Synopsis:

SAVE <Project> <FileName> <FileType>

Function:

Save a project's render screen to disk.

Inputs:

---

Project - Name of the project.  
 FileName - Complete path and file name to save as.  
 FileType - The name of the file format to save as.

Result:

None.

Example:

```

...
    /* The image has been render, now */
    /* Ask the user for a save file name */
'GET_FILE "What do you want to save it as?"'
DestName=RESULT

    /* Ask the user for what format they want to save as */
'GET_FILE_TYPE "What format do you want?"'
FileType=RESULT

    /* Save it! */
'SAVE' MyProject ' ' || DestName || ' ' || FileType || ' '
...

```

Menu equivalent:

```

Project/Save
See also:

GET_FILE_TYPE
,
SAVE_DATA

```

## 1.155 Save to Clipboard

```

                Save to Clipboard
~~~~~

```

Synopsis:

```
SAVE_CLIP <Project>
```

Function:

Save a project's render to the clipboards.

Inputs:

Project - Name of the project.

Result:

None.

Menu equivalent:

```
Screen/Save to Clipboard
```

See also:

---

OPEN\_CLIPBOARD

## 1.156 Save Data

Save Data

~~~~~

Synopsis:

SAVE\_DATA <Project> <FileName> <FileType>

Function:

Save a project's image data to disk as 8 bit grey or 24 bit colour.

Inputs:

Project - Name of the project.  
 FileName - Complete path and file name to save as.  
 FileType - The name of the file format to save as.

Result:

None.

Example:

```

...
        /* The image has been render, now */
        /* Ask the user for a save file name */
GET_FILE "What do you want to save the data as?"
DestName=RESULT

        /* Ask the user for what format they want to save as */
GET_FILE_TYPE "What format do you want?"
FileType=RESULT

        /* Save it! */
SAVE MyProject ' " || DestName || " " || FileType || "'
...

```

Menu equivalent:

```

Project/Save
See also:

GET_FILE_TYPE
,
SAVE

```

## 1.157 Save Data to Clipboard

Save Data to Clipboard

~~~~~

## Synopsis:

```
SAVE_DATA_CLIP <Project>
```

## Function:

Save a project's data to the clipboards.

## Inputs:

Project - Name of the project.

## Result:

None.

## Menu equivalent:

Project/Save Data/Clipboard

See also:

OPEN\_CLIPBOARD

## 1.158 Save Palette

Save Palette

~~~~~

## Synopsis:

```
SAVE_PALETTE <Project> <FileName>
```

## Function:

Save project's palette to disk.

## Inputs:

Project - Name of the project.

FileName - File name to save palette as.

## Result:

None.

## Example:

```

        /* Ask the user what they want the palette saved as */
        'GET_FILE "Select File to save palette as"'
        PaletteName=RESULT

        /* Save MyProject's palette */
        'SAVE_PALETTE' MyProject ' '||PaletteName||' '
        ...

```

## Menu equivalent:

Screen/Palette

See also:



## 1.159 Scale

Scale

~~~~~

### Synopsis:

```
SCALE <Project> <Width> <Height> <FAST | BEST/COLOUR_AVERAGE>
```

### Function:

Scale an image to a new size.

### Inputs:

|                     |   |
|---------------------|---|
| Project             | - Name of the project to scale.         |
| Width               | - New width to scale to.                |
| Height              | - New height to scale to.               |
| FAST                | - Use fast nearest neighbour algorithm. |
| BEST/COLOUR_AVERAGE | - Use colour average algorithm.         |

### Result:

Returns the name of the newly created project in RESULT.

### Example:

```
/* Scale image down to postage stamp size */  
'SCALE' MyProject '80 50 FAST'  
PostageStamp=RESULT
```

### Menu equivalent:

Edit/Scale

See also:

## 1.160 Set Task Priority

Set Task Priority

~~~~~

### Synopsis:

```
SET_PRI <Priority>
```

### Function:

Set Image Engineer's task priority.

### Inputs:

Priority - IE's new task priority. In the range of -20 to 20.  
(Same as the AmigaDOS command ChangeTaskPri, except that the range has been limited, instead of the usual -128 to 127 range).

### Result:

Returns the old task priority in RESULT.

### Example:

```

        /* Reduce our Task Priority so that the user */
        /* can get on with other work in the foreground.
' SET_PRI -1'
OldPri=RESULT

...      /* Do some serious number crunching here */

' SET_PRI ' || OldPri      /* Finished work! restore old priority */

```

Menu equivalent:  
None.

See also:

GET\_PRI

## 1.161 Set a project's Render Options

Set a project's Render Options

~~~~~

Synopsis:

```
SET_RENDER <ProjectName> <Render Options>
```

Function:

Set a project's render options.

Inputs:

```

ProjectName      - Name of the project to set.
Render Options  - String of numbers describing the project's new
                  render settings.

```

Result:

None.

Example:

```

' TYPE COLOUR'      /* We're working in colour */

        /* Find out how the user would like us to render the image */
' GET_RENDER COLOUR "How would like it rendered?"'
RenderOptions=RESULT

' OPEN "bono.iff"'      /* Open the image */
BonoProject=RESULT

' SET_RENDER' BonoProject RenderOptions
' RENDER' BonoProject

```

Menu equivalent:

Screen/Render Control  
See also:

GET\_RENDER

## 1.162 Sharpen

Sharpen

~~~~~

### Synopsis:

SHARPEN <Project> <%>

### Function:

Apply a sharpening filter to an image.

### Inputs:

Project - Name of the project to sharpen.  
% - Percentage to sharpen by.

### Result:

Returns the name of the newly created project in RESULT.

### Menu equivalent:

Filter/Sharpen  
See also:

## 1.163 Threshold

Threshold

~~~~~

### Synopsis:

THRESHOLD <Project> <Level>

### Function:

Apply a threshold to an image.

### Inputs:

Project - Name of the project to threshold.  
Level - Grey level threshold in the range of 0 to 255 inclusive.

### Result:

Returns the name of the newly created project in RESULT.

### Menu equivalent:

Filter/Threshold  
See also:

---

## 1.164 Twirl

Twirl

~~~~~

### Synopsis:

TWIRL <Project> <X> <Y> <Radius> <Degrees> <FAST | BEST/COLOUR\_AVERAGE>

### Function:

Twirl part of an image.

### Inputs:

|                     |                                            |
|---------------------|--------------------------------------------|
| Project             | - Name of the project to twirl.            |
| X                   | - X position of the center of the twirl.   |
| Y                   | - Y position of the center of the twirl.   |
| Radius              | - Radius of the twirl.                     |
| Degrees             | - Number of degrees to twirl clockwise by. |
| FAST                | - Use fast nearest neighbour algorithm.    |
| BEST/COLOUR_AVERAGE | - Use colour average algorithm.            |

### Result:

Returns the name of the newly created project in RESULT.

### Example:

### Menu equivalent:

Edit/Twirl  
See also:

## 1.165 Set Load Type

Set Load Type

~~~~~

### Synopsis:

TYPE <GREY/8/8BIT | COLOR/COLOUR/24/24BIT>

### Function:

Set whether images will be loaded as 8 bit grey or 24 bit colour.  
If no parameters are supplied, the current setting will be returned.

### Inputs:

|                       |  |
|-----------------------|--|
| GREY/8/8BIT           | - Specifies that images should be loaded as 8 bit grey.    |
| COLOR/COLOUR/24/24BIT | - Specifies that images should be loaded as 24 bit colour. |

### Result:

If no parameters are supplied, the current setting is returned in RESULT.

### Example:

---

```

/* Set it up to load as 24 bit colour */
'TYPE COLOUR'
'OPEN "bono.iff"'
BonoProject=RESULT

/* Load the alpha channel as grey */
'TYPE GREY'
'OPEN "bono.alpha.iff"'
BonoAlpha=RESULT

```

Menu equivalent:

Project/Open/8 bit grey, 24 bit colour  
See also:

## 1.166 WB to Front

WB to Front

~~~~~

Synopsis:

WB\_TO\_FRONT

Function:

Move the Workbench screen to the front of the display.

Inputs:

None.

Result:

None.

Menu equivalent:

None.

See also:

IE\_TO\_FRONT

## 1.167 Use with Martin Apel's VMM

Use with Martin Apel's VMM

~~~~~

Image Engineer allocates memory for image data with the MEMF\_PUBLIC flag clear. The only problem is that superview.library's svobjects usually don't allocate memory with the MEMF\_PUBLIC flags (from what I can tell), which means that you can still run out of memory when loading and saving even if you have heaps of VM still left. All I did to get around this was to use the advanced options with 10240 set for both public and non-public allocations. Works great.

## 1.168 About Me (or

About Me (or "Who the hell are you anyway?")

~~~~~

Well, you may have figured out that my name is Simon Edwards. What you probably don't know is that I'm currently studying Computer Science (2nd year) at the Royal Melbourne Institute of Technology (RMIT) in cloudy Melbourne Australia (Oz).

Email: s9407349@yallara.cs.rmit.edu.au

(that's .au as in Australia, \*not\* Austria, yes we have kangaroos, that's the difference. ;-)

Snail Mail: Simon Edwards  
Student Village  
Williamson Road  
Maribrynong 3032  
Victoria, Australia

(Email preferred, I can't guarantee a response to snail mail).

IE was developed using Devpac 3 on a OS3.0 A1200 with a 50MHz 030 + 882, 4Mb of fast ram, and a 250Mb Hard disk.

## 1.169 Reporting Bugs

Reporting Bugs

~~~~~

It'll happen one day that you're using IE and you'll ask it to do something quite reasonable and it'll hang, crash, or do something equally \*evil\*.

Before you reach for your mailer, make sure that you've read all of the documentation \*and\* the superview.library documentation, (especially the Crashes.doc file in the superview distribution). Chances are that it's already been documented.

If you still haven't found a solution or answer, then it's probably time to let me about.

When reporting bugs give a detailed report of what the bug is, what conditions it failed under, what exactly you were doing and what options you had set. If it's reproducible, explain how to reproduce it. Also specify what version of IE, OS (Workbench version \*and\* Kickstart version, this information is very important), superview.library, superviewsupport.library, and reqtools.library you're using. And don't forget to specify what your system consists of and what expansions, hard drives, accelerators, extra ram, graphics boards, etc you also have, along with what other software you may have been running at the time (including commodities, patches, background utilities).

## 1.170 Thanks and Greetings

Thanks and Greetings

~~~~~

Thanks and greetings go to the following people in no particular order...

- \* All programmers of excellent Amiga software.
- \* Andreas R. Kleinert for superview.library
- \* Nico François for ReqTools.
- \* Scott Tribbey, for suggestions, help with uploading, bug reporting, beta testing...
- \* The following people for beta testing and suggestions...
  - Terrence Chun
  - Jerry Fleetwood
  - Joseph Hebert
  - Jon Peterson
- \* Nigel Steward, for of his SLIP all the time. :)
- \* Micheal Haigh, for the technical support
- \* Residents at the Village.
- \* U2, the greatest rock band in the world.
- \* Everyone who reported bugs
- \* to everyone I forgot...

## 1.171 On-line Support

On-line Support

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Image Engineer has a support page on the World Wide Web at:-

<http://minyos.xx.rmit.edu.au/~s9407349/>

From here is the current version of IE and superview.library is available for download, the complete documentation is also available to read. Information about the current status, what work is in progress and when the next version may be out can also be found here. Patches in the form of new executables may also be placed here in the future.

## 1.172 The Future

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## The Future

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This is where you can help. Let me know what features you would like to see in the next version (what would be even better would be a description of how a given feature actually works (saves time in that I don't have to run around trying to figure out how it works)). Also, any other suggestions as to how things can be improved or how things can be done better are also very welcome. If you come up with some wonderful convolve or ARexx script, let me know and I'll include it in the next release.

Future versions also depend on how much time I have. (I'm doing 2nd year Computer Science and that's going to consume most of my time).

"Drink when you are thirsty, rest when you are fatigued,  
program when the moment is right."

## 1.173 History

### History

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V0.0 First the universe formed...

V1.0 21/3/95 Initial Release

V1.1 11/4/95

Bug fixes:-

- \* Couple of minor bugs in the start up code.
- \* Nasty bug when opening 24bit files as 8bit grey.
- \* Fixed problem with the menus under OS 2.0. (->Cavalier)
- \* Bug in Prefs requester.
- \* Numerous other small bug fixes. (I've lost track ;-)

New Features:-

- \* ARexx macros from within IE and user configurable ARexx menu.

V2.0 27/7/95

Bug fixes:-

- \* Nasty bug when rendering narrow (<64) images.
- \* Bug in the contrast requester.
- \* Bug when enclosing project names in quotes (AREXX).
- \* Small bug in Threshold history entries.
- \* Bug in the Resize Arexx command.
- \* Mega-Bug that stopped all gadgets from working under 2.04 (->Jerry Fleetwood, Terrence Chun, Joseph Herbert)
- \* Bug in the Arexx prefs requester
- \* Bug in the CROP Arexx command
- \* Couple of bugs in the Edit palette requester

New Features:-

- \* BOX added to Arexx command PROJECT\_INFO.
- \* Rotate function.



- \* Halftone function.
- \* Editing SVOBJECT ControlPad files using a GUI.
- \* Maximum and Minimum composite modes.
- \* Threshold now works for colour images.
- \* TYPE Arexx command can now return the current setting.
- \* GET Arexx command.
- \* Twirl function
- \* Bulge function
- \* View Saturation histogram
- \* Change Saturation function
- \* View Hue
- \* Change Hue
- \* Displace Pixels
- \* Tile
- \* Remove Feature
- \* Maximum Filter
- \* Minimum Filter

Other:-

- \* Lock to palette best is now faster.
- \* WWW Support

V2.1 2/10/95

Bug fixes:-

- \* Intermediate bug with the gadgets in most windows.
- \* Bug in the Gamma function

New Features:-

- \* Colour preview images
- \* Dithered previews, colour and grey.

Other:-

- \* Palette requester will now let you edit 32 colours on non-AGA machines, instead of 0 colours.
- \* RMB in render screens also brings the corresponding project preview window to the front.
- \* can be made to flush memory, on start up/exit.
- \* Licensed to use V11.8+ of SuperView Library.

"If at first you don't succeed, call it a Beta version."

## 1.174 Bibliography

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