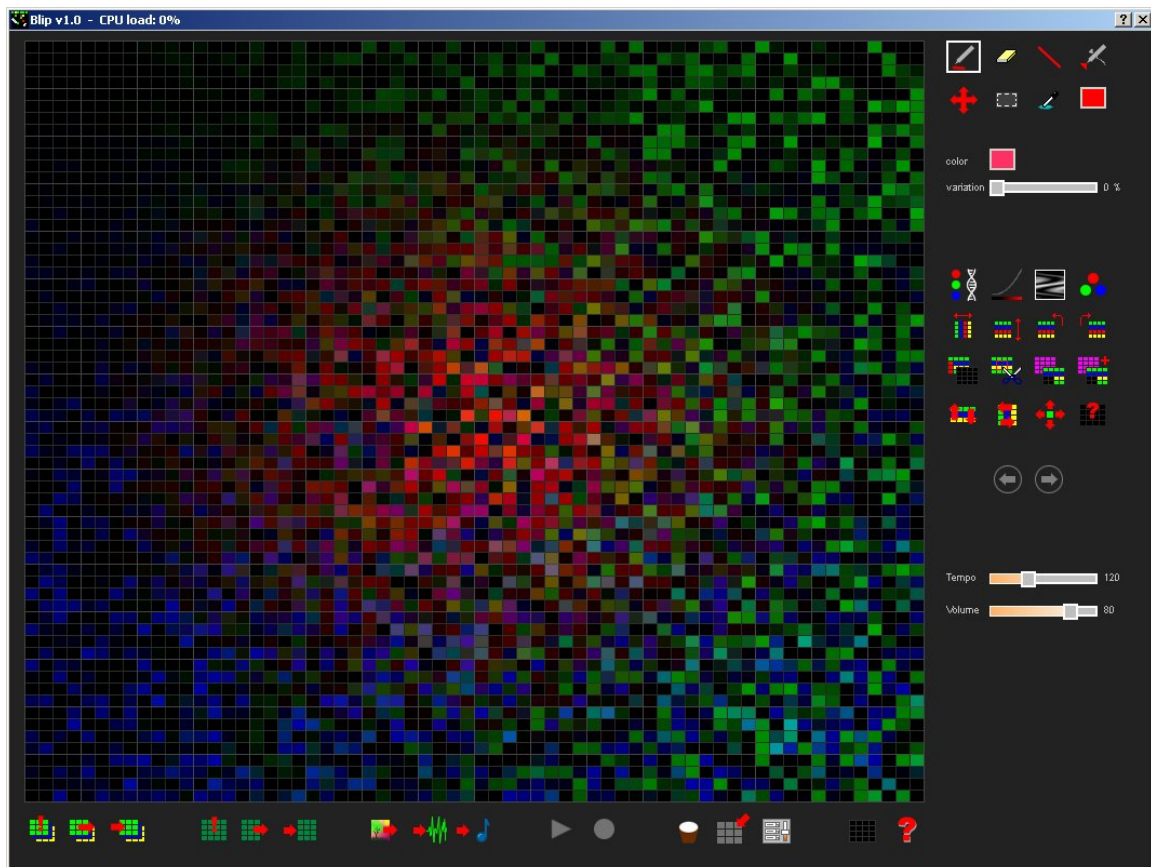


# Blip 1.0

## *User Documentation*

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## 1 - Introduction

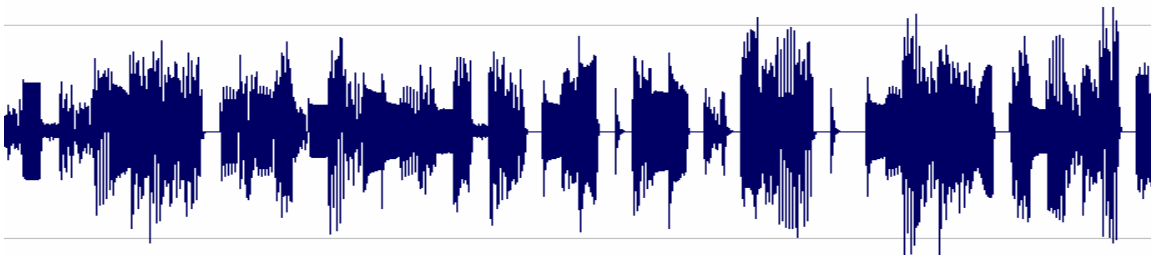
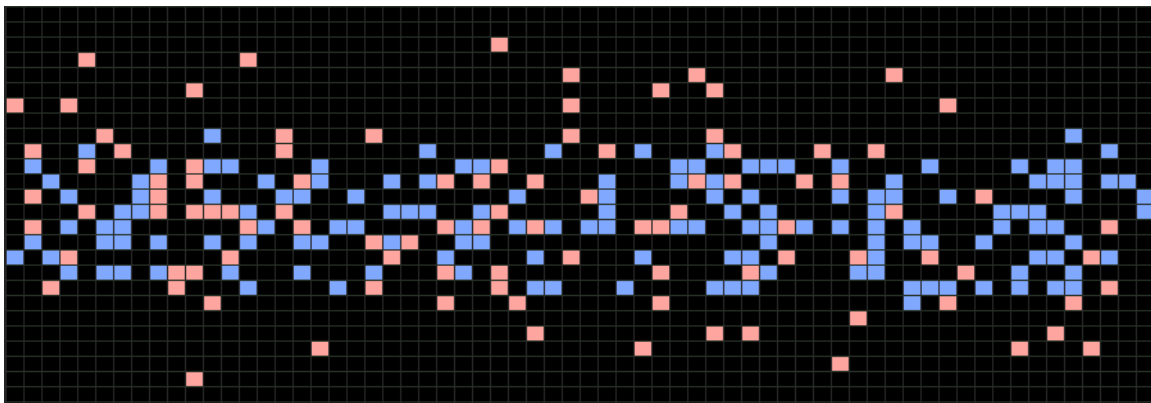
The concept behind Blip is to create innovative sounds and loops by drawing with the usual graphic tools (pencil, airbrush, line...). The classic painting functions take a whole other dimension, as they create melodies and rhythms in the musical domain.

Blip continuously scans a grid of 64x64 cells. Each cell corresponds to a note, whose starting time is determined by its column, and whose instrument is determined by its row. The color of the cell controls the volume of the note (red component), its pan (green component), and its pitch (blue component).

Painting in the grid can be done in real-time while the loop is playing, which coupled with MIDI support and numerous shortcuts, transforms Blip into a very powerful live instrument. There are 16 patterns, each of them having its own tempo.

Blip can be used in many different ways. Here are a few of them:

- with a lot of short percussive sounds to create glitchy patterns
- with a slow tempo and long samples with fading envelopes to create complex ambiances
- with simple tones and only a few painted cells to create wave sequences
- with sine waves for additive / granular synthesis etc...



## 2 - Installation

When you start Blip for the first time, it will create the following folders:

Projects: where you can save your full projects (.blp files).

Patterns: for individual patterns (.pat).

Kits: for sound kits (.kit).

MIDI: where you can export your MIDI files (.mid).

Waves: you may want to store your individual instruments, or export patterns as wave files in this folder.

Output: where the output of the recording function is saved (.wav).

Pictures: to store the pictures to import as patterns.

Filters: all the pictures placed in this folder can be used as filters. The filter function will automatically look into this directory, so you have to place the pictures or patterns you want to use as filters here.

Most of these folders are created for your convenience, and you can choose to save your files in other folders. However the Filters and Output folders are directly referenced by Blip.

## 3 - Main Commands

Here is the description of Blip's main commands. Please note that when you are hovering over a button, Blip will display the purpose of that button at the bottom of the screen.



### *New Project*

This button creates a new project, after a confirmation message. All 16 patterns are deleted. The current kit is also cleared.



### *Load Project*

This button loads a new project. Projects have the .blp extension and contain 16 patterns as well as a kit. A kit does not include the samples themselves but only references to the .wav files, so no sample data is actually stored in a project. It is also possible to load a new project simply by dropping a .blp file in the main window. Loading a new project actually stops the playback.



### *Save Project*

This button saves the current project as a .blp file, which includes the 16 patterns and the kit in use.



### *New Pattern*

This button clears the current pattern and resets its tempo to 120. A confirmation message is displayed.



### *Load Pattern*

This button loads a pattern into the current one. Patterns have the .pat extension and contain the values of the cells in the grid, as well as the tempo setting. It is also possible to load a new pattern by simply dropping a .pat file in the main window. Loading a new pattern does not stop the playback and can be done in a live situation.



### *Save Pattern*

This button saves the current pattern as a .pat file. It includes the content of the grid and its tempo.



#### *Kit*

The kit button gives you access to the Kit dialog where you can edit, load and save kits. A kit is a collection of 64 instruments (.wav files), one for each row of the grid.



#### *Import Picture*

The import picture button allows you to open any JPEG, GIF or BMP file and to import it as a pattern. The size of the picture will automatically be reduced to 64 x 64 to fit in the grid.



#### *Export Wave*

The export wave button will write a .WAV file corresponding to the pattern currently in the grid. The wave file is 44100 Hz, 16-bit, stereo, and its duration is exactly one pattern.



#### *Export MIDI file*

This button lets you export the current pattern as a MIDI file format 1. The MIDI file will contain 64 tracks, one for each row in the grid, and will have the duration of the pattern (i.e. 4 measures at whatever tempo is selected). The names of the tracks will be the names of the instruments as they appear in the Kit Editor. For each cell which is not black, MIDI events are generated for the pan (based on the green component), and for the note triggering [based on the red component (velocity) and the blue component (pitch)]. Several options could be useful in the future, such as smoothing the control curves between the cells, exporting all the patterns in several MIDI files, or one after the other in a single sequence etc..



#### *Play*

The play button lets you start and stop Blip audio playback.



#### *Record*

The record button allows you to save a wave file of what you are currently playing in Blip. The wave file is 44100 Hz, 16-bit, stereo and will be automatically saved in the "output" subfolder of Blip. You will have to press the button again to stop the recording.



#### *Grid*

This button displays or hides the helping grid, which regroups cells in areas of 4 x 4 cells.



#### *About*

This dialog displays version information, credits, as well as a link to go directly to Blip's web site.

Among the main controls are also two sliders. As for all sliders in Blip, you can adjust them more precisely with the left and right arrow keys.

#### *Tempo*

The tempo can be set between 1 and 360. The 64 cells in a row of the grid correspond to 4 measures at the tempo selected.

#### *Volume*

This is the master volume. It affects everything generated by Blip.

## **4 - Graphic Tools**

All these tools can be used while Blip is playing the grid, transforming Blip into a powerful live instrument.



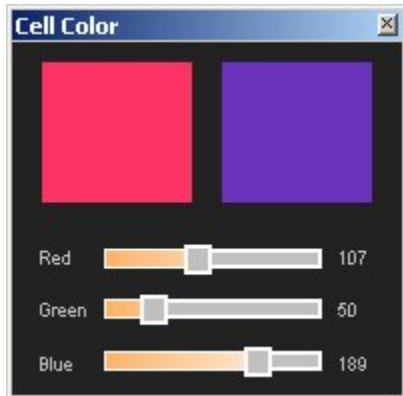
#### *Pencil*

This is the typical drawing tool, with a little twist though. You can select the color of the pencil, but also a variation percentage. Every time you paint a cell, the color will be slightly

different, which is really nice to create drum patterns for example. Simply set the color variation parameter to zero if you want to always paint the cells with the exact same color.

By clicking on the right mouse button in the pencil mode, you can erase a cell.

When you are in pencil mode, you can also click on a cell while holding Ctrl to modify its color. A dialog box will appear, with three sliders to adjust the red, green and blue components of the cell color. Two squares are displayed, one with the original color on the left, and the second with the new color on the right. When you move the cursor over these squares, it will change to a little speaker. Clicking on the squares allows you to listen to their sound, and to compare the original sound to the new one.



#### *Eraser*

The eraser tool allows you to erase large parts of the picture, by stamping a black square on the grid. The size of the eraser can be selected, from 1 cell to 10 cells.



#### *Line*

Again, this is a typical drawing tool but it takes a whole new dimension in Blip. You can select the starting and ending colors of the line. The variation between the red components of these two colors will create crescendos, while the changes in the blue component will generate glissandi. The differences between the green components will make the sound go from one part of the stereo field to another.

Note: if you want to use a single color, you can easily copy it from one slot to the other by dragging it while pressing the Ctrl key.

The line tool also offers a quantize parameter, from 1/16 to 1. It allows you to draw only some of the points in the line, and becomes very handy to create drum patterns quickly.



#### *Airbrush*

The airbrush is another classic drawing tool, which randomly paints cells within the selected radius (here from 2 to 32 cells). The cells painted by the airbrush can vary between two colors. Finally, the speed at which the cells are painted can be selected.



#### *Moving cursor*

The moving cursor allows you to move the whole grid in any direction.

If you press the Ctrl key at the same time, you can move the content of a single row.

By pressing the Ctrl + Shift keys, you can move the content of a single column.



#### *Selector*

The selector tool is useful in conjunction with the copy / cut / paste functions.

Pressing escape will cancel the selection.



### *Color Picker*

The color picker tool lets you pick a color by clicking on a cell of the grid. The color is stored in the color button immediately to its right. It is then possible to drag and drop the color on another tool's color button (pencil, line, and airbrush) and to use it.

It is also possible to click on the tool's color button to edit it. It can be thought of as temporary color storage.

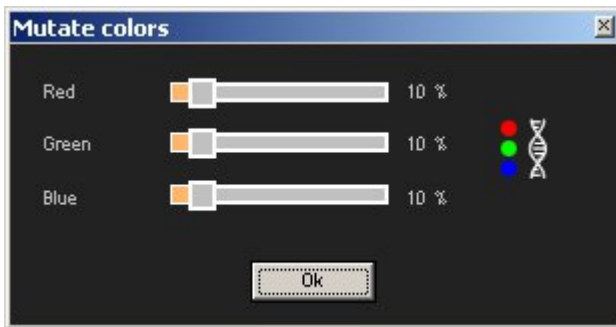
## 5 - Graphic Functions

All the graphic functions can also be used while Blip is playing the grid.



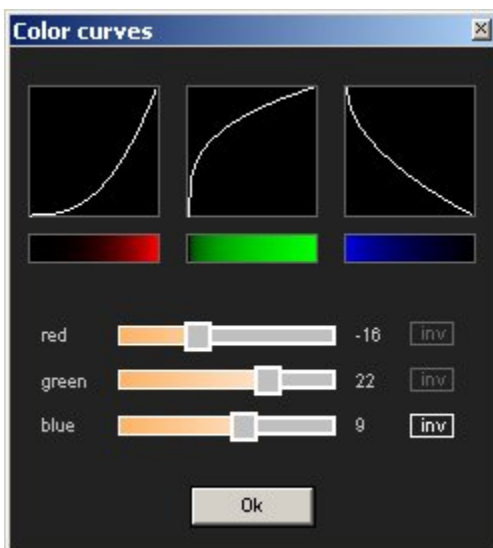
### *Mutate colors*

This command allows you to mutate the colors of the current grid. It is possible to mutate the color components independently. Depending on the amounts selected, the mutation will be subtle or more pronounced. For example, you might just want to add a bit of randomness to the volumes and set the red variation percentage to 10%, while you keep the green and blue variations to zero. You can click on the Mutate button in the dialog box to try different mutations with the same settings.



### *Color curves*

This command lets you modify the dynamic of the colors, by choosing an exponential or a logarithmic curve or even by inverting the colors. The curve for each component can be modified independently, and the results can be heard in real-time.



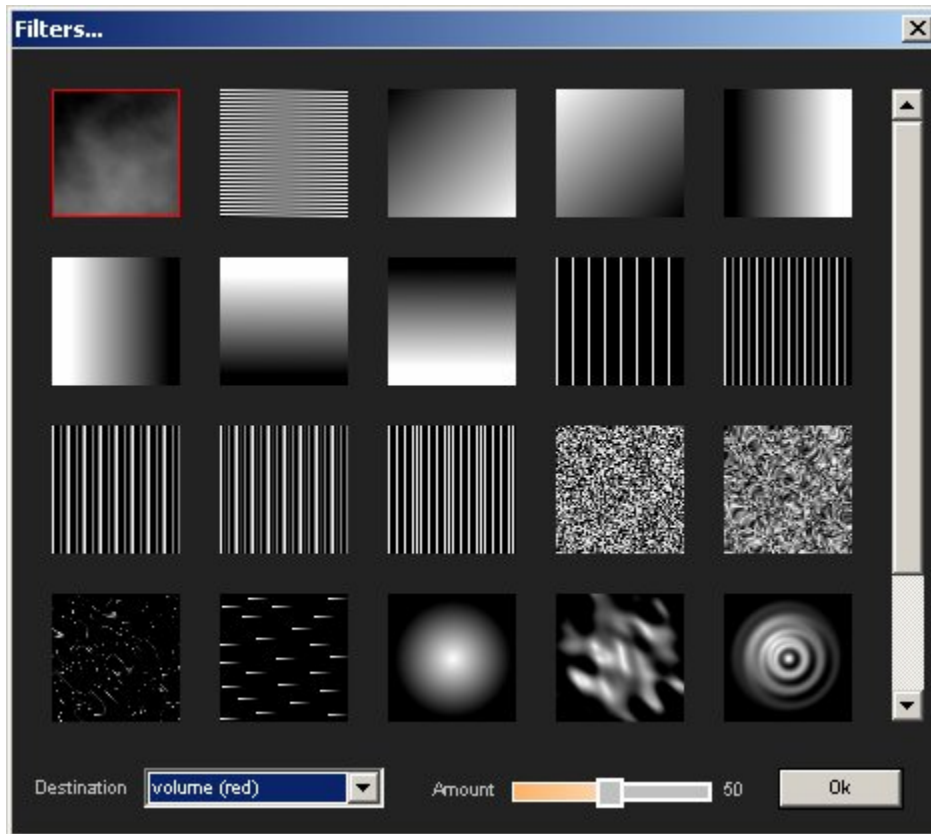


### Filters

The filter command lets you modify the color of the cells in the grid based on the color of an external image or an existing .pat file. Every cell color is modified depending on the intensity of the cell at the same location in the filter picture.

A filter is a grid of 64x64 cells. The filter files must be placed in the "Filters" folder. They can be graphic files (.bmp, .jpg, .gif etc...), or even Blip pattern (.pat) files.

The amount slider determines how much influence the filter has on the initial color.



The provided filters are pictures in grey scale. However you can use color pictures. If you choose to filter the volume (red), the red component of the picture will affect the red component of the cells in the grid etc...It is simply easier to figure out their action when they are in grey scale, and the filters can be used in the same way for all colors as all their components have the same value.



#### *Offset colors*

This command simply adds an offset (positive or negative) to the color components. You can use it for example to increase the overall volume of the grid, or have it move towards the left speaker etc... Changes can be seen and heard in real-time.



#### *Reverse H*

Flip the grid horizontally.



#### *Reverse V*

Flip the grid vertically.



#### *Rotates 90 degrees counter-clockwise*

Rotate the grid 90 degrees. Since it is a square composed of 64x64 cells, no information is lost in the process.



#### *Rotates 90 degrees clockwise*

Rotate the grid, but clockwise this time.



#### *Copy*

Copy the area defined by the Selector tool into memory.



#### *Cut*

Cut the area defined by the Selector tool. The cells located in this area are painted in black.



#### *Paste*

Paste the area previously copied into memory on the grid. Once the paste button is clicked, you can move the picture on the grid and click where you want to paste it. You can press "Escape" to abort the operation.



#### *Mix*

Mix is similar to paste, except that black cells from the copied picture are treated as transparent.



#### *Shuffle rows*

This button randomly rearranges the rows of the grid. The result is a pattern that keeps the same rhythmic feel but the instruments have changed.



#### *Shuffle columns*

This button randomly rearranges the columns of the grid. The result is a pattern that has been sliced in 64 parts and rearranged.





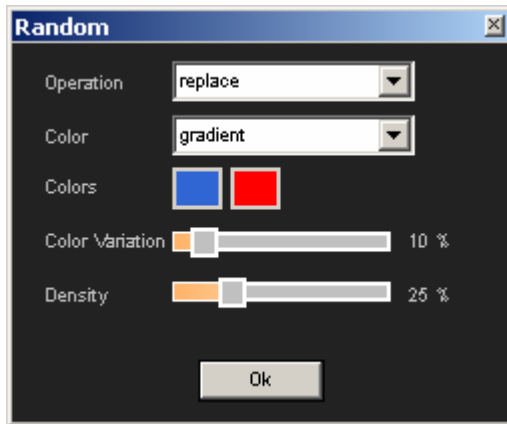
#### *Shuffle cells*

This button randomly rearranges all the cells in the grid. All the cells keep their color but are simply moved to another location. The pattern keeps the same “density” but the rhythmic feel and sound at a given time have changed.



#### *Random cells*

The random function has two modes: add and replace. The first one will simply add random cells on the top of the existing pattern, which can be a nice way to make a pattern evolve into something more complex. The second one will first clear the pattern, and then add the cells.



The density parameter controls how many cells will be added by the function. If you set the density to 25%, for example, one fourth of the grid will get new colors.

Two color modes are available: single color and gradient. In the first mode, all the cells added will be of the selected color (more or less adjusted by the color variation parameter). In the second mode, the cell color will be randomly picked between two colors. Again the color variation parameter can be used to add a bit more fun...



#### *Undo and Redo buttons.*

These functions undo or redo the last edit done to the current pattern (either by a graphic tool like the pencil, or by a graphic function such as the filter).

They also work while Blip is playing audio, which means that in a live situation, you can use them to go back and forth in the pattern history, adding and removing complexity on the fly...

Note: the undo stack is reset when you switch to another pattern.

## Keyboard Shortcuts in the main window

F1: Pencil  
F2: Eraser  
F3: Line  
F4: Aero  
F5: Hand  
F6: Selector  
F7: Color picker

Ctrl + N = new project  
Ctrl + O = open project  
Ctrl + S = save project  
Ctrl + Shift + N = new pattern  
Ctrl + Shift + O = open pattern  
Ctrl + Shift + S = save pattern

Ctrl + I: import image  
Ctrl + W: export pattern to wave file  
Ctrl + M: export pattern to MIDI file

Space = Play / Stop  
Enter: Record on / off

Ctrl+Z: Undo  
Ctrl+Y: Redo

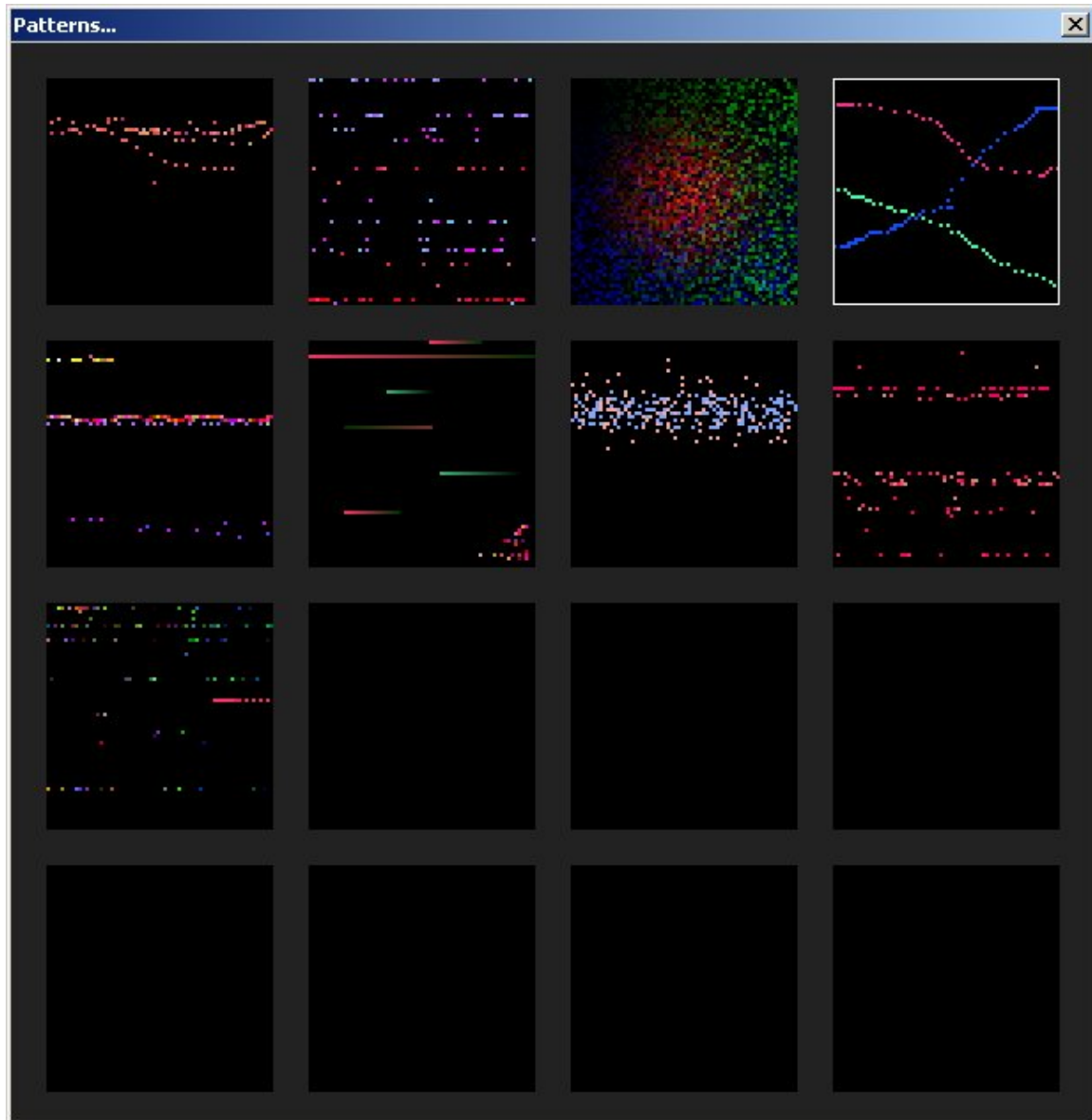
P: open the pattern selection window  
K: open the kit editor window  
F: open the filters window  
Arrow keys: move the pattern one cell in any direction  
Arrow keys + Shift: move the pattern 4 cells in any direction  
D: random cells  
I: play the instrument assigned to the row below the cursor

R = increase by one the value of the red component of all non-black cells  
Ctrl + R = decrease by one  
Shift + R = increase by 10  
Ctrl + Shift + R = decrease by 10  
G / Ctrl + G / Shift + G / Ctrl + Shift + G = same thing for the green component  
B / Ctrl + B / Shift + B / Ctrl + Shift + B = same thing for the blue component

Numeric keypad 1-9: switch to pattern 1-9  
Ctrl + numeric keypad 0-6: switch to pattern 10-16

## 6 - The Patterns Window

The pattern window offers an easy way to switch from one pattern to another. It displays thumbnails for all 16 patterns available in Blip. Simply click on one of them to select it.



The following shortcuts are available in the patterns window:

Arrow keys: navigate through the patterns

Enter: selects a new pattern

Escape: returns without selecting a new pattern

## 7 - The Kit Window

The kit window lets you edit a kit. A kit contains 64 slots, one for each row of the grid. Each slot corresponds to a sample (.wav file). The samples can be 8-bit, 16-bit, 24-bit or 32-bit, mono or stereo, and have any sample rate. However, the audio engine of Blip works at 44100 Hz, and samples at other sample rates will not be resampled. All 16 patterns in a project use the same kit.



When moving the mouse over the slots, samples are automatically selected and will appear reddish instead of grey. Pressing the space bar will let you audition the selected sample, and pressing the return key will open the default wave editor, as specified in the settings window.

The first way to add / replace a sample is to simply click on the name of one of the 64 slots. An empty slot displays "not used". If you want to clear a slot, you can simply right-click on its name. You can clear a full range of slots by just right-clicking on the first one and then moving your mouse. You can also clear all the slots by holding Shift while right-clicking.

In addition, you can drag one or more wave files from the desktop and drop them on the kit editor window. They will be assigned to the free slots.

The samples can be played as one-shots, or as loops, if their duration is shorter than the duration of a cell (this obviously depends on the tempo setting). One-shot samples are represented by a straight green arrow while looped samples are represented by a red circling arrow. You can click on the icon to change the type of sample. If looping is selected, samples do loop in their entirety. Potential looping points present in the .wav files are ignored.

Samples can also be faded in/out or not. You can click on the yellow icons to configure this.



### Clear Kit

This removes all the wave files from the current kit and resets fading and looping settings.



### Load Kit

This loads a new .kit file. It is also possible to load a new kit simply by dropping a .kit file on Blip's main window. Loading a new Kit actually stops the playback.



### Save Kit

This button saves the current kit as .kit file. The kit files are saved in XML. Therefore they can be easily edited by hand or automatically generated by another tool or a script. They include the path to the wave files and their settings, such as fading or looping. Wave files are only referenced by the kit files and no actual sample data is saved in them.

Of course, creating a list of 64 samples has never been something especially exciting in itself. The Kit window has 4 buttons to make this process a bit less cumbersome.



The first button lets you select one or more files, and add them to the first available slots in the kit.



The second button lets you select a folder. Blip will assign any wave file it finds in this folder to any empty slots in the kit. Therefore, it is easy to prepare sample data in folders with whatever tool you are using (batch processor, slicer etc...) and create a full kit in one click.



The third button also lets you select a folder. But in this case, Blip will build a list of all compatible wave files in this folder and its subfolders, and then randomly select 64 of them. This is a very easy way to create original kits and can lead to surprising results.



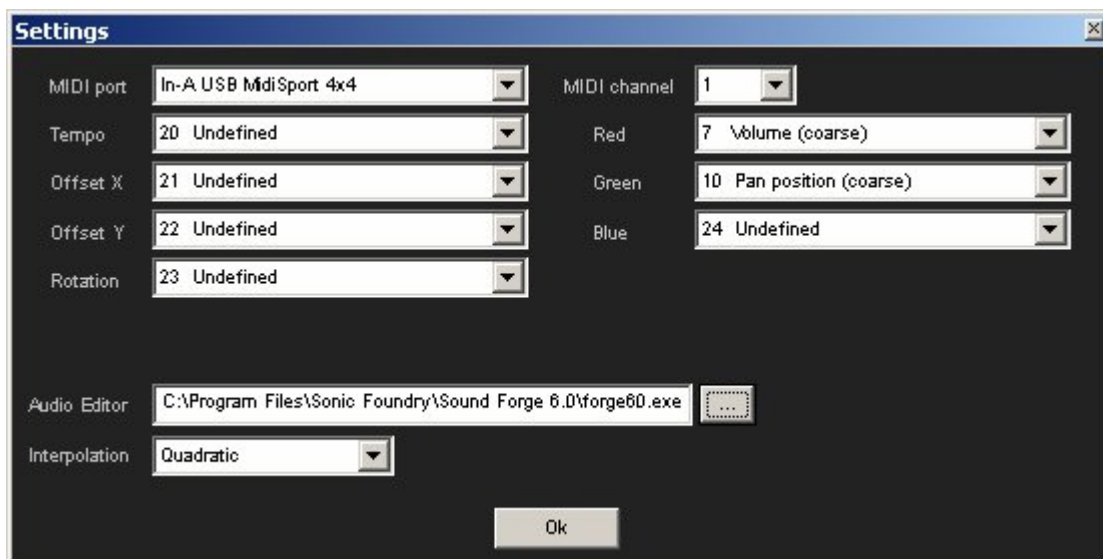
A fourth button allows you to select a long wave file. Blip will slice it in 64 files of the same duration, save them as wave files, and assign them to the 64 slots of the current kit.

#### Keyboard shortcuts for the Kit editor:

- Space: listen to the selected sample
- Up and Down Arrows: select sample
- Enter: open the wave file in the sample editor selected in the settings window
- L: toggles the Loop parameter of the selected sample
- Shift + L (or Shift + click on a Loop icon): sets all Loop parameters
- F: toggles the Fade parameter of the selected sample
- Shift + F (or Shift + click on a Fade icon): sets all Fade parameters
- Delete: clear selected slot
- Shift + Delete (or Shift + right click on slot name): clear all slots

## 8 - The Settings Window

The higher part of the Settings window is dedicated to MIDI, and the lower part to audio.



In the MIDI part, you can select the MIDI In port and channel Blip will respond to. Then you can assign a MIDI controller number to the following operations:

- offset x and y

- red, green and blue components: this will adjust the color of the whole grid. Note: these commands do not have a memory of what was initially drawn. So if you push the green value to the maximum and every cell has a green level of 255, then when you come back to a more reasonable value, all cells will still have the same value, say 120.
- rotation
- tempo

Don't forget that Blip will also respond to program change messages on the MIDI channel you have selected. Program changes #1 to #16 will switch to the corresponding patterns.

In the Audio part, you can choose the default wave file editor. When you are in the Kit window, pressing return over an instrument will open the corresponding wave file in this program.

It is also possible to select the type of interpolation used by Blip's audio engine. This parameter directly impacts the quality of the sound output. The choices are Truncate, Linear and Quadratic, from the lowest quality to the highest (but also from the fastest algorithm to the slowest).

## **9 - Future Developments**

While Blip 1.0 is already a powerful tool, it opens doors to many exciting improvements and experiments. Features expected to appear in the next versions include:

- Instruments with min and max notes, as well as a musical scale, to which the blue levels will be mapped, in order to sound more musical.
- Digital audio effects (tempo-based delay, resonant filter, chorus...).
- Alternate grids, in complement of the note grid, to change effect send levels, or to set the probability that one note will actually be played.
- Procedural generation of grids.
- Automatic evolution / mutation of the grid patterns for live performances.