Creative Coding with vvvv

Marie Schacht | FGTIS colloquium | August 30th 2013

vvvv – the multipurpose toolkit

- modular, hybrid programming environment

    - visual programming interface

    - textual coding for low-level system and graphics programming, written in C#, OpenGL shader language or other languages

- data flow approach

- patch = application written in vvvv

    - consists of a network of nodes, with links between them

    - a node implements simple or complex operations

    - can be created, edited and relinked while running

vvvv – the multipurpose toolkit

- creative programming toolkit, like e.g OpenFrameworks or Processing

  - for easy prototyping of interactive visual installations, large environments with physical interfaces, simultaneous multi-user interaction, real-time motion graphics, audio, video and generative art

- supports various input and output technologies

  - e.g. Kinect, Arduino, Microphone, 3D scenes, multiple projectors, ...

  - supports MIDI, OSC, DMX, Artnet, HTTP, ... protocols for data exchange

- great support: continuously growing and developed further

  - initially developed 2001 by Sebastian Oschatz as a tool for in-house projects of the media collective MESO, based in Frankfurt/ Germany

  - has a vibrant and enthusiastic community

  - the vvvv group organizes an annual conference/ festival -> NODE, in Frankfurt

vvvv patches deal with ...

- diverse data types, ranging from simple numbers to complex (groups of) graphical data objects

  - e.g. values, strings, textures, transforms, meshes

- objects in 2D and 3D

- timeline editing and animation tools

- live video tracking and video effects

- FFT sound analysis and sound rendering

- complex algorithms

  - e.g. fluid solver, Lindenmayer growing

limitations

- runs on Microsoft Windows only

  - requires DirectX for graphics rendering

  - for Mac hardware: Bootcamp + Windows

- visual interface is not that intuitive

- vvvv projects are not compilable into stand-alone executables

  - a copy of vvvv itself is always needed

- does not run in a web browser

  - BUT: a HTML5/JS clone, is under active development → see vvvv.js

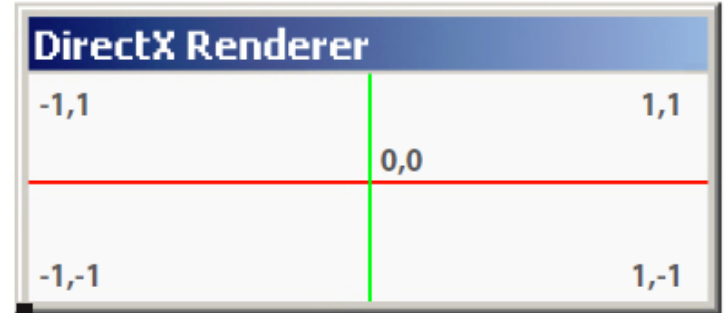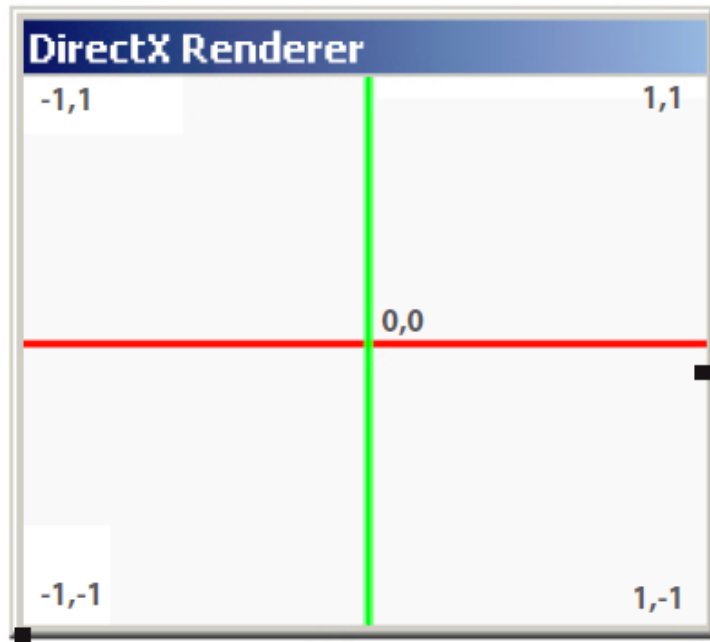- licensing: free for non-commercial use | 500 EUR per CPU

3.0000   *Input 2*

Link

Input 1

Output   + *NODE*

AsString

Text

17
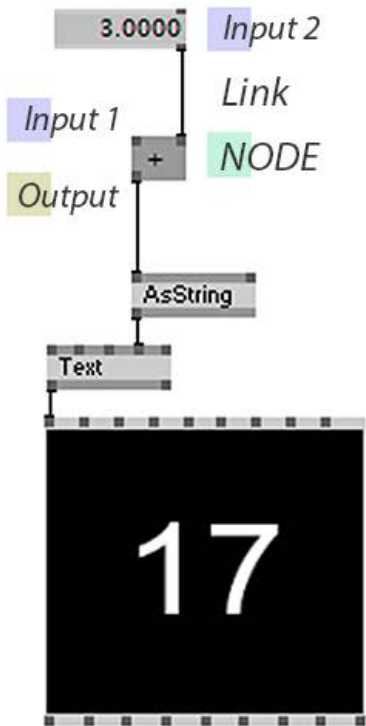
Renderer for graphical Output

+ (Value)

Returns the sum of the inputs	
Attach to Selection	
	Descriptive Name
2	Input Count
14.0000 >	Input 1
3.0000 >	Input 2
17.0000 >	Output
0	ID

input	Input-Pins
processing	Node
output	Output-Pins
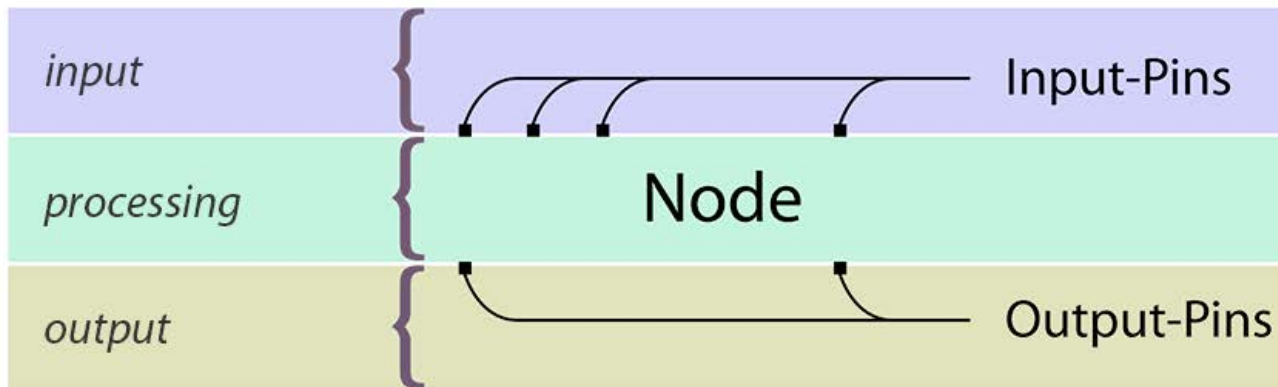
coordinate system

SHORTCUTS

Ctrl + I (‚i')	Mr. Inspector shows the selected Node's details
Ctrl + Tab	switch between open Patches
Ctrl + P	NEW Patch
Ctrl +W	CLOSE Patch
Ctrl + Q	OPEN Patch
Node + F1	related Help Patch Help-Patches serve as unit tests, documentation, and exemplary Node introduction

MOUSE

left double	Node - Browser
right double	IO - Box
right + drag	navigate through Patch
middle	open the Main Menu

WINDOW MODES (e.g. RENDERER, INSPEKTOR, SUBPATCHES)

Alt + 1   Windowed | Node with separate window

Alt + 2   Boxed | Node as box, containing the window

Alt + 3   Hidden | only Node visible

Alt + Enter   Full Screen

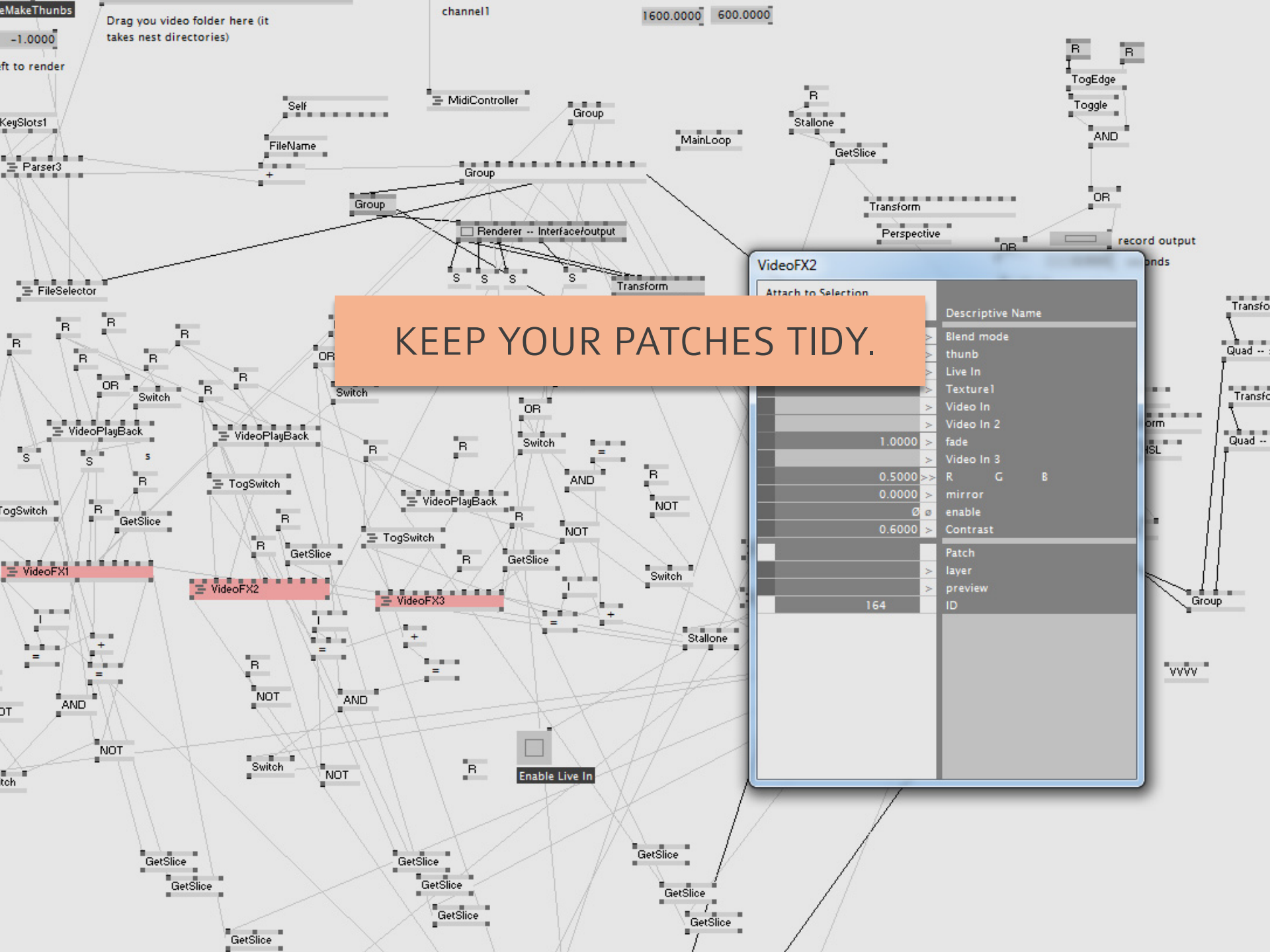
KEEP YOUR PATCH TIDY

Ctrl + Y   convert line connections
                   3 modes: straight, step wise, Bézier curve

Alt + L   align selected Nodes (horizontally or vertically)

left double   add comments, headlines, instructions, descriptions, ...
+typing   use different font sizes to identify logical connections

CTRL+SHIFT+P   NEW SubPatch
                   embrace the modular concept; keep track;
                   reuse units in novel contexts

KEEP YOUR PATCHES TIDY.

Let's get started, now.

// Generative Art

- ~ is the idea realized as a dynamic complex system, able to generate endless variations of music, visual art, moving images, ...

- each generative project is a concept-software that works producing unique and non-repeatable events

- computer is simply a tool, not necessary, but enables efficient processing of the procedural creation

// Generative Designing

- ~ is a procedural design technique

- aesthetics and algorithms interweave

- partly results-driven, partly experimental used

- opens novice imagery worlds

- e.g. for data visualization

// Generative Designing Process
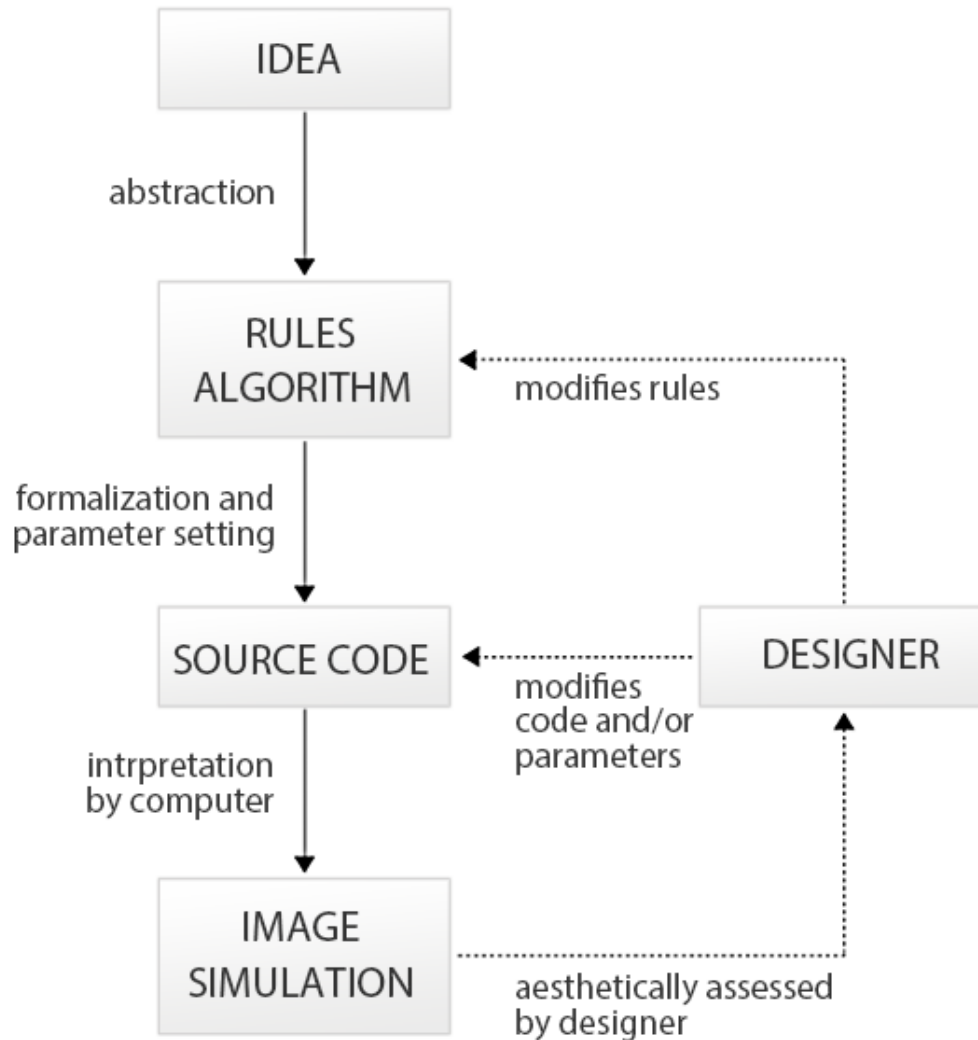
[Bohnacker 2009]

// Visual Music

- ~ is an art that explores any interaction between sound and image

- notable history, with beginnings leading back to Greek antiquity

- influenced by scientific insights, technological progress, perception studies and artistic creations

- digital technologies offer diverse ways for the investigation of audiovisual knowledge exchange