3D FX for the real world

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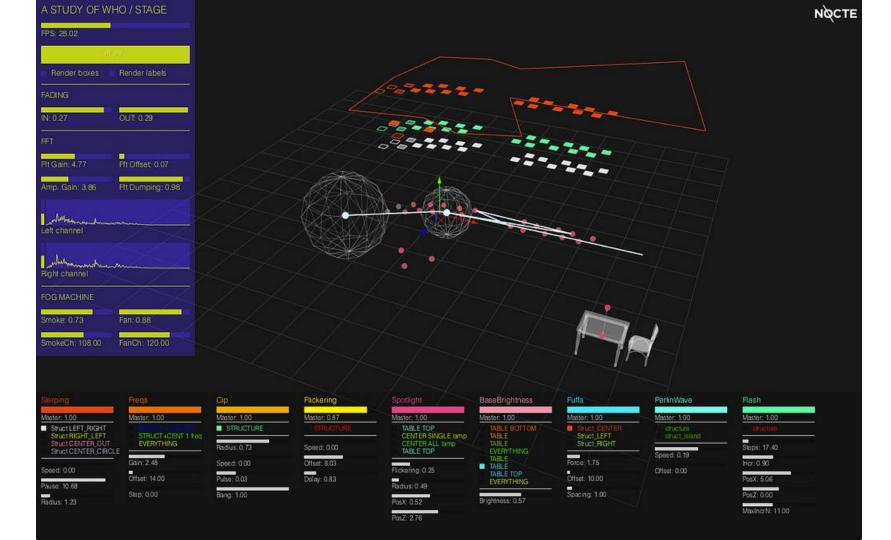
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Site specific installations

Our work lives in a real space.

The interaction with the audience and the effects or behaviors are also based on the actual position in the space.
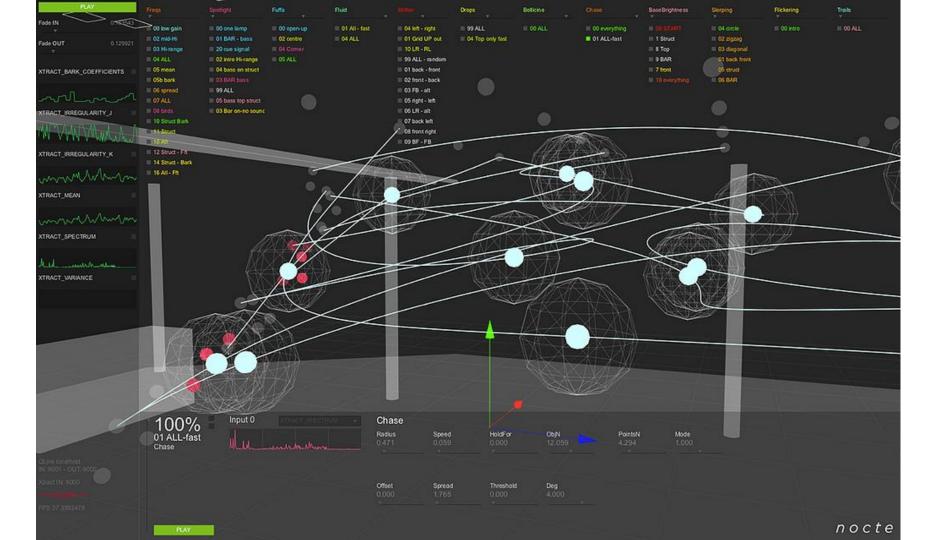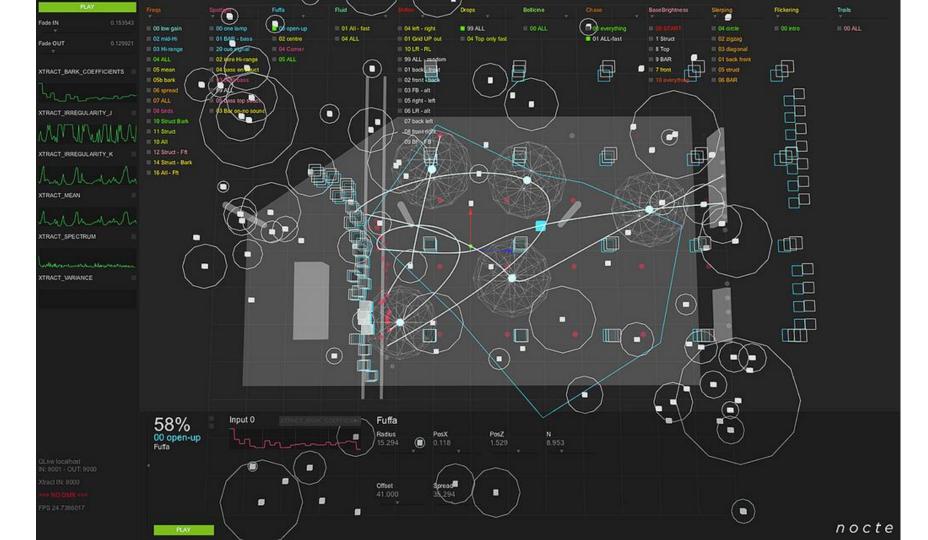
Working in 3D

- Simulate the environment
- Acknowledge the space
- Design/preview effects and behaviors
- Simulate interactions

A STUDY OF WHO / STAGE

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FPS: 28.02

PLAY

Render boxes   Render labels

FADING

IN: 0.27   OUT: 0.29

FFT

Fft Gain: 4.77   Fft Offset: 0.07

Amp. Gain: 3.86   Fft Dumping: 0.98

Left channel

Right channel

FOG MACHINE

Smoke: 0.73   Fan: 0.88

SmokeCh: 108.00   FanCh: 120.00

Slerping
Master: 1.00
Struct LEFT_RIGHT
Struct RIGHT_LEFT
Struct CENTER_OUT
Struct CENTER_CIRCLE

Speed: 0.00

Pause: 10.68

Radius: 1.23

Freqs
Master: 1.00
STRUCT +CENT
STRUCT +CENT 1 freq
EVERYTHING

Gain: 2.48

Offset: 14.00

Stop: 0.00

Cip
Master: 1.00
STRUCTURE

Radius: 0.73

Speed: 0.00

Pulse: 0.03

Bang: 1.00

Flickering
Master: 0.87
STRUCTURE

Speed: 0.00

Offset: 8.03

Delay: 0.83

Spotlight
Master: 1.00
TABLE TOP
CENTER SINGLE lamp
CENTER ALL lamp
TABLE TOP

Flickering: 0.25

Radius: 0.49

PosX: 0.52

PosZ: 2.76

BaseBrightness
Master: 1.00
TABLE BOTTOM
TABLE
TABLE
EVERYTHING
TABLE
TABLE
TABLE TOP
EVERYTHING

Brightness: 0.57

Fuffa
Master: 1.00
Struct_CENTER
Struct_LEFT
Struct_RIGHT

Force: 1.75

Offset: 10.00

Spacing: 1.00

PerlinWave
Master: 1.00
structure
struct_island

Speed: 0.19

Offset: 0.00

Flash
Master: 1.00
structure

Steps: 17.40

Incr: 0.90

PosX: 5.06

PosZ: 0.00

MaxIncrN: 11.00

Fade IN

Fade OUT   0.129921

XTRACT_BARK_COEFFICIENTS

XTRACT_IRREGULARITY_J

XTRACT_IRREGULARITY_K

XTRACT_MEAN

XTRACT_SPECTRUM

XTRACT_VARIANCE

Freqs	Spotlight	Fuffa	Fluid	Softer	Drops	Bollicine	Chase	Base Brightness	Slerping	Flickering	Trails
00 low gain	00 one lamp	00 open-up	01 All - fast	04 left - right	99 ALL	00 ALL	00 everything	00 START	04 circle	00 intro	00 ALL
02 mid-Hi	01 BAR - bass	02 centre	04 ALL	01 Grid UP out	04 Top only fast		01 ALL-fast	1 Struct	02 zigzag		
03 Hi-range	20 cue signal	04 Corner		10 LR - RL				8 Top	03 diagonal		
04 ALL	03 intro Hi-range	05 ALL		99 ALL - random				9 BAR	04 back front		
05 mean	04 bass on struct			01 back - front				7 front	05 struct		
05b bark	03 BAR bass			02 front - back				10 everything	06 BAR		
06 spread	99 ALL			03 FB - alt							
07 ALL	05 bass top struct			05 right - left							
08 birds	03 Bar on-no sound			06 LR - alt							
10 Struct Bark				07 back left							
11 Struct				08 front right							
10 All				09 BF - FB							
12 Struct - Frt											
14 Struct - Bark											
16 All - Frt											

QLive localhost
IN: 9001 - OUT: 8001

Xtract IN: 8000

FPS 37.3892479

100%
01 ALL-fast
Chase

Input 0   XTRACT_SPECTRUM

Chase

Radius	Speed	HoldFor	ObjN	PointsN	Mode
0.471	0.059	0.000	12.059	4.294	1.000

Offset	Spread	Threshold	Deg
0.000	1.765	0.000	4.000

PLAY

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Fade IN   0.153543

Fade OUT   0.129921

XTRACT_BARK_COEFFICIENTS

XTRACT_IRREGULARITY_J

XTRACT_IRREGULARITY_K

XTRACT_MEAN

XTRACT_SPECTRUM

XTRACT_VARIANCE

QLive localhost
IN: 9001 - OUT: 9000

Xtract IN: 8000

>>> NO DMX <<<

FPS 24.7386017

Freqs	Spotlins	Fuffa	Fluid	Shifter	Drops	Bollcine	Chase	Base Brightness	Slerping	Flickering	Trails
00 low gain	00 one lamp	00 open-up	01 All - fast	04 left - right	99 ALL	00 ALL	00 START	00 START	04 circle	00 intro	00 ALL
02 mid-Hi	01 BAR - bass	02 centre	04 ALL	01 Grid UP out			1 Struct	1 Struct	02 zigzag		
03 Hi-range	20 cue signal	04 Corner		10 LR - RL	04 Top only fast	01 ALL-fast	8 Top		03 diagonal		
04 ALL	02 intro Hi-range	05 ALL		99 ALL - random			9 BAR		04 back front		
05 mean	04 bass on struct			01 back - front			7 front		05 struct		
05b bark	06 intro bass			02 front - back			10 everything		06 BAR		
06 spread	07 ALL			03 FB - alt							
07 ALL	05 bass top struct			05 right - left							
08 birds	03 Bar on-no sound			06 LR - alt							
10 Struct Bark				07 back left							
11 Struct				08 front right							
10 All				09 B? FB							
12 Struct - Fft											
14 Struct - Bark											
16 All - Fft											

58%
00 open-up
Fuffa

Input 0   XTRACT_BARK_COEFFICIEN   Fuffa

Radius   PosX   PosZ   N
15.294   0.118   1.529   8.953

Offset   Spread
41.000   35.294

PLAY

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2873.058 mm

THE COMPANY

PLAYING
FPS 59.74

Selected Track
#3   1.00   Fuffa

Force   1.181
Width   1.000
Height   1.000
Freq offset   0

Lamps
Master brightness   1.000
Base brightness   0.000
Fade IN speed   0.12244
Fade OUT speed   0.08797

Fft
Fft gain   5.354
Fft offset   0.000
Fft dumping   0.017

Gain: 5.354   Offset: 0.000

ON SET ●
ON BEAT ●

Workflow

- **Design**
  Sketch and design in a 3d environment, work with real measures.

- **Develop**
  Create a 3D application to pre-visualise the environment and implement FXs.

- **Install**
  The setup should match the 3D model.

- **Tweak**
  Things always change!
  Software and workflow need to be flexible, you want to control many aspects of the installation using a gui to quickly try stuff out.

Cinema4D & Python scripts

C4D as well as many other 3D softwares, offer scripting capability.

The scripts can be used to export data in a convenient format, but also to generate the design and sketch up effects.

Cinema4D coordinates exporter

Open file:

```
# get the desktop path
desktopPath    = c4d.storage.GeGetC4DPath( c4d.C4D_PATH_DESKTOP )

# append the root object name and the format
filename       = str( desktopPath ) + "/" + obj.GetName() + ".csv"

# open the file in writing mode "w"
file           = open( filename, 'w' )
```

Cinema4D coordinates exporter

Write the data:

```
# write the coords for each children
for child in obj.GetChildren():
    mat       = child.GetMg()                              # get obj global matrix
    objPos    = child.GetMg().off / 100.0                  # convert position to meters
    posStr    = str( objPos.x ) + "," + str( objPos.y ) + "," + str( objPos.z )
    file.write( posStr + "\n" )                            # write position

# close the file
file.close()
```

Connecting with sound

Sound can be directly connected to the effect properties to change things like size, intensity, speed etc.

Sound can also be used as a trigger, when ever a level pass a threshold, this can trigger events in our app.

Connecting with sound

```
// get the sound data value normalised
val = mInputs[0]->feature->getDataValue( offset + step * k );

// use the sound to set the fixture brightness
fixtureValues[n]    += gain * val;

// compare the value against a threshold to create new objects or trigger events
if ( val > 0.1f && val > threshold )
    mSources[k].addBlob( ... );

    ...
```

Effects

- Blob
- Frequencies
- Spawn
- Fluids
- Spotlight

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