

The Mixxeo

a new digital video mixer

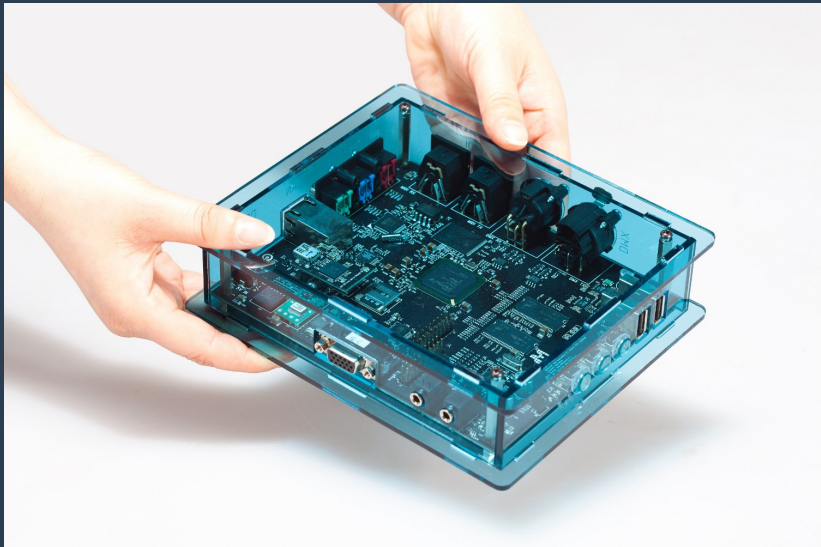
Sébastien Bourdeauducq

June 13, 2013

Milkymist One



(2007-2011)



MILKYMIST ONE

VIDEO SYNTHESIZER

Get ready to be a 3D god in your
- custom scenes. No 3D video capturing
- 3D scenes. Instead the software generates 3D scenes.



MILKYMIST ONE

Warning: This device is not for use in medical applications.
Warning: This device is not for use in safety-critical applications.
Warning: This device is not for use in life support applications.
Warning: This device is not for use in applications where failure could result in death or serious injury.
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Sébastien Bourdeauducq

████████████████████
██████████ Berlin, Germany

15 October 2012

Dear Sébastien:

I'd like to take this opportunity to thank you for your open source work which helped our development of the JPL Software Defined Radio that is part of the SCaN Testbed, which has now been installed on the International Space Station. It has been undergoing initial checkout and commissioning for a few months now, including the use of the dynamic ram controller that Greg Taylor built starting with your work. I think it's safe to say that many millions of bits have passed through the code you wrote in space by now.

Thanks again,

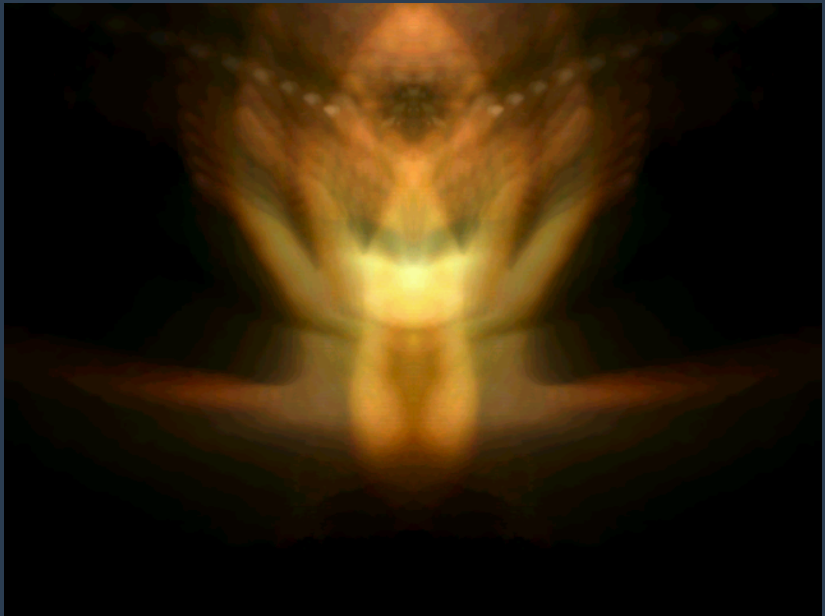

James P. Lux, P.E.

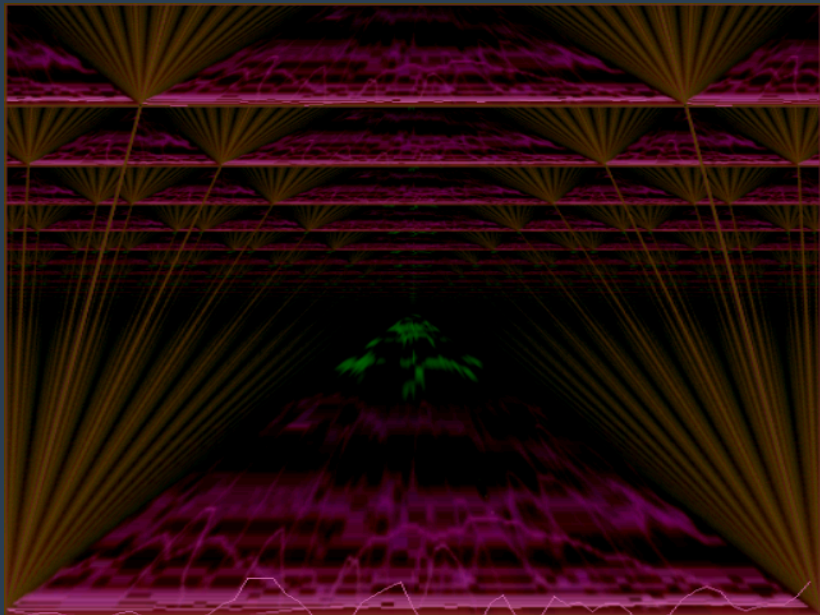
Co-Principal Investigator, SCaN Testbed

<http://spaceflightssystemsgrc.nasa.gov/SOPO/SCO/SCaNTestbed/>

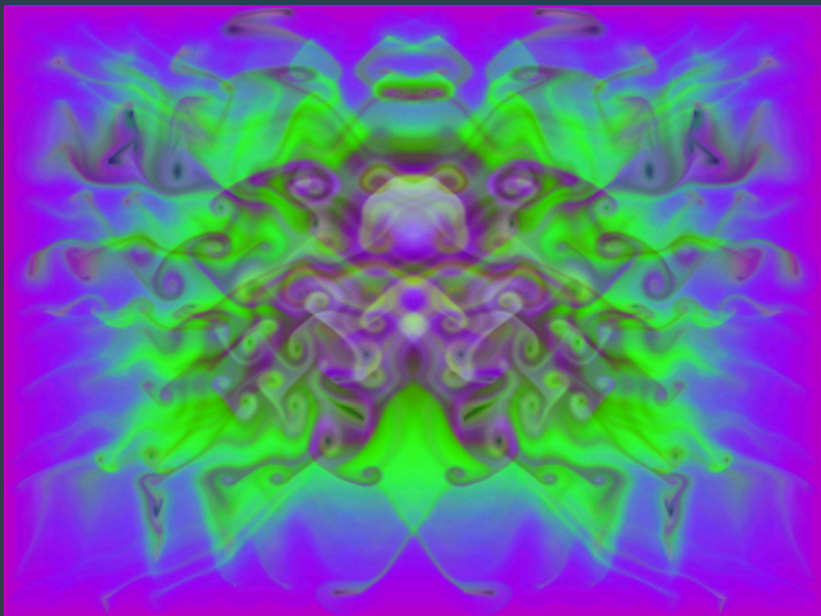
+1 (818)354-2075

james.p.lux@nasa.gov









Control panel

Interfaces

Keyboard | IR remote | Audio

MIDI | OSC | DMX512 | Video in

Patches

Patch editor | Variable monitor

Performance

First patch

Start!

New | Load | Save

Tools

File manager

System

Settings

About | Shutdown

Flash upgrade

Select images to flash.
If your board does not restart after flashing, don't panic!
Hold pushbutton #1 during power-up to enable rescue mode.

Bitstream image (.FPG): Browse

BIOS image (.BIN): Browse

Application image (.FBI):

Ready.

Program flash

Patch editor [Aderrasi - Airs.fnp]

New | Open | Save | Save As | Run (F8)

```
fDecay=0.998
fVideoEchoZoom=1.220183
fVideoEchoAlpha=0.400000
nVideoEchoOrientation=3
nMoveMode=5
bRdd1 tivellaves=1
bMoveDots=1
bMoveThick=0
bMaximizeMoveColor=0
bTextWrap=0
fMoveAlpha=0.785885
fMoveScale=0.796694
fMarpInSpeed=1.000000
fMarpScale=1.000000
zoom=1.000000
rot=0.000000
ox=0.500000
oy=0.500000
dx=0.000010
dy=0.000010
```

Ready.

Open

/flash/

- Aderrasi - Variants Of etc
- Bmelgren & Krash - Rainb
- EvilJim - Ice Drops.fnp
- Fvsee - The Tunnel (Final
- Geiss - Approach.fnp
- Geiss - Cruzin'.fnp
- Geiss - Shift.fnp
- Geiss - The Fatty Lumpkin
- Geiss - Tornado.fnp
- Illusion & Rovastar - Clou

Selection: /flash/
Geiss - Approach.fnp

OK | Cancel

About

Flickernoise 0.3 (built on Mar 28 2011)

OS: RTEMS 4.10.99.0

Platform: Milkymist SoC 1.0RC3

CPU: LatticeMico32

Board: M1 (PCB rev. 1)

Ethernet MAC: 10:e2:d5:00:00:00

Copyright (C) 2010, 2011 Sebastien Bourdeauducq and contributors.
Flickernoise is free software, released under GNU GPL version 3.
Web: www.milkymist.org

Flash | Close

- ▶ Milkymist One: a very experimental device
- ▶ Lots of advanced and generic hardware tech
- ▶ Need for a digital video mixer
- ▶ *spark d-fuser

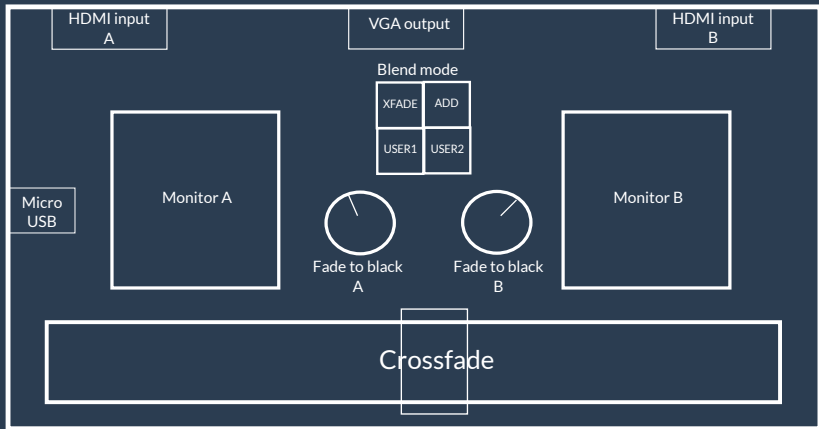


Let's start developing...

MIXXEO



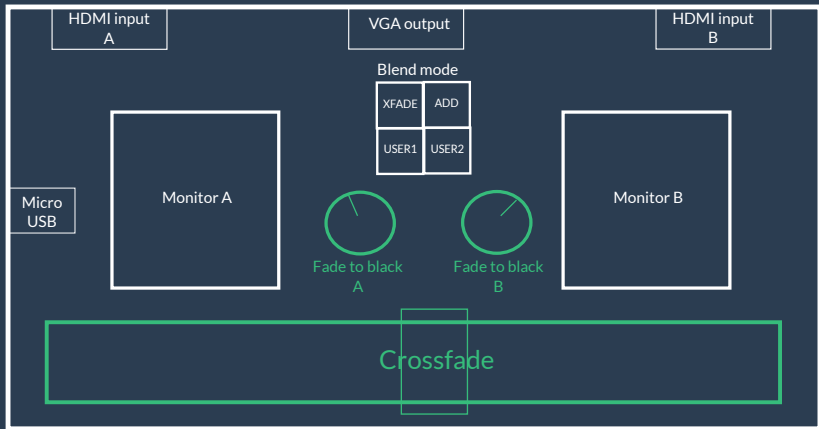
Key points



Straightforward design

Small size, all integrated – no external processor

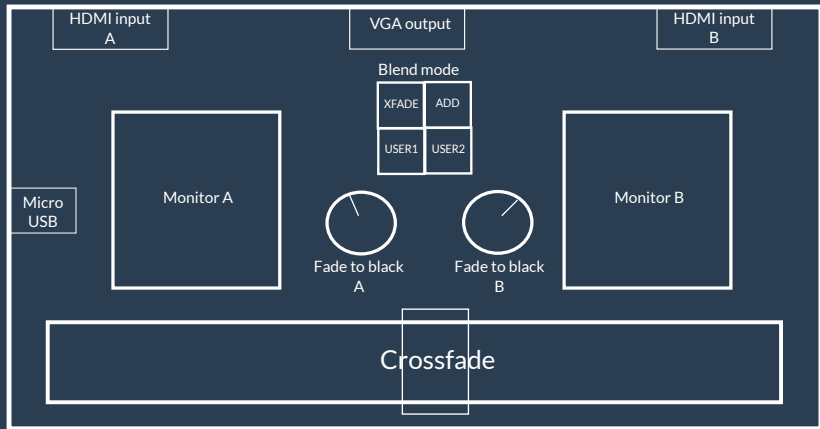
Key points



Crossfade + Fade to black

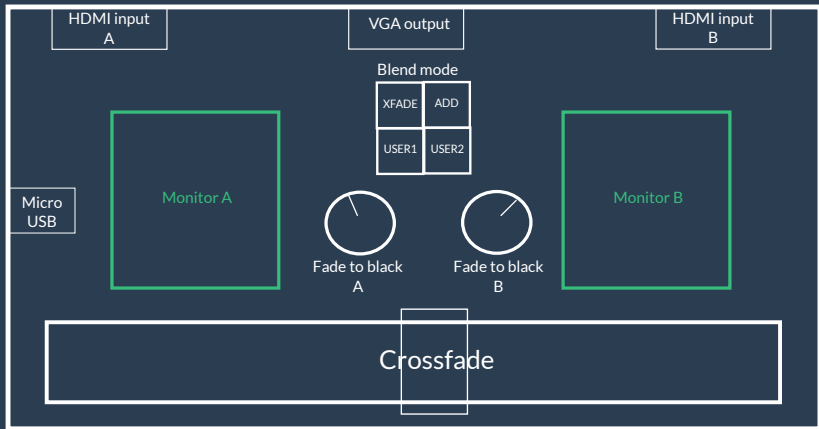
Fancy effects stay on laptops (?)

Key points



Resolution: 720p60, 1080p30, 3*640x480, ...
(Any resolution under 100MHz pixel clock)

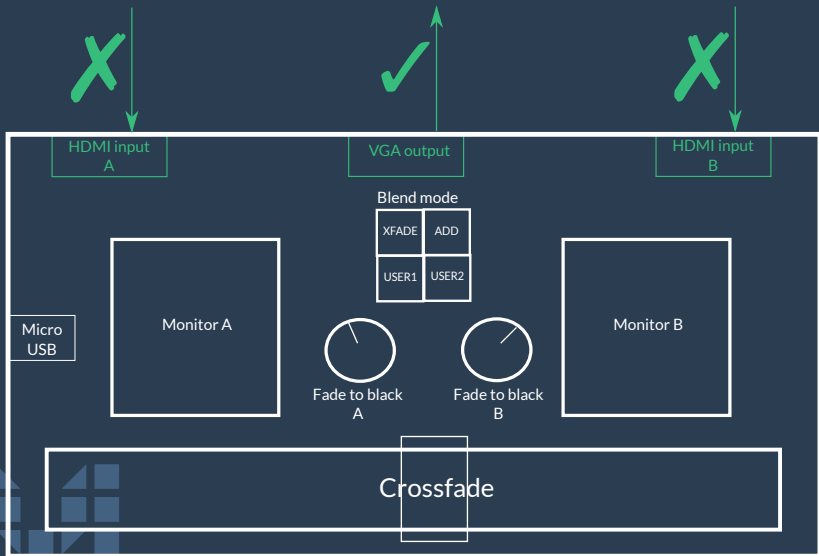
Key points



Built-in monitors

OLED for superior display quality

Key points

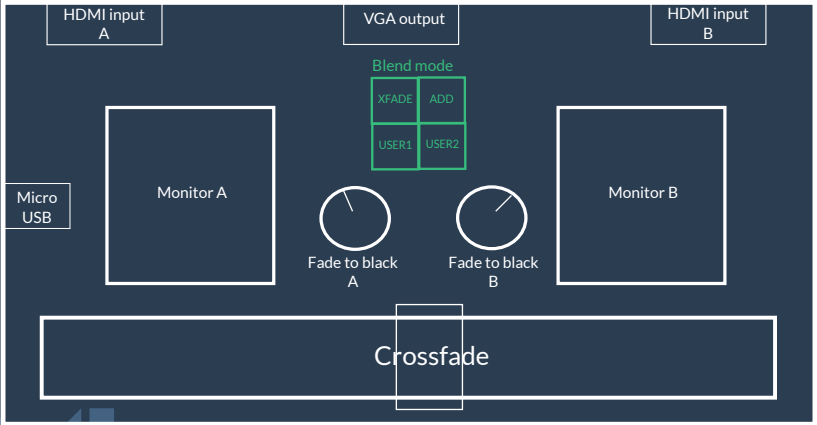


Sync projector all the time

And more...

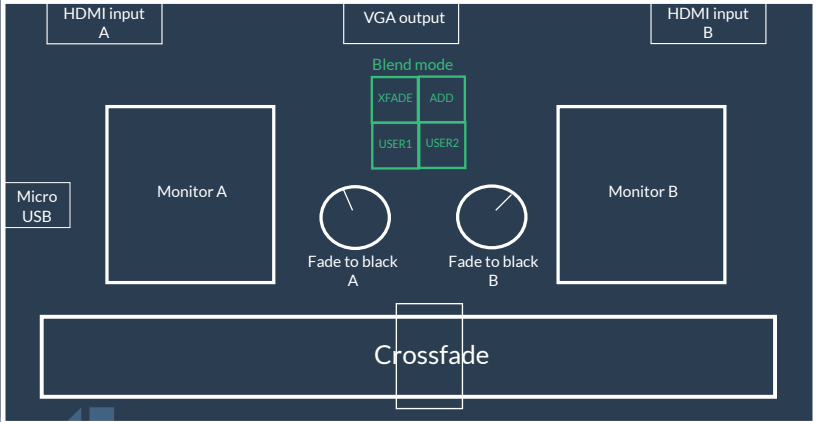


Extra features



Additive blending

Extra features



Chroma key

Extra features: “pixel shaders”?

- ▶ The big difficult feature
- ▶ Do people want effects in hardware?
 - ▶ Invest in more locally-produced devices
 - ▶ Invest in open hardware solutions¹
 - ▶ Learn how things work, go beyond assembly code
 - ▶ Things that CPU+GPU do not do right: raytracing, real-time, ...

¹and I don't mean plastic extruders

Pricing and availability? Stay tuned!

- ▶ Probably under 1000 €
- ▶ **Sign up for email announcements at mixxeo.org**
- ▶ #milkymist on Freenode
- ▶ @Milkymist_Labs

Thanks to: Milkymist contributors (Michael Walle, Werner Almesberger, Wolfgang Spraul, Yann Sionneau, Lars-Peter Clausen, Florent Kermarrec, and more), Migen users and supporters (Alan Langman, PDI-Berlin), emiland.me NSA slides.