

# Project Blinkenlights

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Chaos Computer Club

HITBSecConf2005  
Kuala Lumpur, Malaysia, 2005-09-28

# Chaos Computer Club

- Founded in 1981
- Galactic community of people interested in and concerned about technology
- Decentralized, region-based structure
- Magazine “Die Datenschleuder”
- International conferences, workshops
- 1200+ members

# Chaos Communication Congress (C3)



- Annual Int. European Hacker Conference
- December 27th to 30th in Berlin, Germany
- 3500+ participants

# Chaos Communication Camp



- Quadrennial International Open Air Hacking Event
- Because we can
- 2000+ participants

Part I:  
Berlin, Germany



# 2001 A.D.

- Wau Holland died
- Spontaneous idea to celebrate the 20th anniversary of the CCC (September 12th, 2001)
- The plan: Having a five day exhibition and a big party
- And there is one more thing...

# Blinkenlights

- Interactive installation at Haus des Lehrers, Berlin Alexanderplatz
- Five weeks from idea to realization
- One week setup time
- Low cost & low tech

# ATTENTION!

This room is fullfilled mit special  
electronische equippment. Fingergrabbing  
and pressing the cnoeppkes from the  
computers is allowed for die experts only!

So all the lefthanders stay away and do  
not disturben the brainstorming von here  
working intelligencies.

Otherwise you will be out thrown and  
kicked anderswhere! Also: please keep  
still and only watchen astaunished the  
blinkenlights.



# Details

- 8 floors with 18 windows each
- 144 floodlights on stands
- Automatic playback software
- Pong via phone
- Blinkenlights Loveletters

# Blinkenlights Impressions

# Blinkenlights Photography



Heart as seen from TV tower

# Blinkenlights Photography



Heart seen from the front



# Blinkenlights Photography



Chaosknoten



# Blinkenlights Photography



Chaos Computer Club



# Blinkenlights Photography



Three Letter Acronyms



# Blinkenlights Photography



Supermännchen



# Blinkenlights Photography



Wintertime

# Blinkenlights Photography



No War



# Blinkenlights Photography



Pong

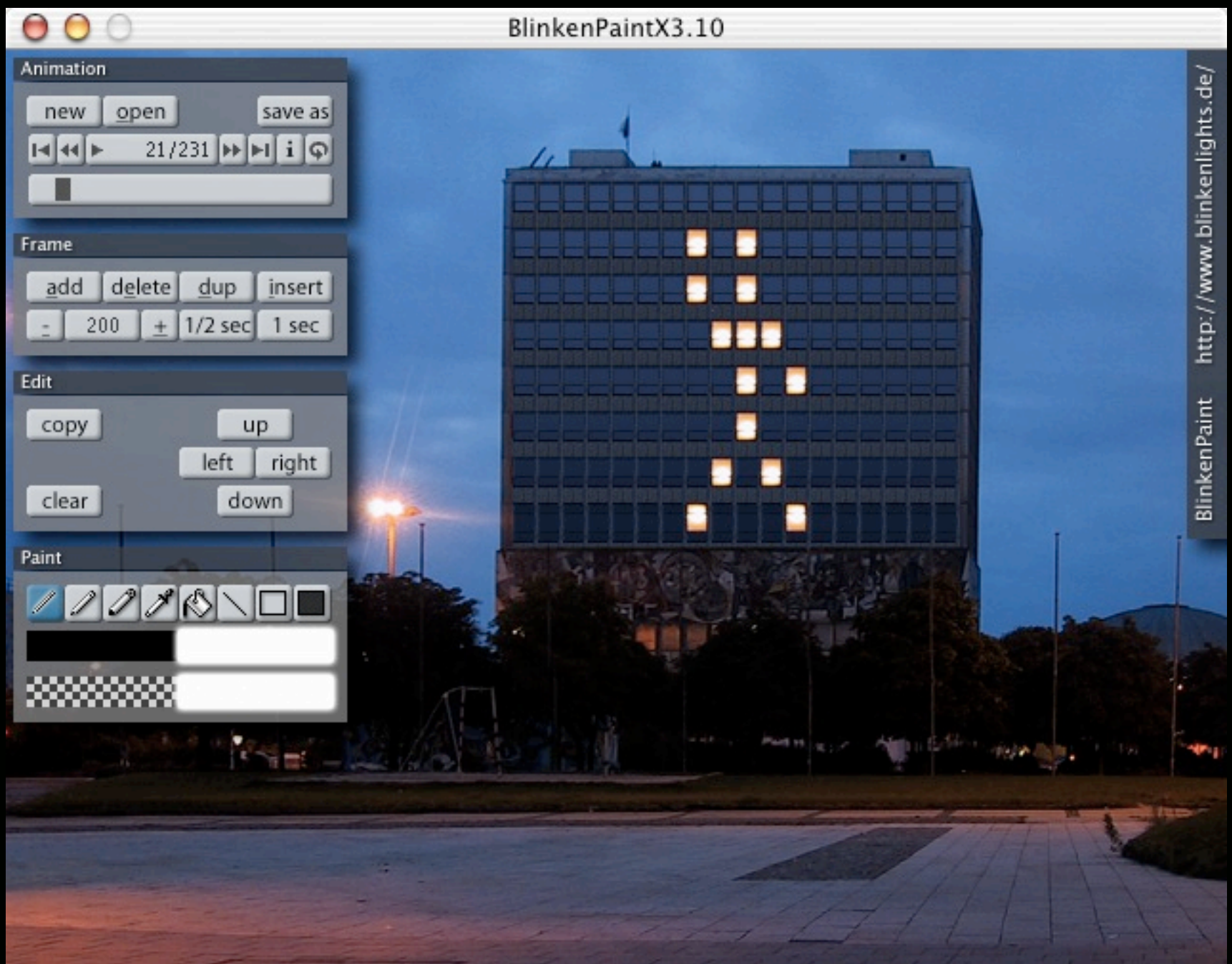
# Pong

- The arcade classic
- Playable via phone
- 1 player against the computer
- 2 players against each other
- Automatic time limit



# BlinkenPaint

- Authoring tool for MacOS and Windows
- Built-in simulator
- Blinkenlights Movies (BLM) file format
- Dispatched via e-mail
- Blinkentools



BlinkenPaint <http://www.blinkenlights.de/>

# Blinkenlights Movies



# Blinkenlights Movies File Format (BLM)

# BlinkenLights Movie 18x8

```
@200
00000000000000000000
000011100011100000
000111110111110000
000111111111110000
000011111111100000
000000111110000000
000000001000000000
000000000000000000
```

```
@800
000011100011100000
000111110111110000
001111111111111000
001111111111111000
000111111111110000
000011111111100000
000000111110000000
000000001000000000
```



# Blinkenlights Loveletters

- Person creates movie with BlinkenPaint
- Sends in movie in by e-mail
- Assignment of code number
- Code gets back to person by e-mail
- Loveletter invocation by phone



# Blinkenlights Art & Beauty Contest





# Towers Of Hanoi



BEST GAME ANIMATION

# Yin Yang



BEST LOGO ANIMATION

# TLA



BEST TYPOGRAPHY

# Le Chat Noir



BEST CREATURE ANIMATION

# Bit Laden



BEST SATIRE

# Pixie In The Box



BEST HUMAN CHARACTER ANIMATION



# Quix Glitter



BEST ABSTRACT ART

# Silent Night



BEST SOUNDTRACK

# Falling Pixels



BEST PHYSICS

# Supermännchen



BEST STORY

# The Fly



BEST MINIMAL

# Anna



BEST LOVELETTER

# Blinkenlights Font

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z  
a b c d e f g h i j k l m n o p q r s t u v w x y z  
0 1 2 3 4 5 6 7 8 9

# Blinkenlights Pop-Art

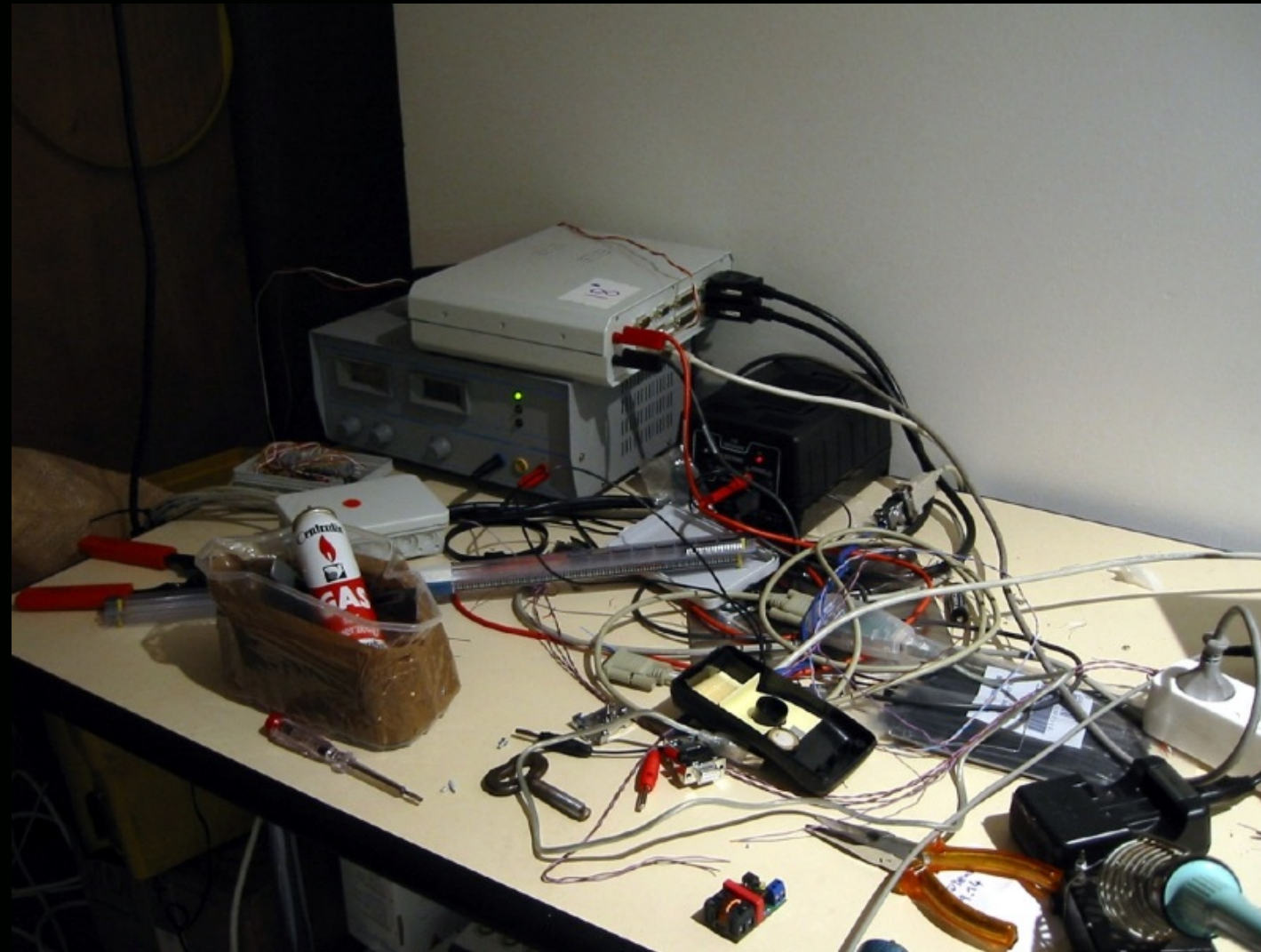
- Golden Boy
- Sven Väth
- Miss Kittin
- Die Toten Hosen
- proto.beamaz





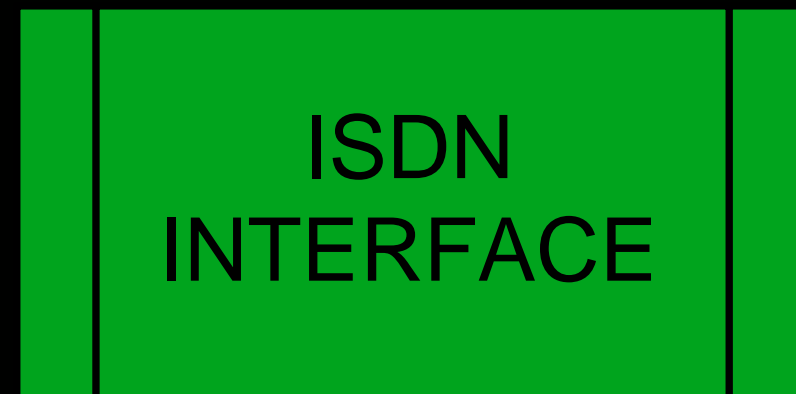
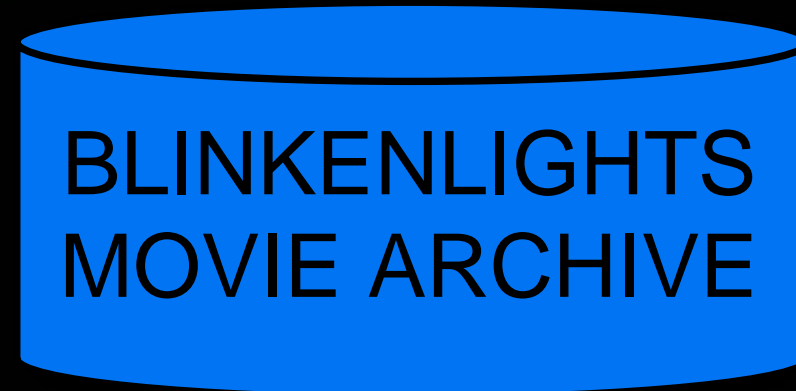
# Blinkenlights Video

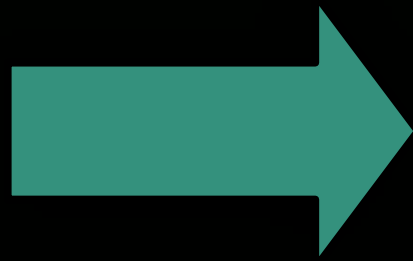
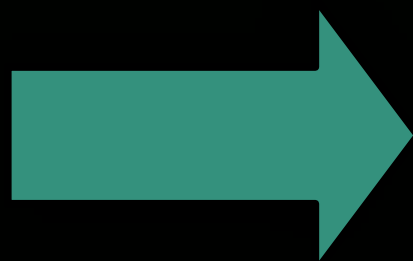
# Blinkenlights Technology



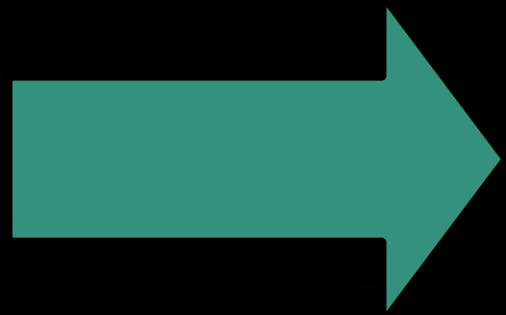
A look inside





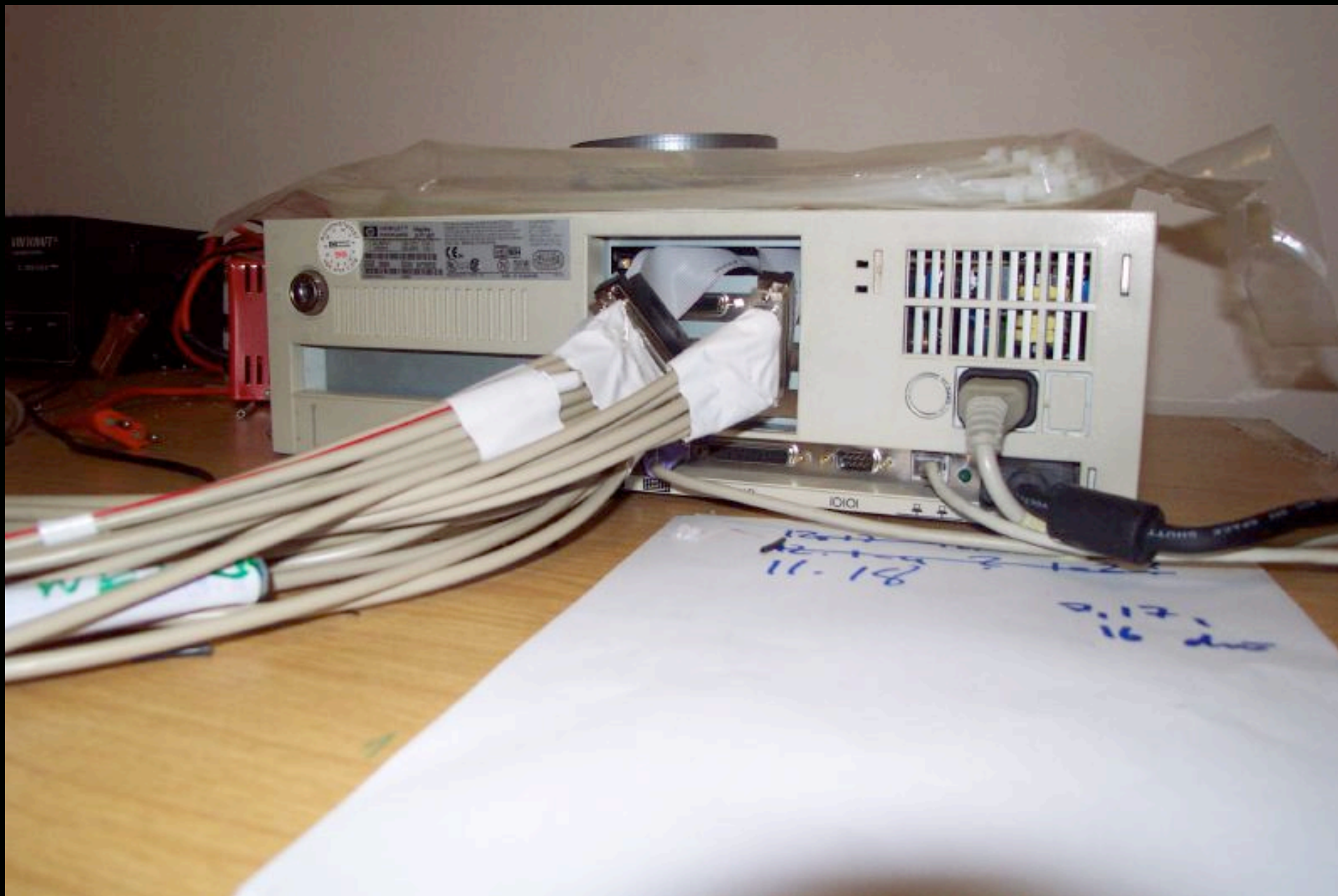


CHAOS  
CONTROL  
CENTRE



MATRIX  
CONTROL

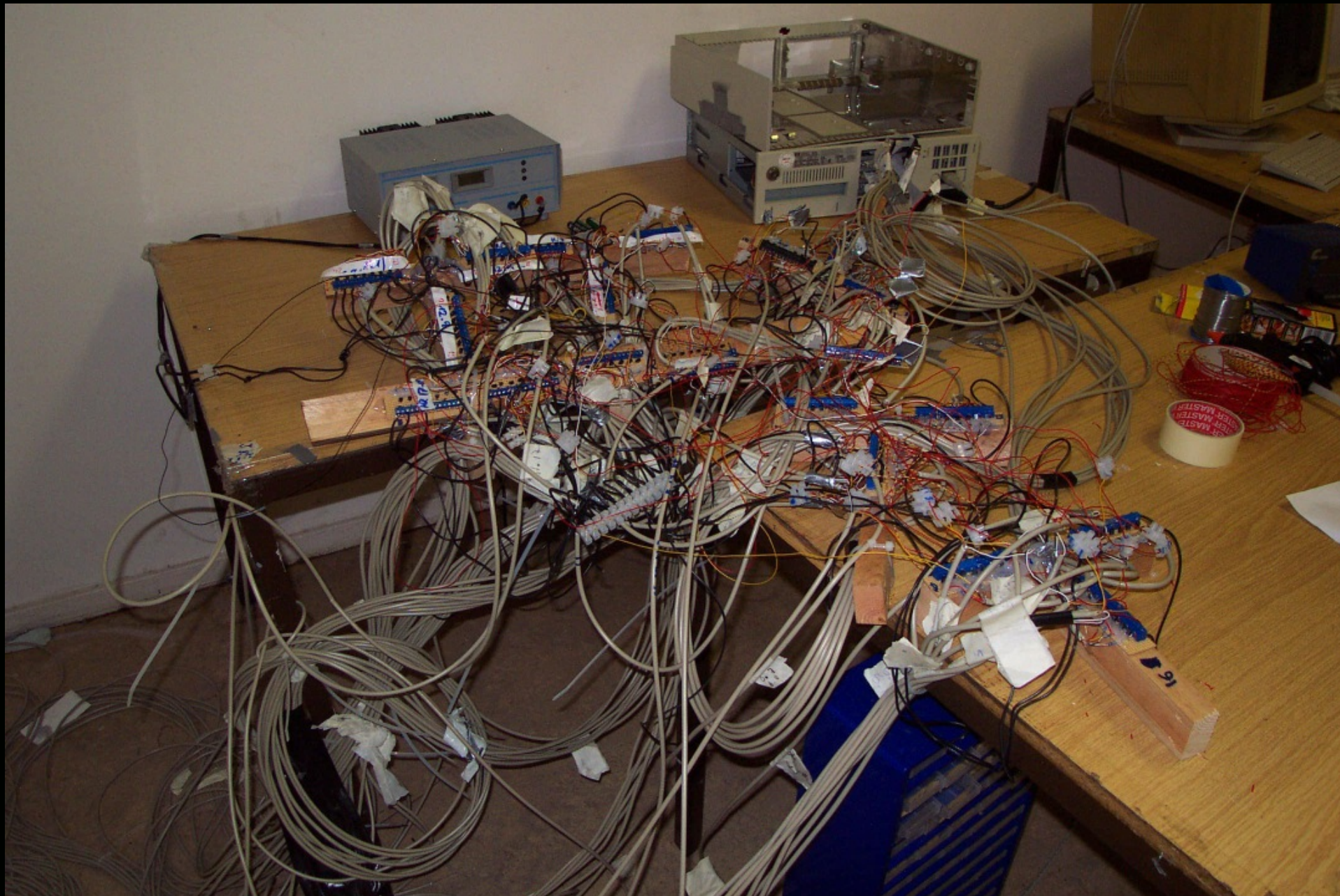
# Chaos Control Center



Matrix Control Computer



# Chaos Control Center



Amplification Setup

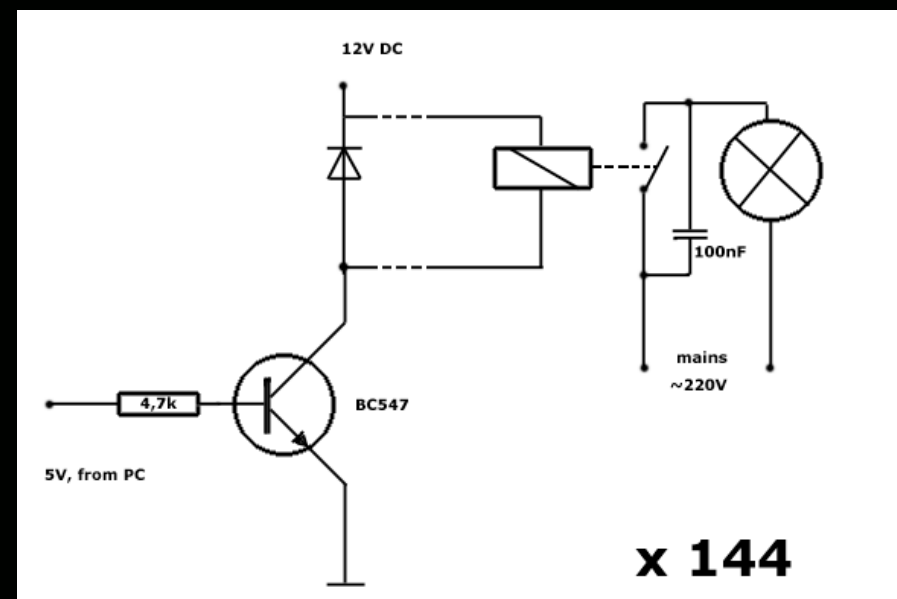
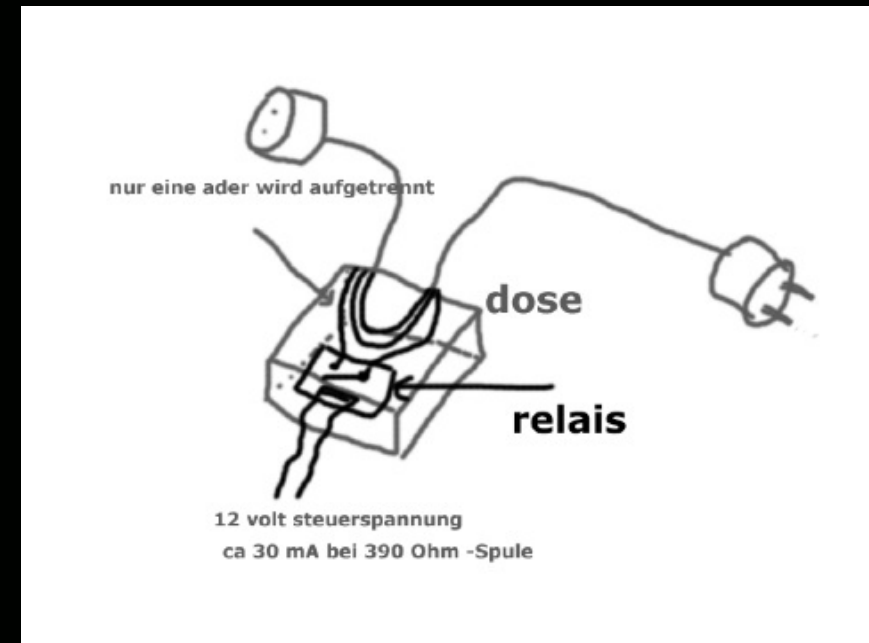
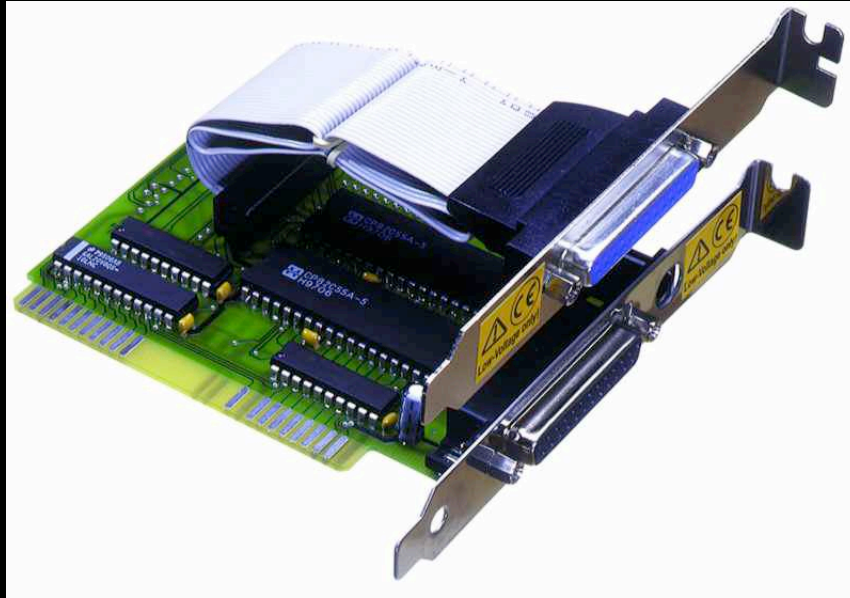


# Floor Setup



Floodlights – Relais – Cables

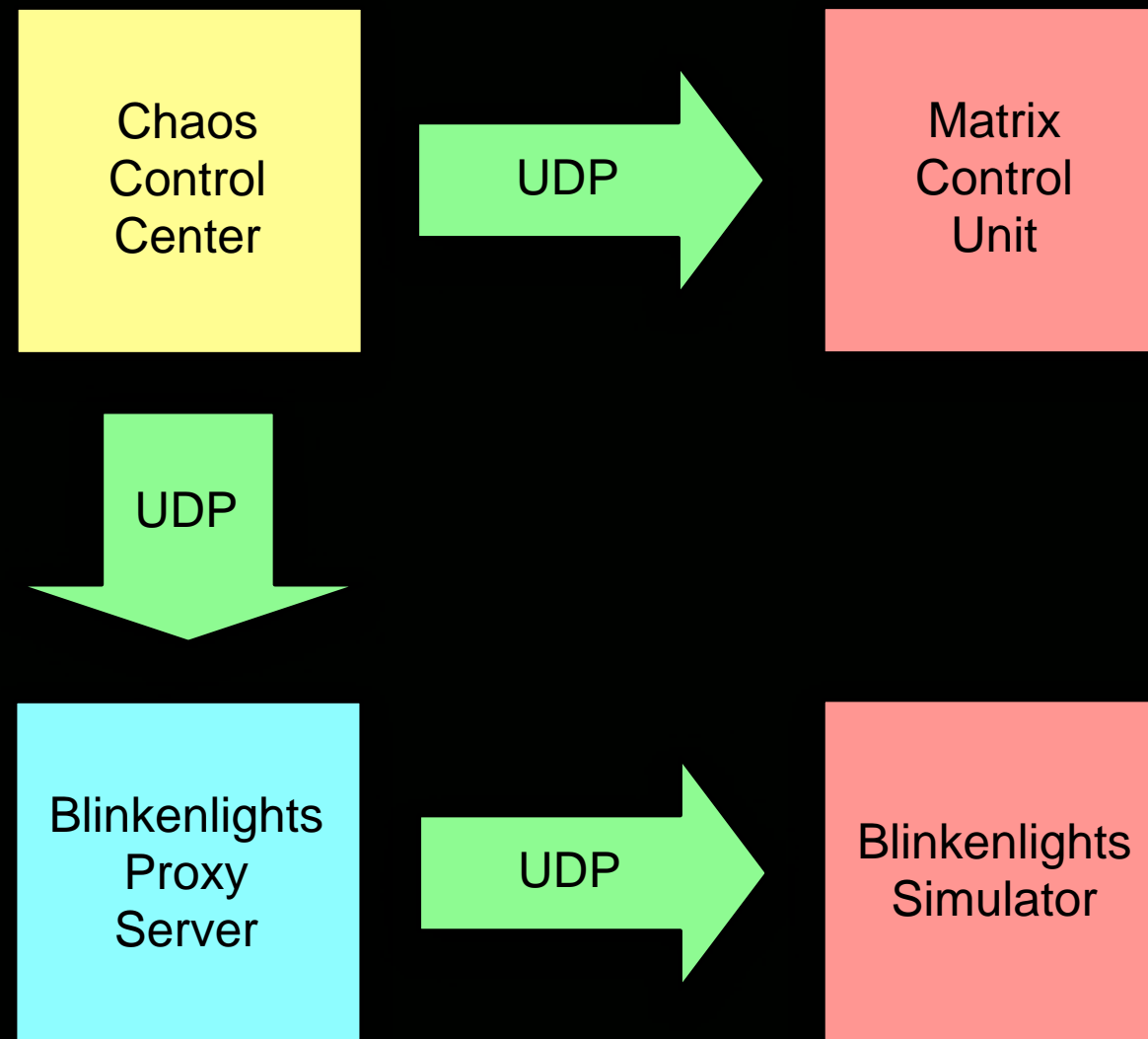
# Hardware Setup



# Blinkenlights Software

- GNU Public License (GPL)
- Chaos Control Center (blccc)
- Simulator (blinkensim)
- Converter (b2b), Utilities (bsend, ...)
- Blinkenlights Library (blib)
- DarwinPorts port available

# Blinkenlights Protocol

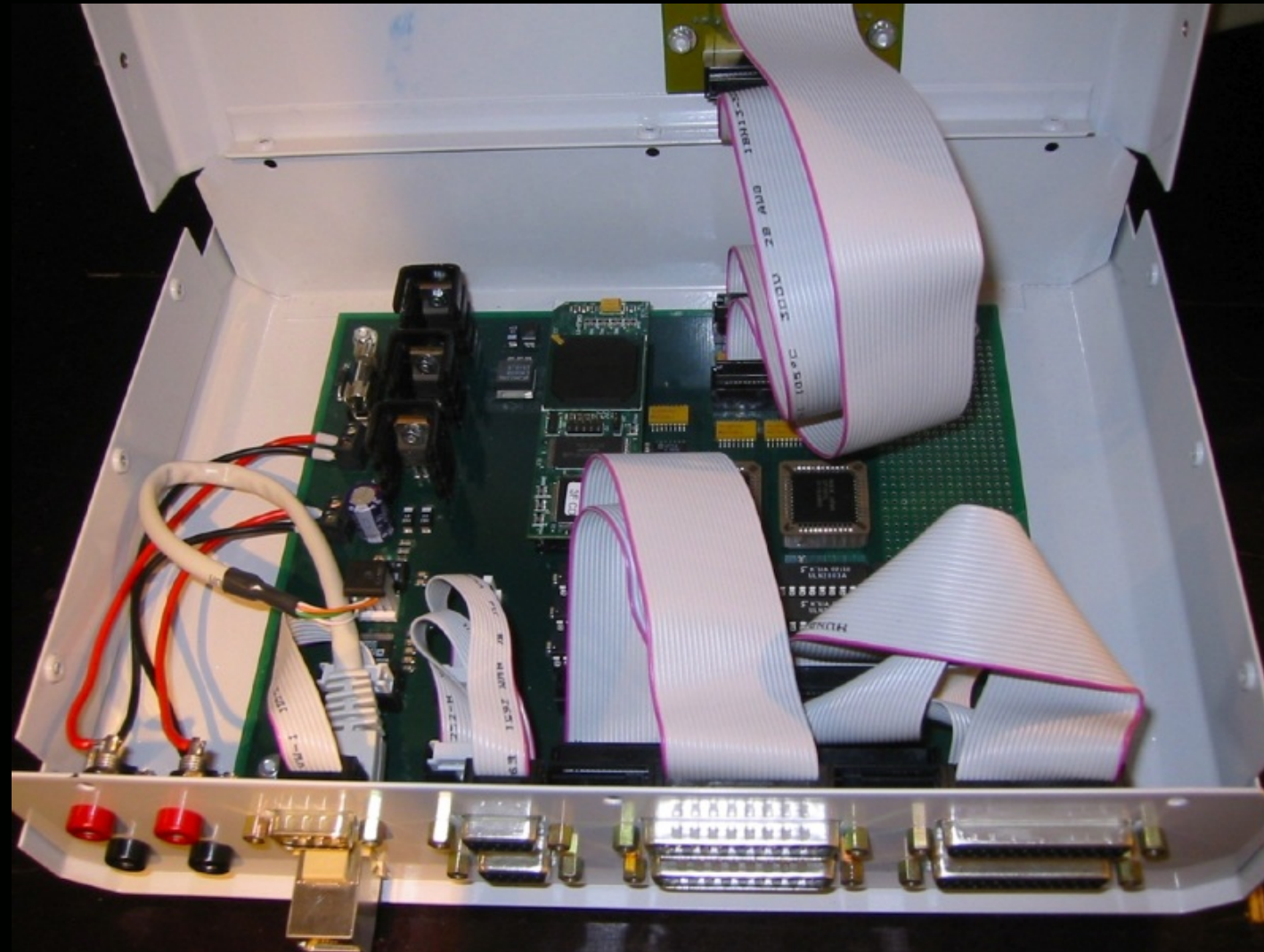




# Blinkenlights Protocol

- UDP based
- Fully implemented in blib
- bsend utility
- blinkenproxy
- mcud

# Matrix Control Unit



Blinkenlights Second Edition

# Matrix Control Unit

- Self-developed light control modules
- Software controlled lamps
- RTAI Linux
- Support for other lamp types
  - Fluorescent lamps
  - Neon RGB

# “Das Bauschild”



- Temporary installation at HdL
- LED technology
- Blinkenlights with 16 greyscales
- Test system for new tricks



# BlinkenArea

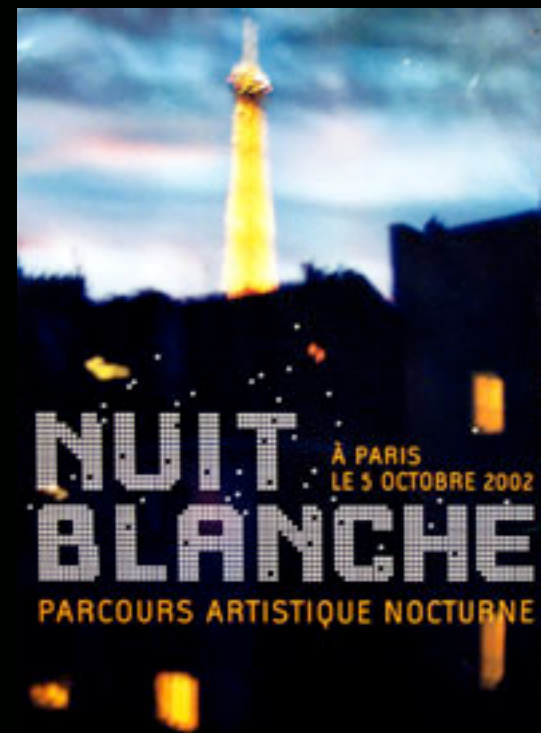


- BlinkenMINI
- BlinkenLEDs
- BlinkenBoard
- LittleLights
- XMasLights

Part II:  
Paris, France

# Arcade

- Interactive installation at Bibliothèque nationale de France, Paris
- Part of “Nuit Blanche”
- Next generation Blinkenlights technology
- Greyscales and Plug-Ins



# Details

- 20 floors with 26 windows each
- 520 double-floodlights
- 8 greyscales per “pixel”
- Extended playback software
- Realtime modules
- Tetris, Pong, Breakout and Pacman

# ArcadePaint

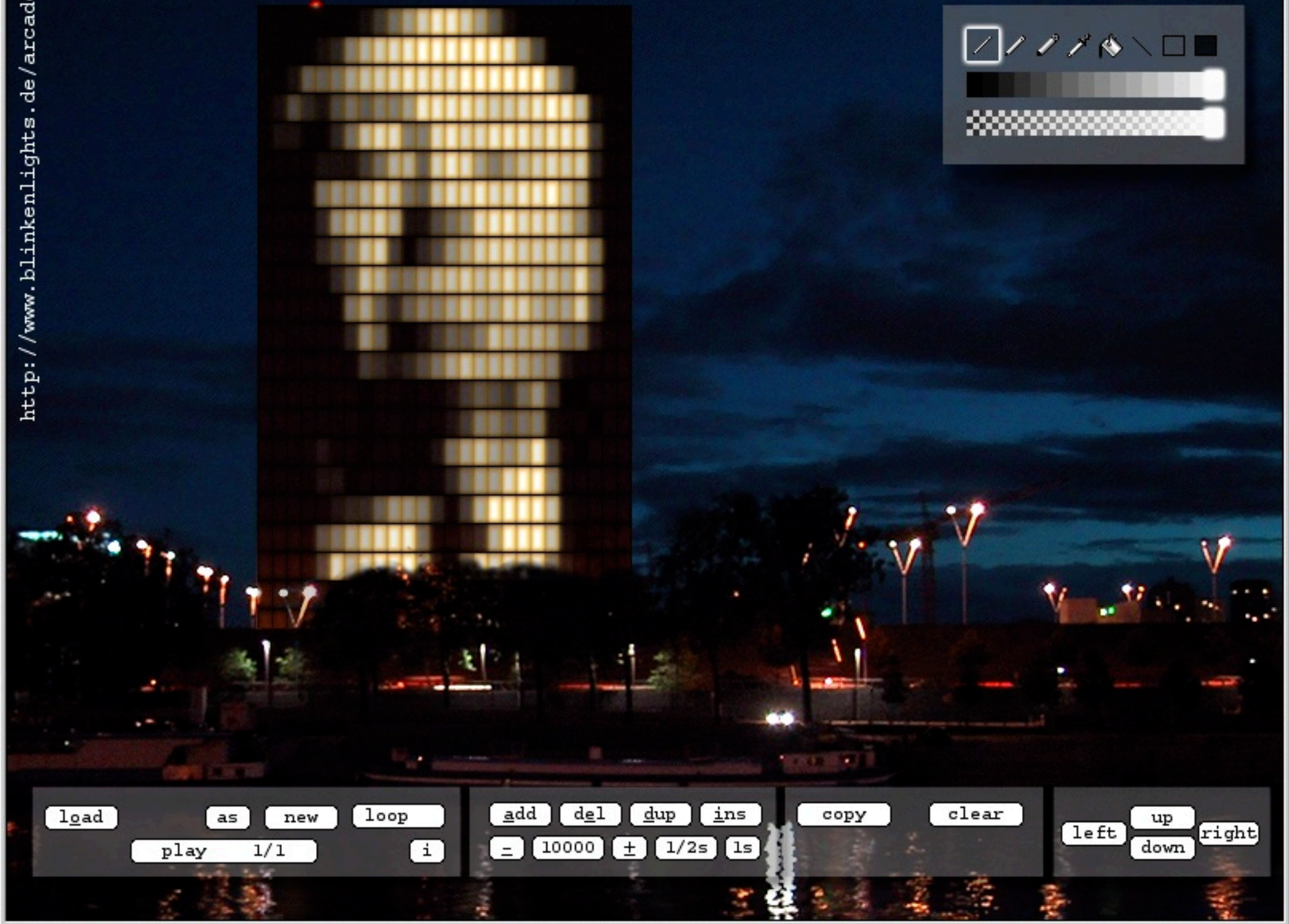
- Next generation BlinkenPaint
- New file format BML
  - Grayscales, Color, Multicolor
  - XML based format
- Communication via e-mail



<http://www.blinkenlights.de/arcade/>

A tool palette containing various drawing tools: a selection tool (white square), a brush tool (black pencil), a line tool (black line), an eraser tool (white eraser), a fill tool (black square), and a color selection tool (black square). Below these tools is a horizontal color gradient bar and a checkerboard pattern.

A command palette with several buttons for drawing and editing. The buttons are arranged in three groups:   
Group 1: load, as, new, loop, play, 1/1, i   
Group 2: add, del, dup, ins, =, 10000, +, 1/2s, 1s   
Group 3: copy, clear, left, up, down, right



# Blinkenlights Markup Language (BML)

```
<?xml version="1.0" encoding="UTF-8"?>
<blm width="18" height="8" bits="8" channels="1">
! <header>
! ! <title>yeah yeah</title>
! ! <creator>gif2blm (modified)</creator>
! ! <author>Tim Ruetz</author>
! ! <email>tim@sushipunk.de</email>
! ! <loop>yes</loop>
! ! <duration>10900</duration>
! </header>

! <frame duration="100">
! ! <row>ffffffffffffffffffffd080a0d0ffffffffffff</row>
! ! <row>ffffffffffffffffffffd0a04064bbe0ffffffff</row>
! ! <row>ffffffffffffbb944020001033a0e0ffff</row>
! ! <row>ffffffffffff8020100000000933a0bbffff</row>
! ! <row>ffffffffffe0ab3b0000000e1020293370b0ff</row>
! ! <row>ffffffffffffd094713300003370bbe0e0e0e0</row>
! ! <row>ffffffffffffb15b33101040a1e3ffff</row>
! ! <row>ffffffffffff9b615031316bcbcbd0d0e0e0</row>
! </frame>
```



# Arcade Impressions



# Arcade Photography



The Eye

# Arcade Photography



Pacman



# Arcade Photography



The Swan

# Arcade Photography



Chaos Computer Club



# Arcade Photography



Mona Lisa

# Arcade Photography



Supermännchen



# Arcade Photography



Alfred Hitchcock

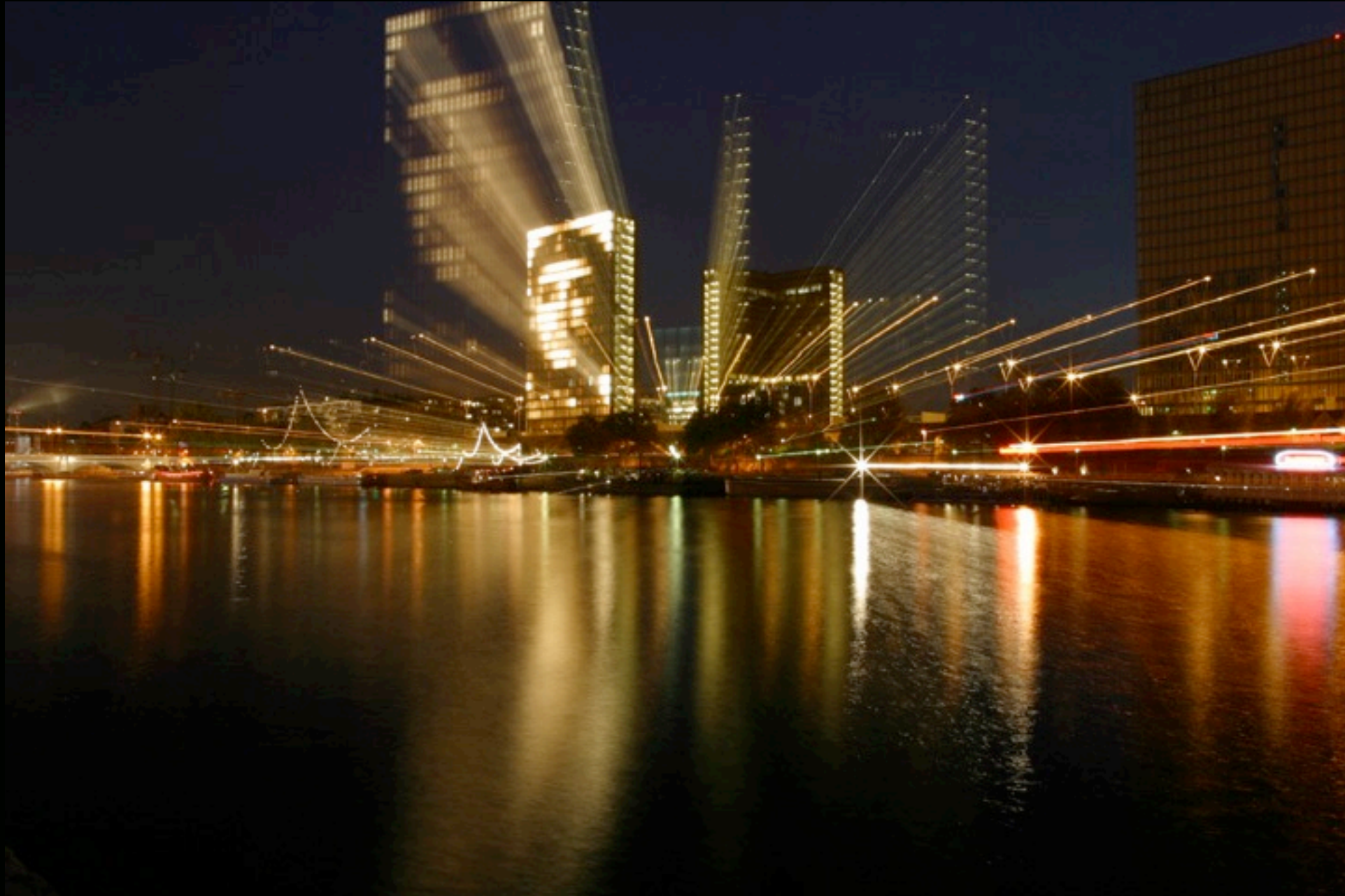


# Arcade Photography



Big Brother

# Arcade Photography



Ché Guevara

# Arcade Real Time Video Art

by proto.beamaz



# Arcade Video



# The future

- New projects might happen
- New interactive input devices
- Improved software foundation
- Web based movie submission and playlist administration
- World domination



# Project Web Site

<http://www.blinkenlights.de/>

- Blinkenlights explained
- Gallery of selected movies
- Documentation videos
- Links
- Could be better



Thank You!  
Any Questions?

[contact@blinkenlights.de](mailto:contact@blinkenlights.de)

<http://www.blinkenlights.de>

(DVD with Videos available - ask me)