



Zen of DirectFB

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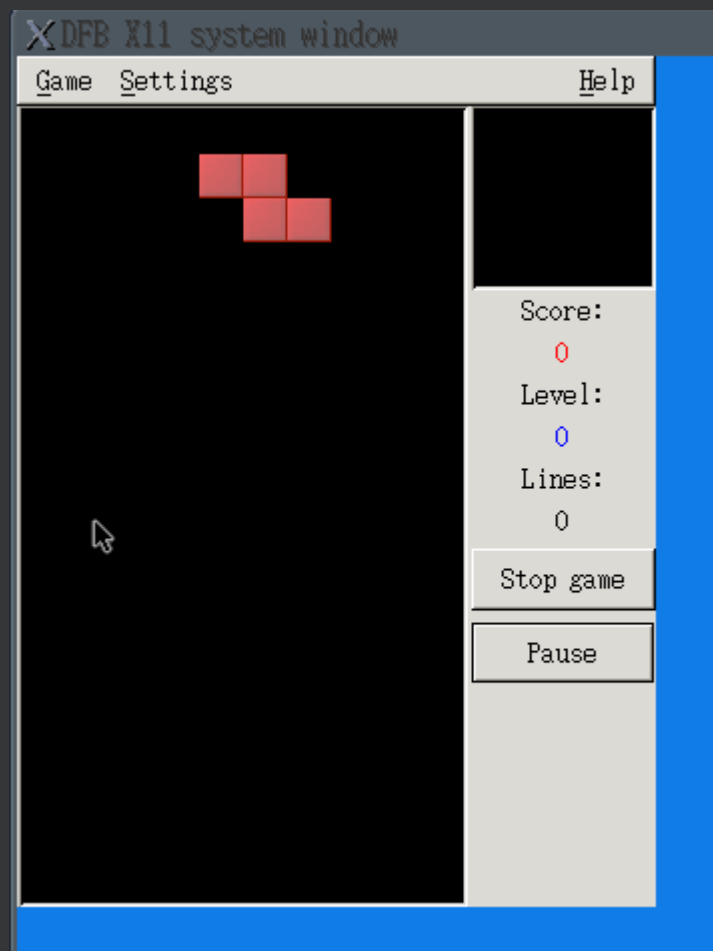
- Projects on DirectFB
- DirectFB Components
- DirectFB Architecture
- Memory Access
- Show Time
- Future

Projects on

The logo for DirectFB, featuring a stylized red and orange 'D' icon followed by the text 'irectFB' in a multi-colored, italicized font. The letters are colored as follows: 'i' is orange, 'r' is yellow, 'e' is green, 'c' is cyan, 't' is blue, 'F' is blue, and 'B' is blue.

Projects on DirectFB(1)

- GTK+
 - gktetries
- Mozilla on DFB



Projects on DirectFB(2)

- Disko
 - A plugin based framework.
 - Morphine.TV
 - A media center system on the Disko framework for Linux
 - http://wiki.morphine.tv/tiki-custom_home.php



Components

DirectFB Components(1)

- Graphic driver
- Resource Management
 - system
- Window
- Input
- Provider
 - Video playback
 - Font
 - Image

- Supports many graphic operations
 - Rectangle drawing
 - Triangle drawing
 - Line drawing
 - (Stretched) blitting
 - Blending with an alphachannel
 - Blending with a constant alpha blend factor
 - Nine different blending functions respectively for source and destination, so all Porter/Duff
 - Colorizing
 - Source color keying
 - Destination color keying

- Supports graphic drivers
 - Ti DaVinci
 - Renesas SH7722 Driver
 - Matrox Mystique/Millennium, G100, G200, G400/G450, G550
 - VIA CLE266
 - ATI mach64/Rage Pro series, Rage 128, Radeon
 - igs CyberPro 5xxx
 - S3 Savage 3/4 series
 - NeoMagic 220/2230/2360/2380
 - NVIDIA TNT/GeForce series
 - SiS 315
 - Intel i810

- Input drivers
 - standard keyboards
 - serial and PS/2 mice
 - Joysticks
 - devices using the linux input layer
 - infrared remote controls (using lirc)
 - iPAQ touchscreen
 - ucb 1x00 touchscreen
 - Microtouch touchscreen
 - Sony PI Jogdia

DirectFB Components(5)

- Resource Management
 - Video memory, layers, windows
 - Input devices
 - Systems

0 0x0100 0x0500 0x1500 0xffff

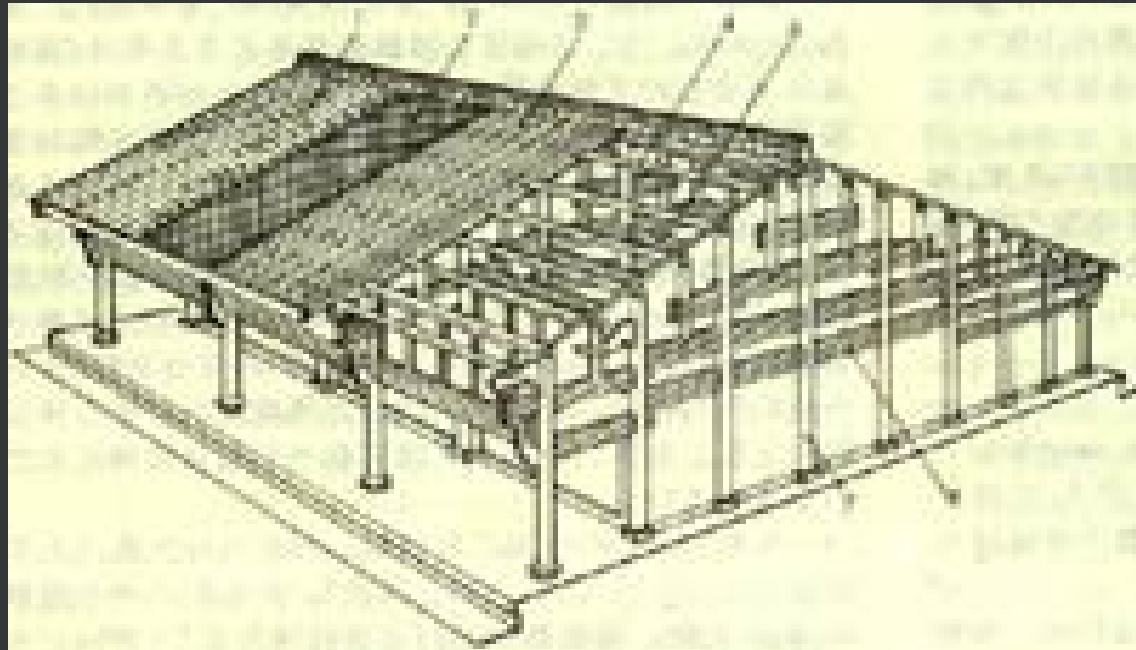


- Devmem
- FBDev
- SDL
- VNC
- X11

- Window system
 - Supports translucent windows
 - Windows using ARGB Surfaces can be blended on per pixel basis.
 - Each window has its own global transparency
- Image Loading
 - JPEG (using libjpeg)
 - PNG (using libpng2)
 - GIF (integrated, no library required)
 - various other image formats (using Imlib2)

- Video Playback
 - Video4linux
 - Mpeg1/2 (using libmpeg3)
 - AVI (using avifile)
 - MOV (using OpenQuicktime)
 - Macromedia flash (using libflash)
- Font Rendering
 - DirectFB bitmap font
 - TrueType (using FreeType2)

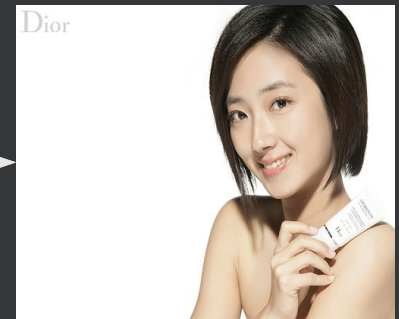
Architecture



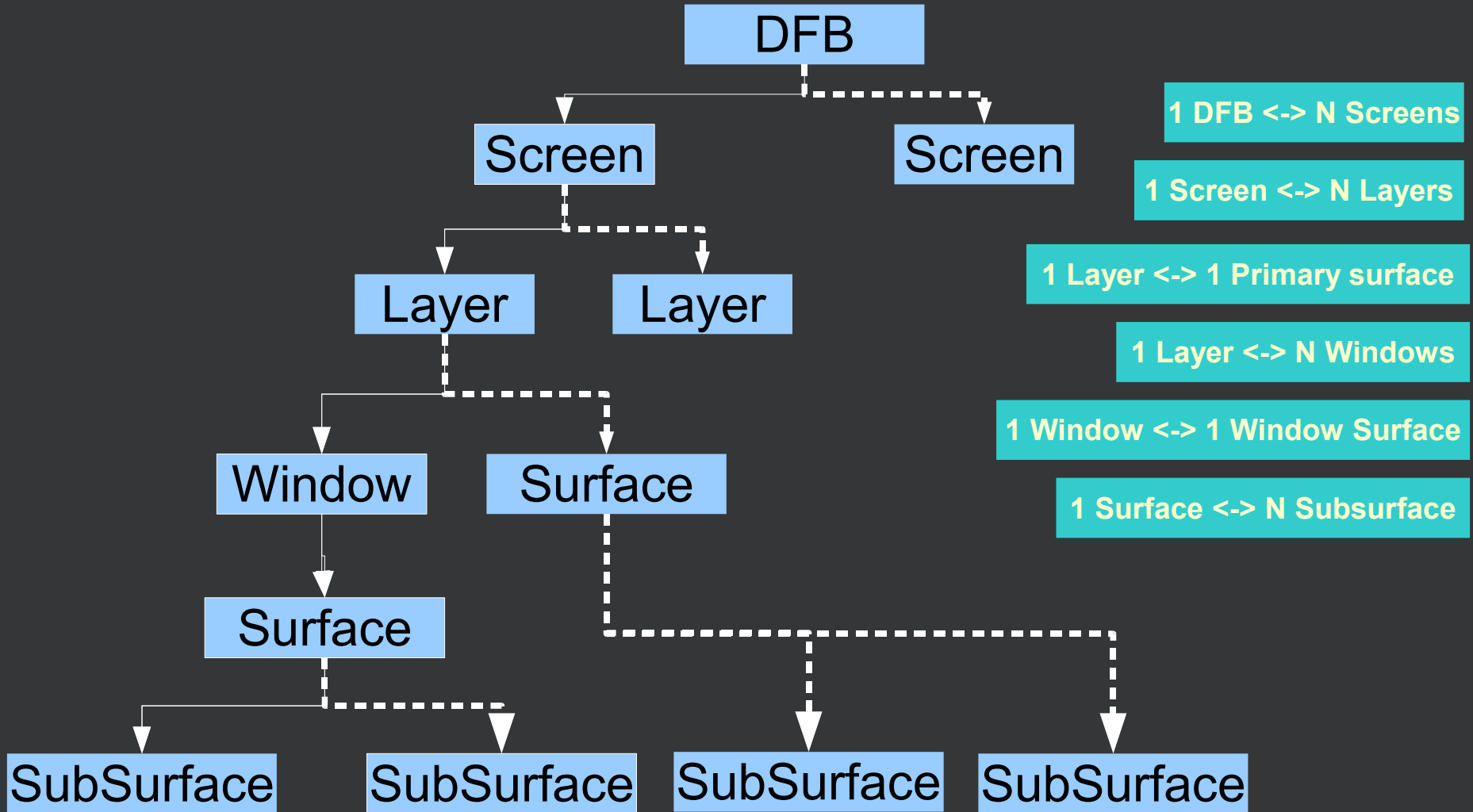
DirectFB Architecture(1)

```
DFB_CHECK (DirectFBInit (&argc, &argv));  
DFB_CHECK (DirectFBCreate (&dfb));  
DFB_CHECK (dfb->SetCooperativeLevel (dfb, DFSCS_FULLSCREEN));  
dsc.flags = DSDESC_CAPS;  
dsc.caps = DSCAPS_PRIMARY | DSCAPS_FLIPPING;  
DFB_CHECK (dfb->CreateSurface (dfb, &dsc, &primary));  
DFB_CHECK (primary->GetSize (primary, &screen_width, &screen_height));
```

```
DFB_CHECK (DirectFBInit (&argc, &argv));  
DFB_CHECK (DirectFBCreate (&dfb));  
DFB_CHECK (dfb->GetDisplayLayer (dfb, DLID_PRIMARY, &main_layer));  
DFB_CHECK (main_layer->SetCooperativeLevel (main_layer, DLSCS_EXCLUSIVE));  
DFB_CHECK (main_layer->GetSurface (main_layer, &main_surface));
```



DirectFB Architecture(2)



Memory Access

Memory Access in DirectFB(1)

- Where is my surface?
- How to access VGA memory?

```
(II) Loading sub module "fglrxdrm"  
(II) LoadModule: "fglrxdrm"  
(II) Loading /usr/lib/xorg/modules/linux/libfglrxdrm.so  
(II) Module fglrxdrm: vendor="FireGL - ATI Technologies Inc."  
        compiled for 7.1.0, module version = 8.47.3  
        ABI class: X.Org Server Extension, version 0.3  
(II) fglrx(0): Using adapter: 3:0.0.  
(--) fglrx(0): VideoRAM: 262144 kByte, Type: DDR3
```

Memory Access in DirectFB(2)

- Heap tree in DFB
 - System memory
 - Graphic card memory
 - chunks
- Allocate memory address by `Ioctl()` and `mmap()`





- df_dok
 - Official benchmark tool.
- df_duallayer
 - One graphic layer with Rectangle
 - One video layer with video playback

Future

- DirectFB 2.0
 - Cairo Support - Supporting the Cairo 2D graphics library
 - Efficient 2D vector graphics, advanced shapes, enhanced pixel processing.
 - **Surface Pools** - Evolution of surface pools developed in DirectFB 1.1
 - Integration/interoperability of OpenGL ES, OpenVG, OpenMAX and DirectFB in one *open* platform
 - Please add your ideas on DFB Wiki



See you !

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