

EFL

A toolkit for the embedded world

Cedric BAIL <cedric.bail@samsung.com>

Who ?

- Cedric Bail
- Senior software engineer at Samsung Electronics
- Free and Open source software contributor
- Using Enlightenment tech since 2005
- Doing R&D for almost 10 years
 - Mobile at Orange
 - Set top box at Free.fr

About ?

- Enlightenment Foundation Library ?
- History
- What it provides
- Where it is used
- Where it is going
- How to get started
- The community
- Questions & Demo

What ?

- Enlightenment Foundation Library
 - Native graphic toolkit
 - Designed with embedded device in mind
 - Handle dpi and reading distance
 - Finger size
 - Efficient (CPU, memory and battery wise)
 - Portable

Enlightenment ?

- First release in 1997 by Carsten Haitzler
- Project exist because he just wanted to add image on the desktop and around windows
- Referred as the original eye-candy window manager
- Became a full Window Manager
- ... and a toolkit !
- Free Software

Enlightenment 17 ?

- Full rewrite started in December 2000
- Released the 21 December 2012 !
- It is highly customizable
 - Profiles
 - Modules
 - Themes

Enlightenment 17 !

- Designed for the embedded world
- The enlightenment community was expecting
 - Linux to takeoff in the embedded world
 - Not on the desktop
- The value shared by this community :
 - Fast
 - Light
 - Features
 - Customizations
 - Scalability

EFL !

- Spend a decade to write a modern graphical toolkit !
- Highly optimized and ahead of the pack !
- First release January 2011
- Stable API/ABI on the long term
- In the process of releasing version 1.8

EFL ?

- Eina: A library of tool for C developers
 - Data types (List, Hash, Iterator, Fixed point, ...)
 - Portable thread and locking
 - Portable in memory file I/O
 - Conversion logic (hex, float, fixed point, ...)
 - Log infrastructure (syslog and journald support)

EFL ?

- Eet :
 - Serialize C structure and restore
 - An order of magnitude faster than JSON/XML
 - File format handling structure, images and sounds
 - Shared string dictionary
 - Portable (endian agnostic)
 - Also work across network

The think that every other toolkit are missing !

EFL ?

- Evas :
 - Scene graph
 - Optimized during the past 10 years
 - Software, OpenGL and OpenGL ES backend
 - Run on FrameBuffer, X11, Wayland, Windows, ...
 - Software backend is actually fully usable !
 - Handle text rendering for all kind of language
 - Provide the infrastructure for all graphism in EFL

EFL ?

- Edje
 - Theme engine (UI and sounds)
 - Declarative language
 - Provide all the pieces and bits to layout all objects
 - Provide an 'interface' for application to abstract UI element
 - One file to pack and distribute all resources

EFL ?

- Ecore: main loop, thread, network, events, ...
- Eo: C object model
- Emotion: video object
- Eldbus: dbus integration
- Eio: asynchronous IO
- Efreet: FreeDesktop standard
- ...

EFL !

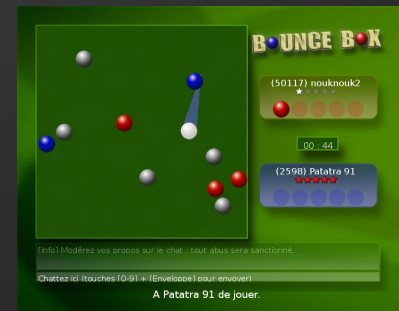
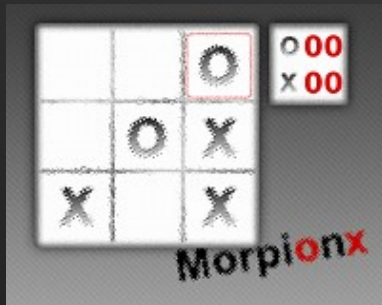
- Application runtime memory use mostly driven by screen size
- EFL can fit on 5MB on disk (static compilation)
- No hard requirement on the GPU
- Enlightenment + OS combined :
 - 48MB
 - 300Mhz (1024 x 768)
 - That's for the desktop profile !

EFL !

- Concept of reading distance instead of DPI
- Take finger size into account
- The UI adapt itself to the screen profile
- Clear separation between UI/code
- Completely themable
- Portability

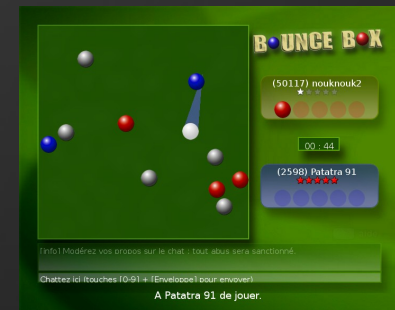
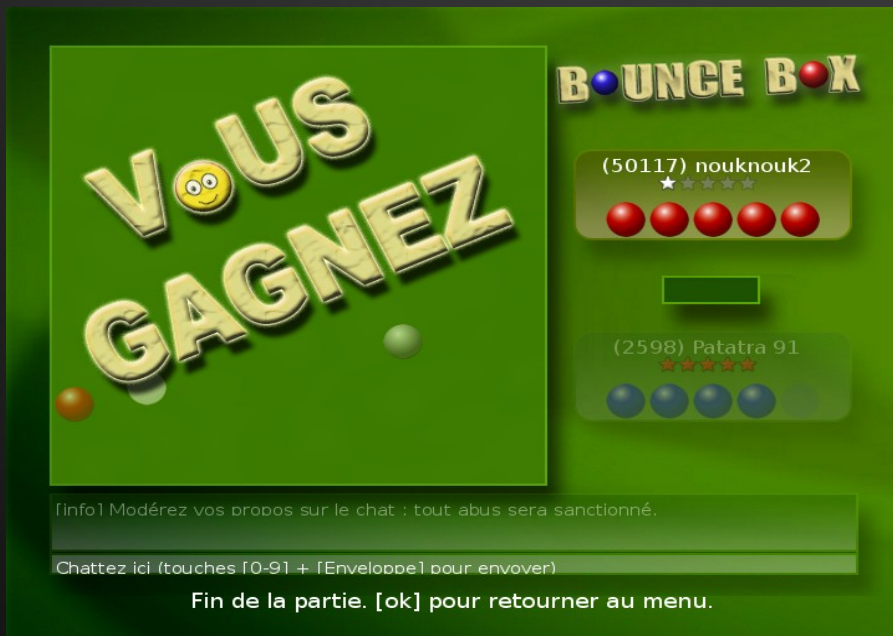
Where ?

- Free.fr (32MB, 200Mhz MIPS)
- Javascript 3rd party SDK
- 200 Games over a year



BounceBox

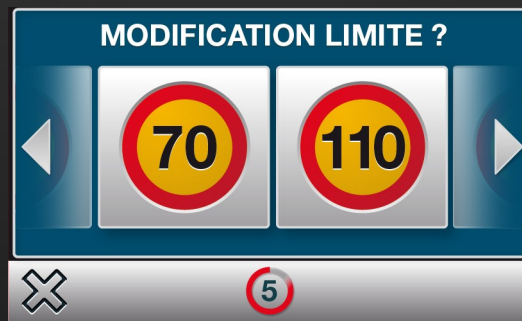
- 1 003 846 players !
- 68 646 262 games played !
- 50 games played simultaneously all day long





Where ?

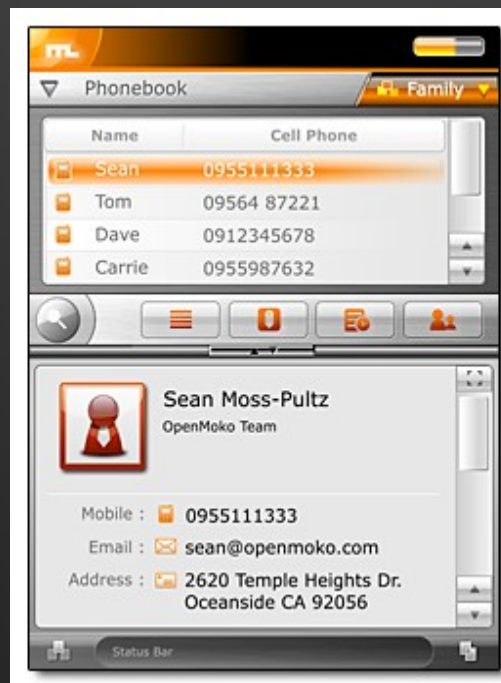
- Coyotes



<http://www.youtube.com/watch?v=mev7I-MqAh4>

Where ?

- Openmoko



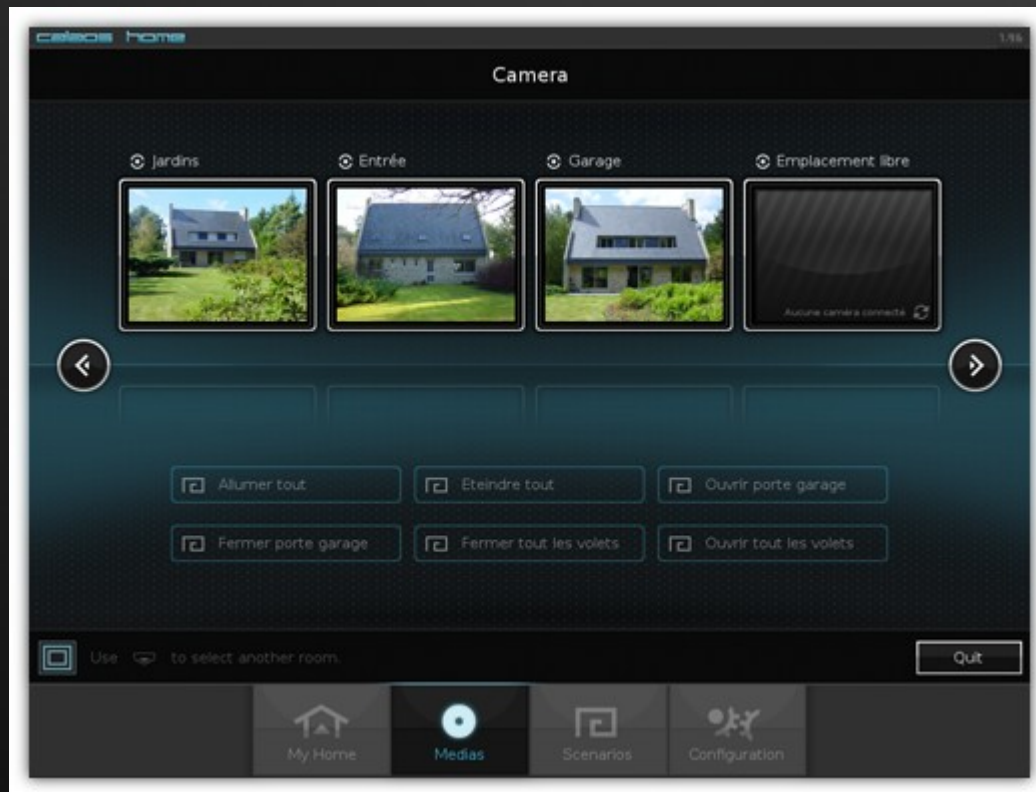
Where ?

- Ordissimo
- 4 developers
- 30000 PC a year
- Only Linux PC you can buy on a shelf in France



Where ?

- Calaos
- 1 developer



<http://calaos.fr/download/videos/>

Where ?

- Samsung NX300



Where ?

- Printers
- Fridge
- Smart meter
- ...

What now ?

- Release 1.8 is coming this month
- One single tree
- Add a physics engine
- Improved memory, cpu, gpu and battery usage
 - Eina_Cow, Cserve2
 - Asynchronous rendering
 - Buffer age and partial update for GL to
- Much more: ChangeLog is 1398 lines !

What now ?

- Biggest change for EFL 1.9 :
 - TIME BASED RELEASE !
 - If your feature is not in, you can get it in the next release three months later !
 - No need to maintain in house fork !
- Enlightenment 18
- Terminology 0.4

What now ?

- Focus on tools
 - Easier to create new theme
 - Easier to modify existing theme
 - Easier to create application
 - Easier to debug
 - Bindings for C++, JavaScript, Python, Lua

What now ?

- Continuous improvement
 - Reduce power consumption
 - Reduce memory usage
 - Reduce CPU load
- Improve portability
 - Windows
 - Android ?
 - Mac OS X ?

How to start ?

- <http://www.enlightenment.org/>
- <http://git.enlightenment.org/>
- <http://phab.enlightenment.org/>
- IRC: freenode, #edevelop and #e (also #e.kr)
- ML: <http://enlightenment.org/p.php?p=contact>

How to start ?

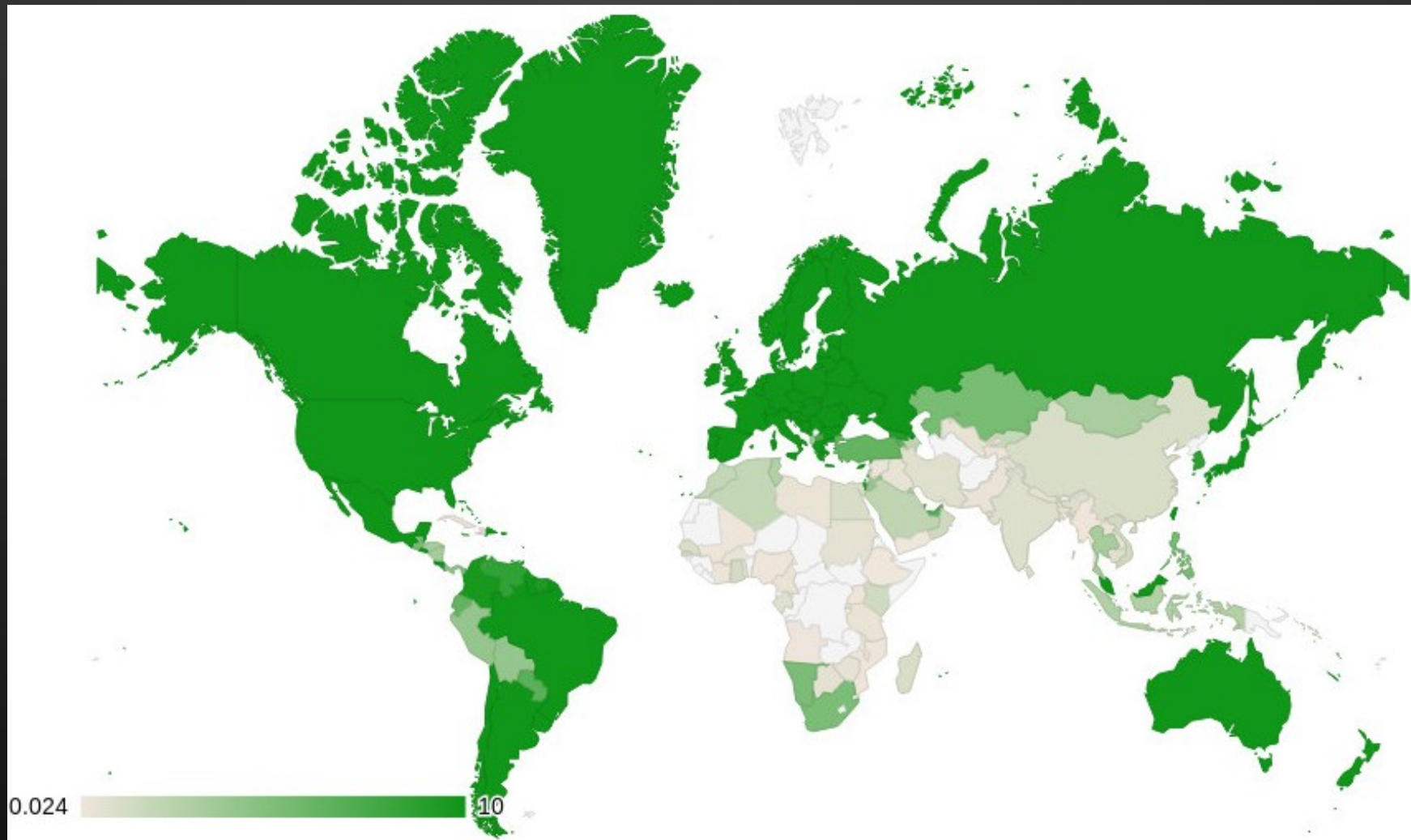
- Look at our documentation
- Look at examples
- Look at simple application, like eleminees
- Start small, modify existing one
- Ask for help (ML, IRC)

Community

- Who is contributing ?
 - Samsung
 - Intel
 - Individuals
- Where are they ?
 - All over the world !
- What ?
 - 15 commits a day (on efl + elementary)
 - Since 31/07/2000 !
 - Around 300 contributors

Community

- Who is using it ?



Questions ?