

A stylized graphic featuring a large white sun with a black crescent moon inside it, positioned at the top center. Below it is a smaller, semi-circular sun with black rays. The background is black with white curved lines. The title text is centered and has a yellow-to-orange gradient.

Enlightenment Foundation Libraries

Features & Strengths

Daniel Juyung Seo

Presenter



Who am I to speak about this stuff.

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- Mostly working for elementary widget set.
- EFL Opensource Committer



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What is EFL?

What is EFL?



- Enlightenment **F**oundation **L**ibraries
- Founded by Carsten Haitzler (Rasterman)



What is EFL?



- Created to provide a clean base for a beautiful, fast and light windows manager.
- Fine-grained split into distinct libraries for specific purposes.
- The core of Tizen platform is based on EFL.
- An open source.
- Enlightenment started in 1996.
- EFL started in 2001 with first Evas implementation.



Demo & Video



- Video

- Freebox HD
 - Set-top Box
 - 4 million sold. 1 million used now.
- I-Kitchen Refrigerator
- Calaos
 - Home automation.
 - C++ with normal EFL C API.
 - 1 programmer + 1 designer(6months)



- Demo
 - Enlightenment 17
 - Rage
 - A media center designed mostly for use on a television hooked up to your pc via a remote control.
 - Ello
 - Elementary
 - Edje Watch

A stylized graphic featuring a white sun with a black crescent moon and a diagonal slash through it, positioned above a white horizon line. Below the horizon, a smaller, dimmer sun is visible. The background is black with white curved lines suggesting a landscape or sky.

Features & Strengths

Philosophy



- **Optimize**

- **Optimize**

- **Optimize**

Philosophy



- Optimized for run-time
 - EFL built from the ground up for efficiency, not as an afterthought of 'let's optimize it!'
 - EFL can optimize transparently for apps.
 - Apps do not need to be updated to gain an optimization.
 - Fast! Light weight!
 - Performance is the king in EFL.
 - Easy to use and well maintained API to help app developers.

Mobile Device Focus



- Focused on embedded and finger-driven touch screen as well as desktop since 2001.
- Considered also
 - Devices with low processing power
 - Small screens

Mobile Device Focus



Bodhi Linux System Requirement

- 300 MHz i386 Processor
- 128 Mb of RAM
- 1.5G HD space

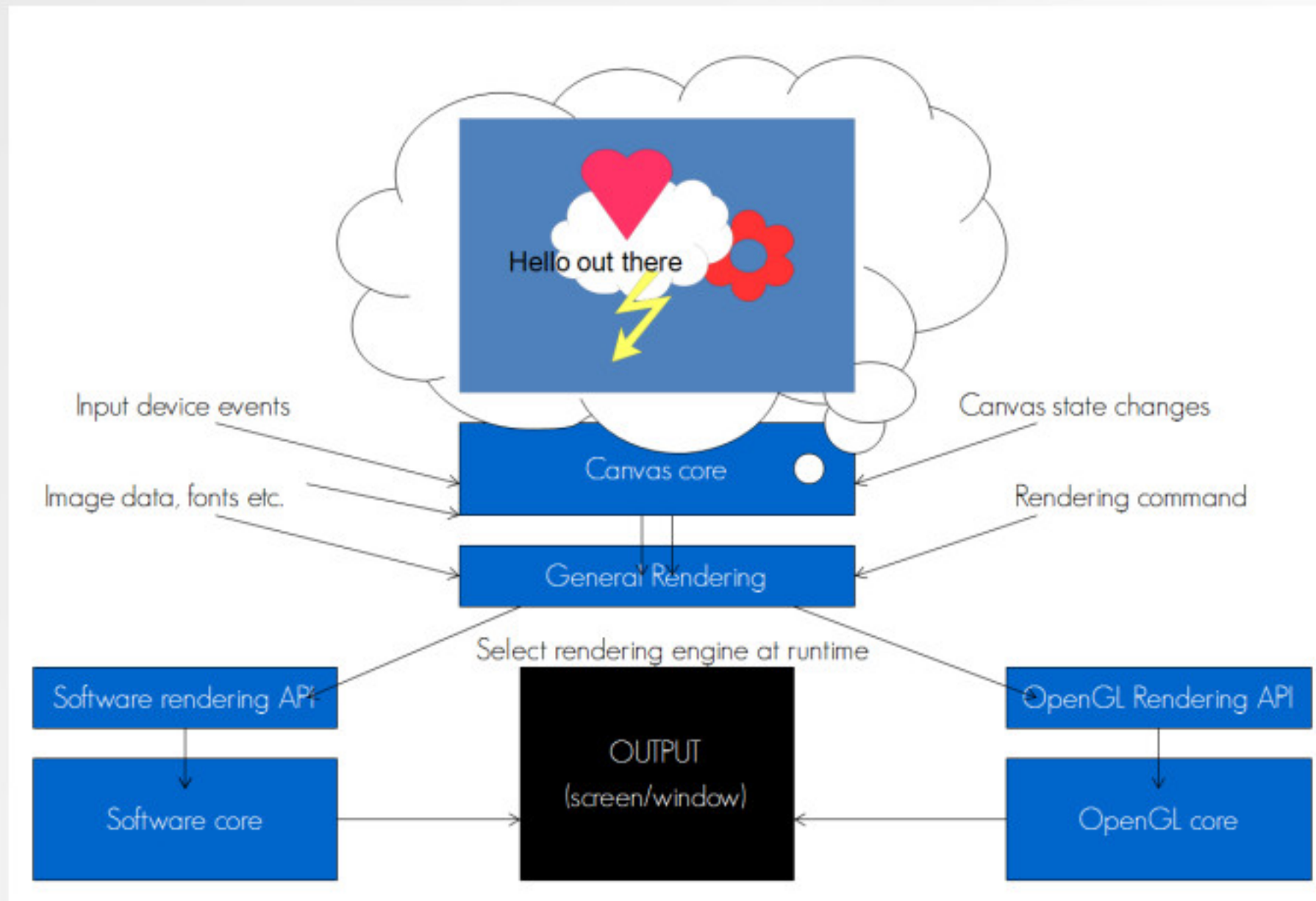
Are you sure?

Yes we are sure. Because of the use of Enlightenment and the cut down Ubuntu base we can get you up and running on very low spec boxes. We have also taken the time to ensure when you boot you can let the system know what type of machine you are running. This is done via Enlightenment Profiles, each profile can be customized to use a variety of devices such as Tablets, Laptops and Desktops.

Canvas Model



from the ground up



Canvas Model



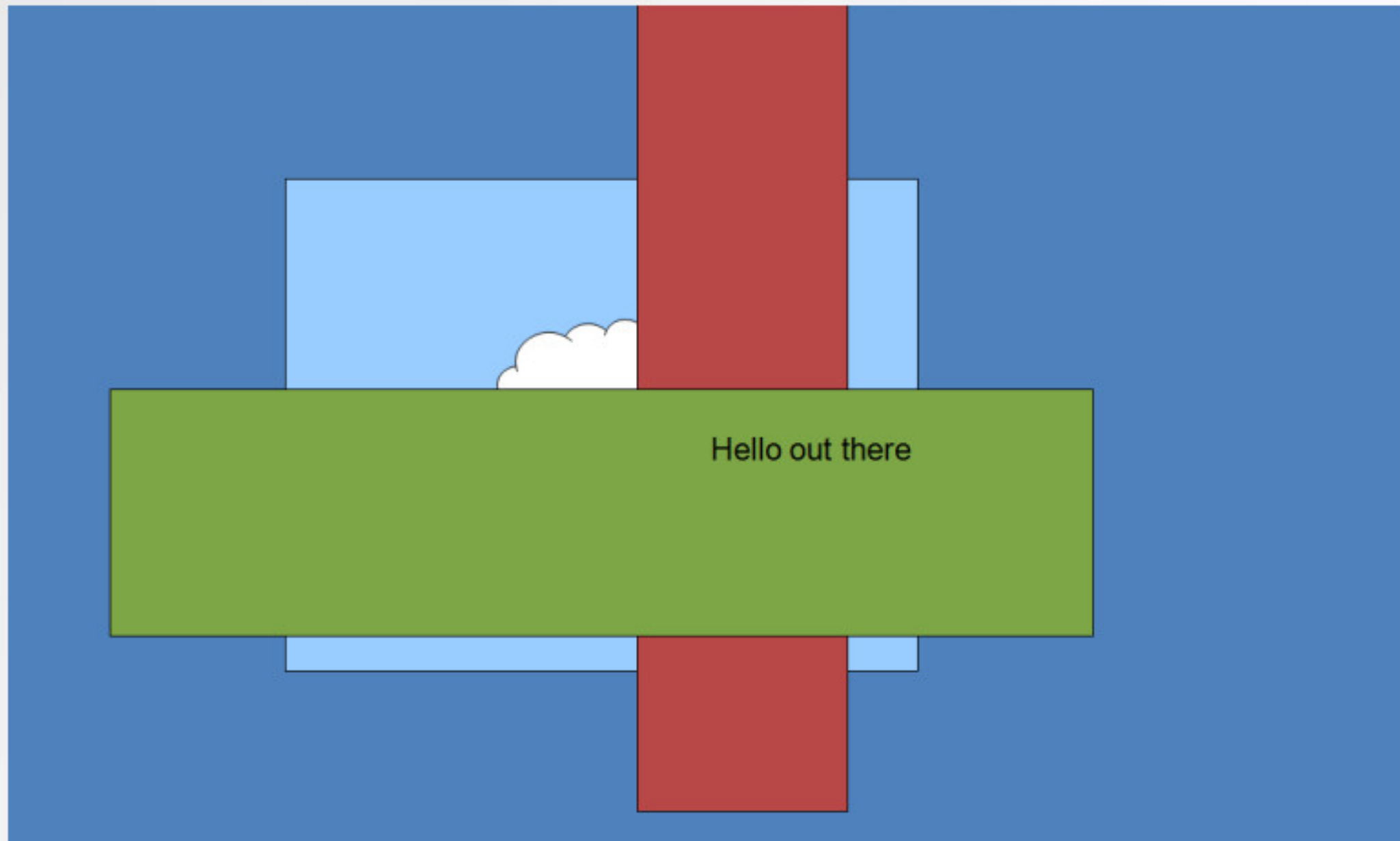
from the ground up

- The abstraction is much cleaner and more efficient.
- Everything renders the same way with the same infra/engine out of the box.
- EFL can layer widgets with alpha blending on top of each other.
- Actually EFL can layer any Evas_Object.

Retained Mode



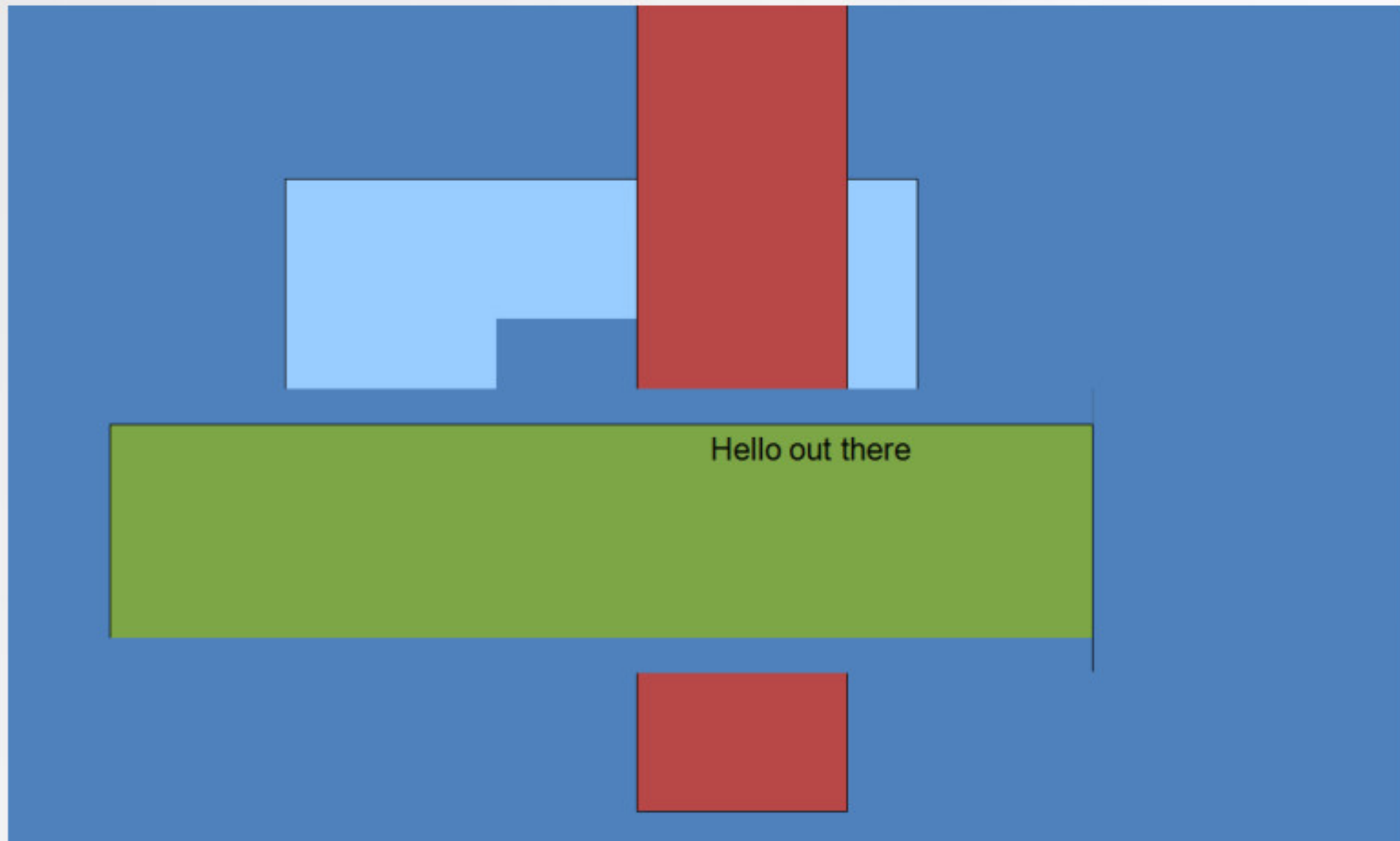
with Scene Graph



Retained Mode



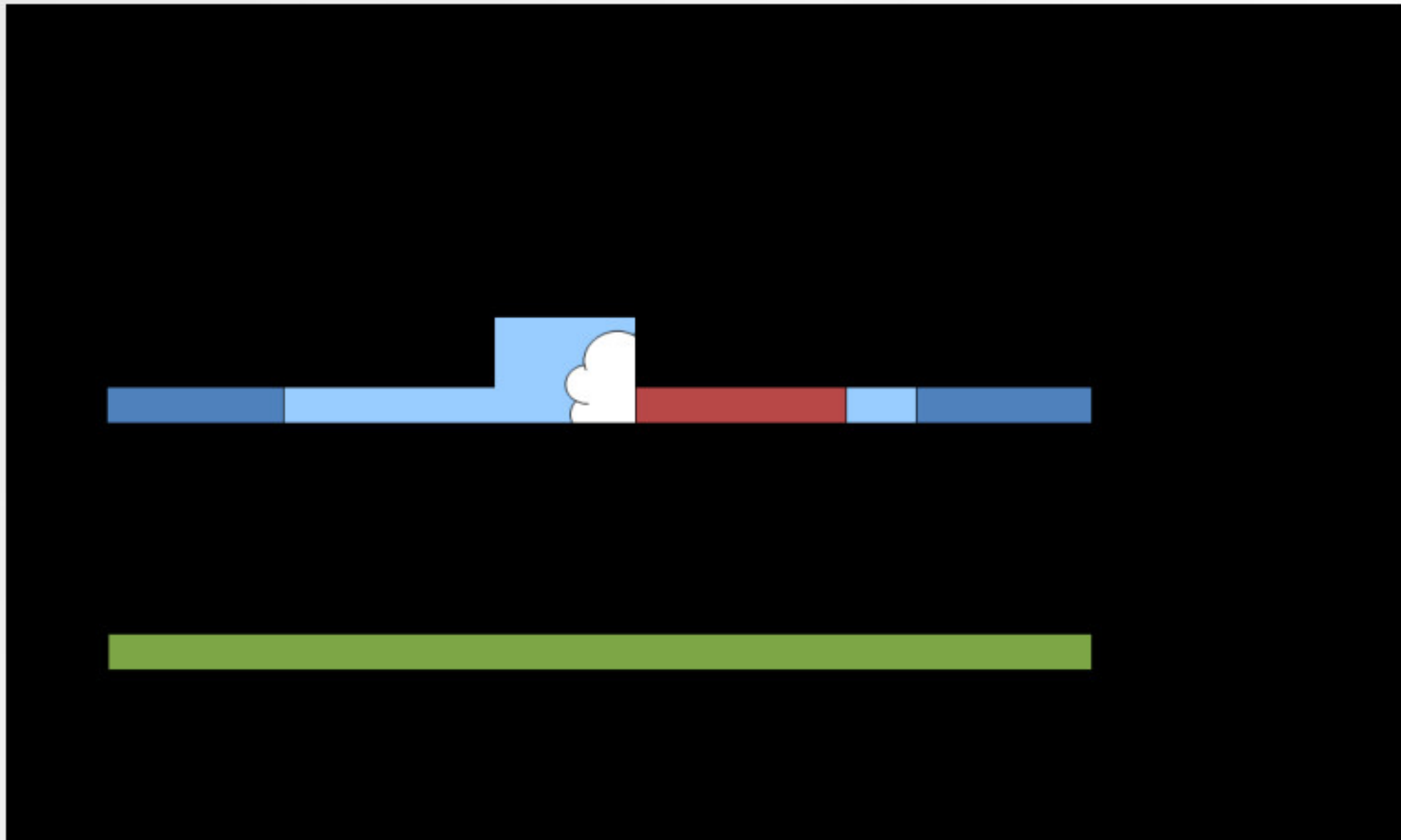
with Scene Graph



Retained Mode



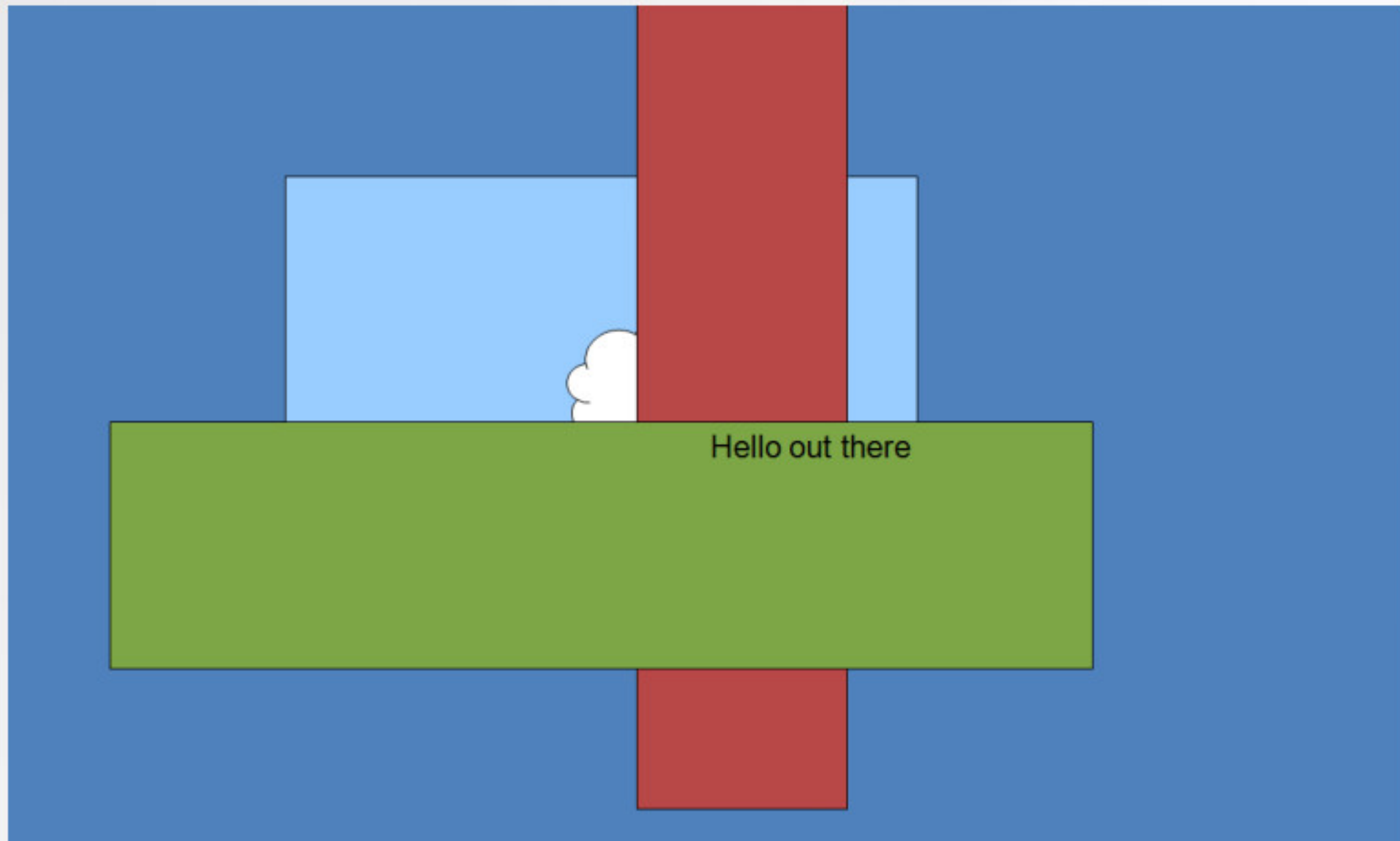
with Scene Graph



Retained Mode



with Scene Graph



Various Back-end Engines



- EFL abstracts rendering to many engines.
- EFL can change back-end very trivially for rendering.
- Back-end Engines:
 - GL
 - X11
 - Frame Buffer
 - Wayland
 - ...

Small Memory Footprint

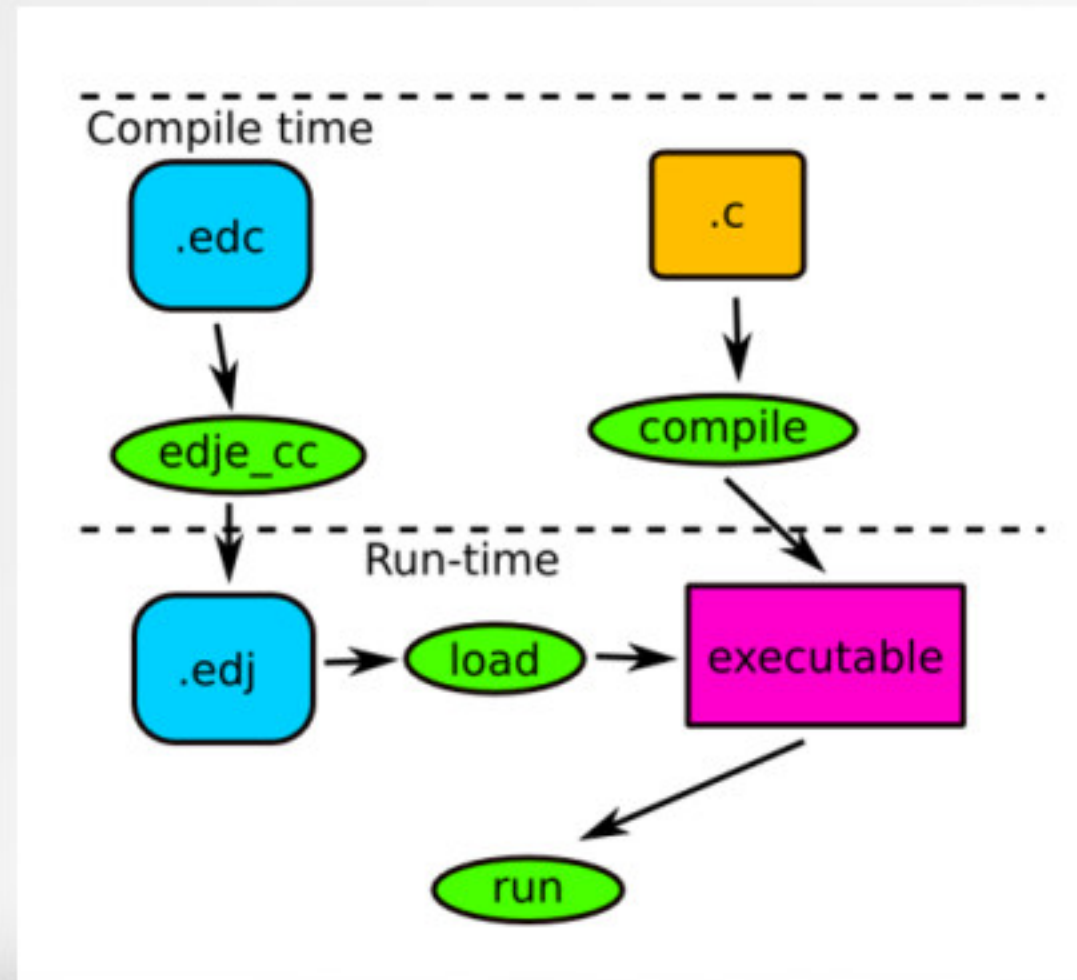


- Memory (Ubuntu 11.04) beyond base X11 'fail-safe' session.
 - Unity - 168 Mb
 - Enlightenment 0.17 - 65 Mb
- Very abstracted and aggressive at being able to remove resources from memory.

GUI and Logic Separation



- Clear line of separation between GUI and logic.
- EDJE



GUI and Logic Separation



- Theme-able
- Reusable.
- Easy customization of GUI.

Scalable



- From small embedded processor to multi core one.
- Various device output size.

Animation



- EFL can easily animate efficiently everywhere.
- Edge, Elementary(transit), EFX

Bindings



- Bindings
 - C++, Javascript, Perl, Python, Vala, Ruby
- Elev8
 - V8 Javascript based run-time

Etc.



- API is all in C, thus easily usable from both C and C++
- Platform support
 - Linux, FreeBSD, other BSDs, Solaris, MacOS X, Windows(XP, Vista, 7 etc), Windows CE, PS3
- H/W Acceleration
 - Rendering with OpenGL and OpenGL-ES2.0 for many years.

Community



Community



- Active
 - Developer community support via vibrant IRC and mailing lists.
 - Even with a very small team, EFL community can produce major features and improvements very quickly.
 - Easier to get changes into upstream
- Rapidly evolving
- Governance
 - Open source project with control distributed, though Samsung is the major contributor over the past few years.
 - No vested interests beyond 'get it out there'



Demo & Video



- Video

- Nouveau Coyote

- PS3

- aMSN2



- Demo
 - Efx
 - Shotgun
 - expedite
 - Elev8
 - ePeriodique
 - Games
 - Terminology



Summary

Summary



- Promising/Good
- Optimized/Performance
- Little marketing compared to coding.
- Even this presentation is done by EFL.