

# The Art of Tizen UI Theme Technology in Various Profiles

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**TIZEN™**  
**DEVELOPER  
CONFERENCE**  
2014  
**SAN FRANCISCO**

# Who Am I

- **Daniel Juyung Seo**
  - Senior Engineer at Samsung Electronics
  - [juyung.seo@samsung.com](mailto:juyung.seo@samsung.com)
  - a.k.a SeoZ
- Tizen Core UIFW EFL Developer
- Enlightenment/EFL Open Source Committer




# What is this talk about?

- Making frameworks and applications **scalable in UI** perspective.
- **Enlightenment Foundation Libraries**

# Audience Introductions

- **What is your expertise?**
  - Application Development
  - Platform Development
  - Design
  - Marketing



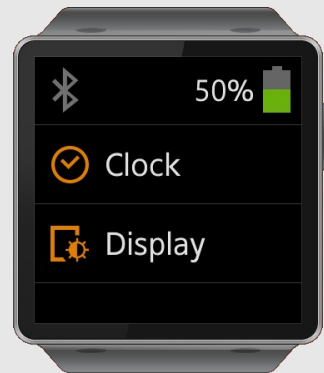
# Introduction

# Tizen – Mobile/Wearable

- **2.2.1 SDK**
- **Test Devices**
  - RD-PQ, RD-210



- **1.0.0 beta2 Wearable SDK**



# Tizen – Camera, Gear 2

- NX300, NX300M, and etc.



- Gear 2, Gear 2 Neo



# Various Tizen Profiles

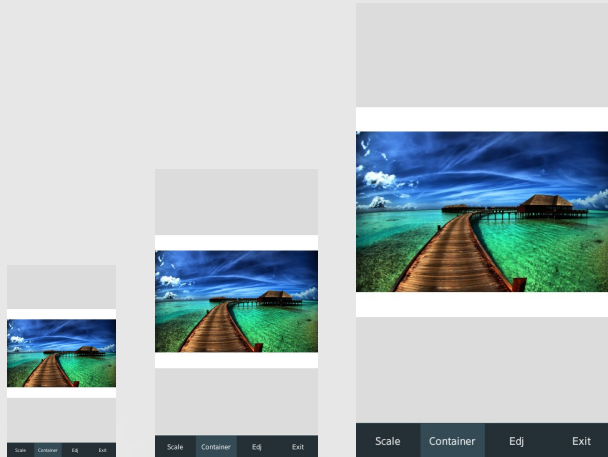
- Mobile, IVI, Wearable, TV, Camera, PC, ...
- **Scalability** is important.





# What is Scalability?

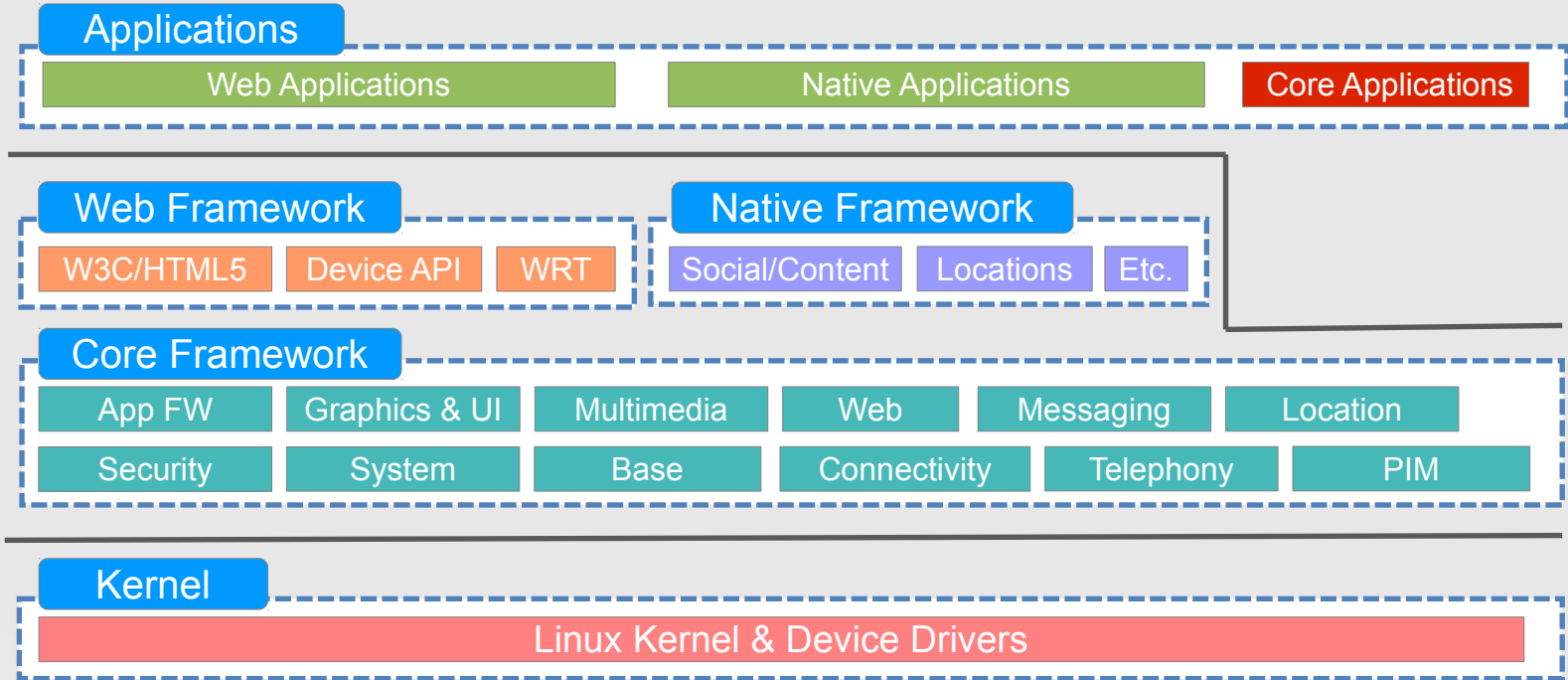
- **Supporting different**
  - resolutions, screen sizes, devices, and profiles.



The slide features a dark background with a stylized illustration of a suspension bridge and city skyline on the left, partially covered by a dark, curved shape. The right side is decorated with scattered blue and green confetti. Two overlapping circles, one dark and one light blue, are positioned at the bottom center. The title text is centered in white.

# Tizen Core UI Framework

# Tizen Architecture



# Tizen Application Development Model

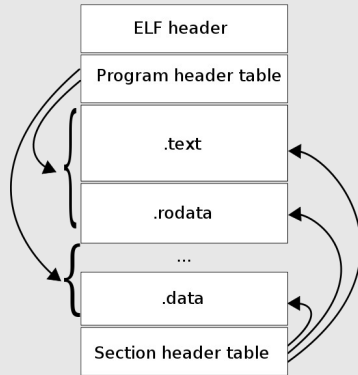
- **Web Applications : HTML5 + CSS + JavaScript + jQuery**
- **Native Applications : C++**
- **Core Applications : C or C++**

Platforms \ Areas	Mobile	Gear 2	NX300
Core	O	O	O
Native	O	X	X
Web	O	O	X

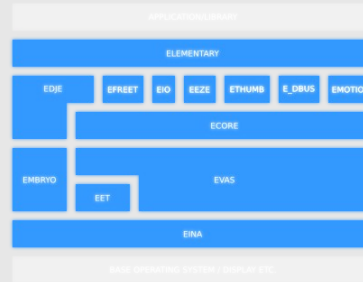
- **But wait, they have something in Common**
- **Core Framework!**

# Does anyone know about EFL?

- Many applications are written in EFL on **NX300** and **Gear 2**.
- **EFL not ELF**
  - EFL may not be an ELF... but it's as pretty as one. :)



**NO!**



**YES!**



# What is EFL?

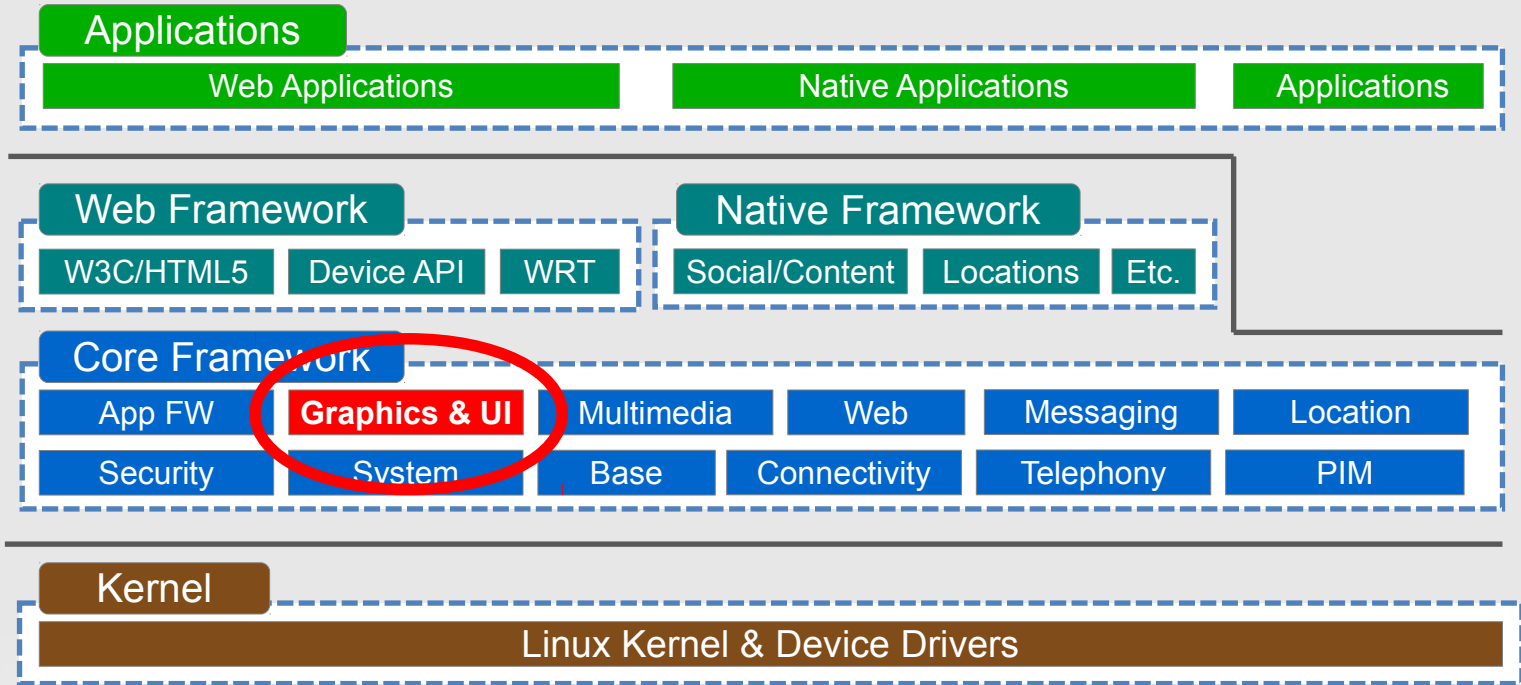
- **Toolkit**

- A **set of libraries** which provides a wide range of functionalities
- <http://www.enlightenment.org/>

- **Enlightenment Foundation Libraries**

- Created to support E17 development
- Targeted at embedded since day 1
  - Also effective on desktops
- Always focused on staying lean while providing fanciness
- The heart of the Graphics component of Tizen

# Core Framework and EFL



# Why is EFL used on Tizen?

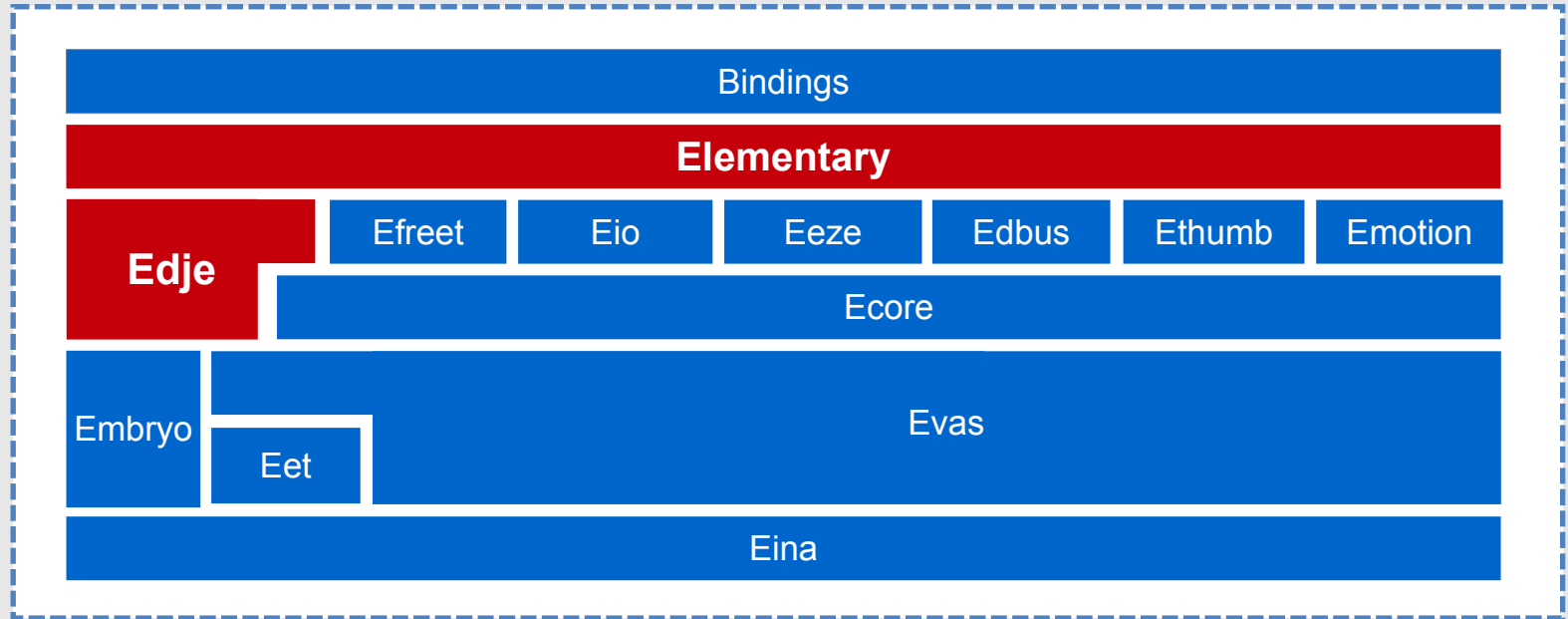
- Performance
- Small memory footprint
- GUI, Logic separation
- Themeable
- Animations
- H/W acceleration
- Various back-end engine
- Flexible
- Scalable





EFL(Edje + Elm)

# EFL Block Diagram

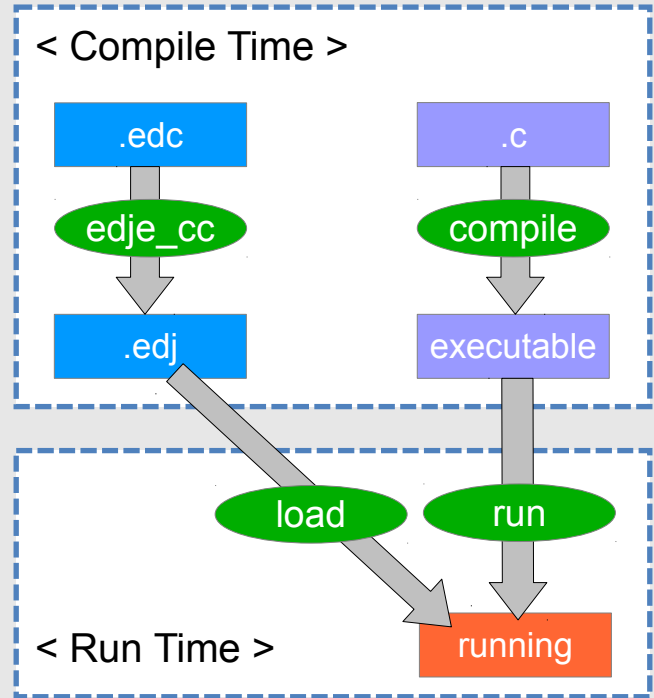


# Edje

- A complex **graphical design and layout** library.
- A graphical user interface without writing a line of C code.
- **Creates visual layouts from compiled EDC script**
  - EDC is completely separate from application code
  - Can be changed at or during runtime
- **Layouts include**
  - Images, Colors
  - Animations, Behaviors
- **Supports relative, absolute positioning.**

# Edje

- **Separation of layout and logic**
  - a graphical part : GUI Layout binary (edj)
  - a functionality : Executable logic binary (C)
- **Utility**
  - edje\_cc : compile edc to edj
  - edje\_decc : de-compile edj to edc



# Edje

- EDC Script

```
collections { - list the groups.  
  group { - the list of parts and programs that compose a given edje object.  
    images { } - list each image file that will be used in the edc.  
    parts {  
      part { - the most basic design elements of the group.  
        (ie. RECT, TEXT, IMAGE, SWALLOW, TEXTBLOCK, GROUP, BOX, TABLE, EXTERNAL)  
      }  
    }  
    programs {  
      program { - manipulates the different interface elements and serve as a bridge between  
        the application and interface.  
      }  
    }  
  }  
}
```

# Elementary

- **Widget Set**
- **75 widgets**
  - Non-Containers - Bg, Button, Check, Entry, Label, List, Icon, Win, ...
  - Containers - Box, Conformant, Grid, Layout, Panes, Scroller, Table, ...
- **Fast, Finger friendly, Scalable, Themeable, ...**

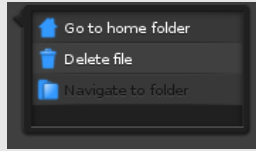
# Elementary



< Bubble >



< Button >



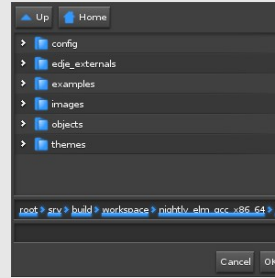
< Ctxpopup >



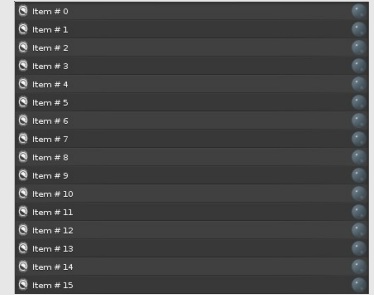
< Check >



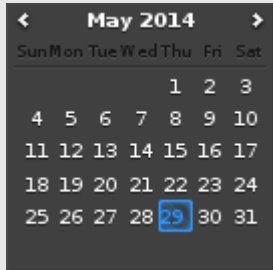
< FlipSelector >



< FileSelector >



< Genlist >



< Calendar >



< Toggle >



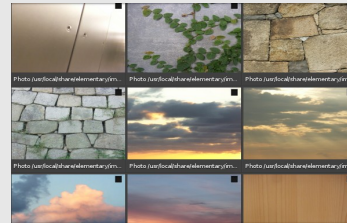
< Spinner >



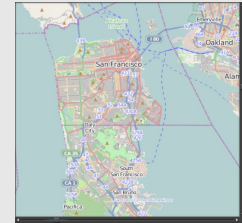
< Clock >



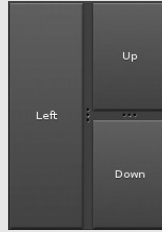
< DaySelector >



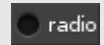
< Gengrid >



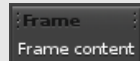
< Map >



< Panes >



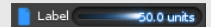
< Radio >



< Frame >



< Slider >



< Progressbar >

# Elementary

- Elementary also uses edge for its layout



Hello, TDC 2014!!

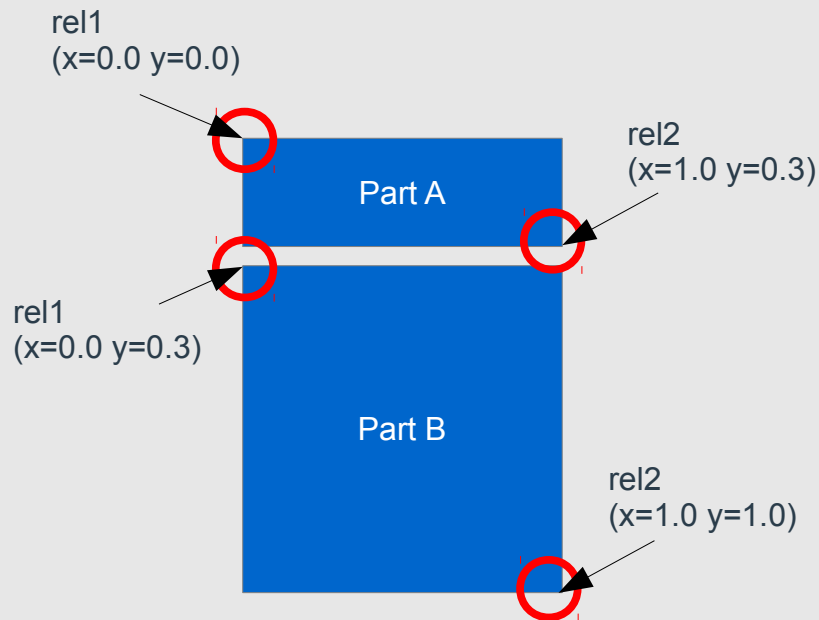
```
group { name: "elm/button/base/default";
  images.image: "button_normal.png" COMP;
  images.image: "button_clicked.png" COMP;
  parts {
    part { name: "base"; mouse_events: 0;
      type: IMAGE
      description { state: "default" 0.0;
        image.normal: "button_normal.png";
        rel1.relative: 0.0 0.0;
        rel2.relative: 1.0 1.0;
        image.border: 4 4 3 5;
        image.middle: SOLID;
      }
    }
  }
}
```

```
description { state: "clicked" 0.0;
  inherit: "default" 0.0;
  image.normal: "button_clicked.png";
  image.border: 5 5 4 6;
}
...
programs {
  program {
    signal: "mouse,down,1"; source: "event";
    action: STATE_SET "clicked" 0.0;
    target: "base";
  }
}
...
```



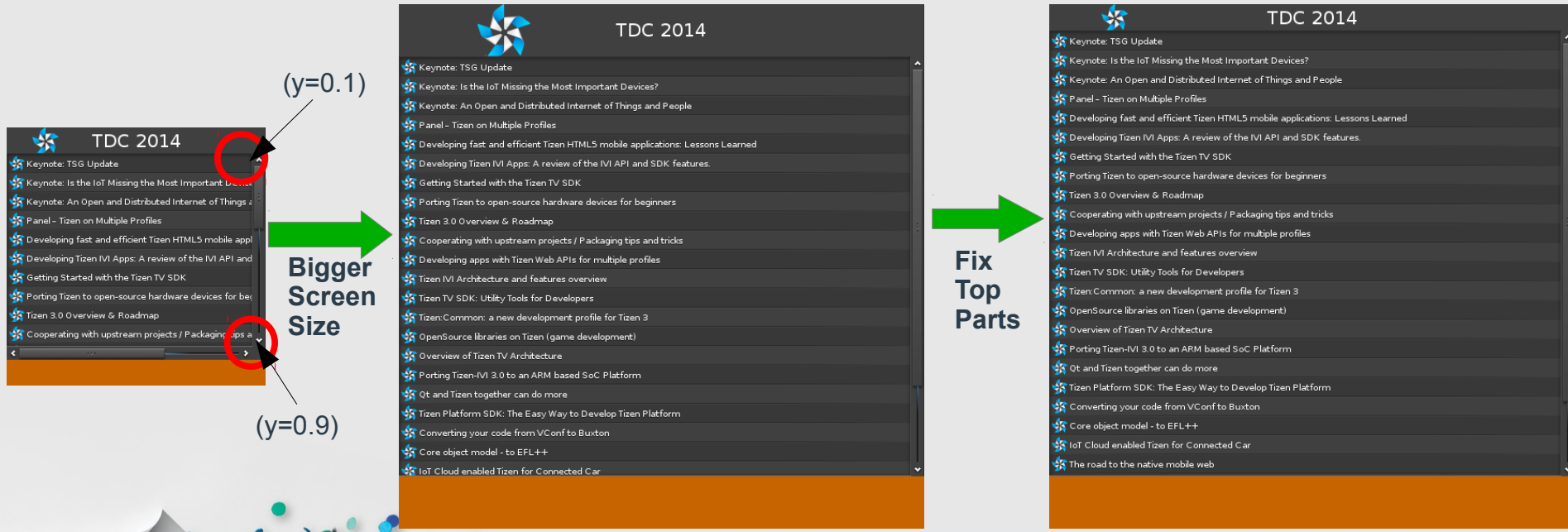
# How to achieve Scalability?

- Relative Positioning (1)



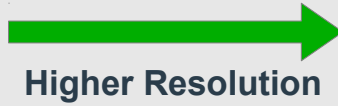
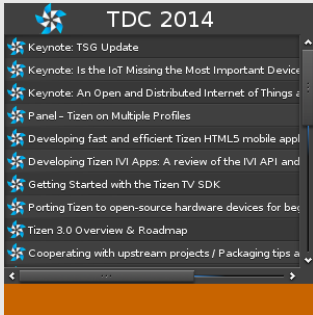
# How to achieve Scalability?

- Relative Positioning (2)



# How to achieve Scalability?

- Scale Factor

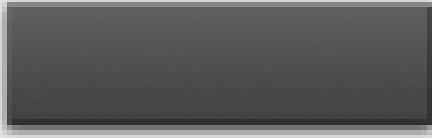


# How to achieve Scalability?

- **Border**



< Original Background Image >



< Expand Without Border >



< Expand With Border >

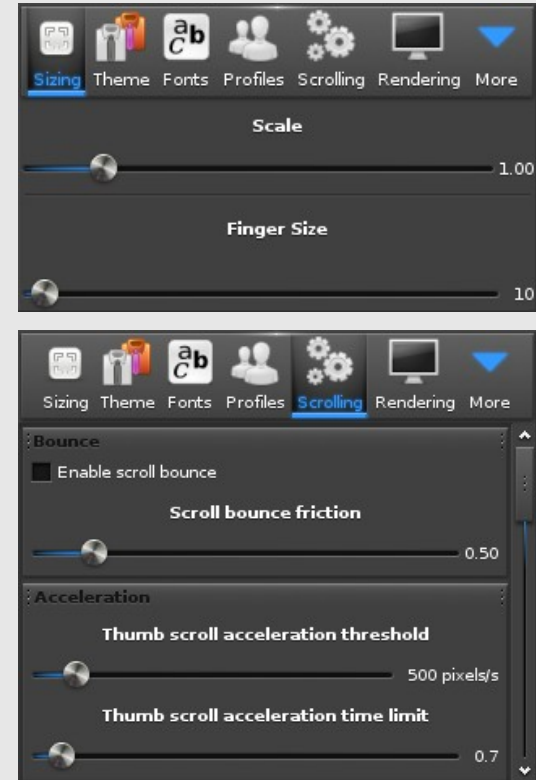
- **Finger Size**



# There is more!

- **Elementary Configuration**

- You can change the configuration based on your your needs.
- Configurations
  - Scale, finger size, engine, scroll, focus, profile, ...
- Profile: a set of the configurations
  - default, standard, mobile, tv, wearable, ...

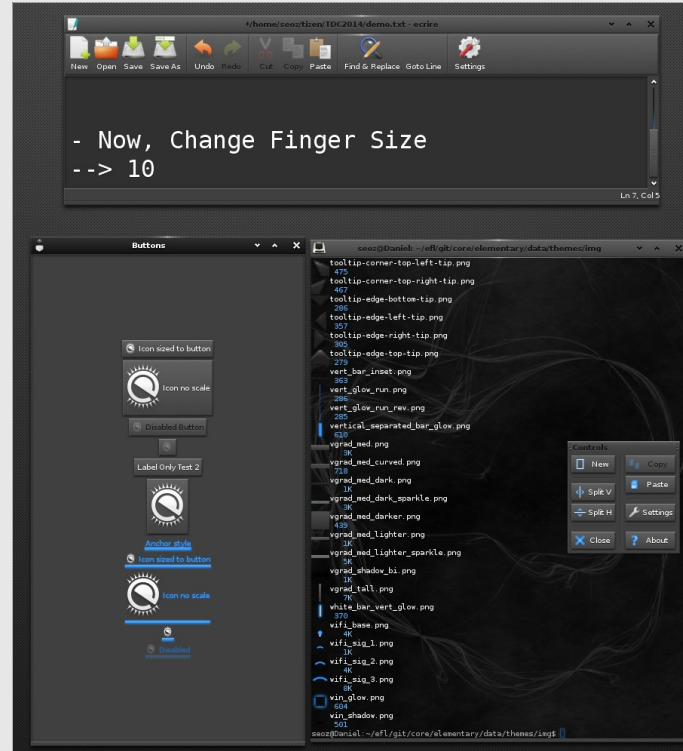


The image features a dark, textured background. On the left, a stylized illustration of a suspension bridge and a city skyline is shown over blue water. The bridge has two towers and cables. The city skyline includes several buildings of varying heights. The water is represented by wavy blue lines. Scattered throughout the image are numerous small, colorful confetti pieces in shades of blue, green, and purple. In the lower center, there are two overlapping circles: a larger, dark grey one and a smaller, light blue one. The word "Demo" is written in a clean, white, sans-serif font on the right side of the image.

Demo

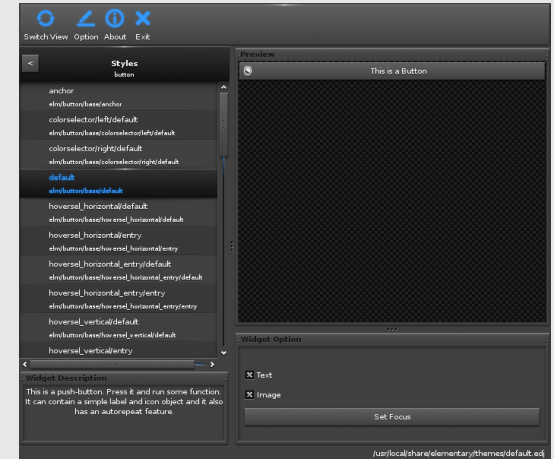
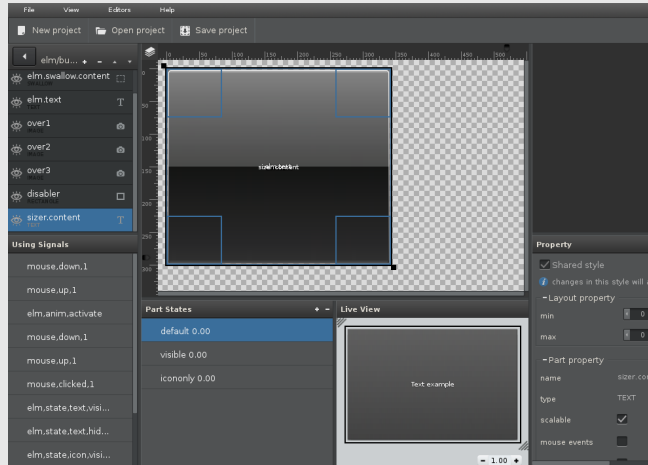
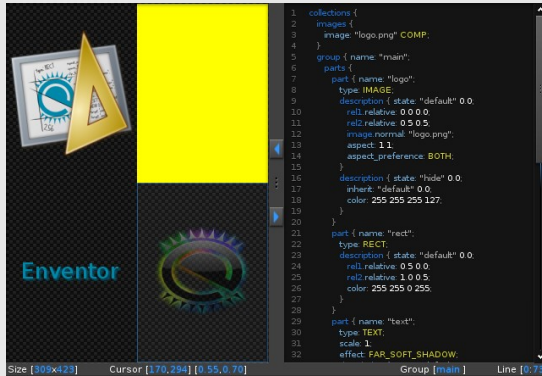
# Demo

- Elementary Test
- Terminology



# EFL Tools for a better Scalability

- Inventor
- Efilete
- Elm theme viewer





# EFL Applications on Tizen SDK

- Install Platform SDK

**TIZEN SDK**

Install  
License  
▶ Configure  
Install  
Complete

**Install Type**

- Typical: Web and Native App Development
- Minimal: Minimal Tools for Web and Native App Development
- Custom

Name	Status	Install size
▶ <input checked="" type="checkbox"/> Web App Development		500.7M
▶ <input checked="" type="checkbox"/> Native App Development		1092.5M
<input checked="" type="checkbox"/> Platform Development		315.2M
▶ <input checked="" type="checkbox"/> Common Tools		347.0M
▼ <input checked="" type="checkbox"/> Platforms		1702.4M
▶ <input checked="" type="checkbox"/> Tizen 2.2		1702.4M
<input checked="" type="checkbox"/> SDK Development Tools		1.6M

**Description** Download size : 1.4GB Install size : 2.6GB

SDK development tools are especially designed for SDK development. These tools are needed only for SDK developers.

Extra repository [Back] [Install] [Cancel]

- EFL Application Template

**Tizen Platform Project**  
Project name must be specified

template Git

▼ Tizen Platform

- Hello EFL
- Empty
- Simple

Preview: Hello EFL 1.0

Description: This is the simple EFL template project that shows "Hello EFL" on the screen.

Project name: [ ]

Use default location

Location: [ ] [Browse...]

[< Back] [Next >] [Cancel] [Finish]

# Summary

- **Tizen supports various profiles over a lot of device categories.**
- **EFL makes you write scalable GUI applications over various profiles with a good performance and small memory foot prints.**
- **It's open. You can start it now.**



Questions?



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