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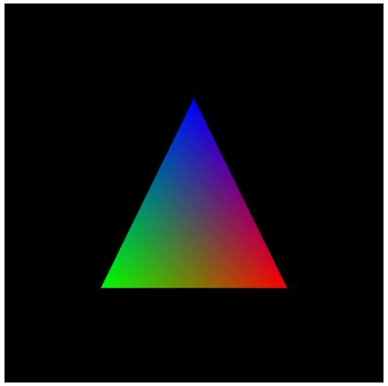
Kickstart for Wayland Client

In this document, I want to explain the basic step to use new HMI Framework[1] for Wayland Client.

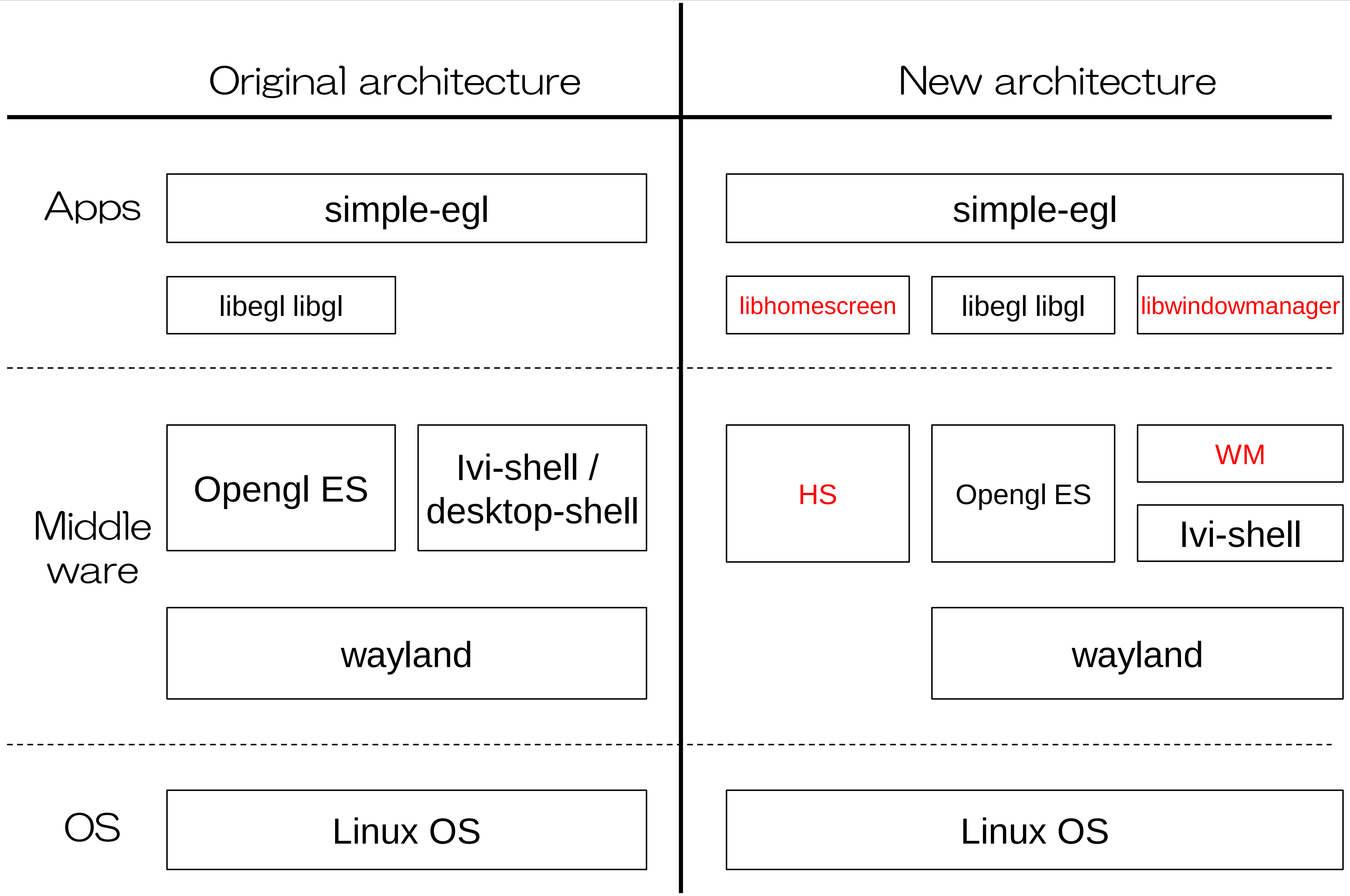
Here is a sample code in wayland source named “simple-egl”[2], some people who use opengl may know it. I will use it to explain.

- Global architecture
- How-to



*1:homescreen-service(referred as **HS**), windowmanager-service(referred as **WM**)
*2:https://cgit.freedesktop.org/wayland/weston/tree/clients/simple-egl.c

Global architecture



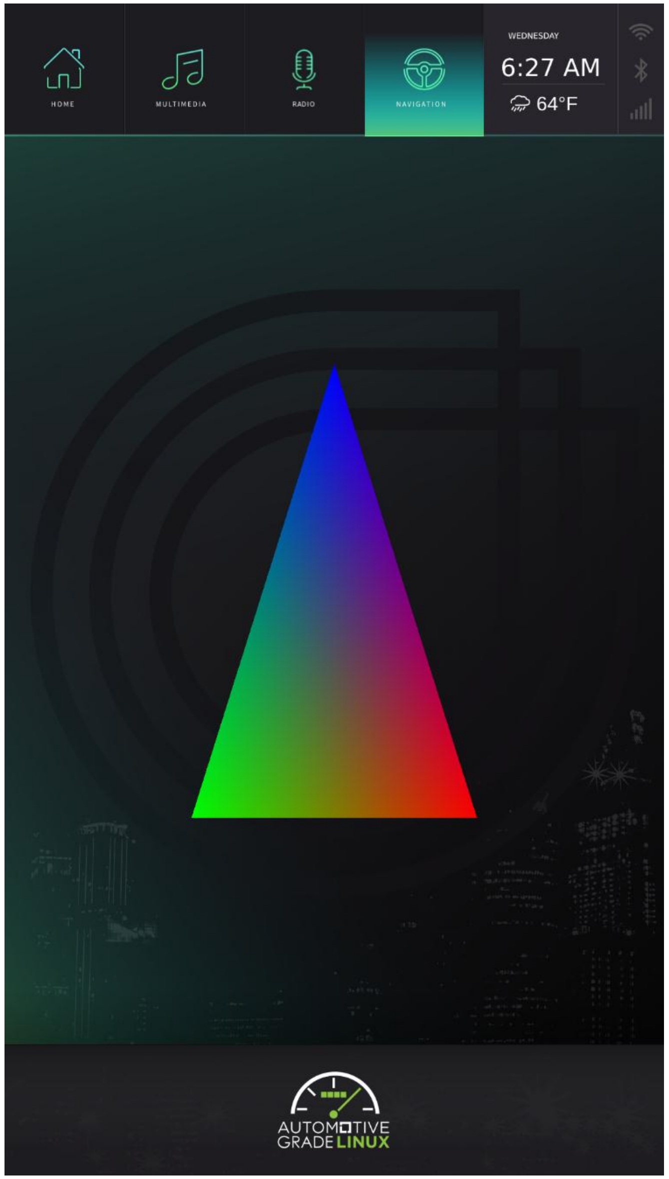
How-to (new HMI Framework)

These three steps need to do by using new HMI Framework.

- **Launch simple-egl**
  When user click the icon on homescreen, HS will launch "simple-egl", and send TapShortcut event to application.

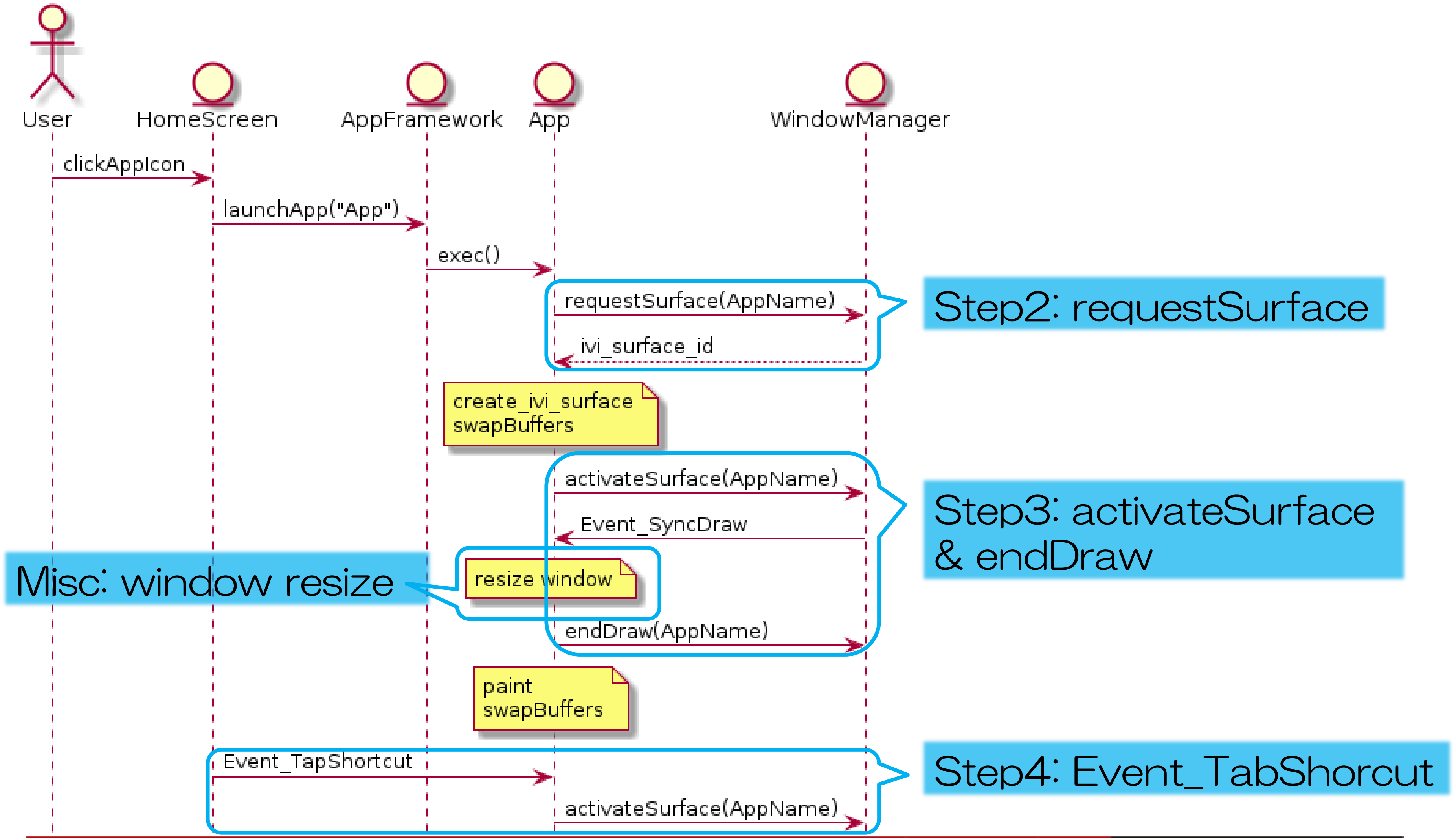
- **Get ivi surface id from WM**
  Using requestSurface() API in WM, "simple-egl" can use surface id given by wm for ivi surface.

- **Display surface**
  Using activeSurface() API in WM, "simple-egl" can display its surface on the monitor.



How-to (HMI sequence)

This is the sequence for using new HMI Framework. You can found full version in https://wiki.automotivelinux.org/windowmanager.



Step1: Preparing

- First we should add two header files in the source.

```
#include <libwindowmanager.h>
#include <libhomescreen.hpp>
```

- Define pointers to these two objects.

```
LibHomeScreen* hs;
LibWindowmanager *wm;
```

- Define application name using by **HS, WM.**
  Here we use "Navigation" as sample.

```
string app_name = string("Navigation");
```

- Get port and token from application arguments.

```
    int port = strtol(argv[1], NULL, 10);
    string token = argv[2];
```

- Add libhomescreen and libwindowmanager librarys into CMakeLists.txt

```
    libwindowmanager.so
    libhomescreen.so
```

Step2: requestSurface

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➢ Initialize libwindowmanager object pointer.

```
wm = new LibWindowmanager();
if(init_wm(wm, &window)!=0){
    fini_egl(&display);
    if (display.ivi_application)
        ivi_application_destroy(display.ivi_application);
    if (display.compositor)
        wl_compositor_destroy(display.compositor);
    wl_registry_destroy(display.registry);
    wl_display_flush(display.display);
    return -1;
}
```

➢ Init libwindowmanager

```
if (wm->init(port, token.c_str()) != 0) {
    HMI_ERROR("simple-egl","wm init failed. ");
    return -1;
}
```

➢ requestSurface for simple-egl.

```
json_object *obj = json_object_new_object();
json_object_object_add(obj, wm->kKeyDrawingName, json_object_new_string(app_name.c_str()));
g_id_ivisurf = wm->requestSurface(obj);
if (g_id_ivisurf < 0) {
    HMI_ERROR("simple-egl","wm request surface failed ");
    return -1;
}
```

Step3: activateSurface & endDraw

We need request a surface id before using it in create_ivi_surface.
And after that, we can display this surface by activateSurface().

```
    eglSwapBuffers(window.display->egl.dpy, window.egl_surface);
    json_object *obj = json_object_new_object();
    json_object_object_add(obj, wm->kKeyDrawingName, json_object_new_string(app_name.c_str()));
    json_object_object_add(obj, wm->kKeyDrawingArea, json_object_new_string("normal.full"));
    wm->activateSurface(obj);
```

And call endDraw in Event_SyncDraw().

```
    wm->set_event_handler(LibWindowmanager::Event_SyncDraw, [wm, window](json_object *object) {
        const char *label = json_object_get_string(
            json_object_object_get(object, wm->kKeyDrawingName));
        const char *area = json_object_get_string(
            json_object_object_get(object, wm->kKeyDrawingArea));

        json_object *obj = json_object_new_object();
        json_object_object_add(obj, wm->kKeyDrawingName, json_object_new_string(app_name.c_str()));

        wm->endDraw(obj);
    });
```

Step4: Event_TabShorcut

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- Initialize libhomescreen object pointer.

```
    hs = new LibHomeScreen();
    if(init_hs(hs)!=0){
        fini_egl(&display);
        if (display.ivi_application)
            ivi_application_destroy(display.ivi_application);
        if (display.compositor)
            wl_compositor_destroy(display.compositor);
        wl_registry_destroy(display.registry);
        wl_display_flush(display.display);
        return -1;
    }
```

- Init libhomescreen and set event handler for Event_TapShortcut.

```
int
init_hs(LibHomeScreen* hs){
    if(hs->init(port, token)!=0)
    {
        HMI_ERROR("simple-egl","homescreen init failed. ");
        return -1;
    }

    hs->set_event_handler(LibHomeScreen::Event_TapShortcut, [](json_object *object){
        const char *application_name = json_object_get_string(
            json_object_object_get(object, "application_name"));
        HMI_DEBUG("simple-egl","Event_TapShortcut application_name = %s ", application_name);
        if(strcmp(application_name, app_name.c_str()) == 0)
        {
            HMI_DEBUG("simple-egl","try to activesurface %s ", app_name.c_str());
            json_object *obj = json_object_new_object();
            json_object_object_add(obj, wm->kKeyDrawingName, json_object_new_string(app_name.c_str()));
            json_object_object_add(obj, wm->kKeyDrawingArea, json_object_new_string("normal.full"));
            wm->activateSurface(obj);
        }
    });

    return 0;
}
```

Misc: Window resize

After Step1~4, we can run this application and display normally.

But there is on more thing may be need to do.
In the original simple-egl, window is resized in the ivi_surface_listener callback.
It can be done in the Event_SyncDraw, instead of ivi_surface_listener.

```
    wm->set_event_handler(LibWindowmanager::Event_SyncDraw, [wm, window](json_object *object) {
        const char *label = json_object_get_string(
            json_object_object_get(object, wm->kKeyDrawingName));
        const char *area = json_object_get_string(
            json_object_object_get(object, wm->kKeyDrawingArea));

        HMI_DEBUG("simple-egl","Surface %s got syncDraw! Area: %s. ", label, area);
        if ((wm->kStrLayoutNormal + "." + wm->kStrAreaFull) == std::string(area)) {
            wl_egl_window_resize(window->native, 1080, 1488, 0, 0);
            window->geometry.width = 1080;
            window->geometry.height = 1488;
        }
        else if ((wm->kStrLayoutSplit + "." + wm->kStrAreaMain) == std::string(area) ||
                 (wm->kStrLayoutSplit + "." + wm->kStrAreaSub) == std::string(area)) {
            wl_egl_window_resize(window->native, 1080, 744, 0, 0);
            window->geometry.width = 1080;
            window->geometry.height = 744;
        }

        if (!window->fullscreen)
            window->window_size = window->geometry;
        json_object *obj = json_object_new_object();
        json_object_object_add(obj, wm->kKeyDrawingName, json_object_new_string(app_name.c_str()));

        wm->endDraw(obj);
    });
```

Thank you very much!

Above all, we just finish the Wayland Client with new HMI Framework.

There is a full sample code in AGL gerrit.

https://gerrit.automotivelinux.org/gerrit/gitweb?p=src/libhomescreen.git;a=tree;f=sample/simple-egl;h=3b6a583636567cc5cbb41b46559b4e57ce00d7dd;hb=62e013c3bfa1ba66ceb459b5cc5e733335e8d6e7