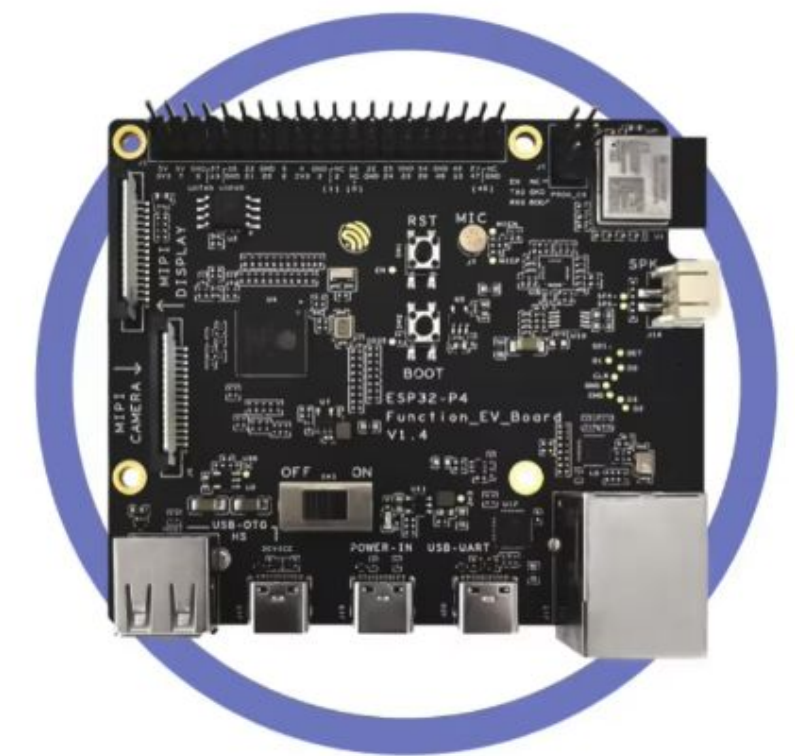# Graphical
apps for ESP32-S3/P4
with SDL3

18th October 2024

ESP Community meeting

Brno

Juraj Michálek

Content

- Historical context
- Libraries
- Code and demos
- Q&A

Historical context

20 years ago…

… I was giving a talk at University

Čo nás čaká

- **interaktívne aplikácie, skriptovanie**
- Allegro, SDL, ClanLib, LUA
- **aplikácie s GUI**
- QT, FLTK, GTK
- **špeciálne knižnice**
- Mesa
- **programátorské nástroje**
- **OpenOffice – UNObridge, C#, Mono, Python**

There were some interesting libs

LUA

- silný skriptovací nástroj
- volanie skriptov z programu
- volanie programu zo skriptov
- jednoduchá syntax jazyka
- http://www.lua.org

Ukážka - LUA

Back in 2004…

SDL 1.x
- more than 115 extending libraries

Timeline

1993
Lua 1.0
First release of Lua by TeCGraf, PUC-Rio, Brazil.

1998
SDL 1.x
Sam Lantinga created SDL while working for Loki Software.

2000
Ogg Format
Release of the Ogg container format by Xiph.Org Foundation.

2002
Vorbis 1.0
Release of the Vorbis audio codec version 1.0.

2003
Lua 5.0
Significant release introducing coroutines and new module system.

2008
Theora 1.0
Release of the Theora video codec version 1.0.

Espressif Systems
Founded, and its headquarters are inaugurated in Shanghai.

2012
SDL 2.0
SDL 2.0 was announced.

2014
ESP8266
Release of ESP8266 Wi-Fi SoC.

2016
ESP32
Release of ESP32 Wi-Fi & Bluetooth SoC.

SDL 3.0 was announced.

Timeline

OpenTyrian Port

ESP Wrover-kit port with ESP-IDF 4.1 and SDL 1.x

2019

ESP32-S2

ESP32-S2 SoC with enhanced security.

2020

Lua 5.4

Latest release with new garbage-collection modes.

ESP32-C3

ESP32-C3 SoC with RISC-V architecture.

2021

ESP32-S3

ESP32-S3 SoC with AI acceleration.

2022

ESP32-C6

ESP32-C6 SoC with Wi-Fi 6 support.

ESP32-H2

ESP32-H2 SoC with IEEE 802.15.4 and Bluetooth 5 (LE) connectivity.

2024

SDL 3.0

SDL 3.0 was announced.

Graphical libraries for ESP32

Embedded Wizard

FlowCode

LVGL

Qt for MCUs

Simple Direct Layer

Slint

Architecture

Architecture

Common pattern - layers

Application + UI

Graphical library

ESP-BSP (Board Support Package)

ESP-IDF

Architecture LVGL

Layers

Application in C
UI in C
ESP-BSP
- esp_lvgl_port
- LVGL 9
ESP-IDF

Price model

royalty free

Architecture SDL3

Layers

Application
UI in C
SDL3
ESP-BSP (noglib)
ESP-IDF

Price model

royalty free

Component Registry

The ESP Component Registry

Discover, download and publish components and examples for ESP-IDF

<div>Search components   🔍</div>

Browse components

ALL   Board Support Package

Compatible with ESP-IDF: v5.0   v5.1   v5.2   v5.3

By target: ESP32   ESP32-C2   ESP32-C3   ESP32-C5   ESP32-C6   ESP32-C61   ESP32-H2   ESP32-P4   ESP32-S2   ESP32-S3

Featured

espressif/mdns
v1.4.0

uploaded 1 month ago

mDNS

lvgl/lvgl
v9.2.0

uploaded 1 month ago

LVGL - Light and Versatile Graphics Library

espressif/esp-modbus
v1.0.16

uploaded 1 month ago

ESP-MODBUS is the official Modbus library for Espressif SoCs.

joltwallet/littlefs
v1.14.8

uploaded 3 months ago

LittleFS is a small fail-safe filesystem for micro-controllers.

components.espressif.com/components?q=tags:bsp

Code examples

Code examples

SDL3

- https://github.com/georgik/esp32-sdl3-example
- https://github.com/georgik/OpenTyrian
- https://github.com/georgik/esp32-weather-display
- https://github.com/georgik/esp32-theora-example

SDL3 with ePaper

- https://github.com/georgik/esp32-weather-display

Components

SDL3
- https://github.com/georgik/esp-idf-component-SDL

SDL_ttf
- https://github.com/georgik/esp-idf-component-SDL_ttf

Lua
- https://github.com/georgik/esp-idf-component-lua

Theora
- https://github.com/georgik/esp-idf-component-theora

Components

Löve2D
 - https://github.com/georgik/esp-idf-component-love

Not finished, still some work left to do

Developer Portal

Check out our Developer Portal

https://developer.espressif.com

Q&A