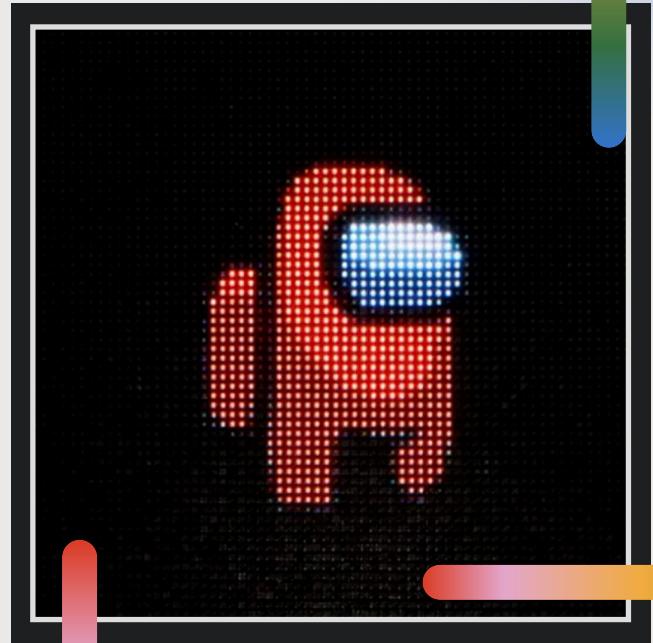




Developing a Smart and
Customizable
LED Matrix Platform:

The Mosaico Ecosystem

Presentato da: Marco Coppola
Relatore: Federico Montori



Smart display

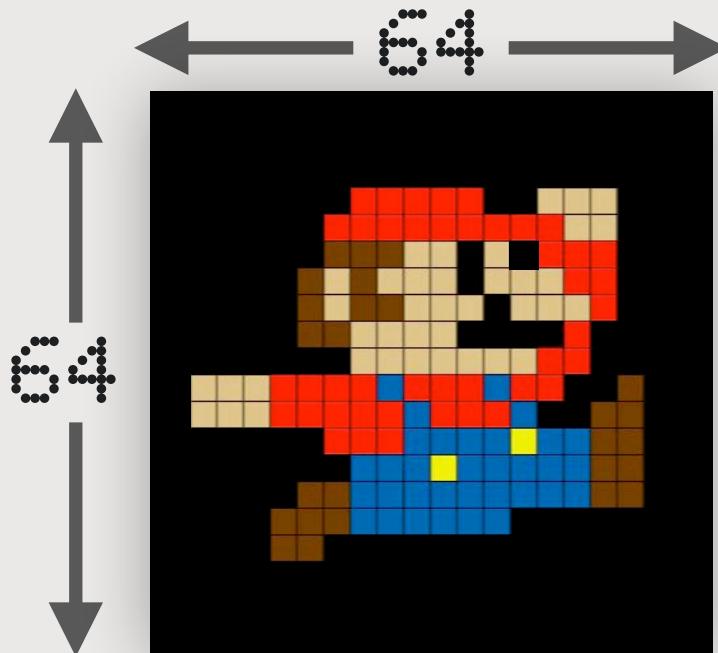
IoT

Widgets!

Mosaico

Open source!

Che cos'è Mosaico?



Che cos'è Mosaico?



Widget

Un'occhiata più da vicino

Open Source



The grid displays various open-source applications for the Flipper Zero:

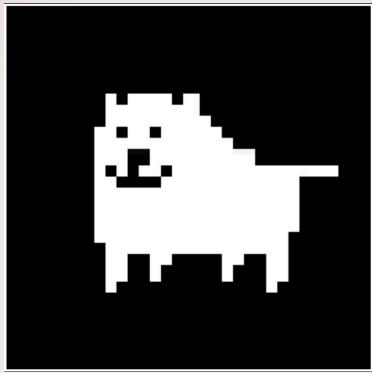
- NFC & LF RFID**: NFC/RFID detector (Tools) - Identify the reader type: NFC (13 MHz) and/or RFID (125 KHz).
- Rock Paper Scissors**: Games - Play the rock-paper-scissors game with your friends using the Rock Paper Scissors camera.
- Hello from UART!**: Tools - Control various devices via the Flipper Zero UART interface.
- iOS Intervalometer**: Tools - Delay (in sec) 1, Press to start, Single shot, Reset shot count, 0 shots, NemOeo.
- Pomodoro**: Tools - Hold to exit, 20:14:56, 24:57, Pause, Time to work.
- Input**: Tools - Convert text to speech on your Flipper Zero with SAM (Software).
- UART Terminal**: Tools - GPIO.
- BT Trigger**: Tools - Control your smartphone camera via your Flipper Zero.
- Text to SAM**: Media - Convert text to speech on your Flipper Zero with SAM (Software).
- ESP Flasher**: Tools - Flash ESP chips from the device (no...).
- Line and mode**: Tools - Filetype: Flipper NFC device.
- T-Rex runner**: Games - Play the port of the Chrome browser T-Rex game on your...
- 2048**: Games - Play the port of the 2048 game on Flipper Zero.
- Orgasmotron**: Tools - Vibrate Flipper in different modes.
- DOOM**: Games - Will it run Doom?

The grid displays nine Homebridge plugin cards:

- TPLink Tapo**: homebridge-tp-link-tapo - Verified, @raresdesigns, v4.1.0.
- Homebridge Govee**: homebridge-govee - Verified, @bwp91, v10.8.0.
- Homebridge Hue**: homebridge-hue - Verified, @ebaauw, v0.13.70.
- Homebridge Meross**: homebridge-meross - Verified, @bwp91, v10.4.0.
- Tapo P100 Plugin**: homebridge-tapo - Not Verified, @anzimnas, v1.4.17.
- Homebridge Wiz Lan**: homebridge-wiz-lan - Not Verified, @kpsuperplane, v3.2.8.
- SwitchBot**: switchbot/homebridge-switchbot - Verified, @switchbot-wonderlabs, v3.4.0.
- Homebridge Lifx Lan**: homebridge-lifx-lan - Not Verified, @devbobo, v0.2.6.
- Homebridge SwitchBot Bluetooth ...**: homebridge-switchbot-bluetooth-platform - Verified, @galizo, v1.2.6.

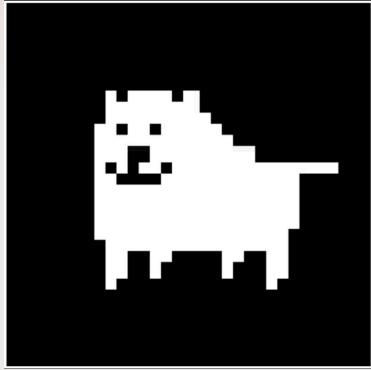
Esempi di Widget

Esempi di Widget



◆ Immagini

Esempi di Widget

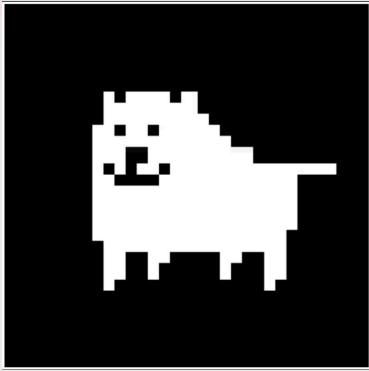


◆ Immagini



◆ Liste

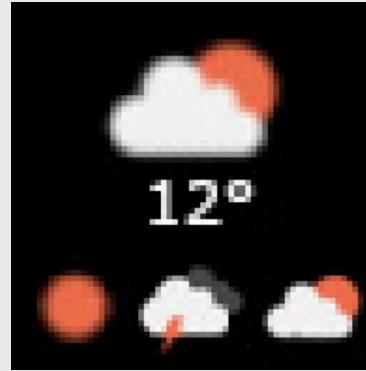
Esempi di Widget



◆ Immagini

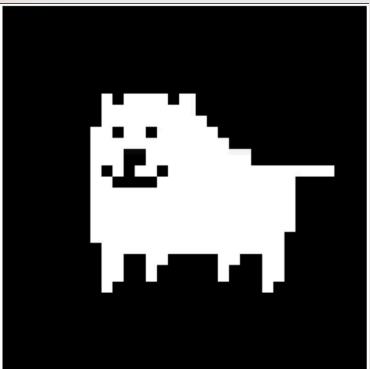


◆ Liste



◆ Meteo

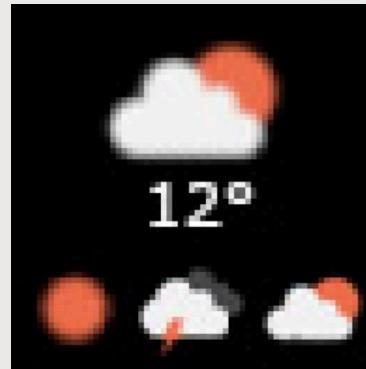
Esempi di Widget



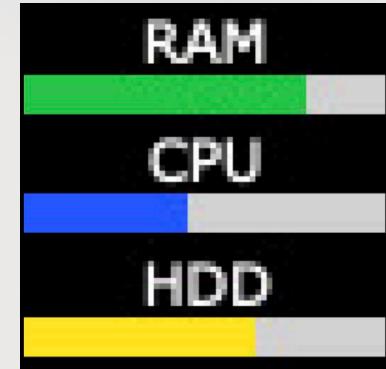
◆ Immagini



◆ Liste

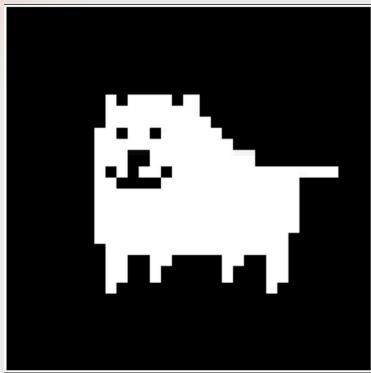


◆ Meteo



◆ Server Stats

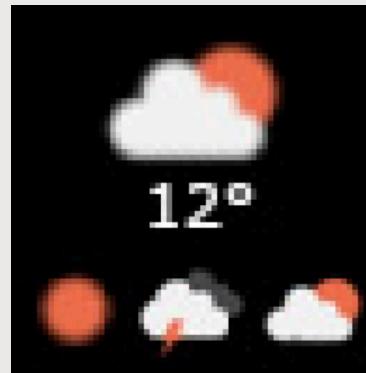
Esempi di Widget



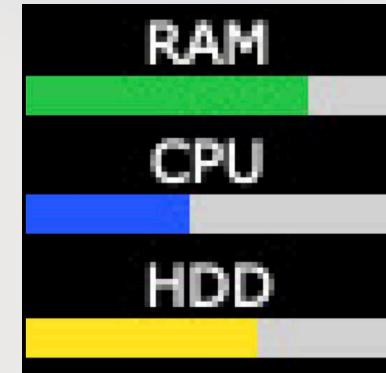
◆ Immagini



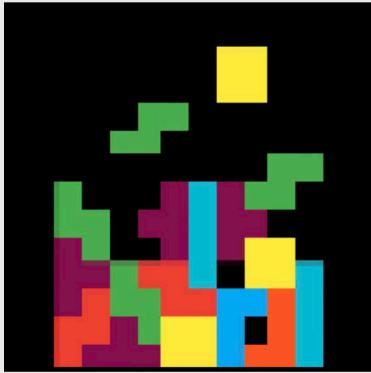
◆ Liste



◆ Meteo

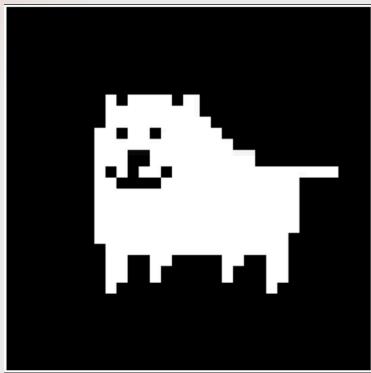


◆ Server Stats



◆ Tetris

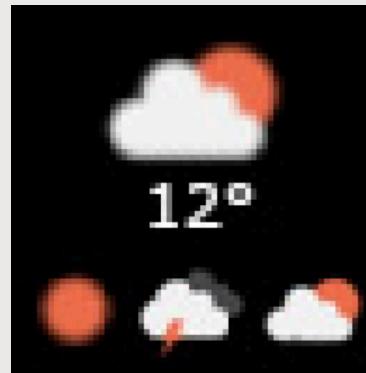
Esempi di Widget



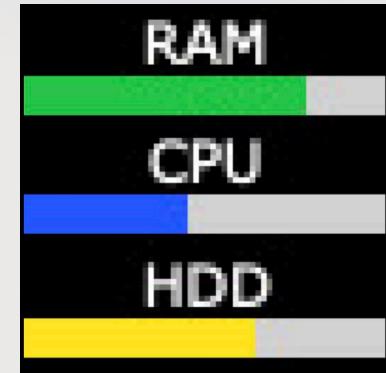
◆ Immagini



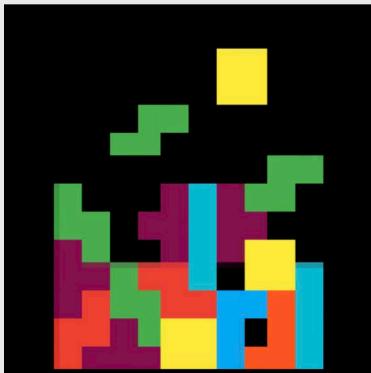
◆ Liste



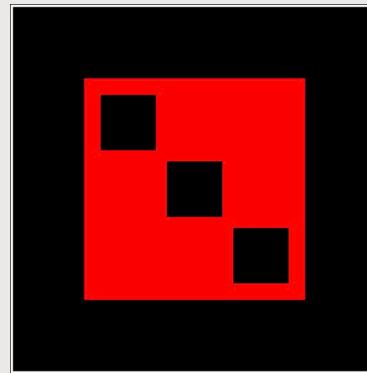
◆ Meteo



◆ Server Stats

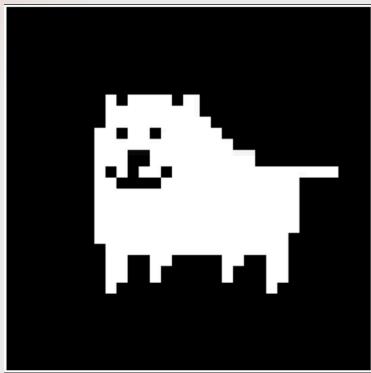


◆ Tetris



◆ D6

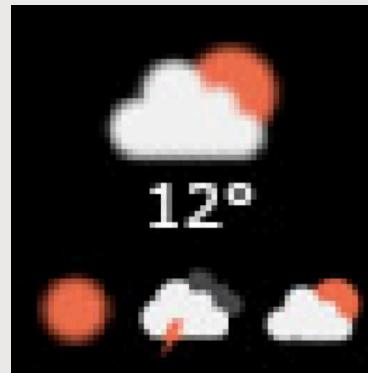
Esempi di Widget



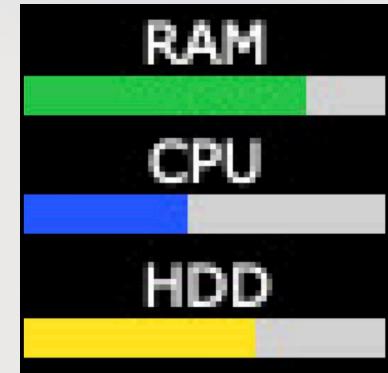
◆ Immagini



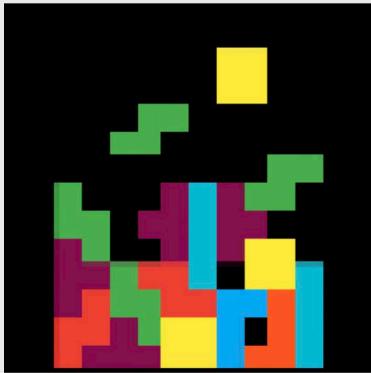
◆ Liste



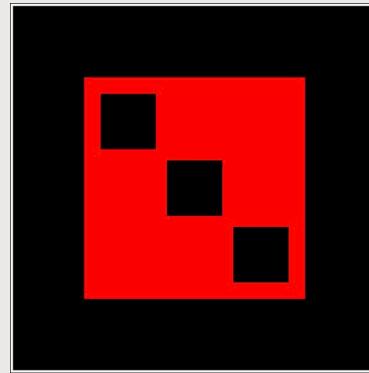
◆ Meteo



◆ Server Stats



◆ Tetris

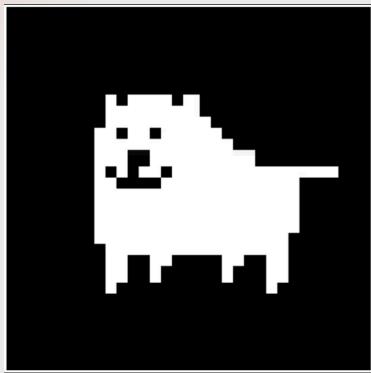


◆ D6



◆ Data e ora

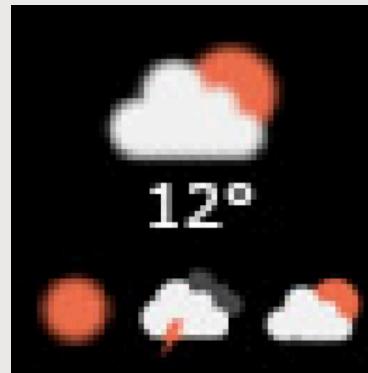
Esempi di Widget



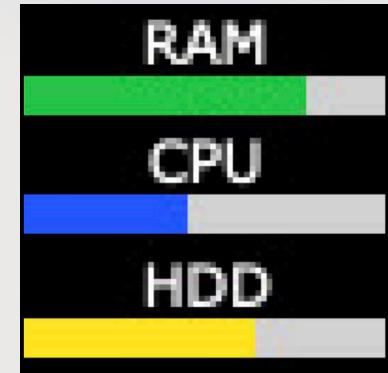
◆ Immagini



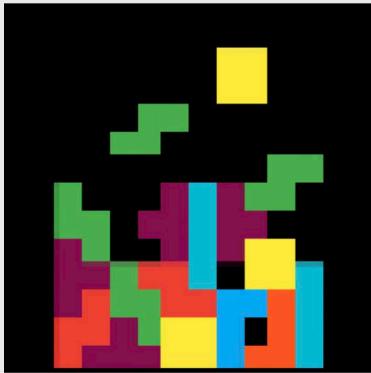
◆ Liste



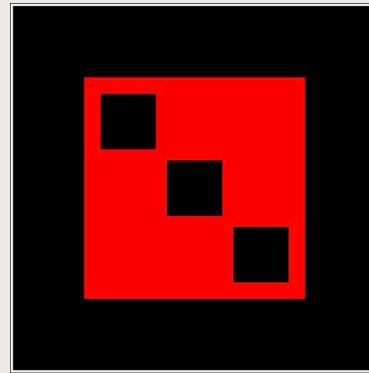
◆ Meteo



◆ Server Stats



◆ Tetris



◆ D6



◆ Data e ora



◆ Testo

Com'è fatto un widget?

```
from mosaico import widget,colors  
import random  
  
# Create text element  
text = widget.createText()  
text.setText("Hello World!")  
text.setFont("5x8")
```



Hello World!

Com'è fatto un widget?

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```
# Customize element  
text.moveTo(3,28)  
text.setHexColor("#ff0000")
```



Hello World!

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from mosaico import widget,colors  
import random  
  
# Create text element  
text = widget.createText()  
text.setText("Hello World!")  
text.setFont("5x8")  
  
# Customize element  
text.moveTo(3,28)  
text.setHexColor("#ff0000")  
  
# Called once each frame  
def loop():  
    rectangle = widget.createRectangle()  
    rectangle.moveTo(random.randint(0, 64), random.randint(0, 64))  
    rectangle.setSize(random.randint(1, 10), random.randint(1, 10))  
    rectangle.setColor(colors.random())
```



Hello World!

Com'è fatto un widget?

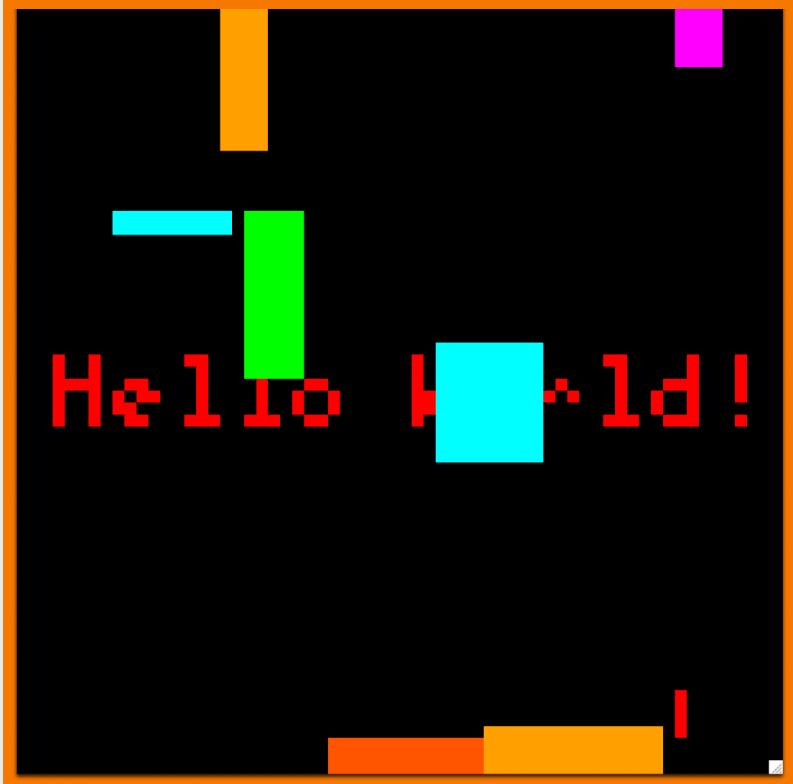
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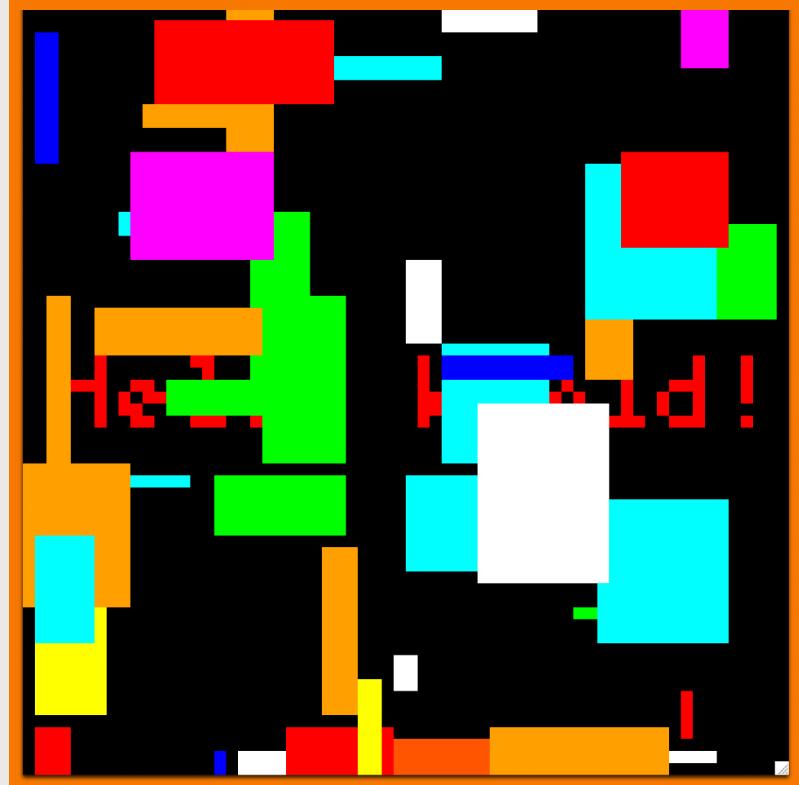
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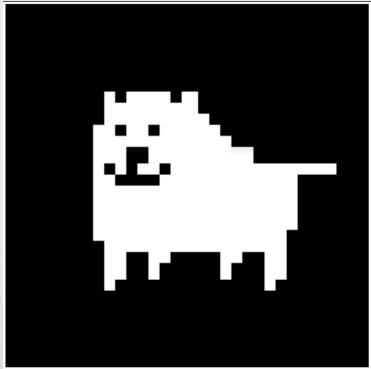


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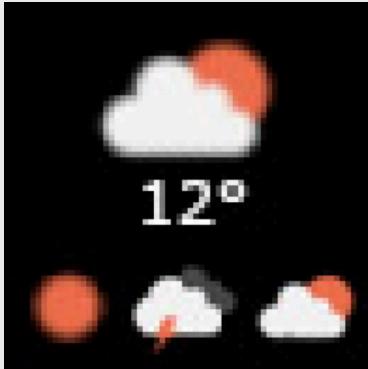
Widget configurabili



◆ Immagini



◆ Liste



◆ Meteo



◆ Testo



Widget configurability

```
{  
  "form": {  
    "title": "Simple List",  
    "description": "Use this form to create a shopping list,  
todo list etc.",  
    "fields": [  
      {  
        "name": {  
          "type": "string",  
          "label": "Name",  
          "required": true,  
          "placeholder": "Enter the name of this list"  
        },  
        "color": {  
          "type": "color",  
          "label": "Color",  
          "required": true,  
          "placeholder": "Choose the color of the title"  
        },  
        "items": {  
          "type": "string[]",  
          "label": "Shopping items",  
          "required": true,  
          "placeholder": "Insert your items here"  
        }  
      }  
    ]  
  }  
}
```



Widget configurabili

```
{  
  "form": {  
    "title": "Simple List",  
    "description": "Use this form to create a shopping list,  
    todo list etc.",  
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      {  
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          "type": "string",  
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          "placeholder": "Enter the name of this list"  
        },  
        "color": {  
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          "label": "Color",  
          "required": true,  
          "placeholder": "Choose the color of the title"  
        },  
        "items": {  
          "type": "string[]",  
          "label": "Shopping items",  
          "required": true,  
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        }  
      }  
    ]  
  }  
}
```



< Ricetta: i saperi del...

Simple List

Use this form to create a shopping list, todo list etc.

Name

Color

#0E73FF

Shopping items

Ricotta fresca	-
Piselli freschi	-
Tutto fresco	+

Widget configurabili

```
{  
  "form": {  
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        }  
      }  
    ]  
  }  
}
```



< Ricetta: i saperi della terra ...

Simple List

Use this form to create a shopping list, todo list etc.

Name

Color

#0E73FF...

Shopping items

- Ricotta fresca
- Piselli freschi
- Tutto fresco

-+



Connected
No active widget

Configurations

- Ricetta: i saperi della terra ...
- Lista della spesa ...
- Promemoria ...

Add new configuration

Close

Widgets Slideshows

Widget Store

Il potere della community

22:33



72

telegram



Annulla



Telegram Messenger
Fast. Secure. Powerful.



★★★★★ 16.822

Telegram F...

Nº4 Social net...



Veloce

Semplice, affidabile e sincronizzato
tra tutti i tuoi dispositivi.

Potente

Nessun limite di dimensioni
per gruppi e broadcast

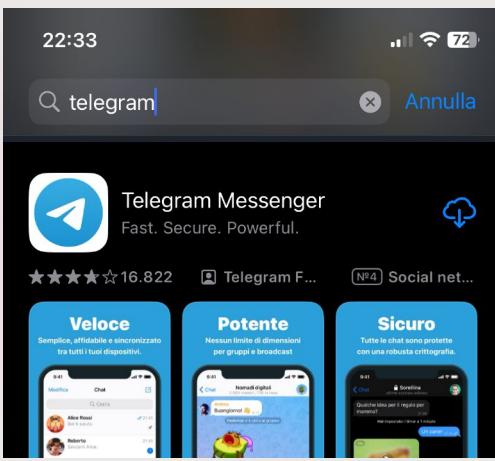
Sicuro

Tutte le chat sono protette
con una robusta crittografia.



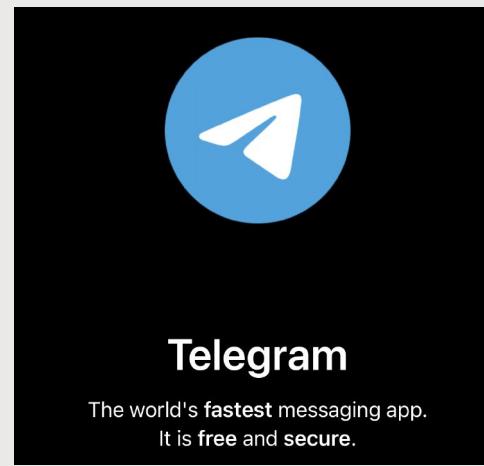
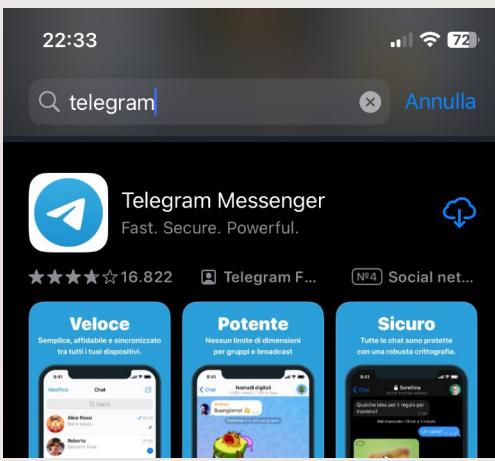
Ricerca





Ricerca

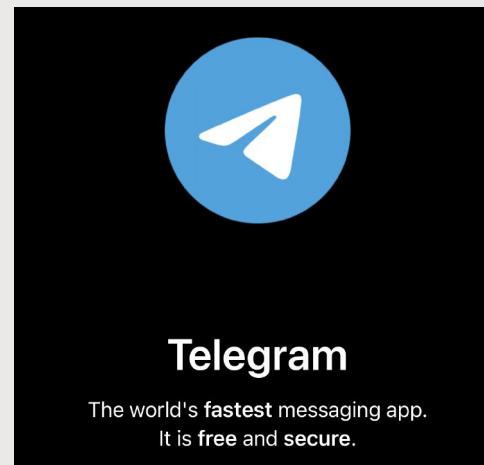
Dettagli



Ricerca

Dettagli

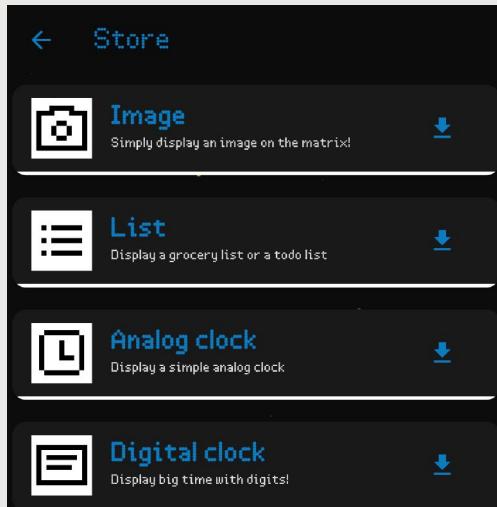
Lancio

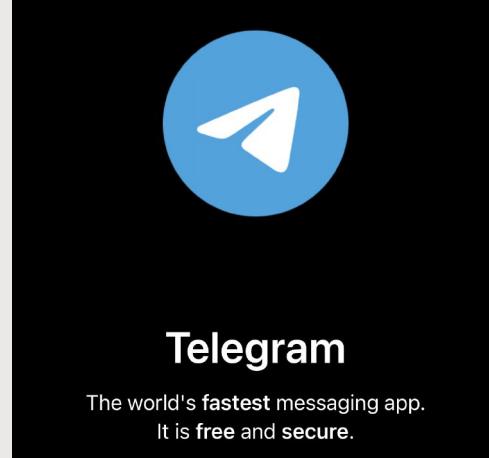
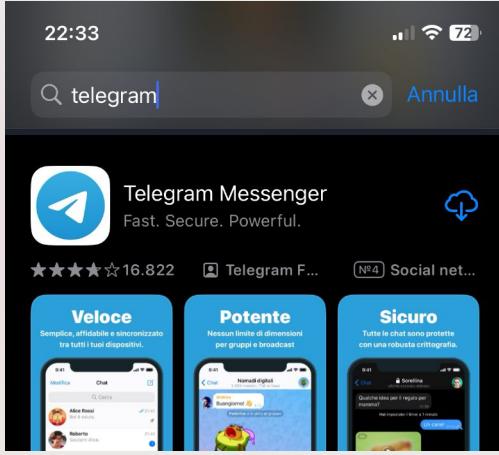


Ricerca

Dettagli

Lancio

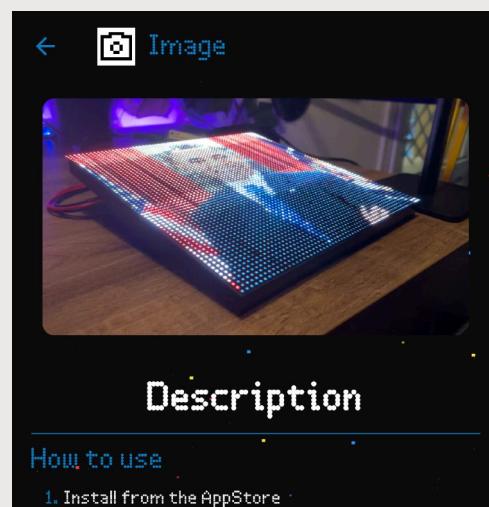
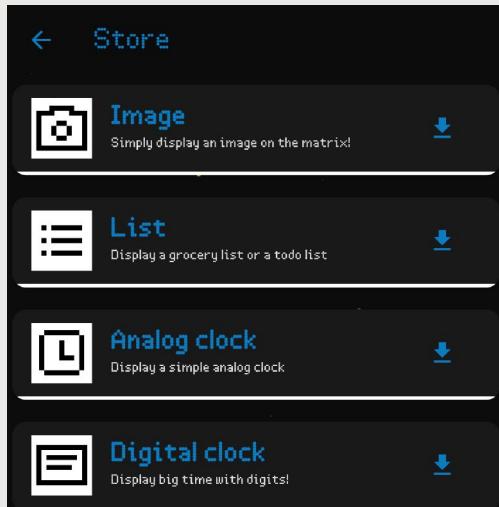


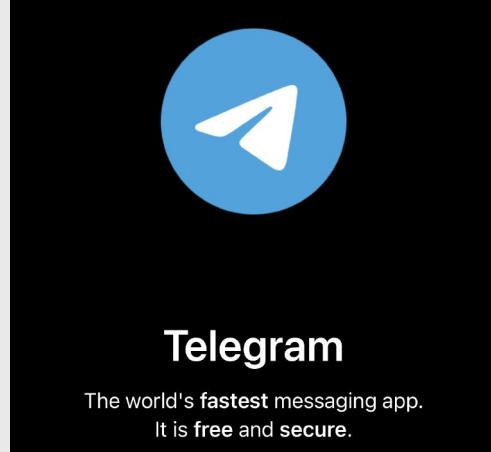
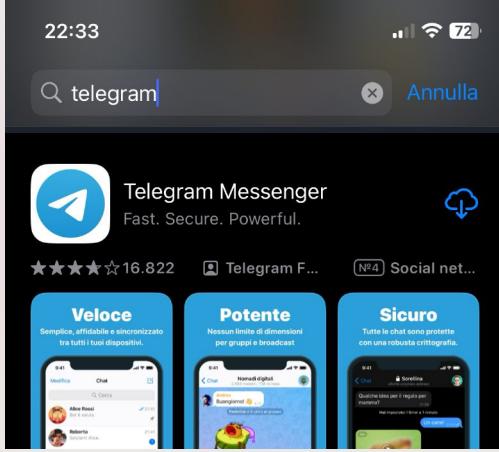


Ricerca

Dettagli

Lancio

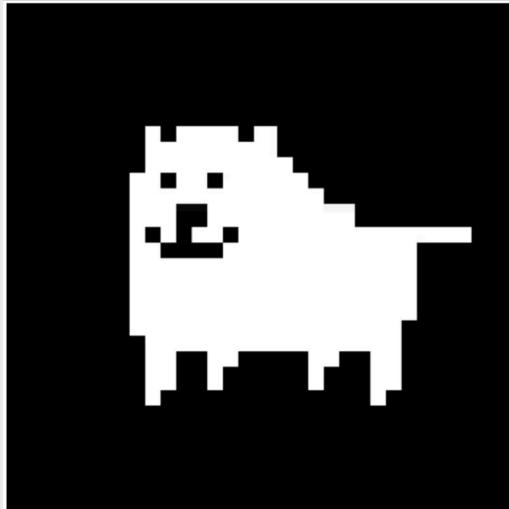
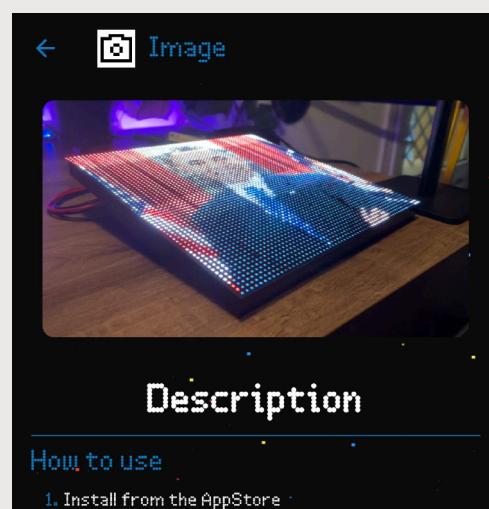
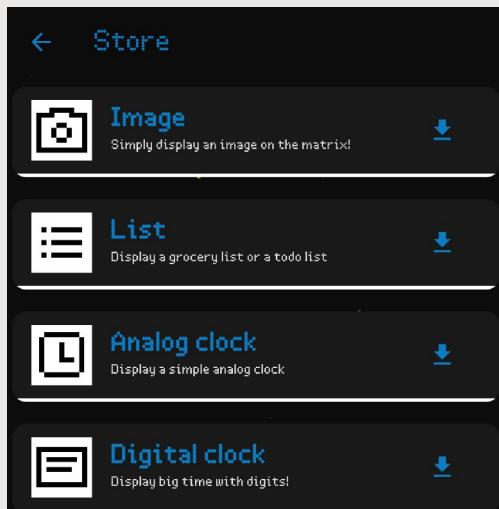




Ricerca

Dettagli

Lancio



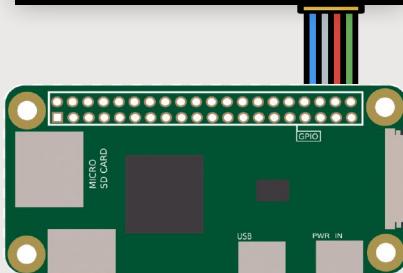
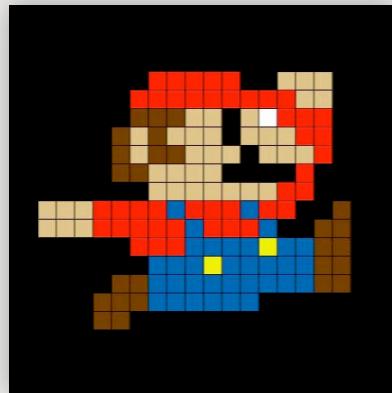
Architettura

Com'è fatto Mosaico?

Mosaico Architecture



Led Matrix

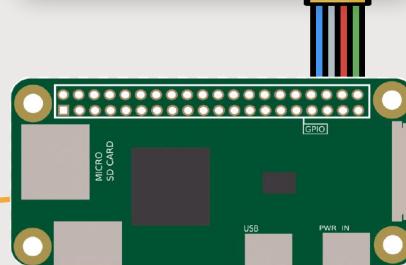
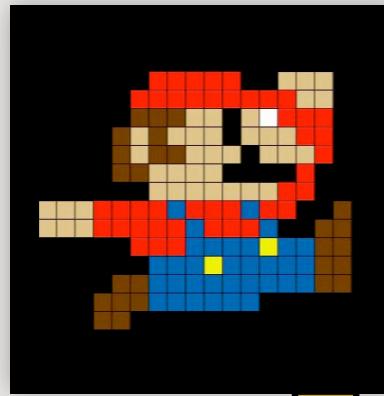


Raspberry Pi Zero W

Mosaico Architecture

- 1. Economico
- 2. Piccole dimensioni
- 3. Basso consumo
- 4. Bluetooth + WiFi
- 5. Linux
- 6. GPIO

Led Matrix



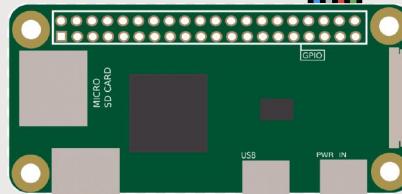
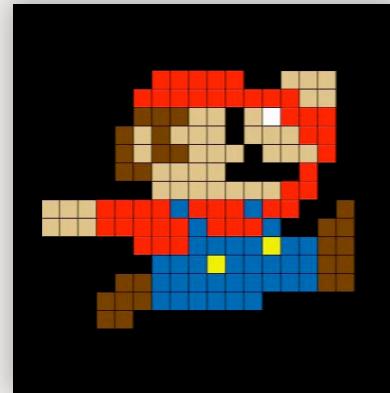
Raspberry Pi Zero W

Mosaico Architecture



Mobile App

Led Matrix



Raspberry Pi Zero W

Mosaico Architecture

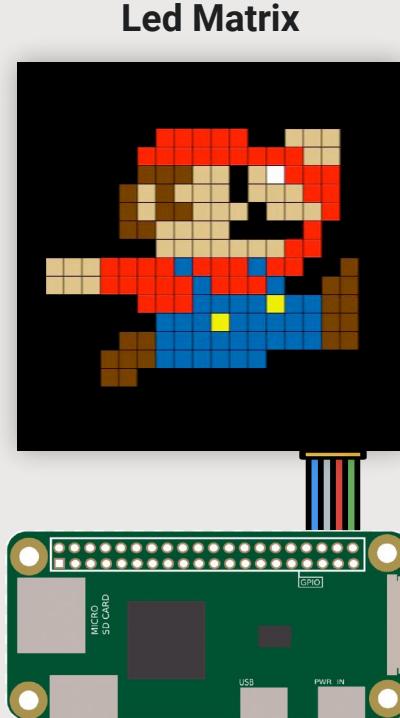


Flutter

- 1. Leggero
- 2. Strutturato
- 3. Performante

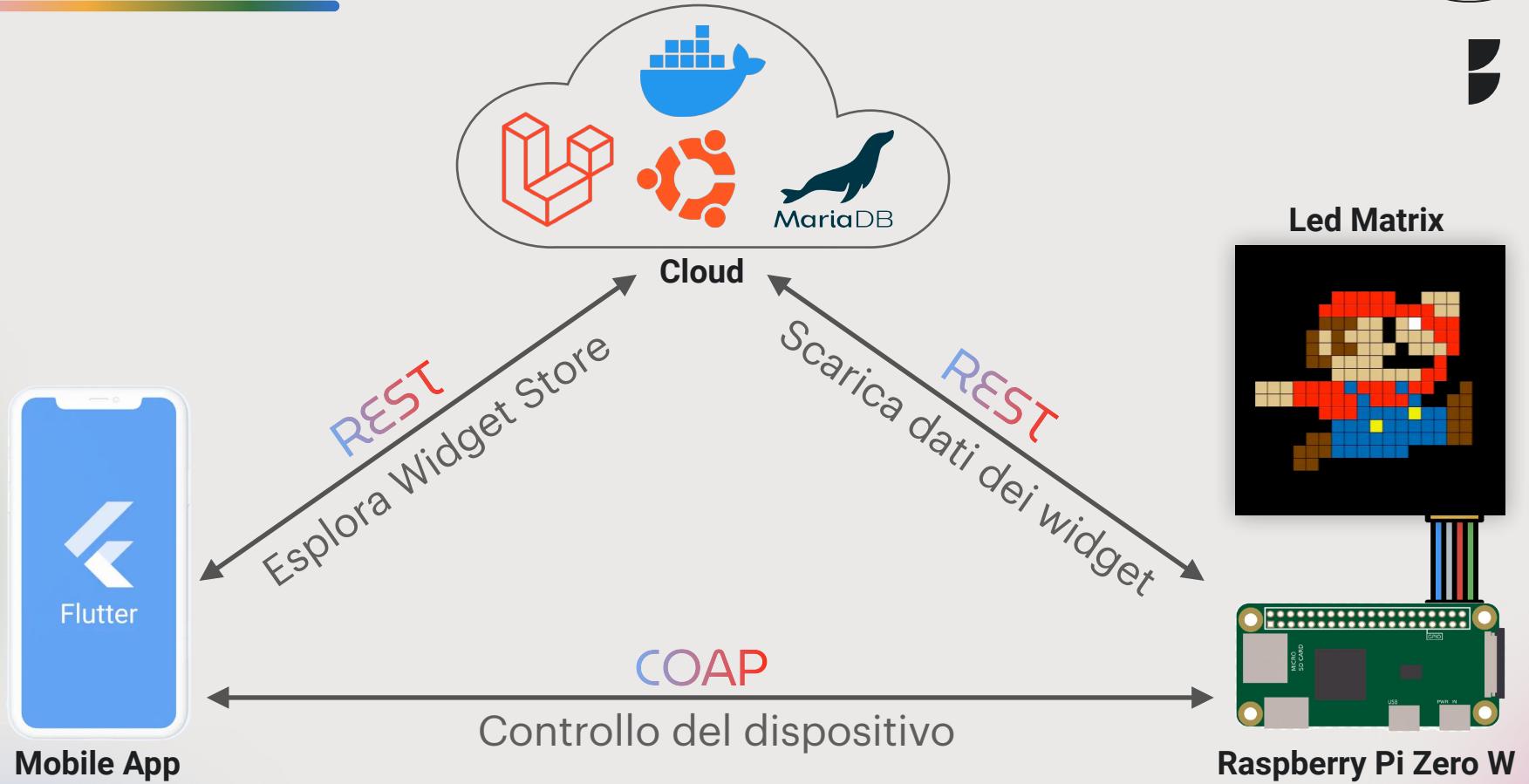
COAP

Controllo del dispositivo

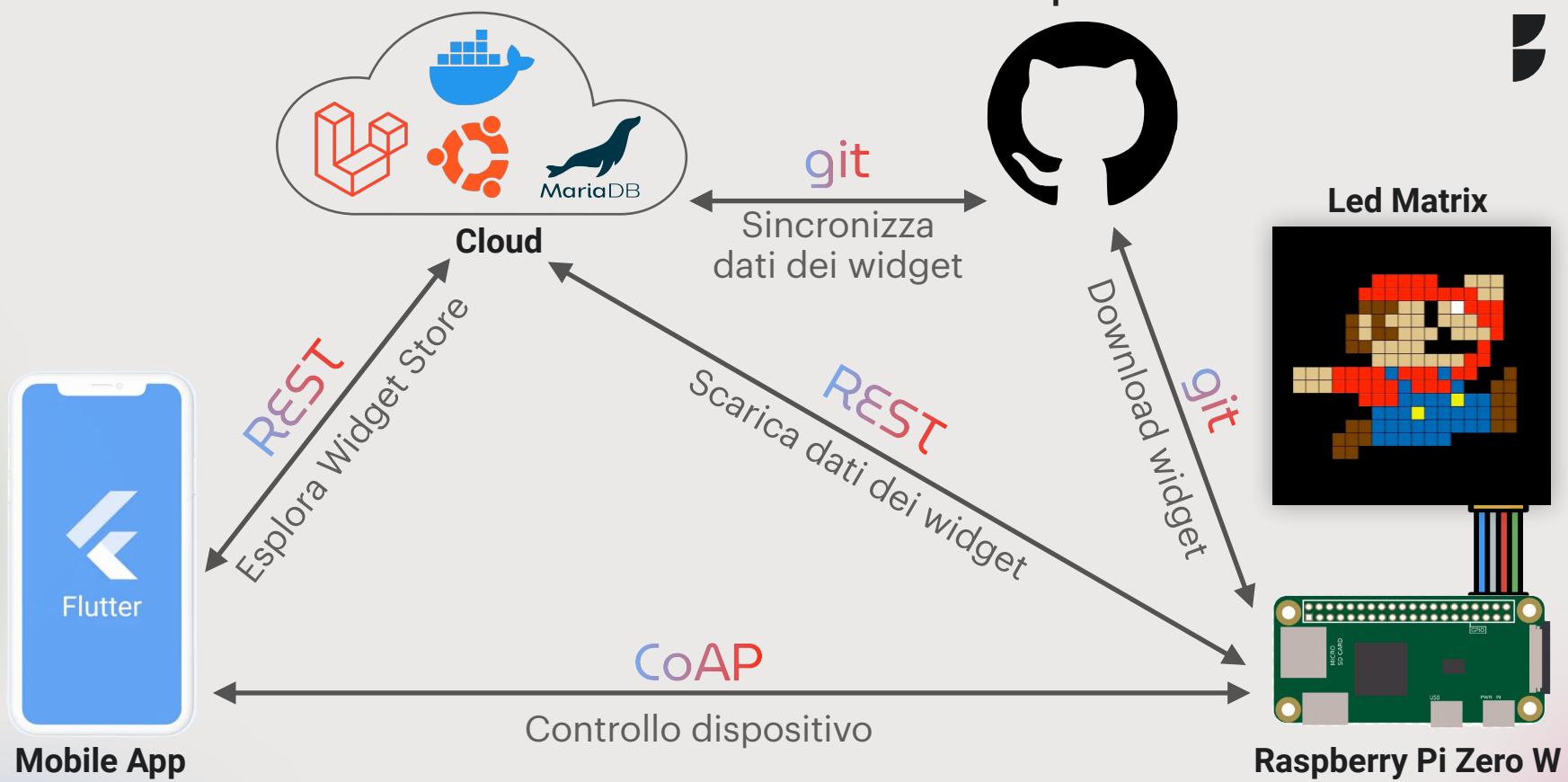


Raspberry Pi Zero W

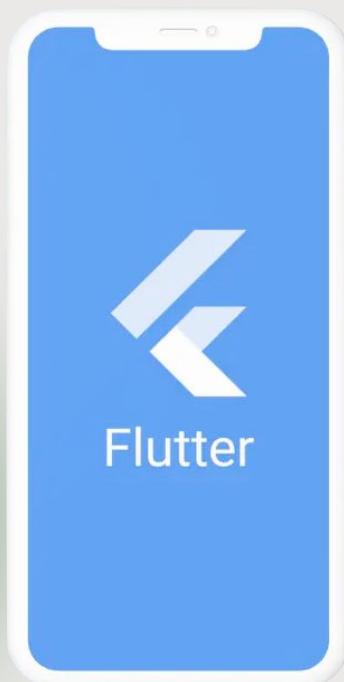
Mosaico Architecture



Mosaico Architecture

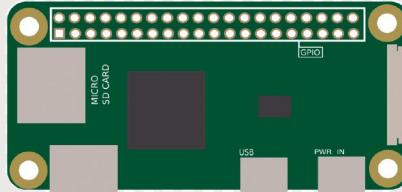
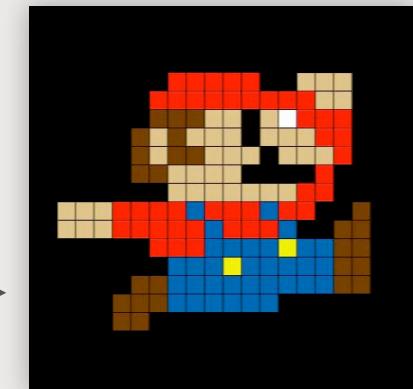


Mosaico Architecture



Mobile App

Led Matrix



Raspberry Pi Zero W

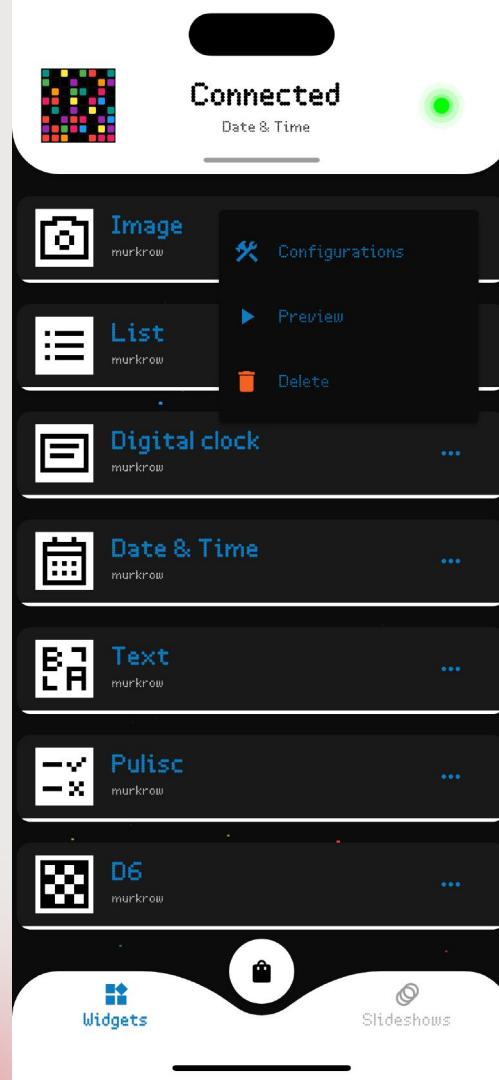
App Mobile

1. Widget installati
2. Widget Store
3. Slideshows
4. Device Control

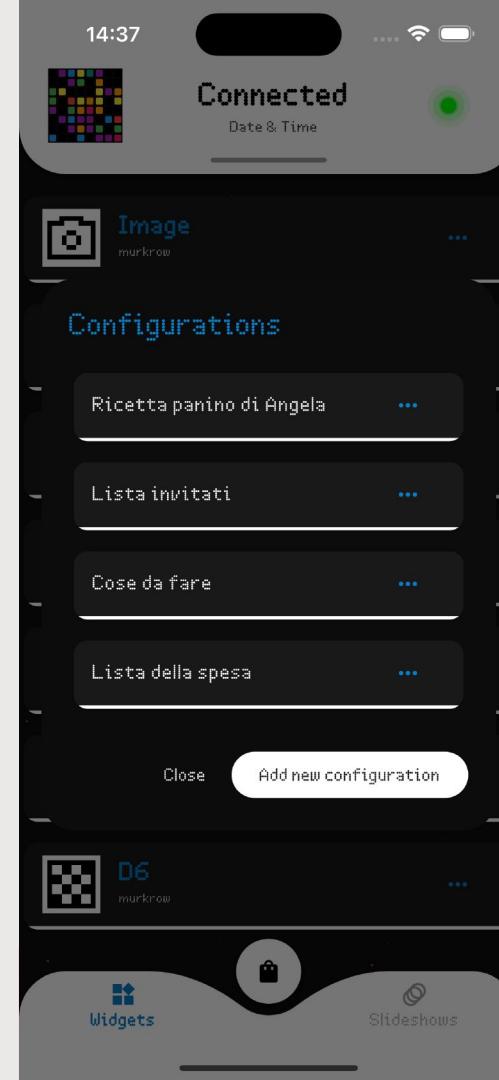
Installed widgets



No installed widgets



Widget options



Configuration picker

Store

14:52

Store

?

Image
Simply display an image on the matrix!

List
Display a grocery list or a todo list

Digital clock
Display big time with digits!

Date & Time
Display today date with time

Text
Write custom text on the matrix

Pulisc
Keep track of cleaning duties with your roommates!

D6
Throw a d6 dice and get a random result!

Store page

19:12

Image

< ?



Description

How to use

1. Install from the AppStore
2. Press [preview](#) on the installed widgets page
3. Add a new configuration
4. Upload the image you want on the matrix
5. Save the configuration, press play and see the result!

Note: you can also chain multiple images creating a slideshow with multiple configurations!

Info

Author

murkrow

Repo URL

github.com/mosaiico-widgets/image-widget

Widget details

14:52

Store

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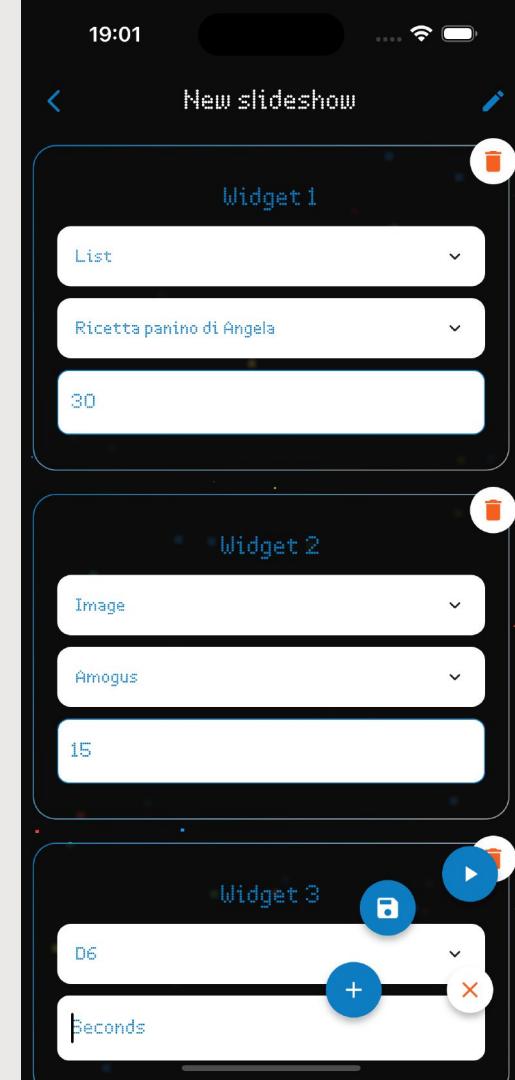
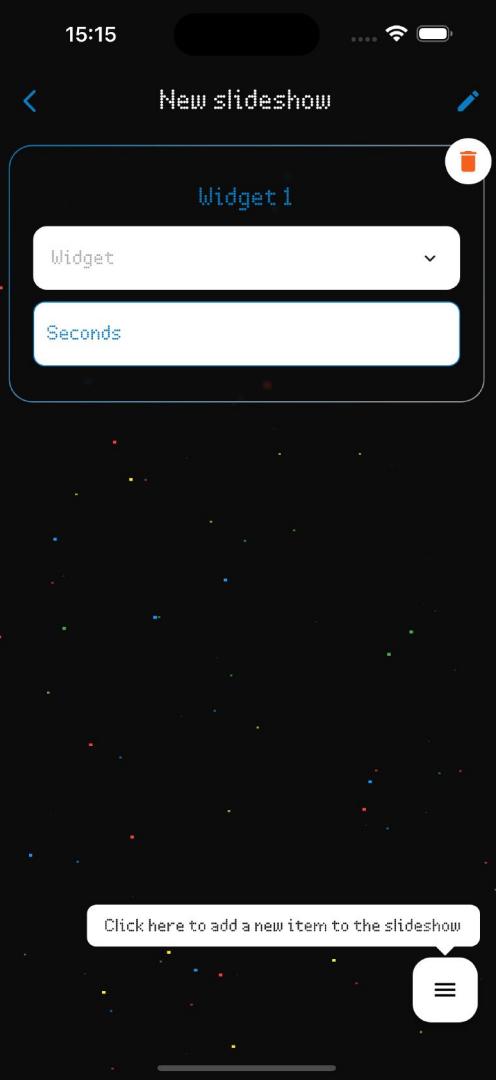
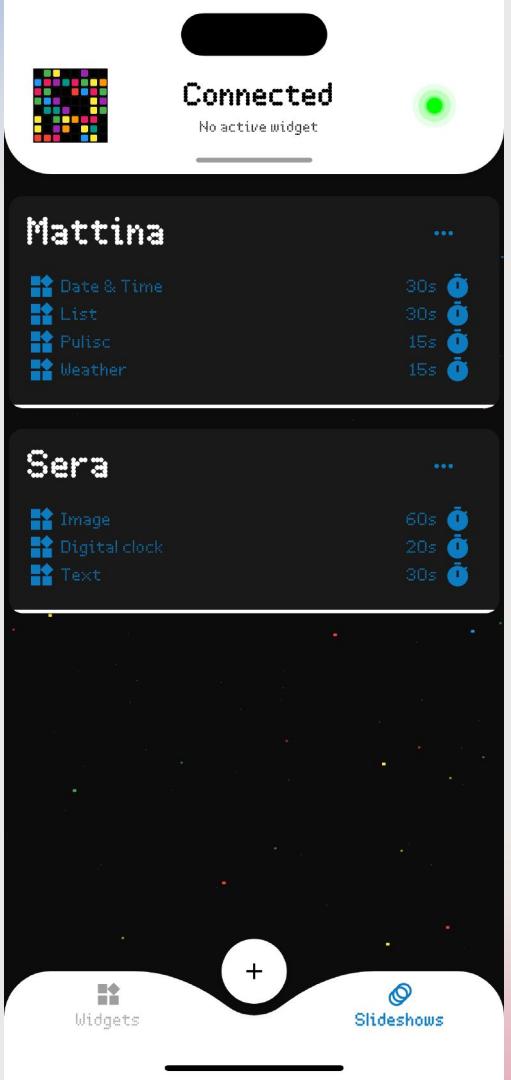
Pulisc
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Widget details

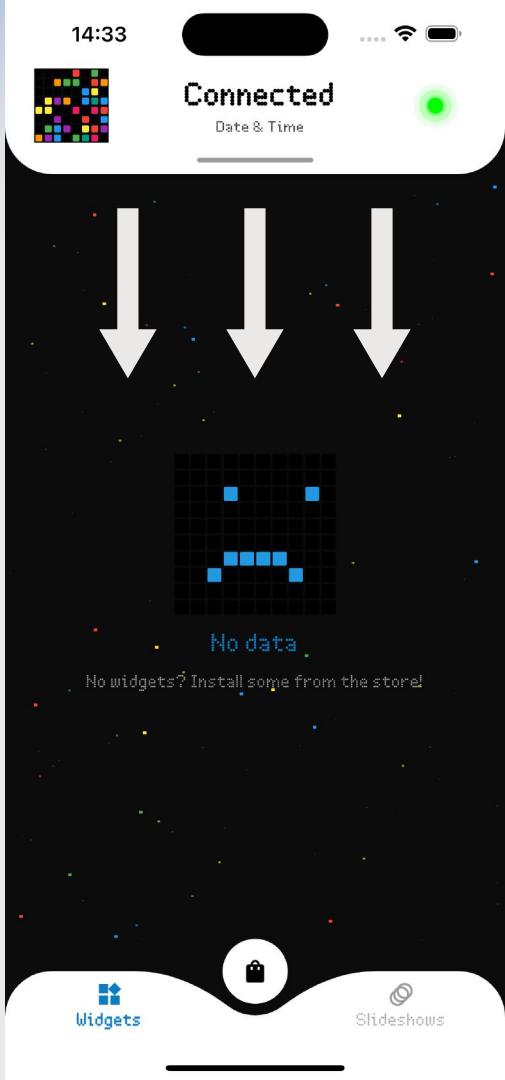
Installing a widget

Slideshows

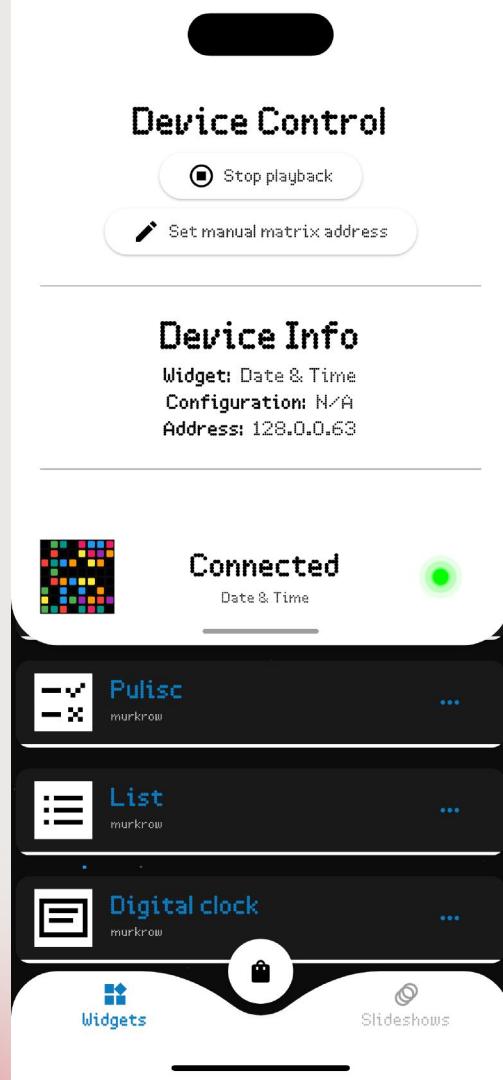


Creating a slideshow

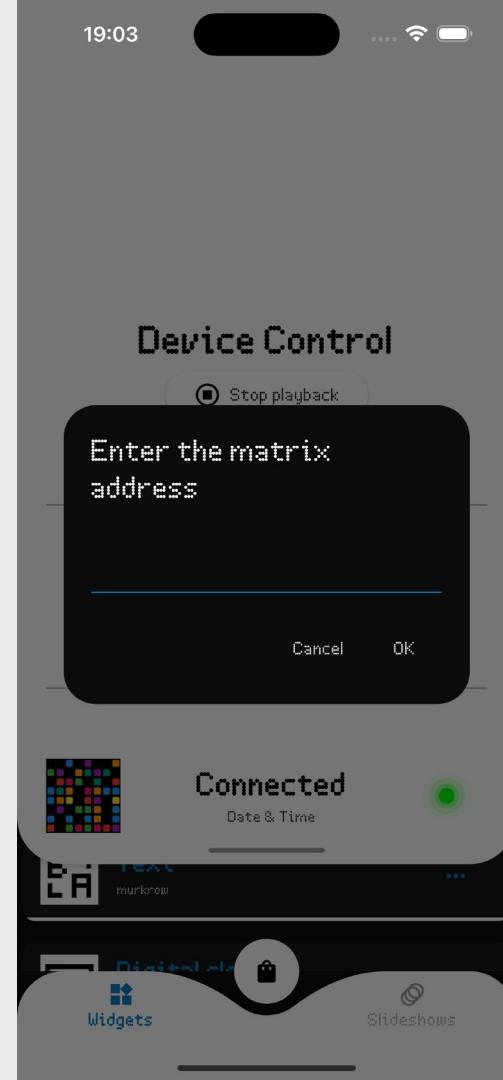
Device Control



Home page



Panel slide down



Manual matrix connection

Software

Analisi delle performance

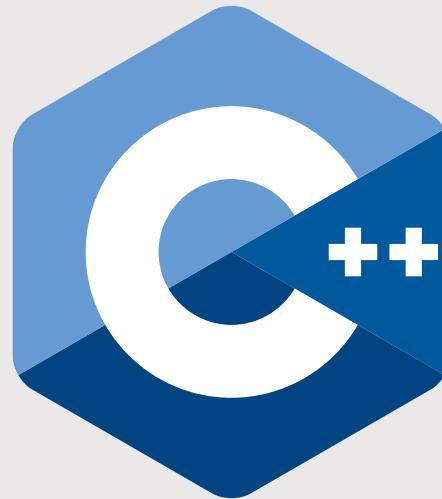
Limitazioni hardware



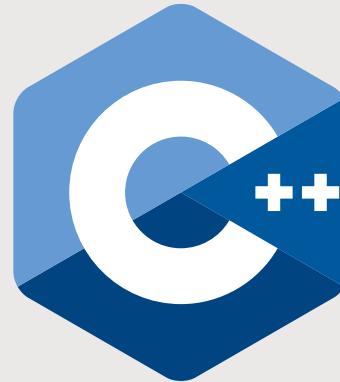
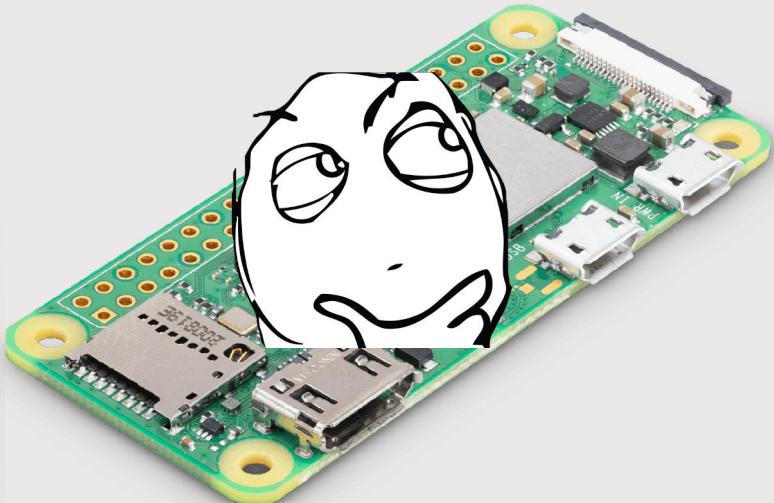
CPU: 1GHz, single-core
RAM: 512MB



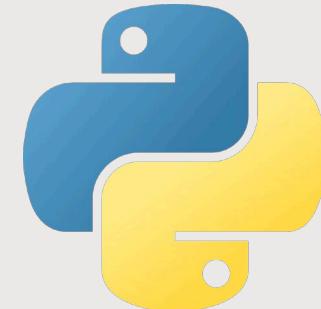
Software C++



Software C++



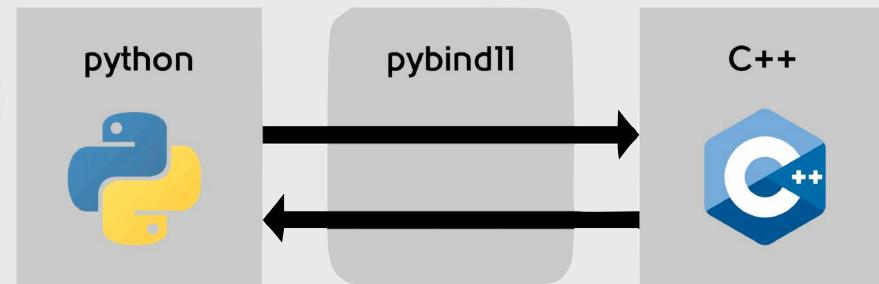
Software

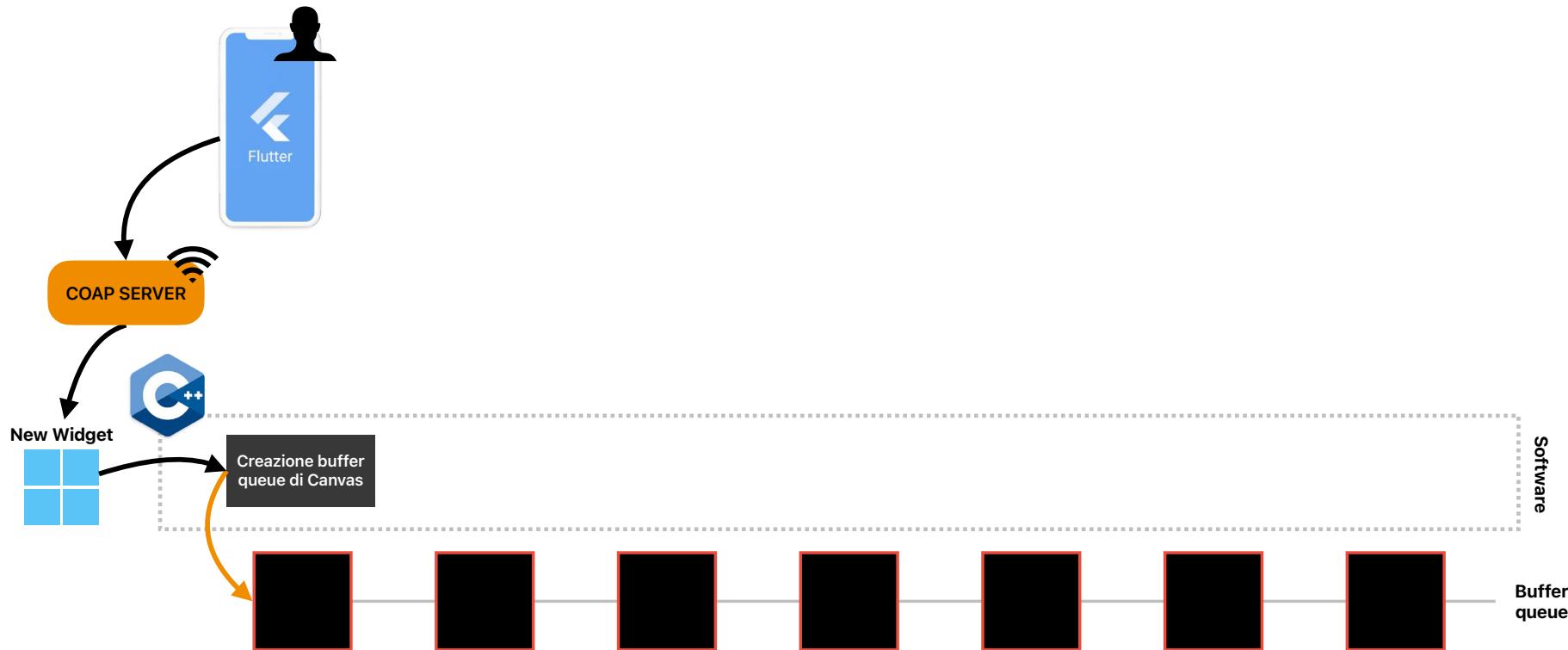


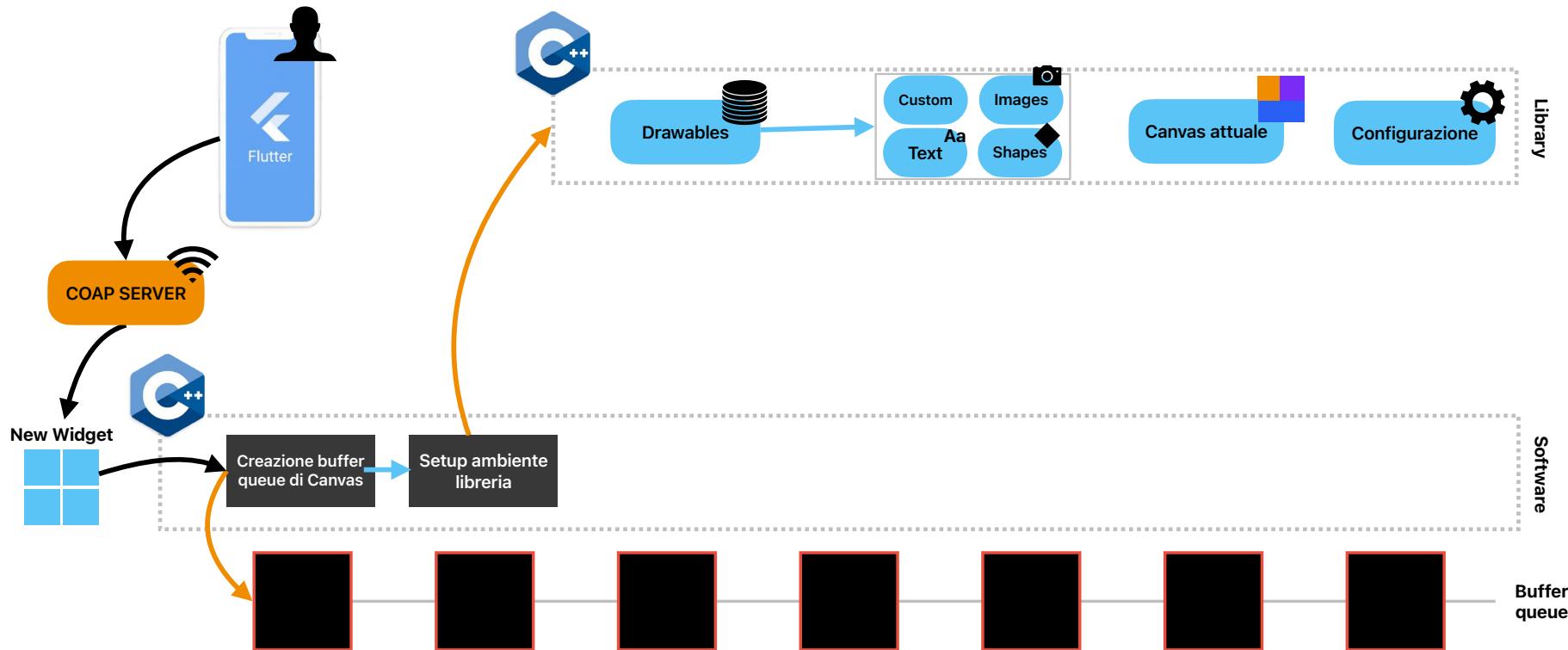
Widget

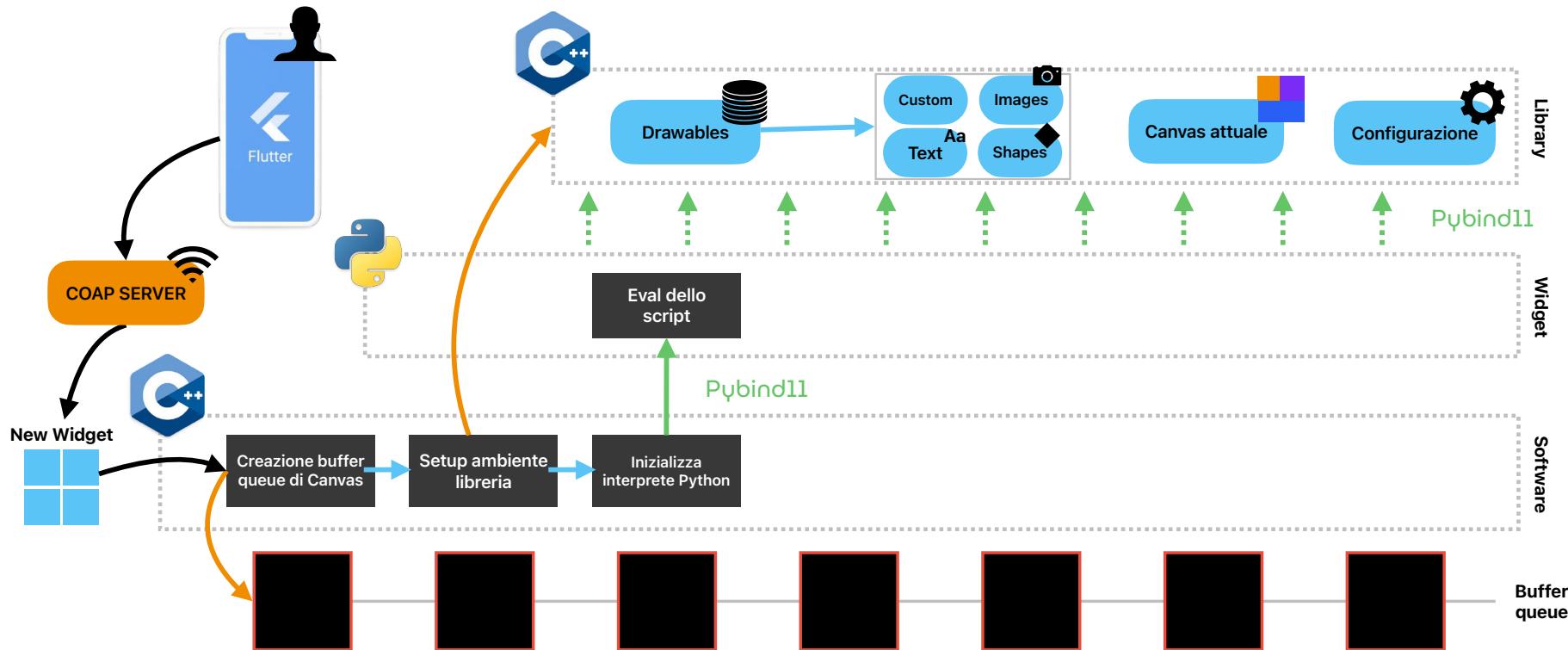


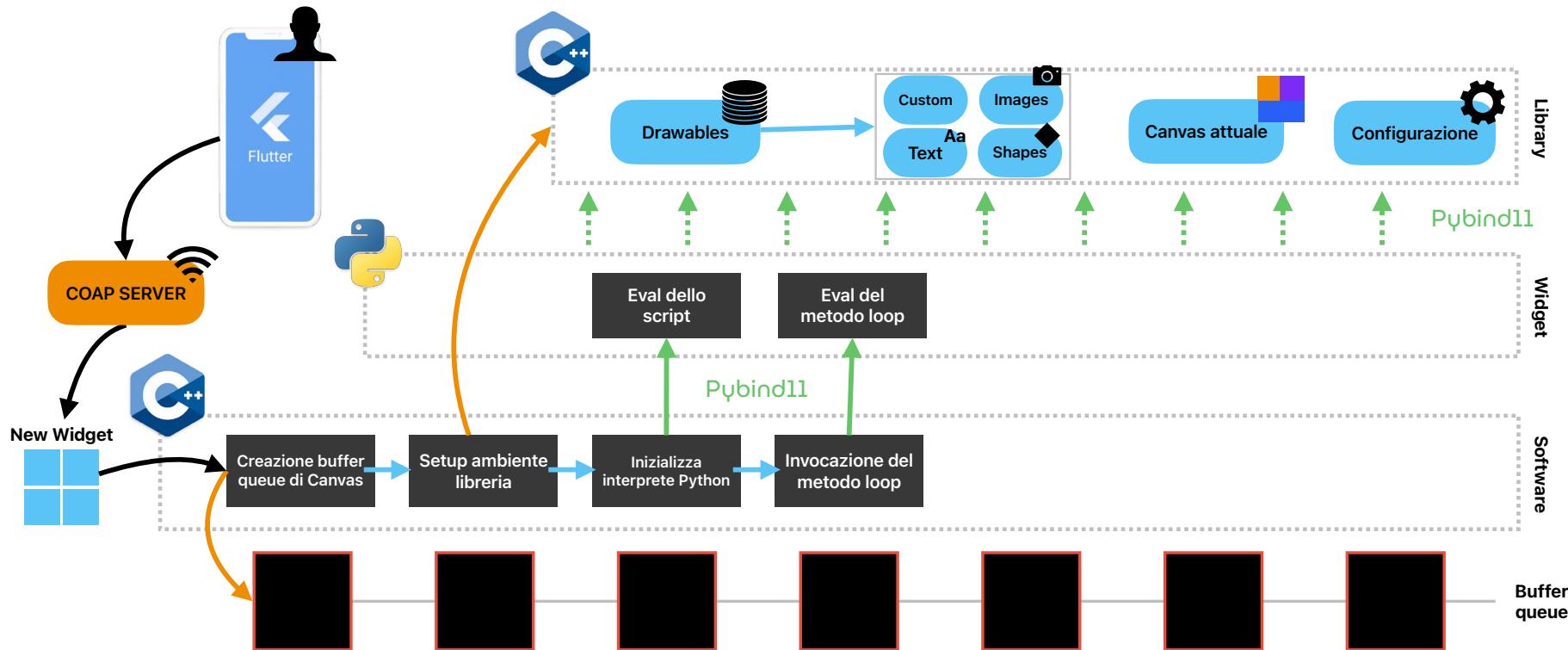
Software C++

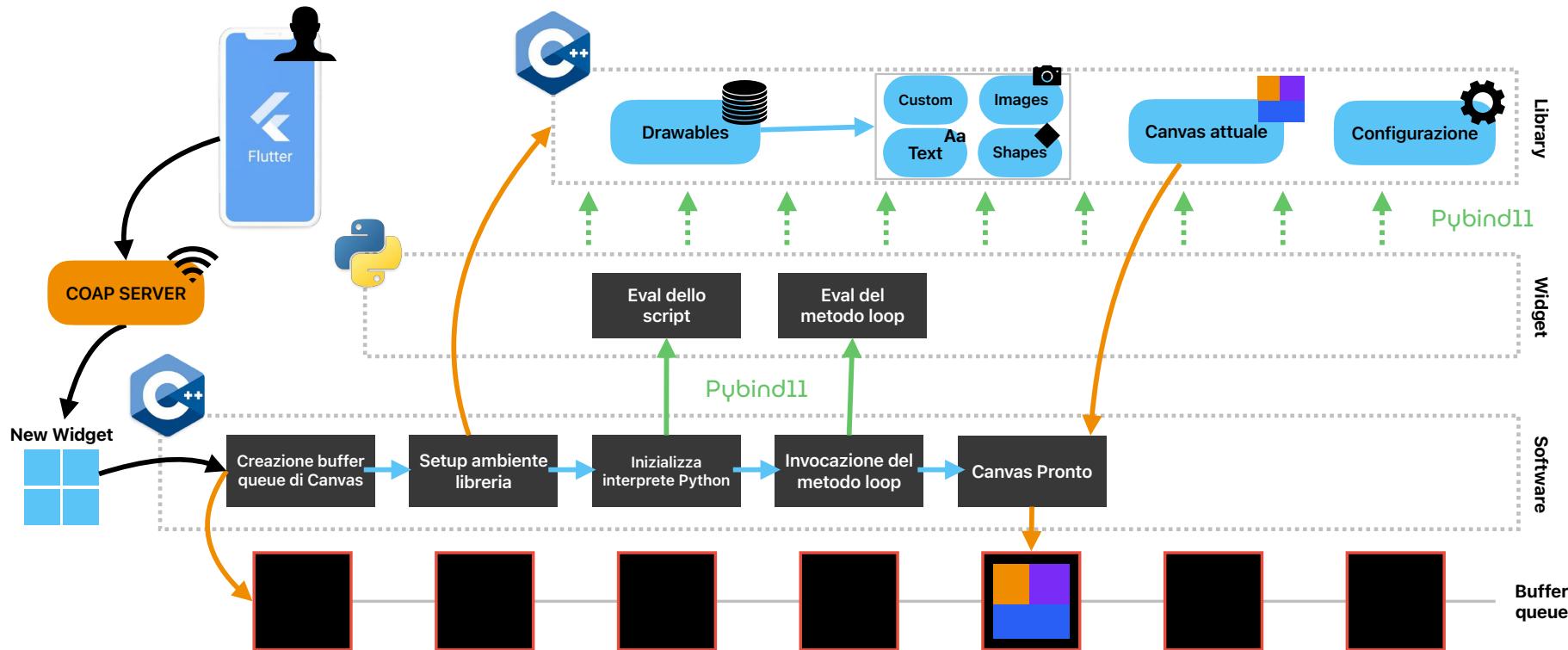


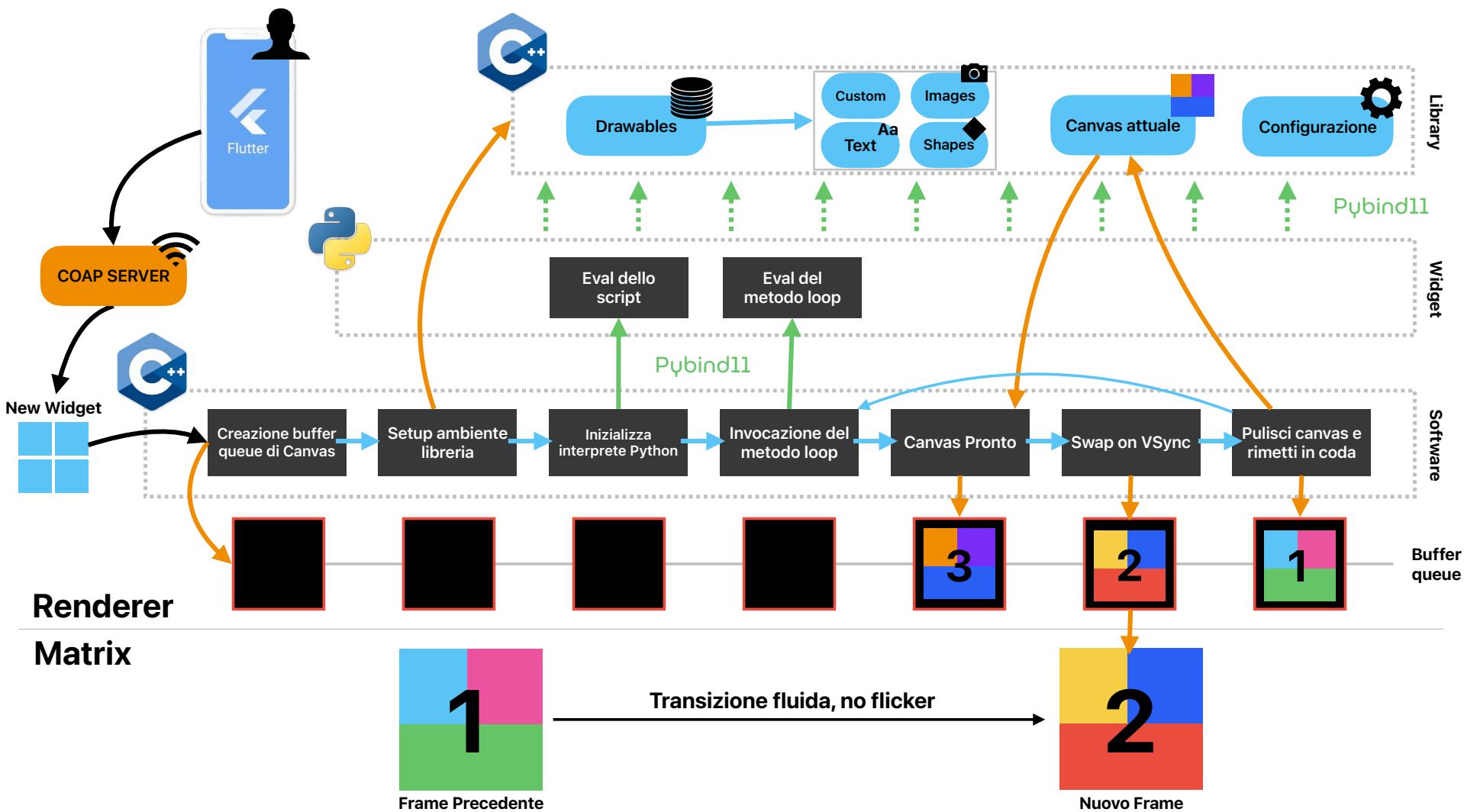




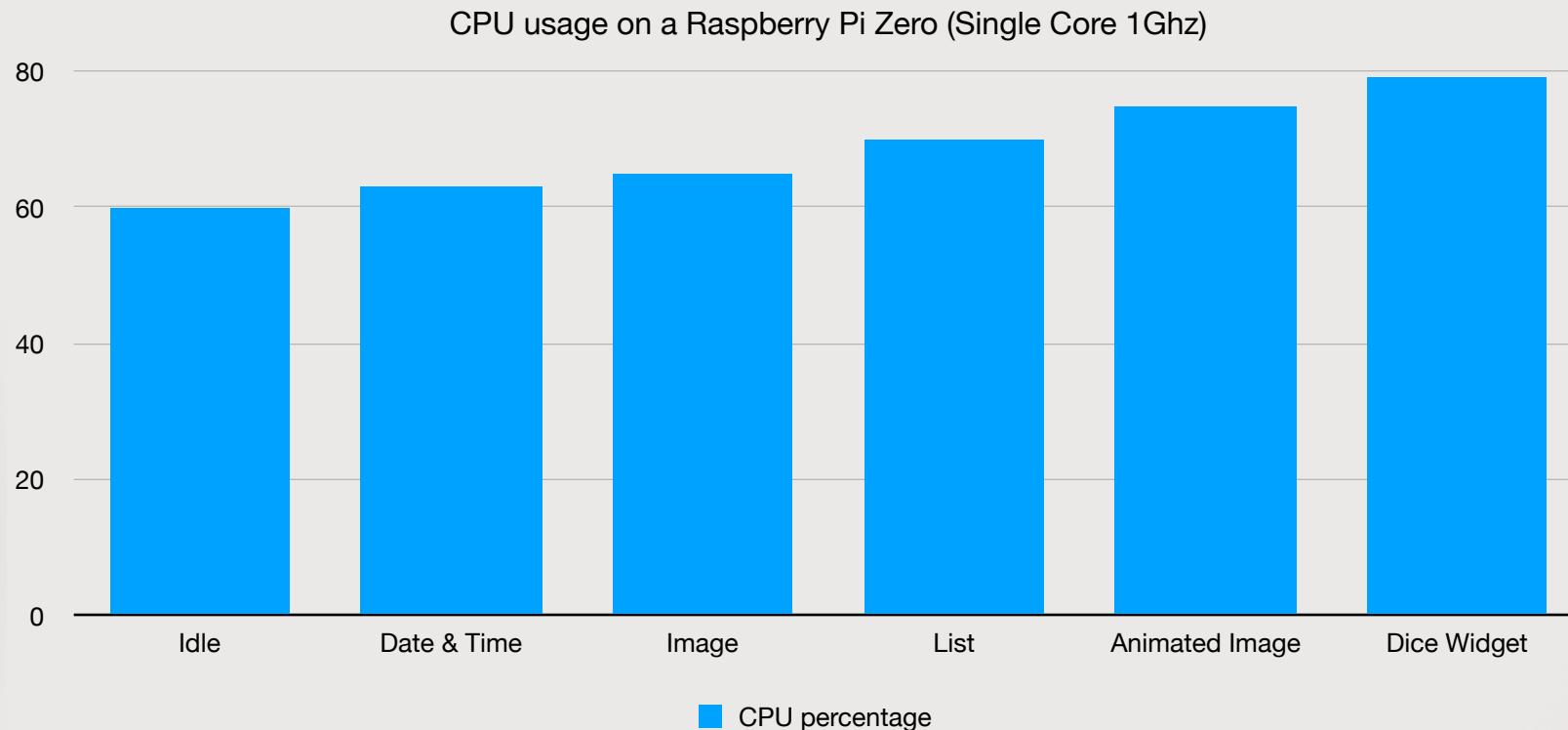






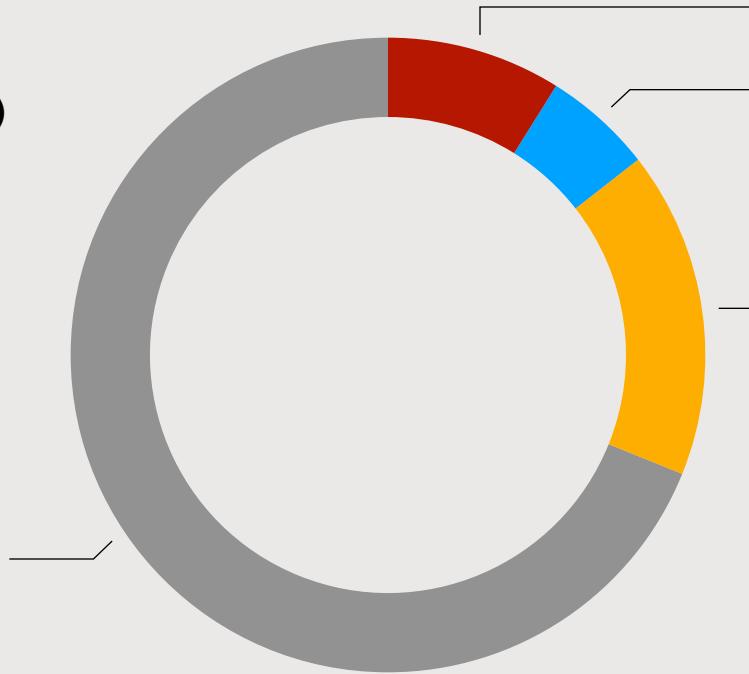


Utilizzo CPU



Utilizzo RAM

- Renderer (43Mb)
- COAP + BLE Server (29Mb)
- DietPi (81Mb)
- Free (324Mb)



Simulatori



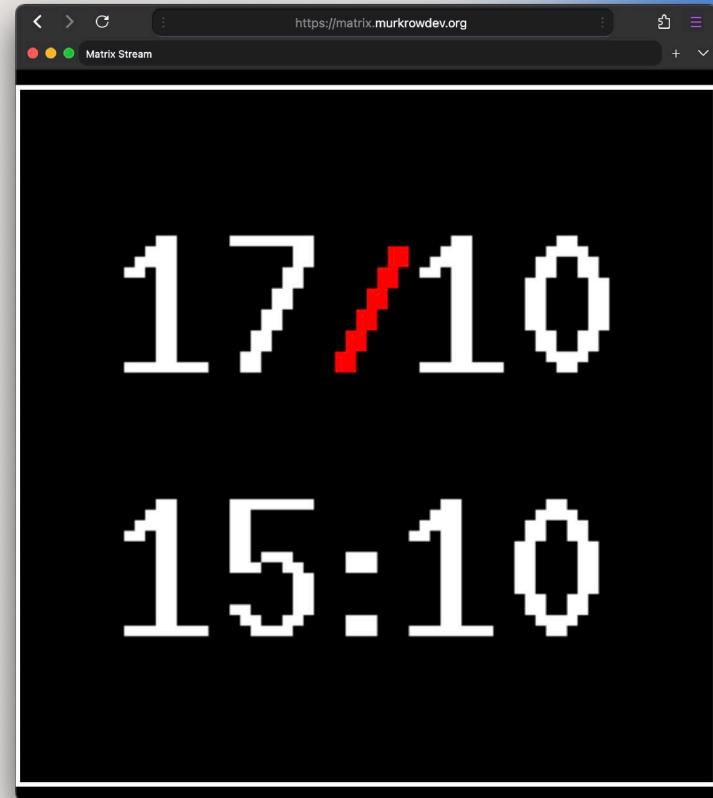
Hardware Matrix

Sviluppo utilizzando
Cross-compilatore per ARMv6



X11 Matrix

Lancio come finestra desktop
Funziona solo su Linux



Web Matrix

Raggiungibile tramite URI:
<https://matrix.murkrowdev.org>
Cross platform

Grazie a tutti!

Più informazioni su:

<https://mosaico.murkrowdev.org>



CREDITS: This presentation template was created by **Slidesgo**, and includes icons by **Flaticon** and infographics & images by **Freepik**