TouchGFX

STM32 Embedded Graphical
User Interfaces (GUI)

SMARTPHONE GUIs ON EMBEDDED PRODUCTS

CONVECTION / HOTAIR

215 °C

START

ST AIRCONDITION
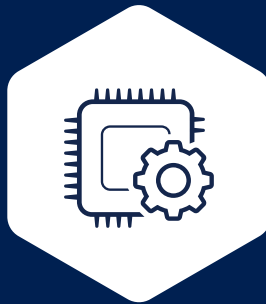
36°

02:36

12:15
JUN 11

TouchGFX

TouchGFX is a free GUI tool and an integrated part of the STM32 ecosystem. TouchGFX includes:

TouchGFX GENERATOR

Configure and generate a TouchGFX project

TouchGFX ENGINE

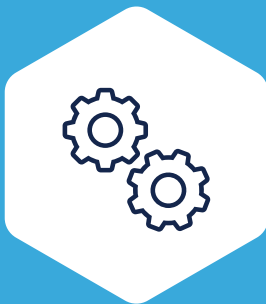Optimized and hardware accelerated graphics library

TouchGFX DESIGNER

A drag-and-drop PC GUI builder and simulator

Delivered as a X-CUBE-TOUCHGFX Package

TouchGFX
GENERATOR

The TouchGFX Generator is a CubeMX plugin, where the user can configure and generate a TouchGFX project for their custom STM32-based hardware.

CUBEMX INTEGRATION

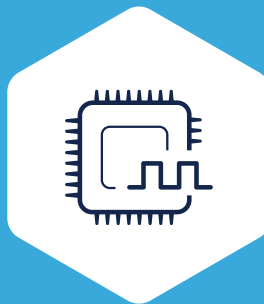**IDE INDEPENDENT**

FASTER LOW-LEVEL DEVELOPMENT

TouchGFX
ENGINE

The advanced TouchGFX technology is optimized for the STM32 microcontrollers, giving you maximum performance on cost-effective hardware.

SMARTPHONE ANIMATIONS

LOW MCU LOAD

COST-EFFECTIVE GUI SOLUTIONS

TouchGFX
DESIGNER

Develop great GUIs effortlessly with our drag-and-drop GUI builder, the TouchGFX Designer.

GET GOING
IN NO TIME
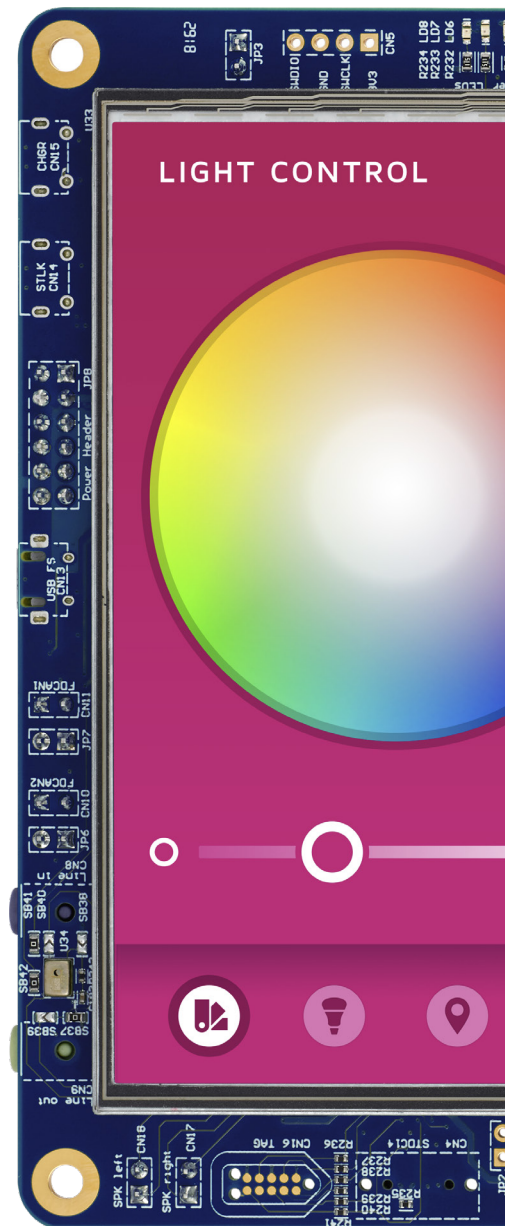
1 OPEN THE TOUCHGFX DESIGNER

+

2 FIND YOUR DISPLAY KIT

+

3 CREATE/SELECT A DEMO

+

4 FLASH YOUR BOARD

LIGHT CONTROL

CREATE ANYTHING

TouchGFX is an advanced GUI tool offering everything you need to create cutting-edge GUIs:

SMARTPHONE FEATURES

· TouchGFX enables smartphone animations and features like swipe, scroll, 3D effects, video playback, transparency, alpha-blending, touch gestures, and anti-aliased fonts and kerning.

INTERNATIONALIZED AND LOCALIZED APPLICATIONS

· TouchGFX supports many languages, such as English, Chinese, Japanese, Thai, Arabic, and more.
· Left-to-right and right-to-left writing systems from the unicode basic multilingual plane are supported.
· For large fonts the application can load and install fonts at runtime.
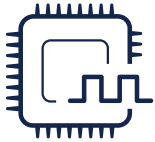
REAL-TIME OPERATING SYSTEM

· Run your TouchGFX application on bare metal or choose any RTOS.

GENERATED CODE & USER CODE

· TouchGFX enables unique GUIs with the ability to combine TouchGFX Designer generated code with user code.
· GUI written in C++.
· Create high performance and easy mantainable code on multiple platforms. The Model-View-Presenter pattern gives way for easy interfacing with other C/C++ application components.
· Create your own software elements with existing widgets.
· Design your own widgets.
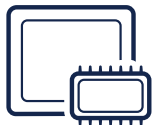
CONFIGURABLE FRAMEBUFFER(S)

· Run applications with 1, 2, 4, 6/8, 16, 24, or 32 bits per pixel color depth.
· Multiple framebuffer setups: partial, single, and double.
· Framebuffer placement Internal and/or external memory.
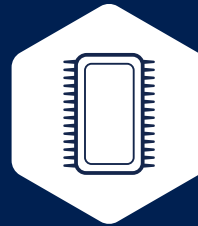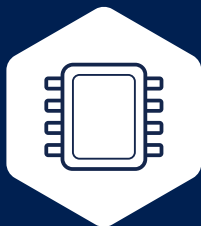
HARDWARE REQUIREMENTS

DISPLAY INTERFACES

- SPI
- Parallel
- RGB TFT
- MIPI-DSI
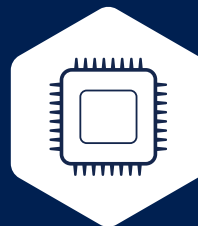
RAM (INTERNAL/EXTERNAL)

- Framework and Stack: 10-30 kB
- Widgets: 1-15 kB
- Framebuffers: 10kB – 3MB (depending on display resolution, color depth, and number of framebuffers)

FLASH (INTERNAL/EXTERNAL)

- Framework: 60-100kB
- Screen definitions, GUI logic: 1-100 kB
- Image and font data: 1-40MB (depending on application size)

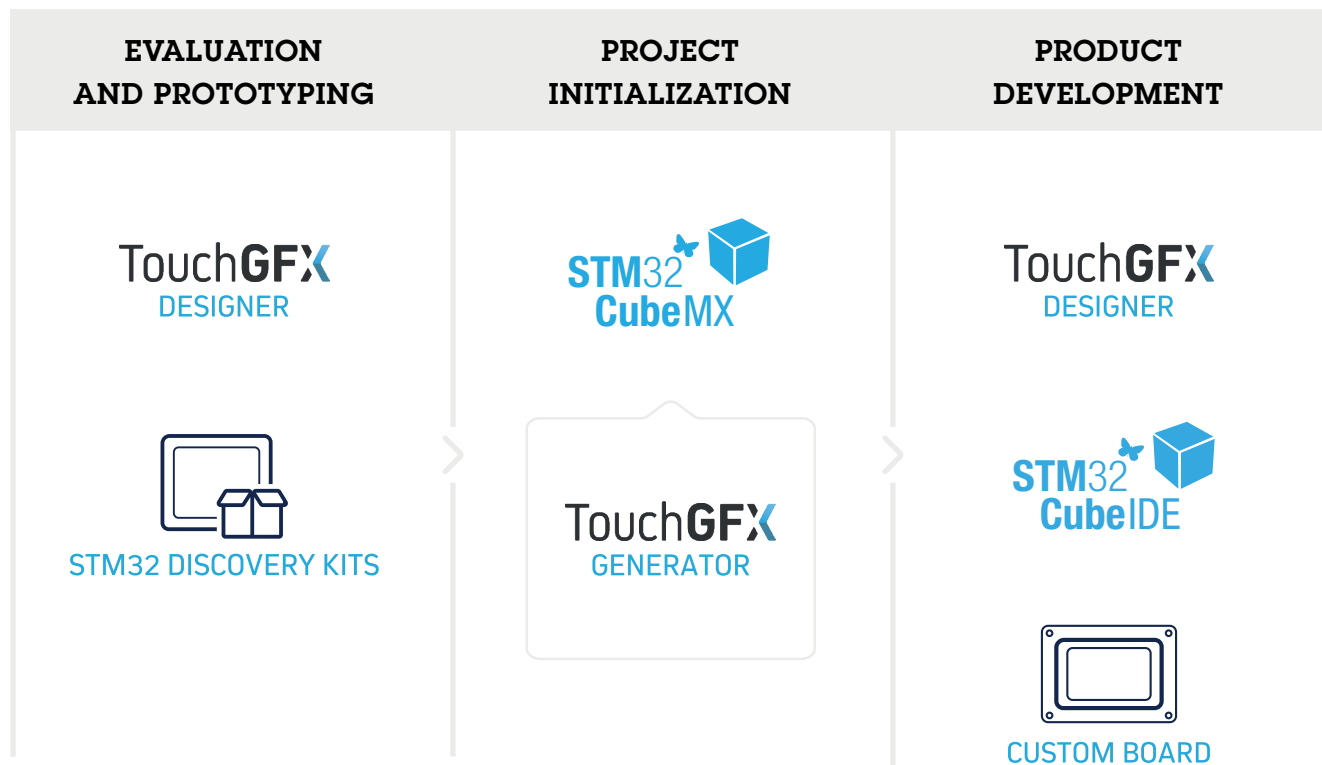## MCU

- Run TouchGFX on any STM32 MCU
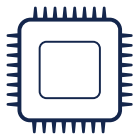
STM32 GRAPHICS ECOSYSTEM

Get a head start on your development on the STM32 MCU, with the free software solutions of the STM32 graphics ecosystem.

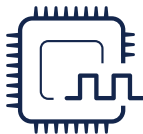| EVALUATION AND PROTOTYPING	PROJECT INITIALIZATION	PRODUCT DEVELOPMENT
Touch**GFX** DESIGNER	STM32 **Cube**MX	Touch**GFX** DESIGNER
STM32 DISCOVERY KITS	Touch**GFX** GENERATOR	STM32 **Cube**IDE
		CUSTOM BOARD

Users can change IDE/compiler in CubeMX to MDK-ARM, EW-ARM.

MCU PORTFOLIO FOR GRAPHICS

STM32 SERIES	FREQUENCY	HARDWARE ACCELERATION	DISPLAY INTERFACES	SUPPORTED RESOLUTIONS
STM32G0 (CM0+)	64 MHz		SPI	Up to 320*240
STM32L4 (CM4)	80 MHz	Chrom-ART ™	Parallel SPI	Up to 480*272
STM32L4+ (CM4)	120 MHz	Chrom-ART ™ Chrom-GRC™	Parallel LCD TFT MIPI-DSI	Up to 450*450
STM32F4 (CM4)	180 MHz	Chrom-ART ™	Parallel LCD TFT MIPI-DSI	Up to 800*480
STM32F7 (CM7)	216 MHz	Chrom-ART ™ MJPEG	Parallel LCD TFT MIPI-DSI	Up to 1024*768
STM32H7 (CM7)	480 MHz	Chrom-ART ™ MJPEG	Parallel LCD TFT MIPI-DSI	Up to 1024*768
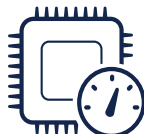
HARDWARE ACCELERATION FOR GRAPHICS

STM32 MCUs embed a powerful hardware acceleration for graphics offloading the MCU, which saves memory and enables smooth animations and video playback.

STM32 Chrom-ART Accelerator is a 2D DMA engine for fast data copy with specific functions, such as pixel format conversion, blending operations, and font management.

BENEFITS:
· Higher FPS
· Lower MCU load
· Modern animations

Hardware JPEG decoding is an accelerator for JPEG image encoding and decoding.

BENEFITS:
· Increasing FPS for video
· Lower MCU load

STM32 Chrom-GRC is a memory management unit for optimizing memory usage for non-square displays.

BENEFITS:
· Lower RAM need
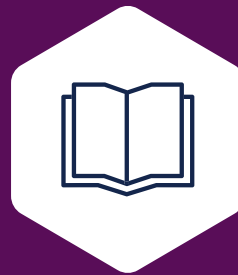· Increased GUI performance on round displays

HELP CENTER

Easy access to experts, technical articles, and support in our community.

COMMUNITY

DEMO AND VIDEO EXAMPLES

KNOWLEDGE BASE

ONLINE SUPPORT

DOWNLOAD TOUCHGFX AT ST.COM

APPROVED TOUCHGFX PARTNERS

Get support from one of our approved TouxchGFX and STM32 expert companies to help create seamless state-of-the-art applications, fast.

· Software: Application development, onsite development, porting, support tickets, training
· Hardware: Hardware development, EMS
· Graphical Design: GUI & UX Design and research

Touch**GFX**

www.st.com/stm32gui