



# Revolutionizing the User Experience of Embedded Interfaces



# TouchGFX

*A software framework enabling high-end graphics on low resource hardware*

## Using TouchGFX:

- Your embedded product gets outstanding graphics and smooth animations.
- You get a high-end product with a low cost per unit and a long battery life.



## USER EXPECTATIONS ARE HIGH

*Smartphones have become the paramount reference when we judge user interfaces and touch displays, making users of embedded interfaces more demanding.*

### THE USERS EXPECT:

- Touch Gestures
- Instant Response
- Intuitive Interaction
- Modern Design
- Strong Brand Identity

### TouchGFX ENABLES JUST THAT:



## YOUR BUSINESS GAINS WITH TouchGFX

- **A PRODUCT DIFFERENTIATOR**

Make your embedded product stand out by giving it a unique smartphone look and feel.

- **A VALUE CREATOR**

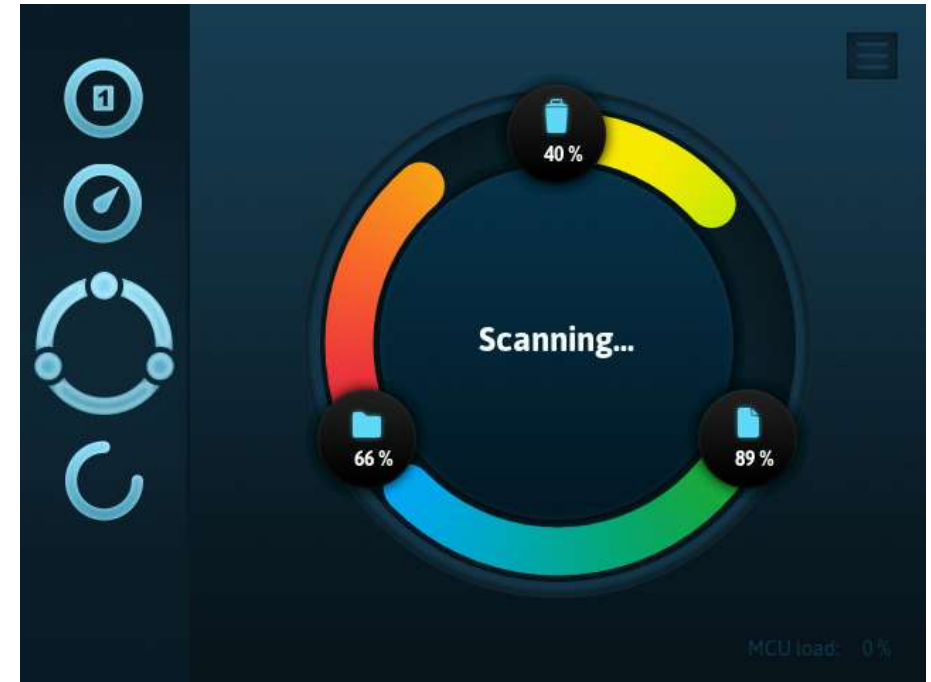
Reach the full potential of your embedded product with an intuitive, responsive, and consistent user interface.

- **A BRAND BOOSTER**

Let your embedded product express your overall brand and visual identity.

- **A MONEY SAVER**

Achieve all of the above on low-cost hardware with TouchGFX.



## WHEN IS IT RELEVANT TO USE TouchGFX?

*Whenever a **high-end GUI performance** brings value to your embedded product.*

And, when one or more of the statements below apply:

- **Low unit cost** is essential for your business profit
- **Low complexity** hardware and software make sense in your application
- **Low power consumption** is important for the value of your application



- ❖ *With TouchGFX and any Cortex M microcontroller you get a high-performing GUI platform with plenty of CPU power to run the control application. No need for a complex and expensive application processor.*

# DIFFERENTIATE YOUR PRODUCT WITH A UNIQUE GUI

## FROM THEN TO NOW WITH TouchGFX:



Reach the full potential of your embedded product by utilizing the possibilities of TouchGFX – giving your product:

- A unique and appealing look.
- Better navigation.
- Proper and safe operation.
- More and better information.
- Advanced features.
- Cohesive brand across all platforms (embedded panels, smartphones, tablets, desktop etc.).

## THE TouchGFX FRAMEWORK

### TouchGFX ENABLES MODERN GUI FEATURES:

- Transparency
- Alpha-blending
- Anti-Aliased Fonts and Kerning
- Touch Gestures
- Animations
- Screen Transitions
- High-Resolution Displays
- High Frame Rate

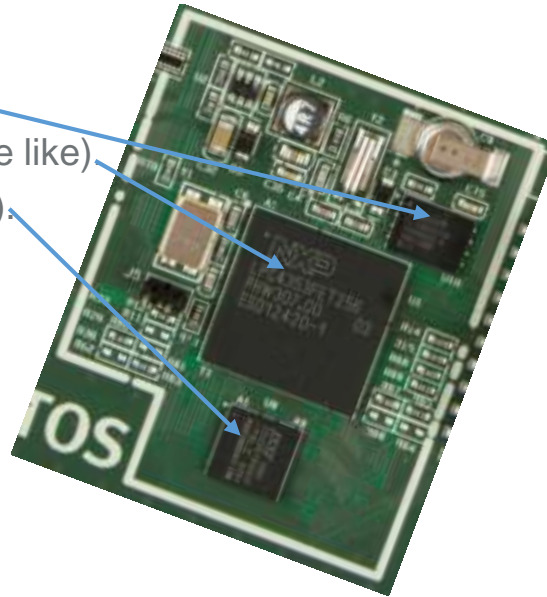




# TouchGFX HARDWARE SETUP

## REQUIRED HARDWARE

- **Flash** (external) for graphics.
- **MCU** (Cortex M0, M3, M4 and the like)
- **RAM** (external) for framebuffer(s).
- **Low MCU Load**
  - Typical < 15%
  - The MCU can perform other application tasks.
  - Single-chip solution.
- **Low Memory Footprint**
  - Internal RAM: 10-35 kB (framework, stack, widgets).
  - Internal ROM: 20 kB (framework) + 1 – 40 KB (screen definitions, UI logic).
  - External RAM: 150 KB -2 MB (framebuffers).
  - External Flash: 1-8 MB (graphics data, fonts, text strings).



- Can be used on any MCU
  - Targeting Cortex M with TFT controller.
- **Display Resolutions:**
  - QVGA: 320x240 (often 3.5").
  - WQVGA: 480x272 (often 4.3").
  - WVGA: 800x480 (often 7.0").
  - WSVGA: 1024x600 (often 10").



# TouchGFX TECHNOLOGY

- **C++ FRAMEWORK**

- TouchGFX application.
- TouchGFX core.
- Board-specific hardware abstraction layer.

- **BITMAP GRAPHICS**

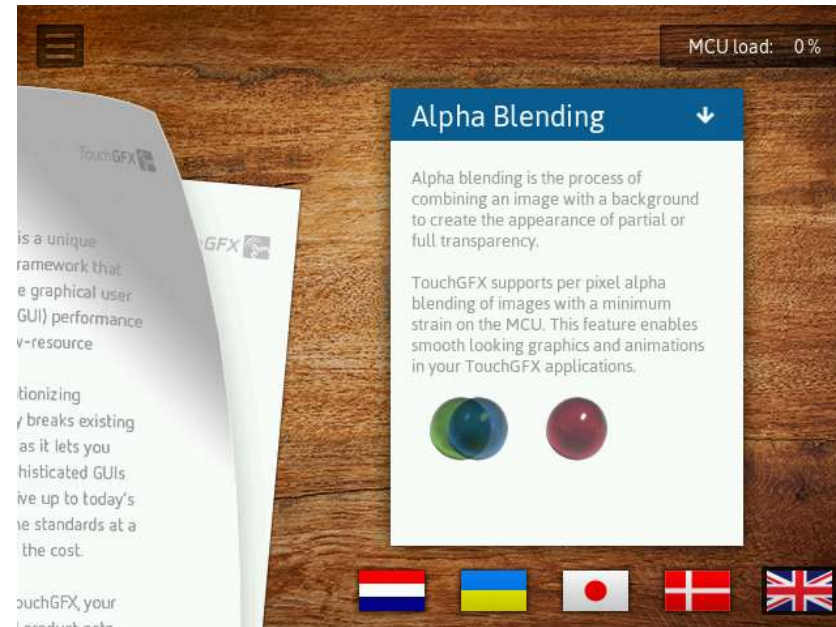
- Extensive use of DMA transfer (offloading the MCU).

- **ADVANCED RENDERING ALGORITHMS**

- Visible Surface Determination and customized invalidation techniques minimize the number of pixels being drawn.

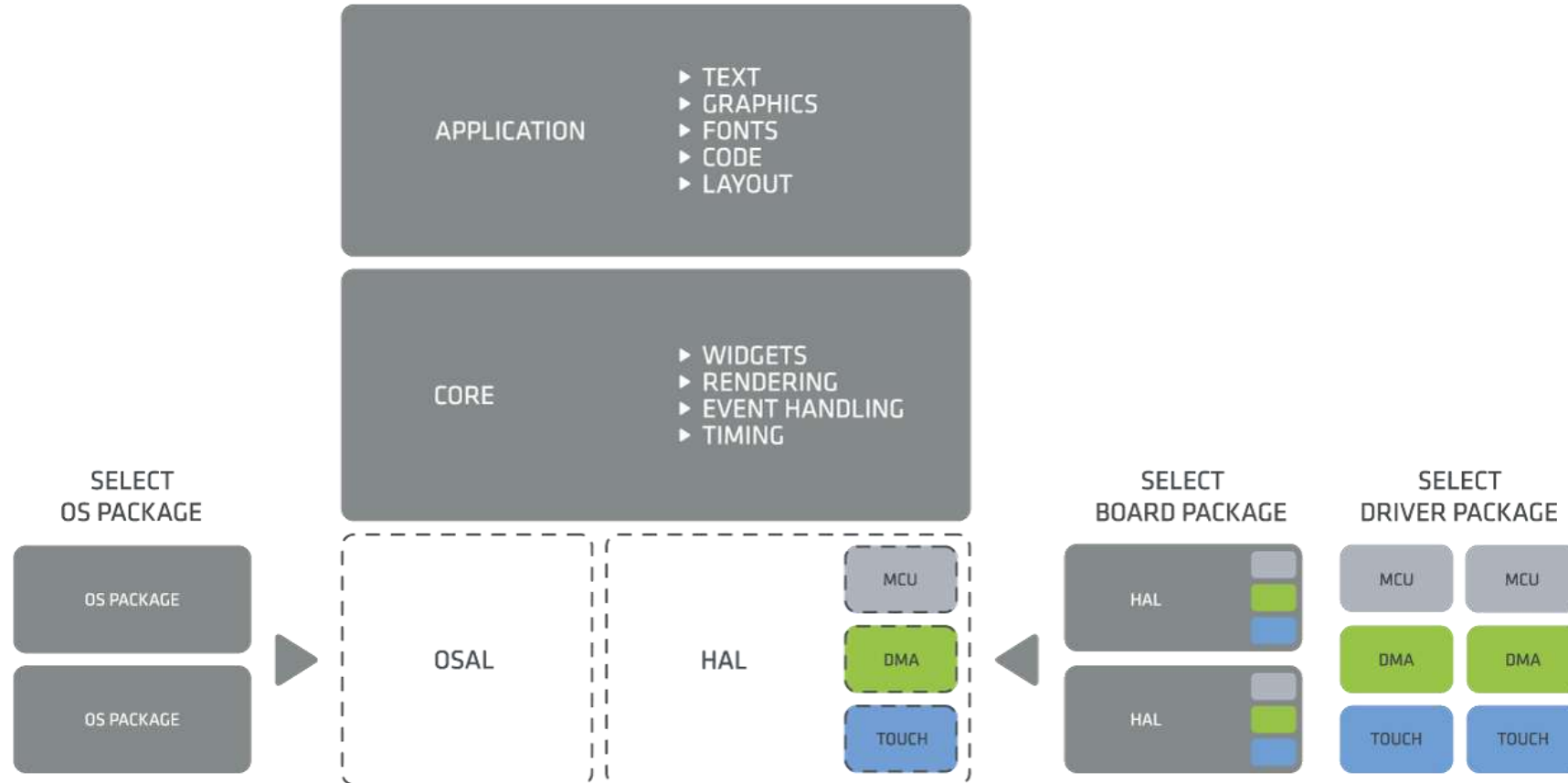
- **EASY AND AUTOMATED DEVELOPMENT**

- Multiple language support made easy.
- Bitmap and font converter.
- PC simulator.



## TouchGFX Software Layers

Software Layers:



## PROOF OF CONCEPT ON TARGET HARDWARE

*The TouchGFX demo board makes it easy to get proof of concept for your next GUI project.*



### THE TOUCHGFX DEMO BOARD

- includes a preinstalled demo application.
- comes with multiple display sizes and resolutions: U.R.T. 3.5", 4.3", 5.7", or 7.0" LCD display.
- is available on different MCUs: NXP LPC4350, LPC4353.
- can be ordered with either capacitive or resistive touch.
- allows transfer of design to target hardware.

**We are ready for your order @ [www.touchgfx.com](http://www.touchgfx.com)!**

# TouchGFX BUSINESS MODELS

## 1. DO IT YOURSELF

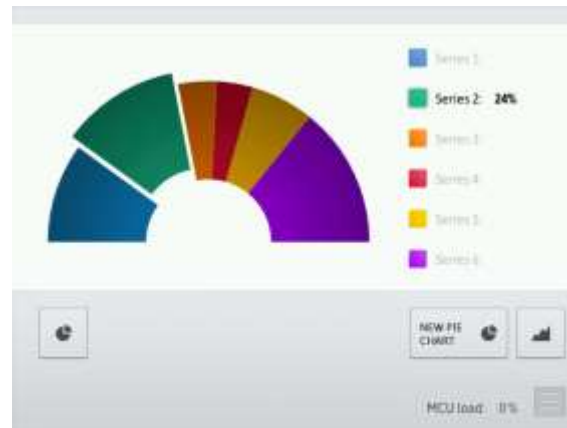
- Buy a TouchGFX license.
- Customize the HAL to your target platform.
- Create your TouchGFX-based application.

## 2. LET US DO IT FOR YOU

- Buy a TouchGFX license and a complete service solution from our expert design and development team.
- We take your product from idea to realization.

## 3. CUSTOMIZED MODEL

- Buy a TouchGFX license and choose which services you want from our TouchGFX team.
- You do the rest yourself.



## LICENSE MODELS

1

### Limited Product Line License

Max 3.000 units per year.  
One year of limited support,  
no maintenance.

**3,000 €**

2

### Product Line License

Unlimited units per year.  
One year of full support  
and maintenance.

**15,000 €**

## LICENSE MODEL in Detail

License Model	Production Volume	Price in € <i>Note 1</i>	Deliveries	Support & SW updates
<b>Evaluation</b> <i>Fully functional, supporting various developer boards incl. TouchGFX demo board.</i>	None. For evaluation purposes only.	Free of charge.	<ul style="list-style-type: none"> <li>• TouchGFX Core - precompiled library .</li> <li>• Ports for supported developer boards, precompiled libraries</li> <li>• Demo apps, examples, templates, source code.</li> <li>• TouchGFX developing tools.</li> <li>• Documentation.</li> </ul>	<ul style="list-style-type: none"> <li>• Limited support, 3 months.</li> <li>• No SW-updates.</li> </ul>
<b>Product Line Limited</b> <i>Note 2</i>	Maximum 3.000 units per year.	3,000,- <i>Optional: Standard support incl SW updates +3.000,-</i>	<i>Deliveries as Evaluation License +</i> <ul style="list-style-type: none"> <li>• Available driver package + ports for supported developer board, source code.</li> </ul>	<ul style="list-style-type: none"> <li>• Limited support, one year .</li> <li>• No SW-updates.</li> <li>• <i>Option: Standard support incl. SW updates</i></li> </ul>
<b>Product Line Unlimited</b> <i>Note 2</i>	Unlimited.	15,000,-	<i>Deliveries as Evaluation License +</i> <ul style="list-style-type: none"> <li>• Available driver package + ports for supported developer board, source code.</li> </ul>	<ul style="list-style-type: none"> <li>• Support incl. SW-updates, one year.</li> <li>• <i>Option: Customized support</i></li> </ul>
<b>Customized</b>	On request.	Depending on scope of license.	<ul style="list-style-type: none"> <li>• On request.</li> <li>• Full source code available.</li> </ul>	<ul style="list-style-type: none"> <li>• On request.</li> </ul>

*Note 1: All license fees are one-off. No royalties and developer licenses.*

*Note 2 Product Line License: Used on a line of products where all the products have the same function and same user interface. An example would be a set of microwave-ovens where different units (variants) have different features (e.g. level of max. microwave power).*



## GETTING STARTED - WE HAVE MADE IT EASY

1. Request a free, fully functional TouchGFX evaluation at [www.TouchGFX.com](http://www.TouchGFX.com).
2. Download the EVAL version and explore the framework and demo examples.
3. Create your own TouchGFX application and test it on the PC simulator.
4. Buy a supported demo board that matches your target hardware.  
*TouchGFX demo board available at [www.TouchGFX.com](http://www.TouchGFX.com).*
5. Get a proof of concept by compiling and flashing your application to the demo board.
6. Buy a license matching your business.
7. Customize the porting to your target hardware
8. Compile and flash your application to your target hardware.

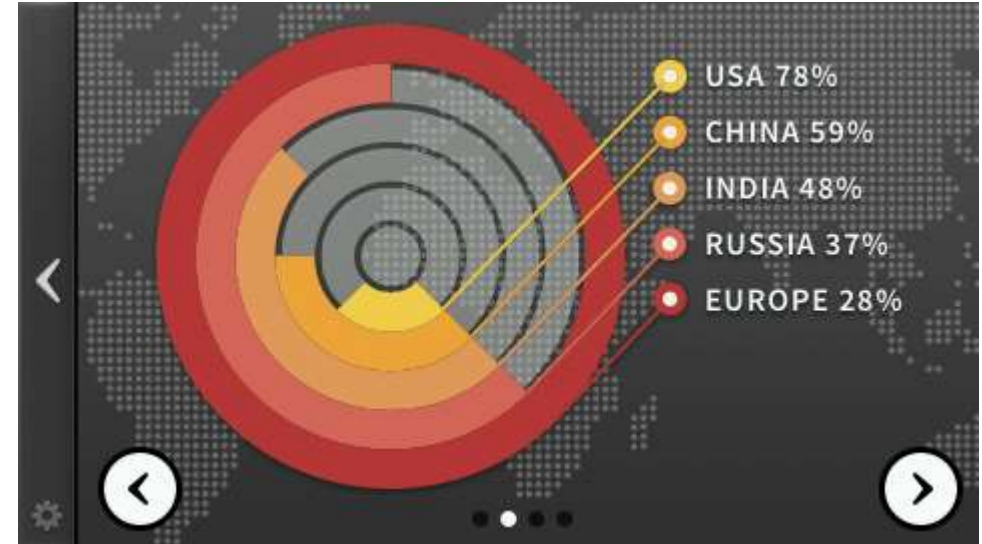




# TouchGFX SERVICES

## DRAUPNER GRAPHICS PROVIDE:

- Porting of the TouchGFX Framework to Custom Hardware Platform.
- Performance Optimization.
- Application Code Review.
- User Interaction and Graphical Design Consultancy.
- Developer Training.
- Extended Support and Maintenance Agreement.
- On-Site Assistance.
- TouchGFX Demo Board.
- Rapid Prototyping.
- Design and Development.



# Draupner Graphics

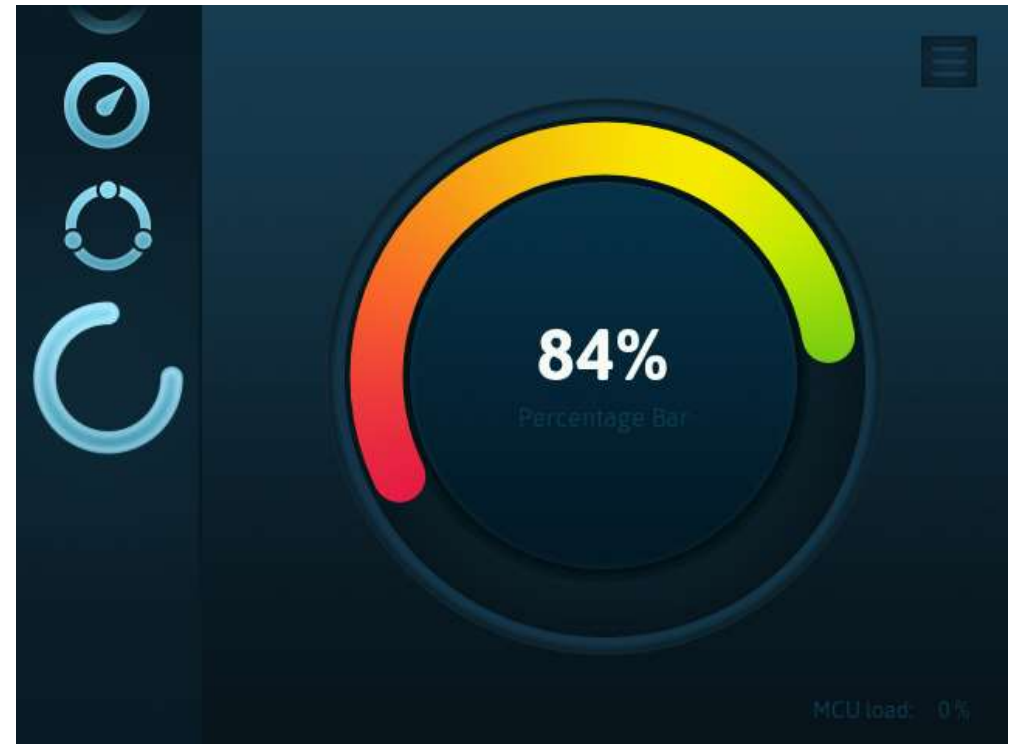
- Specialists in modern GUIs on low-resource hardware with our TouchGFX framework
- Our software tools and services enable you to design and implement state of the art embedded GUIs
- We are located alongside our sister company, Mjølnir Informatics, in Aarhus Denmark



# The Story of TouchGFX

## Milestones

- **2009: Internal Tool**  
TouchGFX 1.0 is an internal tool in Mjølner Informatics. The tool is used to match market requests for a smartphone look and feel in price sensitive applications.
- **2012: Product Launch**  
TouchGFX 2.0 becomes a stand alone software product.
- **2014, April: Product Enhancements**  
TouchGFX 3.0 have more graphics features and more supported hardware.
- **2014, October: Company Spin-Off**  
Draupner Graphics A/S is founded to hold all TouchGFX activities. TouchGFX 4.0 includes an open HAL for custom porting to target hardware.





For more information, cases, and videos, visit:

[www.touchgfx.com](http://www.touchgfx.com)

Send your questions or submit your order to:

[touchgfx-info@masters.com.pl](mailto:touchgfx-info@masters.com.pl)

