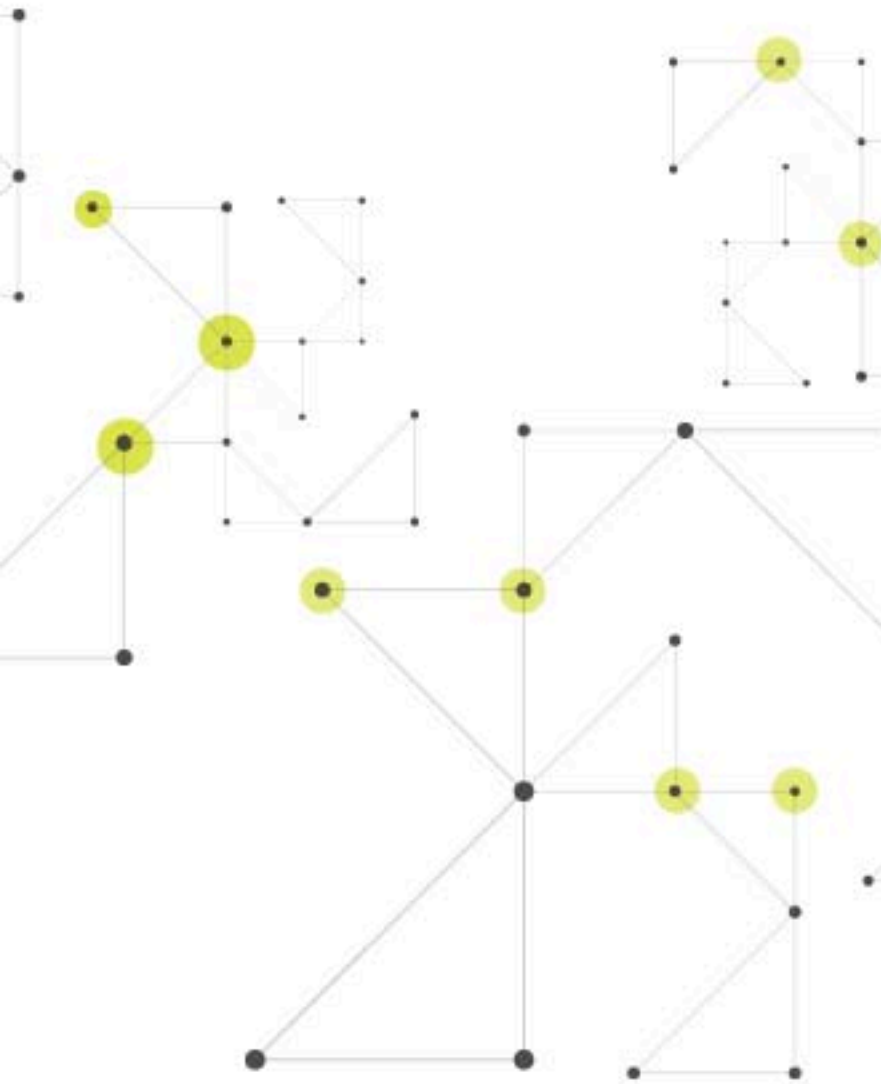


Whitepaper: uSwish Framework

Advancing Design and Development for Successful
Natural User Interfaces

Version 1.0



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✕ Introduction

Today's users of smart TVs, smartphones, and tablets – any device with a touchscreen – want fun and memorable experiences that create emotional connections. As touchscreen devices increasingly become a commodity, manufacturers want to differentiate themselves in a competitive market with devices that “stand out in a crowd”. The needs of both users and manufacturers can be met through a natural user interface (NUI).

A NUI is a step beyond graphical user interface (GUI) technology. Based on natural gestures and fluid transitions, a NUI does not force users to learn the artificial logic of a device. Instead, the user experience emphasizes intuitive human interactions, allowing the device itself to become transparent so that users focus on the content or activity. A NUI lets users focus on what they are doing, not how they are doing it.

A good user experience designer can visualize the layout, animations, and sequences for an original and unique NUI that will appeal to its users. Traditionally, however, the challenge has been recreating this design vision through development and implementation. Often, designers illustrate their design vision in video tools to show complex animation scenes. They are frustrated, however, that developers cannot accurately recreate these designs. Developers can spend months attempting to recreate these scenes as animated user interface components. The typical trial-and-error nature of many development projects requires a substantial time investment that results only in a “close enough” implementation of the original design vision.

YOUi Labs solves this problem with uSwish, a unique framework for translating a design vision into a NUI implementation. uSwish has been developed based on the company's extensive experience creating successful NUIs for a diversity of hardware devices running on modern platforms such as iOS, Android, Linux, BB10, and Windows 8.

✘ uSwish Elements

uSwish comprises three elements that work together to facilitate the design and development process of creating a NUI:

- **uSwish software development kit**
This software development kit (SDK) is used by developers to build the NUI. Among other software resources, the SDK includes the uSwish plug-in for translating designs created in industry-standard design tools such as Adobe After Effects into data, which are treated as assets in the implementation.
- **uSwish engine**
This runtime engine runs the NUI on the hardware platform. The engine is customized for specific platforms to optimize runtime performance, such as 2D and 3D graphics rendering.
- **uSwish workflow**
This unique process is used by designers and developers to turn the designer's vision into a fully functional NUI. The process facilitates collaboration between designers and developers on areas of innovation, and the iterative approach provides the flexibility to adapt to change on an ongoing basis.

✘ uSwish Key Benefits

uSwish facilitates the creation of NUIs that are true to intended design visions, at a fraction of the time, effort, and frustration of traditional methods.

Key benefits include:

- **Industry-standard tools.** Designers can focus on creating the design vision that enhances the user experience because they use familiar tools. These tools include Adobe After Effects and other applications that produce files in supported formats.
- **Design without compromise.** The uSwish plug-in translates designs directly into data, which are treated as assets in the NUI implementation. Because these assets are used as direct input to the NUI, the design vision is the user experience reality.

In addition, direct translation of designs into assets means that a relatively simple animation can progress from a design concept to a prototype in a few hours, rather than requiring months of coding using limited, 2D tools. Designers and developers can focus on innovation because uSwish takes care of the lower-level coding.

- **Programming language options.** Development teams can use their preferred programming language (most commonly, C++ or Java).
- **Iterative and collaborative process** fully engages designers, developers, and product owners to ensure progress on a priority basis, facilitate continuous improvement and innovation, and provide the flexibility to adapt to change.

✘ uSwish Capabilities

uSwish overcomes the barriers of traditional development projects by providing a rich design and development environment that offers easy-to-use resources.

Key capabilities include:

- Direct translation of the design into data by the uSwish plug-in. In seconds, this plug-in exports 2D or 3D designs created using industry-standard design tools. The export process creates uSwish asset files that contain exact representations of graphics and animations in the design, eliminating the need to adjust images and equations.
- In addition to the uSwish plug-in, the uSwish SDK provides the software resources to facilitate rapid development of the NUI, including a library of custom-developed classes designed for portability, flexibility, and fluidity. The SDK allows developers to work in the programming language of their choice (most commonly, C++ or Java).
- Modern, motion-based tools support animations based on natural gestures and fluid transitions, with flexible and efficient effects achieved through GLSL shaders.
- At any time during development, the NUI can be rendered using the uSwish engine, allowing the team to assess and test the NUI in real-time. In fact, with almost no code, even the asset files created by the uSwish plug-in can be rendered, constructing designs exactly as represented in the design tool.
- The cross-platform uSwish engine renders rich and flexible 2D and 3D drawings, providing superb graphics performance via the OpenGL pipeline.
- The collaborative and iterative workflow allows creation of custom and unique user experiences with significantly short turnaround times.

✖ uSwish Platform, Language, and Technology Support

uSwish supports all real-time operating system platforms, including iOS, Android, Linux, BB10, and Windows. Developed in C++, uSwish integrates with these platforms either directly or by hooking into another framework.

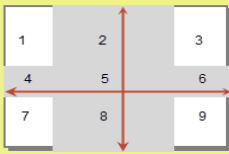
Developers are not restricted to working in C++, however. uSwish exposes bindings to other languages, allowing developers to work in their preferred programming language, including Java.

uSwish provides the flexibility for most development environments, such as Eclipse for Android applications and Xcode for iOS applications.

The uSwish plug-in for exporting designs from design tools supports both Windows and Mac OS X. The assets created by the export process are platform independent.

N-Patch Image Support

uSwish supports an advanced version of nine-patch images. Nine-patch is a feature commonly used by designers for the Android environment, where designs are often intended for various screen sizes. This feature is a standard way of representing images that can be scaled while retaining their overall integrity.



In this simple example of a button image, the grey area represents where it can be stretched horizontally or vertically. Edges and corners remain intact. The term “nine-patch” refers to the nine areas that comprise an image once this feature has been applied.

uSwish N-Patch Provides more Flexibility and Control

uSwish N-Patch allows an unlimited number of patches within the image while preserving quality. N-Patch images are processed like any piece of geometry, and therefore, benefit from the full hardware acceleration provided by the GPU. Allowing for more than nine-patches gives designers greater flexibility and control over the areas to be stretched. In addition, for designs to be supported across multiple screen sizes, N-Patch images save time because designers can reuse the same graphics in all layouts for all screen sizes.

uSwish Supports N-Patch Images in Adobe After Effects

N-Patch images are created using design tools that support the .9.png file format, such as Adobe PhotoShop. However, Adobe After Effects cannot display these images. To help designers visualize how N Patch images included in Adobe After Effects designs will look when rendered by the uSwish engine, uSwish includes a special filter that provides a WYSIWYG view of the image.

N-Patch images are identified by the uSwish plug-in during the export process, and interpreted during the loading of the assets created by this process for use by the uSwish engine.

✘ Conclusion

Today, a positive user experience is key to the success of any touchscreen device. However, the boundaries of current GUI technologies restrict the user experience such that a device is often viewed simply as functional hardware. The power, flexibility, and ease-of-use of uSwish allows designers and developers to push past these boundaries to provide users with the natural user interfaces (NUI) that are imperative for product differentiation in competitive markets. A NUI provides fun and memorable experiences for users, building the emotional connections that integrate the device as part of a lifestyle.

uSwish NUIs are created using a workflow that encourages designers and developers to work closely together to realize the design vision. The direct translation of designs into data by the uSwish plug-in removes any communication barriers between designers and developers. Teams can produce design iterations quickly and frequently, facilitating continuous improvement and innovation while providing the flexibility to adapt to change. Ongoing collaboration between designers and developers produces high quality results from all perspectives. The uSwish workflow is proven to produce NUIs that offer all the innovation and creativity that designers intended, without compromise.

uSwish provides a powerful, yet simple to use, design and development experience, producing NUIs from complex designs at a fraction of the time and frustration of traditional software tools and methods. More importantly, uSwish NUIs bring to life exact representations of the natural gestures and fluid transitions that were first visualized by designers. This innovative, interactive experience based on human interactions creates the product differentiation and user loyalty that are essential for sustained success in the market.