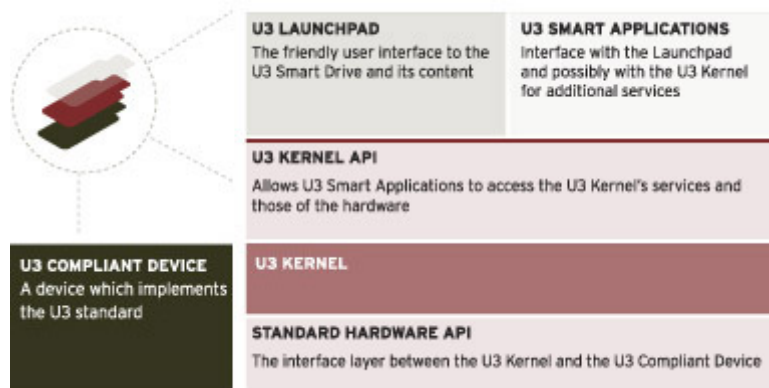# U3 smart Computing Platform

Overview

The robust U3 smart platform enables hardware manufacturers and software developers to create U3 smart products. For hardware manufacturers, compliance with the U3 hardware standard ensures USB smart drives are compatible with all U3 smart applications. For software developers, the U3 smart platform makes adapting or creating portable U3 smart applications easy.

U3 LAUNCHPAD
The friendly user interface to the U3 Smart Drive and its content

U3 SMART APPLICATIONS
Interface with the Launchpad and possibly with the U3 Kernel for additional services

U3 KERNEL API
Allows U3 Smart Applications to access the U3 Kernel's services and those of the hardware

U3 COMPLIANT DEVICE
A device which implements the U3 standard

U3 KERNEL

STANDARD HARDWARE API
The interface layer between the U3 Kernel and the U3 Compliant Device

The key components of the U3 platform (illustrated above) include:

The U3 System Software and Launchpad: U3 system software is the low-level software infrastructure that serves as the bridge between the hardware drive and the applications and data stored on the drive. The U3 Launchpad is the user-friendly graphical user interface to the U3 smart drive and its content. The Launchpad is pre-installed on all U3 smart drives and provides the user an easy-to-use entry point to the applications and data in his or her personal workspace.

The U3 Software Development Kit (SDK): enables software developers to deploy their applications on U3 smart drives with minimal effort. The U3 SDK includes deployment tools, sample code, and thorough documentation.

The U3 Hardware Development Kit (HDK): enables hardware manufacturers to design and manufacture U3 smart drives. The HDK includes the U3 hardware specification, configuration tools, and thorough documentation.

U3 smart Applications

U3 smart applications are designed or adapted to run from a U3 smart drive through the U3 Launchpad. U3 smart applications differ from standard Windows applications because U3 smart applications are portable, which means they can be launched and run from any U3 smart drive plugged into the USB port of any computer (host computer).

U3 smart applications are available for users to download to their U3 smart device at U3 smart Download Central, which is accessible online via the U3 Launchpad. Software updates are also available at U3 smart Software Central.

Currently, U3 smart applications are compatible with all Windows operating systems from Win2000 SP4, Windows XP, or newer.

Application Portability

U3 smart applications are packaged so they are self-contained and do not make lasting changes to the host computer's hard drive. By contrast, the standard Windows application installation process makes lasting changes to the Windows registry on the host computer's hard drive, by adding program files, dynamically linked libraries (.dlls), and other objects.

U3 smart applications store all programs, executables and supporting files within a "package" on the U3 smart drive. When the application is launched, the U3 smart "package" is loaded into Temporary Files on the host computer to launch and run the application, and may use the U3 smart drive as the default storage location for U3 smart applications and the user's data. When the application is closed, all Temporary Files are removed from the host computer, making it possible for U3 smart applications to leave no trace of application usage or user data.

U3 smart applications differ from standard Windows applications installed onto and launched from the host computer's hard drive in three key ways:

- Standard applications are usually hard-wired to the directory structure and the operating system on the host computer's hard-drive. U3 smart applications are independent of the host computer's directory structure and hard drive.
- Standard applications are usually hard-wired to a specified drive on the host computer (e.g., the C:\\ drive). U3 smart Launchpad automatically releases U3 smart applications from this dependency.
- Standard applications usually require registry changes in order to function properly. U3 smart applications function properly independent of the host computer's registry.

To enable portability and ensure U3 smart applications run properly from the U3 smart drive, the U3 Launchpad creates a runtime environment for each U3 smart application. The runtime environment is a set of directories and runtime variables managed by the U3 Launchpad to shield the U3 smart application from the dynamic nature of directory and file locations. The U3 smart application is therefore independent of drive letters and paths assigned by the host computer to the U3 smart drive.

U3 smart Application Runtime Phases

The U3 Launchpad not only provides a user-friendly graphical interface to the U3 smart drive and its content, it also manages all phases of application execution to ensure U3 smart applications run properly from launch to exit. The Launchpad ensures that the host computer has all the needed capabilities to run the U3 smart application, and makes it possible for applications to test for operating software version, release pack, and user rights.

If the configuration check of the host computer is successful, the U3 smart application launches and runs properly, using the runtime environment provided by the Launchpad. When the application is closed, the Launchpad ensures proper exit and clean up. Even if the U3 smart drive is removed from the host computer while the application is running, the U3 Launchpad makes it possible for U3 smart applications to shut down and clean up the runtime effects on the host computer.

The U3 Launchpad

The U3 Launchpad is the main user interface for the U3 smart drive. The U3 Launchpad runs automatically when a U3 smart drive is inserted into the host computer. All U3 smart applications installed on the U3 smart drive are accessed through the U3 Launchpad.

The U3 Launchpad enables users to install, manage, and configure U3 smart applications, as well as manage and configure the U3 smart drive. For example, the U3 Launchpad can be configured to run only specifically selected U3 smart applications when the U3 smart drive is inserted into a host computer.

When the U3 smart drive is ejected using the U3 Launchpad or is removed from the host computer, the U3 Launchpad cleans up the host computer by removing the U3 runtime environment thereby restoring the host computer to the state it was in before the U3 smart drive was inserted. During the cleanup process, the U3 Launchpad requires U3 applications to undo any system changes that were made.

U3 Device Services

U3 Device Services are at the core of the U3 smart platform. They provide U3 smart applications with various services including access to special areas on the device and device information. The U3 Device Services are accessed programmatically via the Device APIs. Some of the services include:

Special Area Access:

- **Configuration Access**: To configuration, capability, and status information for U3 smart drives and all other drives plugged into the host computer.
- **Protected Area Access:** Login and logout to protected areas, read and write passwords for protected areas, and read and write to protected areas.
- **Non-Protected Area Access:** Read and write to non-protected (normal) cookies.

U3 smart Cookies:

The U3 smart platform supports the use of cookies to store sensitive data and is only available via the Device Services on U3 smart drives. Cookies are used to store data in a special hidden area of the U3 smart device, accessible only by the U3 Device API. Two types of cookies are supported:

- Standard cookies, accessible by any application that uses the U3 Device API.
- Protected cookies that support both read and write passwords. These cookies are managed by the Device Services and are stored in the hidden area of the device.

Summary

The U3 Software Development Kit (SDK) provides application developers with everything they need to adapt their application to run from a U3 smart drive through the U3 Launchpad. Because making a U3 application smart involves mainly repackaging, most applications can be adapted to run on a U3 smart drive with minimal modification to the source code or recompilation, making the typical development cycle days and weeks instead of months.