

New Generation of Development Tools Empower Designers

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Designers today are faced with ever-increasing complexity in both the silicon at the heart of a system and the applications it serves. First for SoCs and now for bridging silicon, development tools are now catching up with advances in silicon and helping designers realize improved time to market. However, designers need to understand the array of software options available to them before embarking on a system design.

As the complexity of SoCs increased, it became necessary to provide designers with a mechanism for decreasing the system and tool chain specific knowledge necessary to implement designs.

In order to harness the power of processors without investing a prohibitive amount of time and effort, ever-higher levels of abstraction have been added to software in order to allow programmers and designers to focus less on the low-level complexities of the system and more on the higher-level architectures and the problems that they are looking to solve. This has been done through the addition both of new programming languages and of software design tools, in particular the integrated development environment (IDE).

Today, bridging silicon is catching up. Just as processor vendors have simplified the design in process for designers, so too have bridge vendors, who are packaging bridging devices with an array of tools developed to empower designers to harness the true power of the silicon they have selected without investing significant time and effort.

Initially, bridging silicon providers offered device drivers with their product. This obviously removed a serious amount of software development from the designer's plate. However, it also facilitated designers producing more robust products while employing less of a hardware focus. From the silicon vendors' standpoint, providing low-level drivers for their devices can also decrease the amount of design-in support that designers require for their devices – a good outcome for all parties.

Command line or command prompt type tools have long been available for bridging devices to allow access to configurable registers. These sorts of tools will always have a need as they allow a high degree of access to the internal workings of the device. However, the downside is that they also demand a high degree of the designer's knowledge of the device in order for the tools to be useful. To address these limitations, silicon providers are now adding GUI-based software to their arsenal of design-in tools.

For the product designer, the most compelling factors of this new generation of

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tools are the increased ability to quickly and easily differentiate and brand products, and the reduced time to market those benefits yield. Effectively, well-thought-out tools allow designers to more efficiently add their own unique selling points.

Not all software design-in tools for bridging silicon are equal. It is all well and good to improve the look and feel of the tools with the latest in user-focused technologies, such as Java and .NET. Yet, the real value of these tools is when the provider truly grasps how the designer will be using a particular device in a system design, understands the areas that the designer will wish to customize and delivers tools that allow the designer to implement exactly the system that he/she has designed, with the smallest amount of time and effort.

There now are powerful, highly efficient design-in tools on the market for bridging silicon. For example, the Oxide and the ISIS tool suites (PLX Technology) go beyond simply enabling the designer to modify and upload firmware and/or configure information to Flash or EEPROM; they take into consideration the full design cycle, from evaluation of silicon to prototyping of product to mass production. These tools include, for example, for the ability to edit the INF file of Windows device drivers and brand the device drivers provided with the silicon (see Figure 1).

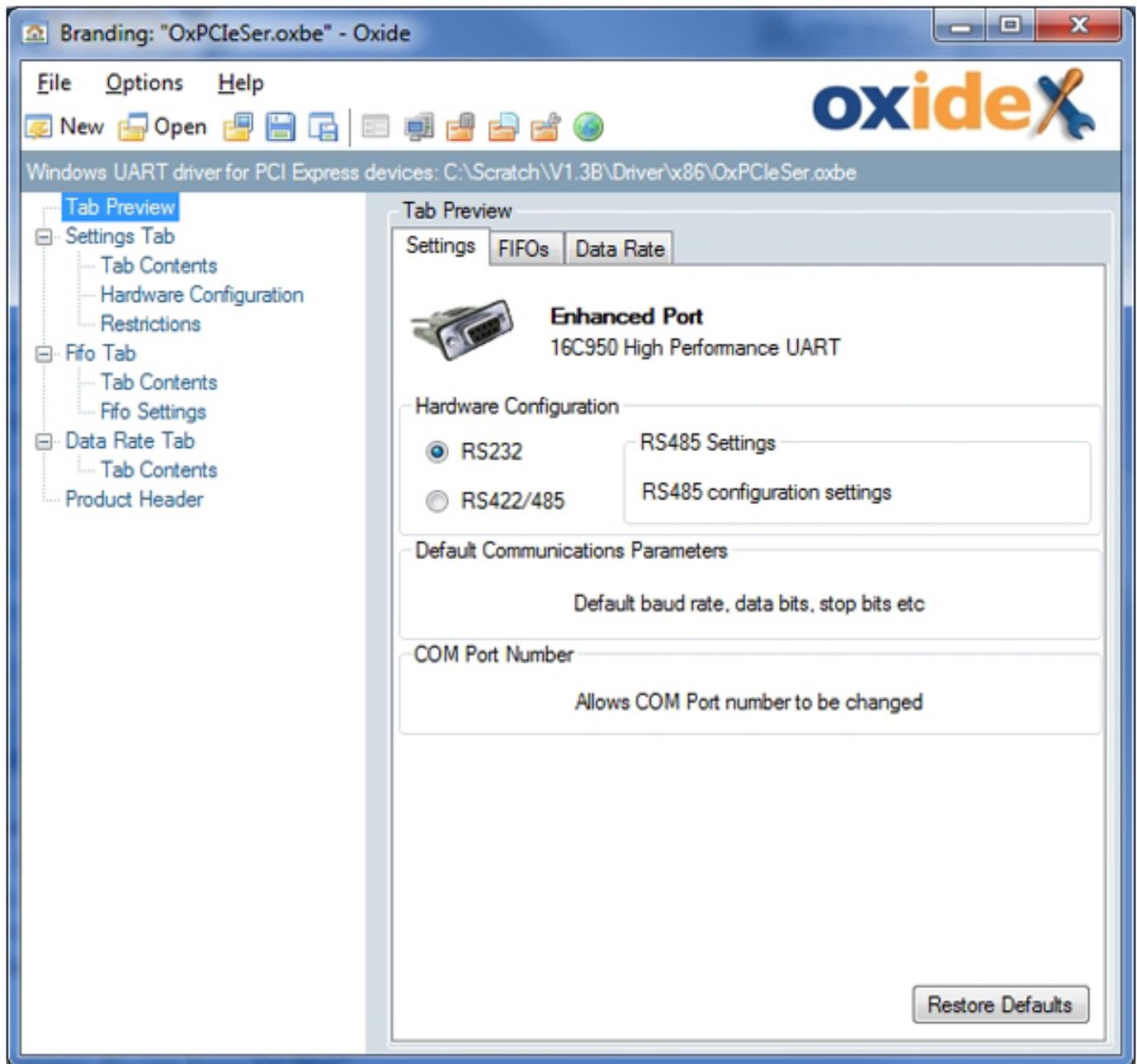


Figure 1: The branding tool in Oxide enables configuration and customization, of which device properties are presented to the end user through Windows Device Manager

For the uninitiated, INF files are notoriously complicated and modifications to them are error-prone. Further complicating things is that most designers either are unaware or do not have the depth of knowledge to customize a device driver and the properties page that describes the device in the Windows Device Manager utility. By adding tools to that allow the designer to simply input strings, device IDs and images in order to fully customize the device drivers that will be delivered with the final product, the silicon provider is empowering designers to use all available features of the eventual design.

Conclusion

When selecting the optimum silicon solution for a particular project, designers should consider carefully the total solution available to them. By selecting silicon with the best design-in support tools, they'll be able to maximize time to market

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without sacrificing their opportunity to differentiate the end product for maximum value.

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