Fuji Xerox Cuts Time-to-Market with Wind River Simics

Fuji Xerox Co., Ltd.

Industry
Industrial

Solution
- Wind River Simics

Benefits
- Software development started several months before the hardware was available
- Sped up the development cycle
- Reduced the time and costs of testing and implementation

Fuji Xerox, a joint venture between its two namesake corporate parents, has grown into one of Asia's leading players in document management systems. Its multi-function printers are marketed throughout Japan, China, and the Asia-Pacific area.

The Challenge
Seeking a Competitive Advantage

To stay competitive, Fuji Xerox needed to find ways to accelerate time-to-market, cut the total cost of ownership of its products, and make them more energy efficient. The company realized that it needed a solution to help it be more efficient in development and manage risk.

Having used Wind River® products and services successfully for over a decade, Fuji Xerox began investigating Wind River Simics®, a comprehensive software development simulation solution that allows design and development to take place on a virtual platform that simulates the target hardware design, without the need for physical hardware. That means hardware and controller platform software development of multifunction devices can take place on parallel tracks rather than sequentially, speeding time-to-market by as much as several months in many cases.

System simulation in software development was a new concept for Fuji Xerox. The team was somewhat skeptical at first, but after Wind River held a workshop and demonstrated Simics, they were impressed.

> *"Time-to-market is critical in our business. The faster turnaround times we expect with Simics will give us even more of a competitive advantage in this market."*
>
> —*Fuji Xerox Co. ,Ltd.*

The Approach
Overcoming Technical and Business Ussues

The controller platform development team at Fuji Xerox had three key issues in shifting development to Simics:

- How soon would they be able to start software development in advance of custom hardware being available?
- How quickly would they be able to bring up the platform once custom hardware was ready?
- How could they assure platform quality and reduce testing time on the custom hardware once the software was ready to deploy?

Simics delivered on all three counts. Software development was able to start several months before the hardware was available, allowing the team to "shift left" their development cycle. Each phase of the design could be modeled incrementally in Simics, allowing the developers to work on the software without waiting for the full hardware specification to be finished. Wind River delivered Simics in increments, enabling Fuji Xerox to spread its investment over time.

The initial test build of software developed on Simics onto the actual board hardware can usually be completed within one day. In Fuji Xerox's case, it took much less time—only a few hours.

As far as quality, Simics makes it possible to perform virtually non-stop testing throughout the development process. Regression tests can be run overnight, so developers can do more frequent regression testing and catch regressions earlier. Simics also enables far more efficient debugging than traditional hardware-based methods. Traditional testing requires rerunning the software repeatedly in search of a bug. Simics, in contrast, enables developers to enter the system at any point and use reverse execution—essentially running backwards—to

locate the precise breakpoint. Simics also employs fault injection to detect and correct potential failure points.

With Simics, they can run software in a repeatable and functionally accurate way to make debug simpler, and repeat a debug with confidence. Furthermore, they can inject faults at any place in system and at any point, making Simics priceless.

The Result
Higher Quality, Lower Costs, Less Time

As a result of these capabilities, the controller platform development team can not only speed up the development cycle, but also deliver high-quality software with most if not all of the issues resolved, thereby reducing the time and costs of testing and implementation.

The bottom line is that with Simics, Fuji Xerox was able to significantly reduce development time by starting development several months prior to the hardware being available. Simics has allowed the Fuji Xerox team to debug, test, and start integration phases much earlier in the lifecycle, where it is most cost-effective to fix and change design. This has transformed their development and helped them reduce risk.

Today, the majority of the company's multi-function printers run on VxWorks®. "Having a stable and reliable OS, backed by Wind River's technical support and professional services, has enabled us to develop and deliver high-quality, high-speed printers with reduced power consumption," Fuji Xerox points out. "Time-to-market is critical in our business. The faster turnaround times we expect with Simics will give us even more of a competitive advantage in this market."