



## Case Study

# Soft Servo Systems, Inc. – Motion Control Systems

### Overview

Founded in 1998, by MIT professionals, Soft Servo Systems, Inc. offers high-performing, innovative, and affordable motion control solutions to high-volume OEMs in the machine tool, factory automation and general motion control industries. By teaming with Ardence, Inc. (also founded by MIT professionals) during early product development, Soft Servo Systems integrated Ardence RTX's high reliability and real-time control, to be among the first to develop a truly PC-based servo controller in which a single, powerful Windows-based host computer performs all real-time motion control operations. The combined solution enhances reliability, reduces hardware costs, and increases performance over hardware solutions, which previously monopolized the motion control and CNC industries.



### The Challenge

In 1998 a group of the world leaders of machine tool companies co-founded the Next Generation Control Project at MIT to develop new control theory and advanced motion control algorithms, so that PCs would be able to manage motion control without hardware-intensive DSPs or proprietary micro processors, to reduce system costs, add reliability and increase supportability. Soft Servo Systems formed out of this project, having developed advanced theory and complex control algorithms that accomplished these goals. Because reliability and supportability were paramount, Soft Servo Systems selected the robust Microsoft Windows XP Embedded operating system, originally designed by Ardence, which provided a full suite of development tools and a familiar user interface. This also allowed them to achieve a small footprint, which enabled Soft Servo Systems to run the OS on solid state memory, without the reliability issues associated with a hard disk.

However, to achieve the necessary performance and control over the target devices, Soft Servo Systems needed the functionality of a real-time operating system. While they had developed a real-time kernel that was sufficient for research purposes, Soft Servo Systems needed a more robust solution that was less performance-dependent on hardware configurations.



## The Solution

Soft Servo Systems considered offerings such as Hyperkernel and RadSys. But in seeking an industry-proven brand and a stable company that was well-integrated and supported by a strong Microsoft relationship, Ardence RTX was the clear answer. In addition, RTX supplied better performance than all the contenders and its unique ability to survive a Windows crash ensured that Soft Servo Systems could deliver total system reliability.

*“Because Ardence developed the precursor to Windows XP Embedded and has been a highly integrated Microsoft Partner for years, our real-time performance was effectively added to our Windows XP Embedded system with no additional 3<sup>rd</sup> party vendors.”*

*Boo-Ho Yang, Ph.D.  
CEO and President  
Soft Servo Systems, Inc.*



## The Result

The combined solution, powered by Intel’s Pentium 4 architecture, which is hundreds of times faster than older CNC processors and DSPs, has enabled a new generation of “Soft Motion.” Soft Servo Systems, with Ardence RTX, has enabled the motion control industry to reduce hardware costs, increase reliability and performance, improve system supportability, and simplify application development, while reducing 3<sup>rd</sup> party hardware and software.

## About Ardence

Ardence, Inc. is a global leader in designing and developing software platforms that enhance the control, dependability and management of Windows operating systems. The company’s embedded solutions include RTX, Phar Lap ETS<sup>®</sup> and ReadyOn<sup>®</sup>. RTX is a real-time solution that enhances the control of Windows, providing greater flexibility and reliability. Phar Lap ETS is the smallest-footprint Win32 real-time operating system in the market, and ReadyOn provides instant-on functionality for Windows devices. Ardence streaming software solutions enable on-demand streaming of the operating system and applications, providing economic, system-management, and user benefits at the desktop and in the data center. Additionally, because it is a software-only solution, Ardence software streaming works with, and extends the life of existing hardware. Ardence streaming solutions have widespread application throughout the Enterprise and are deployed worldwide.



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