

## CASE STUDY: Hyundai Rotem



### KEY BENEFITS

- ⚙️ Reduced training time
- ⚙️ More realistic simulation environment
- ⚙️ Improved ability to test new battle strategies
- ⚙️ Proven reliability in aerospace and military applications
- ⚙️ A fast-responding support environment
- ⚙️ Greatly reduced costs versus training in a real tank

## South Korea Defense Contractor Relies on Concurrent for State-of-the-Art Virtual Tank Platoon Simulator

Hyundai Rotem of South Korea, the heavy industry division of Hyundai Motors Group, needed reliable, state-of-the-art and cost-effective image generators for the Phase I deployment of its K-Series Tank Platoon Simulator (KTPS) program. After a thorough look at the competitive landscape, it chose Concurrent's ImaGen™ visual servers powered by the RedHawk™ Linux® real-time operating system.

### **Challenge:** Help Defend a Country – Without Overspending

Hyundai Rotem has played a critical role in strengthening South Korean defenses by developing the K1/K1A1 tank and its family of vehicles. Along with the development of that family of vehicles comes the need for training that is thorough and efficient. A critical part of this training is virtual simulation which provides crucially important skills to tank crews and ultimately saves time and money.

### **Solution:** ImaGen Visual Servers Powered by the RedHawk Linux Real-time Operating System

After a complete vetting of competitive systems, Hyundai Rotem ordered more than 100 ImaGen visual servers running RedHawk Linux. The ImaGen servers will be used by Hyundai Rotem in the Phase I deployment of image generators for the K-Series Tank Platoon Simulator (KTPS) Program. The full deployment will include more than 300 ImaGen servers.

The initial deployment purchase includes delivery of more than 100 high-performance graphics channels utilizing the latest NVIDIA® graphics technology. Each tank simulator's ImaGen configuration includes eight channels rendered by award-winning Presagis® Vega Prime® visualization software. The integrated solution based on RedHawk Linux and Vega Prime imaging software offers a high-fidelity, COTS PC image generation system with unprecedented jitter-free performance.

The order was placed through KCEI Co., Ltd., a Concurrent value-added reseller in South Korea. "We initially selected Concurrent during the program's development phase in March 2008 when we evaluated multiple PC-image generation systems," said Hyun Joon Ko, president, KCEI Co. Ltd. "We found Concurrent's ImaGen to be the best technology and value available on the market. We chose Concurrent for the deployment phase on the strength of their latest state-of-the-art IG platforms and their outstanding technical support."

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### SOLUTION CHOSEN BY HYUNDAI ROTEM

- Concurrent RedHawk Linux real-time operating system
- Concurrent ImaGen visual server

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– Hyun Joon Ko,  
President, KCEI Co. Ltd.

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### **Results: Proven Performance & Savings in Time and Costs**

Concurrent’s solutions are battle-proven – literally, in the case of military applications – and are currently in use in aerospace and defense, energy, automotive, industrial automation, and financial services applications. For Hyundai Rotem, the benefits include reduced costs and the ability to deploy battle-ready weapons systems and soldiers into the field to ensure the safety of South Korea.

### **Concurrent ImaGen visual servers: The Only Choice When the Mission is Critical**

Concurrent’s ImaGen Visual Server family offers fully-integrated, affordable high-performance IG solutions for real-time modeling and simulation applications. Powered by Concurrent’s RedHawk Linux, ImaGen is the ideal platform for truly interactive, virtual reality, landscape, architectural and aerial, ground, and marine simulation.

The ImaGen family provides the most flexible, multichannel Linux-based graphics platforms available today. ImaGen can be custom configured to address a broad range of price/performance requirements from low-end, single-channel systems to large, genlocked, multi-channel and SLI video server solutions. ImaGen delivers the technology needed to rapidly develop and deploy accurate, real-time 3D visual solutions for applications such as:

- Civil and Military Simulation
- Mission Planning
- Homeland Security
- Scientific and Medical Visualization
- Architectural Design
- Energy Exploration

ImaGen platforms are complete IG solutions. All required IG components are fully integrated and supported by Concurrent, including COTS imaging channels, monitors, color-matching projectors with edge-blending and curved screen distortion correction, display screens, rackmount chassis, mounting hardware and application software.

### **Concurrent RedHawk Linux: Industry Standard for the Most Demanding Applications**

Concurrent’s RedHawk Linux is the real-time, low-latency version of the open source Linux operating system for x86 Intel® and AMD®-based systems. Fully compatible with Red Hat® Enterprise Linux, RedHawk is ideal for a broad range of deterministic applications such as modeling and simulation, as well as industrial control, financial trading and medical imaging. RedHawk guarantees that a user-level application can respond to an external event in less than 15 microseconds on certified platforms. Available for server-class and embedded applications, RedHawk leverages the power of multi-processing, multi-core technology.

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**LEARN MORE**  
about Concurrent's  
award-winning  
Linux solutions:  
Visit [real-time.ccur.com](http://real-time.ccur.com)  
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### About Hyundai Rotem

Hyundai Rotem is staffed with 3,800 skilled employees including 700 researchers that proudly carry on the company name by producing a wide variety of vehicles such as electric multiple units, high-speed trains, light rail vehicles, locomotives and passenger coaches; ground weapon systems such as the K1A1 Main Battle Tank (MBT), the K1 Armored Recovery Vehicle (ARV) and the Armored Vehicle Launched Bridge (AVLB); as well as Plant & Machinery such as presses, steel making plants, car manufacturing systems and environmental plants.

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**For more information, please visit <https://www.hyundai-rotem.co.kr/eng/>**

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### About KCEI

Established in 1982, KCEI conducts research and development on the area of M&S including visual simulation fields. KCEI has been an exclusive distributor for many companies for over 30 years. KCEI participated in the public projects by the Ministry of Commerce, Trade and Energy and Military purpose simulator development in the early 1990's. KCEI engineering team has over 20 years of experience with outstanding skills and expertise in today's demanding market of visual simulation.

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**For more information, please visit [www.kcei.com](http://www.kcei.com)**

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### About Concurrent Real Time

Concurrent Computer Corporation (NASDAQ:CCUR) is one of the industry's foremost providers of high-performance real-time Linux computer systems, solutions and software for commercial and government markets worldwide. Concurrent has deployed and supported thousands of multi-core solutions for the most demanding of mission-critical applications for over four decades. These applications include hardware-in-the-loop and man-in-the-loop simulation; data acquisition; and process control in the aerospace, defense, automotive, medical, energy, transportation and financial industries. The company's products include the RedHawk Linux real-time operating system with guaranteed response; NightStar™ tools for advanced Linux debugging and analysis; and application-specific tools for simulation and testing.



When you need guaranteed response time, you need  
Concurrent for your mission-critical applications. ☛