

## **CRI Middleware and Hitachi High-Technologies Corporation join forces to build the technology infrastructure for smart factories**

Tokyo, Japan – March 2, 2017 -- CRI Middleware Co., Ltd. (HQ: Shibuya Ward, Tokyo, President: Masao Oshimi, 3698:TYO, hereinafter referred to as “CRI”), and Hitachi High-Technologies Corporation (HQ: Minato Ward, Tokyo, President and Chief Executive Officer: Masahiro Miyazaki, 8036:TYO, hereinafter referred to as “Hitachi High-Tech”) are jointly developing the core systems for “smart factories,” utilizing CRI’s high-quality image and video technologies for remote monitoring of production in overseas factories from Japan through a large number of always-on cameras and sensors via the internet. CRI and Hitachi High-Tech are working collaboratively toward business expansion in the smart factories for the future.



Comment from CRI Middleware President, Masao Oshimi

“We have been working on strategies to use our custom video technologies and experience in the game and entertainment fields to contribute to other fields and business infrastructures for some time now. Through this partnership with Hitachi High-Tech, we are finally able realize these long-term goals. We are proud to support the overseas expansion of Japanese companies through our company’s 100% made-in-Japan technology.”

Comment from Hitachi High-Tech President and Chief Executive Officer, Masahiro Miyazaki

“We are helping to accelerate the overseas expansion of Japanese manufacturing by providing smart foreign factories as a shared service. By combining CRI’s excellent video technologies with Hitachi’s manufacturing know-how, and incorporating that into our full value chain service, we have made it possible to meticulously operate and manage factories overseas from Japan. Moving forward, we plan to make Japan’s outstanding technology and product quality available to the world.”

Hitachi High-Tech’s smart factory service division is about to launch their Smart Factory as a Service to make it possible for multiple Japanese companies to share manufacturing locations. To succeed in today’s marketplace, globalization of business is required, even for small and medium-size manufacturers. There are many challenges involved in setting up and operating overseas factories such as legal and labor issues in each country that can be alleviated through the use of remote systems.

Hitachi High-Tech makes use of its long experience in overseas business to provide services required for a Japanese manufacturing company to expand overseas. Hitachi High-Tech provides full value chain services, including site investigations, manufacturing equipment arrangements, camera and sensor installation, remote monitoring system provision, additional material procurement, and sales channel development. This comprehensive approach will support the ability for rapid overseas business development, and will reduce the initial investment required for each participating business as they can manufacture different products in the same factory while sharing manufacturing equipment and remote monitoring systems.

In the Hitachi High-Tech smart factory, CRI's proprietary technologies will be used to monitor the state of production with cameras and sensors, allowing for real-time remote monitoring from Japan over the internet. Inexpensive, locally sourced cameras can be used in the system, making it feasible to equip one work area with several dozen cameras. One participating factory is expected to have 100 cameras installed. Having multiple cameras in fixed positions within the factory provides the freedom to remotely monitor any targeted area inside the factory.

Unlike previous systems that offered only remote monitoring, CRI's specialized technologies process video data to be smaller and lighter. This means that video data can be easily managed and transferred over the internet, greatly reducing the data storage and IT costs to send and transfer the video. With superb video quality and the ability to transfer, save, manage, view, and analyze video recordings, CRI and Hitachi High-Tech are collaborating to offer a system that provides a user experience through remote factory monitoring that "feels like you are on-site."

### Fast, Responsive Remote Monitoring with Reduced Cost through High Quality Video Compression

With CRI's custom video compression technology CRI DietCoder®, the video can be compressed to 1/2 to 1/3 the original size without sacrificing video quality, and DietCoder is directly embedded into the smart factory cameras. Compressing the video down to a size that can be easily transferred over networks like wireless LAN or LTE allows for quick and responsive remote monitoring, reducing the cost of data storage by 1/2 to 1/3. With DietCoder, high quality compression means the integrity of the data can be maintained without any loss of image quality required for big data analysis and analytics. Maintaining image quality also greatly reduces the amount of time required to process data for analysis.

### Efficient Playback and Monitoring of Large Quantities of Stored Video

Continuous recording of video from over 100 cameras requires a viewing system that can handle the management of an extremely large video library. For this project, emphasis was placed on the ability to simultaneously view multiple videos and to quickly access video from a specific date and time. The interface was designed so that the user could grasp both the current and overall status of the factory, with the ability to go back and access any past abnormal values or incidents recorded by the sensors and play back the video at the time of those occurrences. CRI's custom-developed mass video management and monitoring technology, CRI Caplan™, was used to achieve this system. This technology is capable of loading and saving many video sources from and to a camera or external storage device (STB, HDD, etc.) and provides efficient playback and monitoring of recorded video.

### Browser-based Monitoring on any Device

In line with recent "mobile first" and "BYOD" trends, the service also provides the ability to play recorded video from the smart factory through the browser on an iPhone or Android smartphone. This feature reduces the workload of remote monitoring tasks and makes it easy to get check in on factory status remotely from Japan 24 hours a day, 365 days a year. By utilizing CRI's browser-based web video middleware solution LiveAct® PRO, supervisors can view video any time through their browser from any device, without installing any extra apps..

From this strategic combination of technology and know-how, CRI and Hitachi High-Tech have moved beyond basic remote factory monitoring to create the ideal smart factory, providing fast, real-time, easy-to-use, cost saving services suitable for the IoT age. Through this new partnership, CRI and Hitachi High-Tech will expand their business in the smart factories, and provide mission critical support to Japanese manufacturers in their effort to expand overseas.

▪ List of CRI Middleware Technologies Used in Hitachi High-Tech Smart Factories

(1) CRI DietCoder®

Technology overview: Video transcoder (encoder)

Effects: Reduces the file size of security camera video by 1/2 to 1/3 without any quality loss.

Advantages: Reduces the cost of transferring, saving, and managing video data through reduced file sizes, increases efficiency

Details: <http://www.cri-mw.co.jp/product/streaming/dietcoder/security.html>

(2) CRI Caplan™

Technology overview: Video management system (capturing, recording, playback, etc.)

Effects: Provides unified saving, management, and playback of large quantities of video data from multiple cameras.

Advantages: Provides efficient management of large quantities of video data, real-time monitoring, and instant playback of video from a specific date and time.

(3) LiveAct® PRO

Technology overview: Browser-based web video middleware

Effects: Allows for the management and playback of security camera footage in a smartphone (iOS or Android) browser.

Advantages: Easy playback of video on restrictive smartphone browsers (no app required, supports BYOD)

Details: <http://www.cri-mw.co.jp/product/web/liveact/index.html>

Exhibition at SECURITY SHOW 2017

CRI will introduce technologies for Smart Factories at the SECURITY SHOW 2017 (March 7 - 10, 2017), Japan's largest comprehensive exhibition of security and safety industry.

URL : <https://messe.nikkei.co.jp/en/ss/>

CRI's booth No: SS7105

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