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# The Next Level of Knowledge

Dell Technologies partner delivers breakthrough innovations in image processing.

## digital harmonic®

Software | United States

## Business needs

Digital Harmonic needs leading-edge accelerator-optimized servers, storage systems, edge devices and workstations to power its groundbreaking image processing technology.

## Solutions at a glance

- Dell Precision 7000 series mobile and fixed workstations
- Dell EMC PowerEdge C4140 servers
- Intel® Xeon® Scalable CPUs
- Dell Technologies OEM | Embedded & Edge Solutions

## Business results

- Delivering next-generation image processing
- Helping government agencies protect citizens and assets
- Enabling advances in healthcare
- Transforming commercial and industrial applications

PurePixel® software from Digital Harmonic **automatically enhances** still images and full-motion video.

Keyframe software results in **20-80% reduced bandwidth** for streaming

# Reinventing image processing

Digital Harmonic invents and delivers new technologies for enhanced image processing. The company's software products are used to extract information otherwise hidden in images, providing the company's customers with insights that would otherwise be unavailable.

The company's flagship product, PurePixel® software, automatically enhances still images and full-motion video. With unrivaled capabilities, PurePixel performs automatic scene recognition and programmatic manipulation of pixel values to optimize exposure, increase contrast and detail, de-blur, reduce noise in low-quality images and help detect faint anomalies.

PurePixel also enhances artificial intelligence (AI) and machine learning (ML) applications. For example, when it is used upstream of an ML image classifier, PurePixel can increase the probability of object classification. This versatile software can also process full-motion video at less than a frame delay (< 30ms/frame at 1080p) and stream or store the output.

Another Digital Harmonic solution — Keyframe — dramatically increases video stream quality while reducing required bandwidth for live and video on-demand streaming by 20-80%. Keyframe is easily configured as a "bump-in-the-wire" solution in any real-time image, video, or stream processing workflow, operating on the client side, with the option to be used server side.

# Powerful software

Although Digital Harmonic is a young company, it's already making an impact on national security and healthcare, and could soon be doing the same for a wide range of commercial applications. For example:

- Defense and intelligence agencies are applying Digital Harmonic technologies to provide enhanced resolution of images in support of threat detection and mitigation.

- Healthcare providers are using the company's products to reduce the radiation dosage required to take medical images and to support the early detection of cancer.

- Digital Harmonic solutions can also be applied to a variety of commercial and industrial applications, including oil and gas discovery, engine health monitoring, and image/video analysis.

Many of the use cases for solutions from Digital Harmonic enable users to gain a clearer view of things they want to see. The company's technology can help people see more clearly through smoke from a wildfire, fog, cloud cover and darkness. With PurePixel, they can suddenly see people and vehicles on the ground, roads and utility lines, or the wreckage of an aircraft, rather than nothing but murky air with faint outlines of things below.

"For military, state and local first responders this product is a game changer," says Timothy Stefanick, Vice President of Business Development for Digital Harmonic. "PurePixel enables greater extraction of data critical to the decision maker."

## Rock 'n' roll roots

The fundamental technology of Digital Harmonic was developed by Paul Reed Smith and his father, Jack Smith, who was an applied mathematician. What started as an experiment for measuring waveforms from a guitar string to create a new guitar synthesizer ended up producing a technology that could revolutionize the practice of imaging processing.

The answer is found in high harmonics — creating a best-in-class method for extracting and analyzing waveforms and signals across time, frequency and amplitude — thus revealing information never seen before. Applying this construct to images uncovers new data and insights that were never thought to be possible.

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## A sharper view

**For a firsthand look at the amazing capabilities of PurePixel, see the before-and-after views on [Vimeo](#) or [YouTube](#).**



**BEFORE**



**AFTER**

# Working with Dell Technologies

Under a partnership announced in 2020, Digital Harmonic is working with Dell Technologies to bring its PurePixel AI-driven image and video enhancing solution to the Federal government market.

Through its ability to turn night into day, clear up fog, and remove cloud cover in image and video sources, in real-time, the PurePixel solution will help the U.S. government secure critical areas and communities, enabling military leaders to make better-informed command and control decisions.
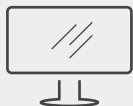
Under this partnership, Digital Harmonic is collaborating with Dell Technologies OEM | Embedded & Edge Solutions to deliver PurePixel to Federal agencies on a scalable suite of hardware solutions, ranging from edge devices and mobile workstations to data center servers and storage systems.

One option for delivering PurePixel to customers is the Dell EMC PowerEdge C4140 server with 2nd generation Intel® Xeon® Scalable processors. It's an ultra-dense, accelerator-optimized rack server purpose-built for AI solutions. With support for up to four GPUs, this server is ready for some of today's most demanding workloads, including low-latency performance for advanced AI use-cases.

Another option for powering PurePixel is the Dell EMC PowerEdge R740 server with 2nd Generation Intel® Xeon® Scalable processors. It's designed to maximize application performance with an optimal mix of accelerator cards, storage and compute power.

Technologies like these are key to getting the transformative power of PurePixel and other Digital Harmonic products into the hands of the government agencies, as well as other users, according to the company's leaders.

"We can think of no better collaborator than Dell Technologies to achieve the speed and scale needed to place our powerful technology in the hands of Federal customers to help give the U.S. a competitive advantage," says Scott Haiges, CEO of Digital Harmonic.

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Unlock the value of data with artificial intelligence

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