DELL Technologies

INDUSTRY BRIEF

A COMPUTER VISION AI BLUEPRINT

Bringing AI to your data

AN OUTCOMES-LED APPROACH FOR COMPUTER VISION DELIVERS BETTER QUALITY INSIGHTS FASTER:

- **Increased operational efficiencies:** Leverage all the data you're capturing to deliver high-quality services and improve resource allocation.
- **Optimized safety and security:** Provide a safer, more real-time aware environment
- **Enhanced experience:** Provide a more positive, personalized and engaging experience for both customers and employees.
- **Improved sustainability:** Measure and lower your environmental impact.
- **New revenue opportunities:** Unlock more monetization opportunities from your data with more actionable insights.

How Dell Technologies is leading the industry with an outcomes-led computer vision AI blueprint

Organizations from every industry are in a digital race to turn data into business outcomes, faster. Computer vision AI helps organizations quickly leverage their video and other data across distributed and edge environments to deliver actionable business insights.

From situational awareness to tracking customer flow in retail to optimizing supply chains, the opportunities to improve outcomes using computer vision are immeasurable. Progress, however, is often impeded by operational and design complexities. How does an organization match the right systems to the right workflows, and subsequently those workflows to achieve the desired outcomes? That's where Dell Technologies comes into play.

At the forefront of the enabling technology of computer vision, Dell Technologies has teamed with key industry stakeholders and an extensive partner network to develop and refine an end-to-end process that takes customers from ideation to full-scale implementation faster. At the foundation of the process is Dell Technologies AI Factory, which is an end-to-end solution comprising of Dell infrastructure, services as well as ecosystem partner technologies. The AI Factory lowers barriers to and accelerates adoption of AI, while lowering risks and delivering optimized business outcomes.

The Global Industries team at Dell Technologies includes computer vision subject matter experts in just about every major industry. This team works with customers and partners throughout the process to provide organizations with validated, optimized solutions that deliver real-time business insights.

BETTER QUALITY INSIGHTS FASTER:

Dell Technologies provides the ability to ingest visual and sensor data once, allowing multiple tools to extract different insights from the exact same data, thus providing insights back in the context of the insight consumer.

Prioritizing outcomes with an AI blueprint

Dell Technologies is focused on identifying our customer's business outcomes and providing the workflows that deliver them. We follow a unique validated design solution process to test workflows to scale, both in number of sensors, as well as multiple concurrent applications. Through this process we create design, implementation, and sizing tools that reduce the risk and speed up the implementation of complex infrastructures, ultimately delivering better quality outcomes for our customers.

Although our discussions start with understanding the customer's current physical infrastructure, it evolves into defining their desired outcomes. After conducting thousands of conversations, we discovered a universal theme. Regardless of industry, every customer was interested in delivering one or more of the following outcomes. These include:

- Increasing operational efficiencies
- Strengthening safety and security
- Enhancing the people experience
- Improving sustainability
- Generating new revenue opportunities

Each of the five outcome categories, although common across industries, entail different workflows (see Table 1 for industry examples).

Supporting the customer's data journey and building computer vision workflows

Once the desired outcome(s) are identified, the Dell Technologies team supports customers through their data journey and works with key customer stakeholders to define the specific workflows that will achieve the desired outcomes.

Table 1. Computer vision example workflows: Delivering greater business value by focusing on the right outcomes.

	People & Facility Safety	People Experience	Operational Efficiencies	Sustainability	Enhanced Revenue Streams
Transportation	Abandoned object	Queue monitoring	Fuel optimization	De-icing management	Retail wayfinding
Smart Cities	Intersection safety	Taxi flow management	Traffic pattern analysis	Water management	Parking revenue
Critical Infrastructure	Substation security	Smart metering	Smart grid	Vegetation control	Dynamic pricing
Retail	Loss prevention	Customer 360°	Dynamic inventory	Cold chain management	Shelf location analysis
Healthcare	Access control	Extended patient care	Virtual nursing	Medical waste	Increased procedures
Manufacturing	Worker safety	Connected worker	Predictive maintenance	Energy optimization	Production quality
Sports & Entertainment	Entrance monitoring	Wayfinding	Dynamic staffing	Waste management	Targeted digital signage

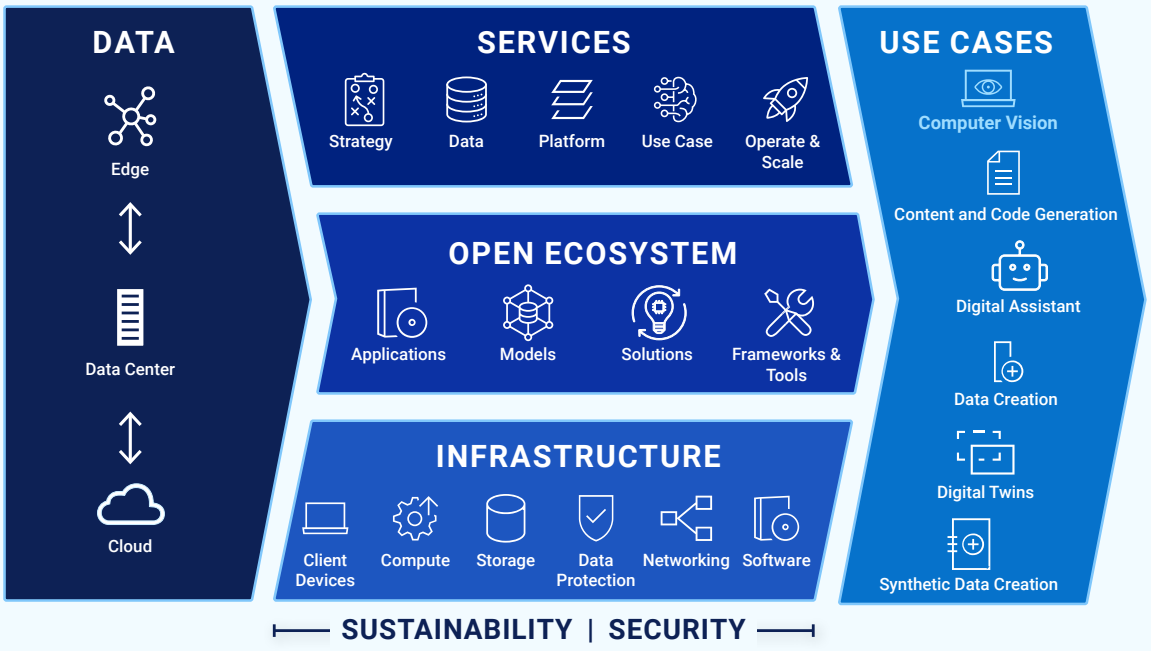

Figure 1. The Dell Technologies AI Factory: Data-driven insights drive the competitive advantage.

These workflows require data to be readily accessible regardless of location—whether at the edge, in the data center, or in the cloud. Dell's AI Factory approach (Figure 1) is designed to utilize customer data wherever it may be located as the raw material for delivering actionable intelligence. It allows Dell to stay focused on delivering key customer outcomes while taking an ecosystem-centric approach. Dell's extensive set of services allow our customers to refine their AI strategy and execution, while Dell's leading infrastructure solutions underpin the deployments.

We first assist customers in identifying where their data is located, how to access it, and how to explore, exploit and enrich that data. Our goal is to help them align their business needs with AI solutions. We then focus on key workflows to deliver the desired outcomes. Workflows are delivered via algorithms. They can be used for simple object detection, such as identifying abandoned objects in an airport terminal, debris on the runway, or link a particular item or bag to a specific person. Or, they can be more complex such as monitoring ramp operations, ensuring the right personnel and equipment is in place to minimize aircraft turnaround time. For retail, the workflow can leverage analytics that show which items customers examine, how much time they spend at the display, if they ultimately purchase the product. More advanced algorithms can be used to plot the most common paths through the store so the highest-margin goods are placed in high-traffic locations, thus maximizing per customer revenue.

After defining the workflows, our compoter vision solution experts look for the best suited software partners that have the capabilities to support these workflows. They are assessed from both a technical and business perspective. Once the right partners are identified, the lab validation process starts.

The importance of lab validation

The validation process from Dell Technologies (Figure 2) is one of the most comprehensive in the industry. We start by leveraging our partnerships with technology partners like Intel® and NVIDIA. We maintain mutual labs where these applications are brought in and tested on the various Dell platforms. Not only are the applications tested for basic functionality, but an extensive ecosystem of partners provide developer support to help optimize their code on a Dell platform—a critically important aspect that helps deliver benefits to our end users and partners.

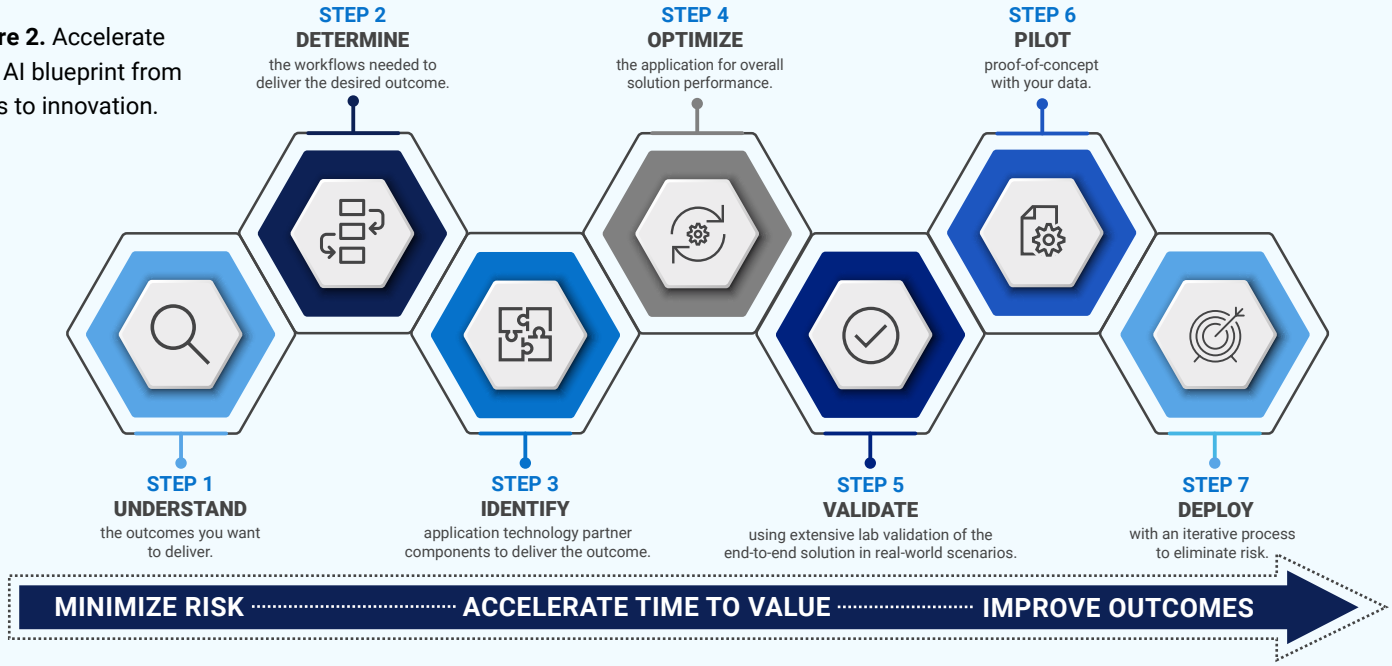

Figure 2. Accelerate your AI blueprint from ideas to innovation.

Following application optimization, the video management and analytics applications are tested together, in real-world scenarios that range from tens to thousands of cameras. This is where we look at performance metrics that are critical to the development of its sizing tools, ensuring that when a design is deployed, it works from day one and beyond. Ultimately, the customer receives what is needed most—a working infrastructure delivering real-time insights at scale.

From that point, demonstrations are conducted at a Dell Customer Solution Center to provide support for proof-of-concept designs, either virtually or onsite. This allows a company to bring its data into a secure environment and get some time with various applications on a variety of Dell hardware. All of this is backed by a team of industry experts who can provide insights about specific use cases that have been implemented at facilities large and small.

The output is a Dell Validated Design Solution—a platform including multiple applications that have been tested together. As part of the process, Dell produces a design guide with sizing and configuration information to help the customer, integrator and OEM replicate exactly what was done in the lab. This process is all about eliminating risk inherent with delivering a complex deployment.

Getting started with Dell Technologies

When it comes to innovation, people often find themselves paralyzed by the 'art of the possible'. They don't know where to start because they may be looking at individual use cases. They find themselves asking how it applies to them. At Dell Technologies, we can help address these unknowns. With our outcomes-based process and AI blueprint, we can help define the workflows that map to the desired outcomes, test the solution at scale, test it to fail, and build it from an ecosystem of industry-leading partners. Through validation, best practices plus sizing—all while bringing AI to your data—we can help you accelerate the adoption of innovation.

Learn more at **Dell.com/computervision** and **Dell.com/ai**.

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