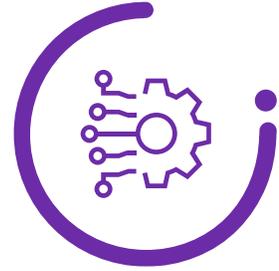


# Computer Vision Driven Outcomes – The Business Manager Viewpoint



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## Increasing customer efficiencies through simple, specific and optimized solutions

For business managers, insights mean everything. Regardless of industry and use case, and whether enhancing profits or reducing costs through operational efficiencies, fulfilling corporate sustainability requirements, improving the customer experience, or ensuring the safety of patrons, access to timely, high quality, and above all "actionable" data can make or break the business from one moment to the next. Business managers may not want to understand the details of how their AI solution may work, but they certainly know the power of data driven insights and the pursuit of predictive analytics in solving issues before they cost time and money.

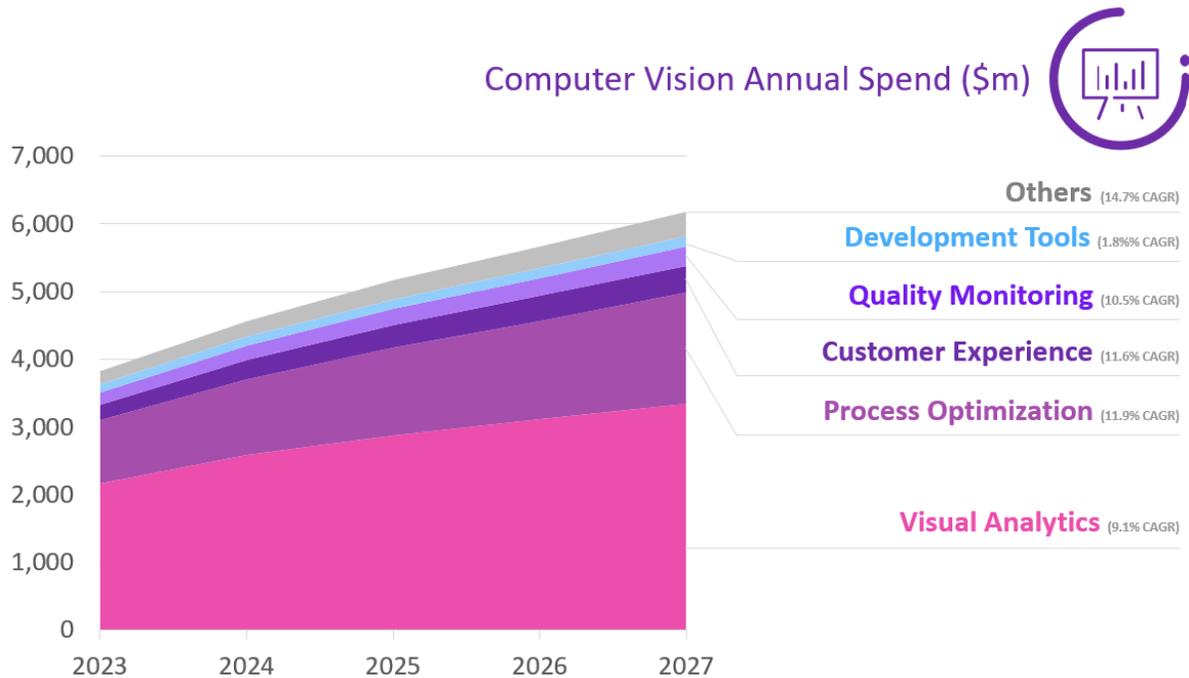
To illustrate, what may appear as a chance anomaly in a business intelligence (BI) dashboard might in reality point to a cascading chain of unseen, interconnected events that have not been integrated from available sensor and business data sources. This in turn could lead to an ill-advised or missed decision, which could result in significant revenue loss.

Fortunately, we are currently living in the age of deep learning (DL), as evidenced by current market intensity swirling around generative AI that promises to push the market for all AI technologies to more than \$159 billion dollars by 2026.

*Nowhere is AI innovation more tangible and instantaneous than in the deep learning realm of computer vision.*

Building on advancements in model architectures and hardware efficiencies, each day, technology researchers are discovering new approaches and new capabilities that were only dreamt of a few years prior. And nowhere is such innovation more tangible and instantaneous than in the deep learning realm of computer vision.

**Figure. Computer Vision Market Growth Rates**



Source: Omdia Artificial Intelligence Software Market Forecasts 1H23

At its very core, computer vision is not complicated – but is so much more than just a tool for identifying and then drawing bounding boxes around objects within computer security videos (see the use cases in figure above). Stated simply, computer vision defines the act of imbuing machines with the ability to see, comprehend and then act on visual information from the surrounding world. And from this one simple premise, companies seeking to transform their business have at their fingertips a myriad of possibilities to explore.

With computer vision data at the ready, business owners can gain access to better accuracy of information as well as the ability to measure a wider range of measures. From facilities management, transportation, or sports and entertainment, a wide array of markets already rely on computer vision to increase operational efficiencies, build stronger ties with customers, generate new revenue streams, work in better harmony with the environment, and of course improve the safety and security of employees and customers alike.

With a proper investment in computer vision technologies, business owners can not just find out what happened in the past, they can begin to predict the future and prescribe the next best action to take. Here are a few such benefits.

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- **Real-time visual analytics** - Computer vision can analyze live video feeds and imagery to extract insights in real-time, identifying risks and opportunities as they occur.
- **Situational awareness in context** - Computer vision can understand the contextual details of a situation using visual cues. For live venues, computer vision can assess not just crowd size and demographics, but also the sentiment of that crowd.
- **Actionable alerts and predictions** - By combining real-time analytics with context, computer vision systems can provide targeted and actionable alerts. For supply chain issues, this could mean flagging an impending product shortage, for instance.
- **Visual forensics and auditing** - The ability to use visual data to reconstruct incidents noteworthy and patterns. With this, business users can gain a high degree of accountability to resolve disputes and provide compliance documentation, for example.

## Example: Revenue Enhancement in Transportation

Computer vision is uniquely positioned to deliver on two seemingly opposing forces at play in today's enterprise -- the need to reduce operational costs and improve profits. As but one example, it can directly reduce costs by automating human processes. Second, it can indirectly surface actionable, data-driven insights capable of generating revenue opportunities.

Whilst so many of the computer vision goals are interlinked, this is most true in the area of revenue enhancement – where for example, operational efficiencies and better customer experience can directly drive an increase in top-line revenue.

### The Transportation Case Study

Public transportation serves as a critical component of urban life. For both passengers and transit providers alike, safety and efficiency form the very tip of the pyramid of solution requirements. These are important concerns, not just in moving people to their destinations but also in supporting local commerce across a myriad of markets. If the trains shut down commerce and people suffer.

But public transport can be so much more, especially if equipped with a modern computer vision system and data stack. A video-enabled rail system, for example, can both engage and entertain travelers while keeping them accurately informed on location, wait times, time-to-destination updates, even station-by-station weather reports. Technology-savvy transportation facilitators are even extending computer vision systems to drive new revenue streams through improved safety, compliance and predictive maintenance – this is not just real-time information, but even ahead of time.

By unifying computer vision data across all transit endpoints (cars, stations, queues, etc.), facilitators can put the resulting situational awareness to work as an innovation engine. For example, using chip-enabled transit cards together with face-matching cameras can kill two birds with one stone, simultaneously providing two-factor authentication for paying users while encouraging users to opt-in to revenue generating programs.

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## Finding the Solution

Putting computer vision to work in finding and resolving such problems can feel particularly daunting, as business owners must coordinate with not only IT and data science practitioners, but also other departments with each prioritizing its own, individual requirements. The trick for business owners rests in abstracting away complexity -- that is, removing of the complexities involved in creating a bespoke, multi-departmental computer vision solution.

Often, the best way to not just built but realize the full potential of a computer vision solution is to partner with technology providers that understand computer vision hardware and have extensive experience building use case-specific outcomes capable of capturing the data streaming off of computer vision hardware, bringing that data into a central data warehouse where it can co-mingle with other analytical signals, and then surfacing insights from that data that are specific to the business owner's needs. Such an approach yields many benefits, including:

- **Hardware, simplified** - Partners can deliver optimized solutions that coordinate hardware across servers, edge equipment, storage and networking, all tuned to support very specific computer vision workloads.
- **Full stack optimization** - Hardware-savvy technology partners can help optimize the full, end-to-end system architecture, infrastructure and components, creating a high degree of vertical integration from chip upwards through software.
- **Future-proof solutions** - This vertical integration can support updates and new computer capabilities down the line with one unified view into into upcoming releases and roadmap investments.
- **Turnkey deployment** - Business owners can rapidly speed up deployment through pre-designed and pre-integrated systems that feature optimized software stacks. This bypasses the complexities found with in-house integration efforts.
- **Support services** - Partners can provide ongoing support for integration, testing, maintenance, and troubleshooting issues. This is a mission critical requirement for complex multi-department computer vision systems.
- **Ecosystem connectivity** - Hardware-savvy computer vision partners can leverage extensive ecosystem partnerships to solve otherwise intractable issues. This can be very helpful for complex data, AI, and analytics library interdependency issues.
- **Compliance assurances** - Partners can greatly assist in ensuring that solutions comply with security, data privacy and industry AI regulations.

By working with partners that understand computer vision hardware and business use cases, companies can rapidly create a personal business plan based upon the most appropriate, supportive workflows -- right out of the box. This lets enterprise practitioners focus on desired outcomes rather than worrying about how they might map those outcomes to required data points and the supportive infrastructure as proven out in real-world settings.

*To read more recommendations and insight to the market, readers should view the full whitepaper: Practical Computer Vision from the further reading list below.*

## Appendix

Further reading

[Practical Computer Vision - Whitepaper](#)

[Beyond the platform](#) - by Dell Technologies and Intel

[Leading the industry with an outcomes-based process for computer vision](#) - by Dell Technologies and Intel

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