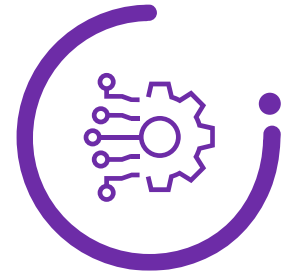


Computer Vision Driven Outcomes – The IT Manager Viewpoint



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Integrating new data sources and AI Driven technologies is the new IT challenge.

While business users and data scientists have the luxury of hyper-focusing on their individual projects, often in relative isolation from the rest of the company, IT managers must consider each and every project as a single piece in a much larger, corporate puzzle -- one that must deliver across many demands including cost, performance, security, privacy, and increasingly, sustainability.

For IT managers tasked with managing the burgeoning world of computer vision use cases, the challenge of managing these demands from an infrastructure perspective can quickly grow out of hand – all while under pressure to minimize risk but accelerate implementation.

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. Simple enough. But computer vision is so much more than just a tool for identifying and then drawing bounding boxes around objects within computer security videos. Companies are quickly learning that computer vision can transform their business – part of the drive behind the forecast 150% growth in annual spend on computer vision from \$2.5 billion dollars in 2023 to \$6.2 billion dollars in 2027, according to Omdia market research.

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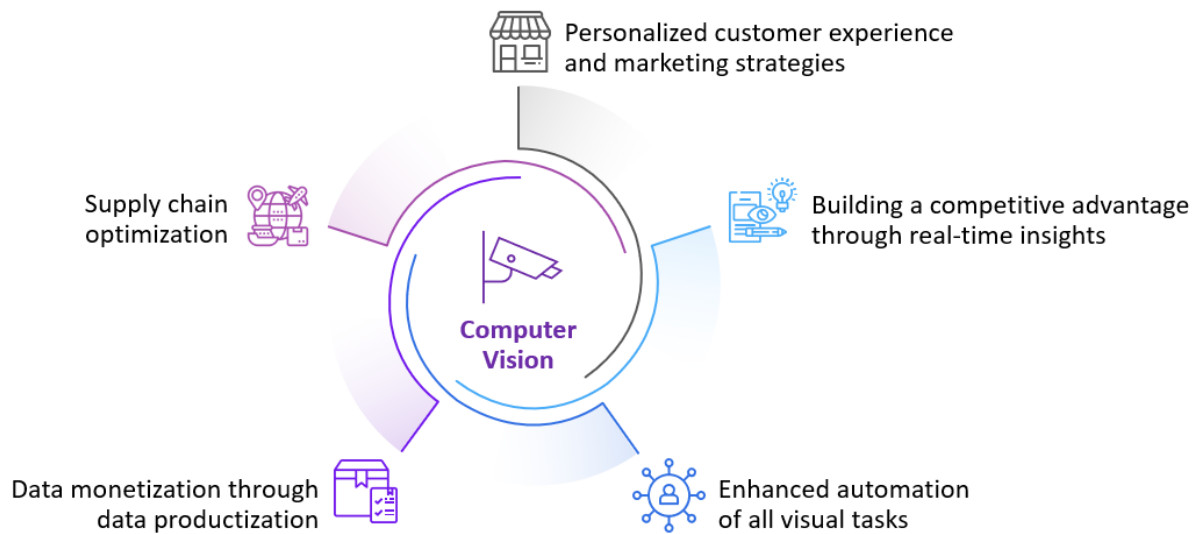
Why is this booming interest in computer vision keeping IT managers up at night?

First and foremost, the availability of high-quality data to increase accuracy of computer vision deep learning (DL) models, enables them to effectively tackle many different domains, from security cameras to self-driving cars, and even social media. The rapidly increasing number of data savvy edge devices is a key driver here, helping companies share data previously closed off from the broader business.

Second, the rapidly decreasing cost of hardware and edge devices (cameras, sensors, storage/memory, etc.) coupled with new-found infrastructure efficiencies is enabling companies to deploy larger, more capable computer vision models on a grand scale.

And third, demand for both corporate efficiency and growth are themselves fuelling the computer vision market because a single platform can drive a wide array of important use cases such as supply chain management and customer experience management. By ingesting and processing data from many disparate sources (not just video), a well-designed computer vision platform can serve analytical requirements across the business, creating a true flywheel effect of ingest once, deliver everywhere continuously (see Figure below).

Figure. The Computer Vision Flywheel Effect



Source: Omdia

Managing all of this data, supporting bigger and bigger DL deployments, and responding to increasing analytics requests from across the business may facilitate a positive flywheel effect for the company, but it also puts a lot of pressure on IT managers. To keep things running smoothly, they need to be able to juggle an exceptionally wide variety of tasks, including managing data storage, provisioning sufficient compute resources, maintaining systems integration connectivity, as well as monitoring DL models for accuracy, security, performance, etc.

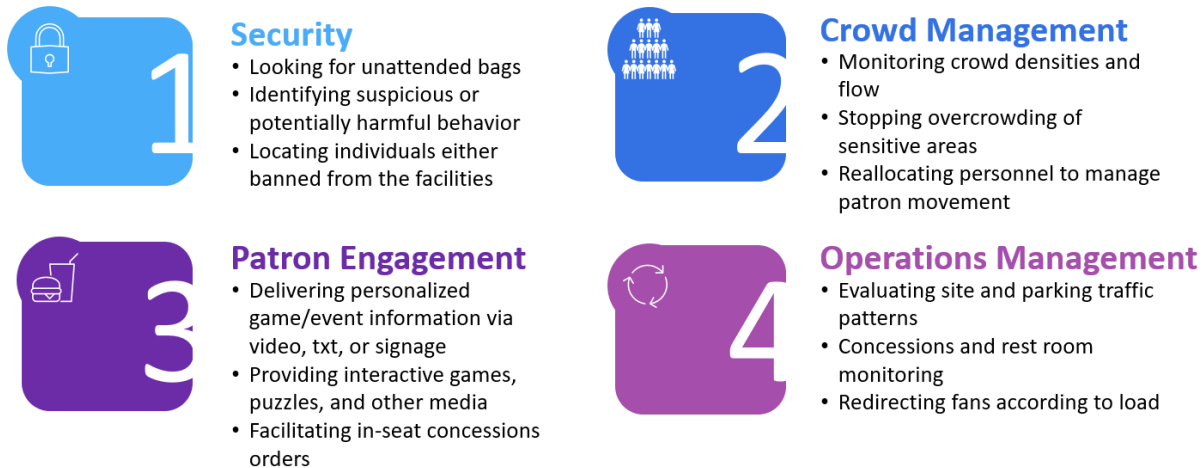
It's game day!

To illustrate the challenge (and power) of a wide variety of data steeped in computer vision, imagine that it's game day. The stands are packed, and concessions are overflowing, as food buyers have run out of the team's signature fare on the second floor and machines on the first floor have broken down unexpectedly. Word travels fast, and fans are now crowding the staircases to reach a higher concessions promenade level, one not at all equipped to handle the rush. This scenario may sound extreme, perhaps unlikely; however, it plays out time and again across very large sporting venues in the United States and Europe, where 60,000 plus attendees can be the norm.

How can a business owner navigate let alone choreograph all those interdependencies? How can they fully leverage the value of computer vision data, in gathering timely knowledge of measures like queue length, live heatmaps, GIS coordinates, attendee demographics (e.g., who's here rooting for the home team), occupancy levels, weather info, network loads, and concessions? Of course, better managed outcomes will bring enhanced customer experience and increased revenue, for example owners can understand both the reason for and the best response to an emerging concern. Early detection of overcrowding can be used to prompt workers to help steer fans to less-used facilities long before any issues arise.

In bringing computer vision out of the traditional silo and into the core of the central IT infrastructure, the key for IT engineers in meeting this challenge is through validated designs, and having the right tools (and partners) to reduce the complexity in building workflows.

Figure. computer vision use cases in sports and entertainment



Source: Omdia

Thinking “workflow” and simplifying IT architecture

To succeed with computer vision, successful practitioners must think from the outcome to arrive at a workflow and supportive infrastructure capable of putting computer vision to work “in time.” Practitioners must architect for what matters most -- the ability to access and process both structured and unstructured data in near real-time. With the correct underlying hardware and computer vision DL

model inferencing resources, the venue can immediately detect and respond to both functional anomalies and human incidents.

New challenges and on- or off-premises

Achieving this might bring new and seemingly complex IT challenges – for example, companies need to ingest video streams at the edge and process those streams in real-time before moving the pertinent video data to central archive (on- or off-premises), where it can be put to use in supporting broader opportunities.

For both edge device and central data warehousing servers, the use of highly integrated, converged systems can dramatically cut down technical staffing requirements. These hardware solutions behave in many ways like cloud-native services in that they are automatically kept up to date, protected against security vulnerabilities and interdependency-induced instabilities. And they do this across edge, core, and cloud through a single management pane of glass.

Furthermore, these systems often employ federated AI architectures, where AI processing power can be easily offloaded onto edge and even end-point devices. These combined capabilities can reduce time to market while also shrinking the skills gap necessary for long term operation, enabling affordable and easily managed adoption of demanding use cases at scale.

As with any transformative project, doing things right requires careful planning and execution across a complex technological landscape. First practitioners must establish a common foundation of devices. Second, they should focus on properly collecting and curating data. Third, they should open up that data/underlying platform to internal and external systems, data sources, and solutions. And finally, they should link the aggregate of these efforts directly to the business for real-time, ubiquitous access to computer vision insights

Optimizing IT investments in computer vision

There is no doubt that computer vision is a worthwhile investment, even given the numerous challenges facing companies just beginning to explore its numerous and multifaceted opportunities. Unfortunately, there are no shortcuts for IT managers hoping to build a scalable computer vision architecture to meet the business needs, whether to constrain costs or drive innovation.

For example, to achieve full digital transformation, IT managers must to take the initiative in carefully designing an underlying compute capacity to handle AI inferencing across numerous workflows. Only by provisioning the right amount of AI processing power across endpoint, edge, and cloud, can they hope to build a solution capable of not only spinning the flywheel of opportunity but also meeting the innumerable demands (security, performance, cost, etc.) of the broader business.

How then should companies best prepare to succeed with computer vision?

Enterprises should seek out a computer vision technology partner that possesses domain expertise garnered from numerous customer engagements. Bonus points for partners offering converged and hyperconverged hardware, which can itself accelerate development by cutting down on software management costs over time.

To succeed with computer vision, successful practitioners must think from the outcome to arrive at a workflow and supportive infrastructure capable of putting computer vision to work “in time.”

Commissioned Research

Given that computer vision solutions will undoubtedly span both premises and cloud (and often multiple cloud platforms), partners should either integrate with or provide their own vertically integrated hardware, software, and services offering. In this way, the right partner can help companies minimize risk, generate high quality insights, and overall shorten the time it takes to move from project conception to deployment.

This last point is crucial because finding a good technology partner capable of simplifying the front end process can help companies overcome what Omdia has found to be the biggest hurdle to the adoption of any AI-based solution, namely the complexity of AI itself and the difficulties involved in integrating AI into the business. The right partner can even help enterprises translate best practices and domain expertise into actual solutions.

By choosing a partner with extensive experience in supporting distinct vertical and use care requirements, enterprise practitioners can benefit from the business and operational lessons learned in helping customers realize business outcomes from their AI and computer vision investments. Further, working with a hardware-savvy partner that can help marry disparate systems together.

Together these traits can help IT managers tackle current challenges while paving the way for future opportunities and in so doing unlock the power of computer vision systems to increase operational efficiency, strengthen security and safety, improve sustainability, deepen customer relationships, and most importantly generate new revenue opportunities.

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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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Omdia Commissioned Research

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