# SIGHT SOLUTIONS

## UNIQUE IN HOUSE DEVELOPED RECOGNITION ENGINES

primevision

## PRIME VISION SIGHT SOLUTIONS

A COMPREHENSIVE OVERVIEW

Prime Vision applications automate human interpretation. All applications are based on our unique in house developed technology. This technology is applied in several recognition solutions and has far higher processing capabilities than the average human. The result is a reduction of processing time and prevention of errors, while significantly improving quality and accuracy.

Our Sight solutions are used in markets where large volumes of handwritten or printed characters need to be read fast and accurately into digital systems.

These include:

- CEP, e-Commerce, Postal and Logistics for reading addresses on letters and parcels;
- Warehousing and distribution for reading labels on boxes;
- Airport industry for reading baggage labels.

## OUR SIGHT SOLUTIONS

**Address Vision**
OCR/Optical Character Recognition

**Barcode Vision**
Barcode Reading

**Customs Vision**
International Label Reader

**Indicia Vision**
Indicia Recognition

**Hazmat Vision**
Dangerous Goods detection

**Quality Vision**
IQ card/barcodes

# ADDRESS VISION

## REDUCES MANUAL HANDLING COSTS AND IMPROVES READ RATES

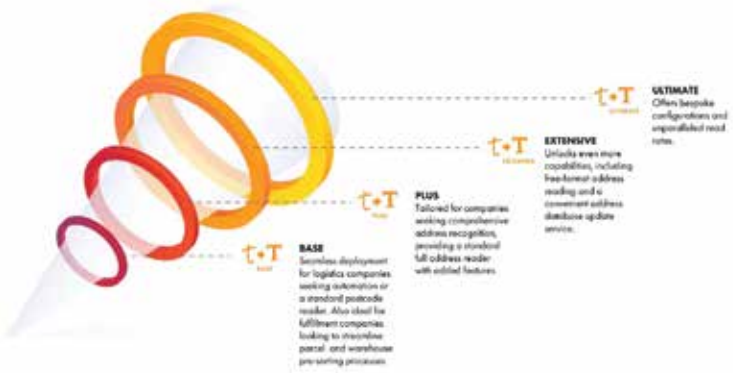
Postal and parcel services often rely on address-based sorting to ensure parcels and letters are delivered to the correct destination, and OCR allows this to be completed quickly and precisely.

Address Vision represents a cutting-edge solution designed to automatically interpret both handwritten and machine-printed addresses with precision and efficiency. Tailored for companies engaged in mail and parcel sorting, this sophisticated system harnesses the power of OCR to achieve impressive read rates.

The solution is particularly well-suited for companies relying on address-based sorting and warehouse processes, offering a seamless transition to automation or providing a dependable backup system.

## ADDRESS VISION, FOUR LEVELS

The Address Vision Suite, distinguishes four distinct levels, each customized to meet diverse requirements. With each level, read rates progressively improve.




Regardless of the level chosen, our solutions achieve high read rates and seamless integration into existing sorting operations. Moreover, all leverage state-of-the-art AI techniques, to ensure optimal performance. A standardized approach simplifies and accelerates OCR integration into any operation, while offering easy plug-and-play micro service upgrades for a truly tailored system.

- Boosts efficiency by accelerating sorting and routing processes while reducing handling time
- Minimizes errors in sorting and warehouse processes
- Cuts costs on labor and errors
- Seamlessly integrates into existing sorting operations with speed
- Significantly reduces the need for manual coding

# CUSTOMS VISION

## INCREASES EFFICIENCY IN SORTING CENTERS FOR CROSS-BORDER PARCELS

Postal and Parcel distribution centers often run into challenges with parcels sent from abroad. Sorting and delivery are delayed because of poor quality of the address labels on these parcels. Many of the labels are incorrectly formatted, in illogical order and/or miss critical information.

Most installed older OCR readers in distribution centers are unable to correctly recognize and process address and CN 22/23 labels. Automatic sorting of these parcels therefore fails frequently. As a result, more manual sorting effort is needed in the distribution centers. This leads to increased cost of sorting and possible delays in delivery due to necessary manual handling of the parcel.
According to the new EU regulations all cross-border parcels, independent of the value, need to be declared to customs. Manual registration of this information will certainly have a huge impact on your organization and increase workload.

Customs Vision is the answer to those problems. Before delivery to the client, thousands of illegible addresses from individual countries on the neural network were fed into the Customs Vision's database. This is how the system learned the formats, regularities and connections within the address formats, lowering the number of failures in scanning the labels and sorting the parcels. Parcels can now be sorted faster and more accurate at lower cost.

Customs Vision improves the efficiency in the sorting phase of the delivery process and saves much time and effort in customs declarations by collecting and registering the information on the CN 22/23 labels. Cutting cost of manual labor and speeding up delivery of cross-border parcels to their end destination.

- Increases automation rates in automatic sorting
- Less manual sorting needed
- Usable as stand-alone solution or connected to your existing OCR systems
- Automated collection of CN 22/23 label information saves time in customs declarations

# BARCODE VISION

## IMPROVES THE READ RATE OF BARCODES AND LIMITS MANUAL PROCESSING

When barcodes are read by optical cameras, normal barcode reading software can only read them perfectly if the quality of the barcode and camera complies with many strict requirements. For example, the amount of white space around the barcode, the fact that the barcode needs to be printed on a flat surface, the darkness of the ink, the printing should not be scratched or broken, the lighting must be sufficient, etc.

The no-reads in the logistic processes occur on objects for which these constraints are violated. Printers run out of ink, labels get torn, folded or scratched, and objects are not always flat. These barcode no-reads can be very costly in logistic processes, because the items then have to be handled by fallback processes which are usually more time-consuming, expensive and in many cases manual. Typically, 5% of common parcel sorting processes have to be handled by these fallback processes, often leading to hundreds of thousands of Euros of lost revenue per year.

We understand that the rigid constraints imposed on barcode quality are there to reduce the risk of incorrect reading the barcode result. However, these constraints are very conservative, and are meant for all possible conditions under which barcodes are used. Our Barcode Vision solution looks at the barcode reading from the specific customer's point of view. It essentially ignores several of these constraints which may not apply to the specific customer case and compensates the increased risk of incorrect reading by applying domain-specific knowledge to identify and prevent accidental errors.

Barcode Vision is meant as a second attempt to read a barcode of an object, which only occurs after the primary barcode reader has not been able to read the barcode.
A configuration tool allows customers to manage their own image database so that all new objects can be added at short notice.

- Around two-thirds of initially rejected barcodes can be read
- Less manual sorting needed
- Tailor made solution

# INDICIA VISION

## SAVES COSTLY, UNNECESSARY HOURS AND HELPS RECOVER CONSIDERABLE LOSSES IN UNPAID REVENUE

Maintaining profitability and optimization of revenues are top priorities for organizations. Since parcel volumes continue to increase and sorting centers currently operate at maximum capacity, CEP operators need reassurance that correct postage is paid for work carried out.

Prime Vision developed a solution which allow our customers to increase their read rates significantly. The automatic recognition of printed items on enveloped items is fast and accurate. Depending on the case, the read rate on stamps could exceed 99%, whilst the error rate could be reduced to almost zero.

Indicia Vision is based on comparing information. First, we compare descriptions of image patches around detected interest points on the image with descriptions stored in a database. We keep the comparison up to speed by applying innovative search techniques developed by our research team. As a result of this, more target objects can be stored in the database with even more image descriptors, which increases the applicability, increases the detection rate and reduces the error probability at the same time.

Over 1.000 stamps can be logged in the system. Our solution reaches these fantastic performance figures within a low processing time. For the validation of the detection result, new techniques are used that compare the object with a reference image over the full image area. This ensures that even very similar objects can be distinguished with high certainty. Additional OCR techniques will read text in the objects for the purpose of validation or data gathering.

Next to being accurate, Indicia Vision offers postal organizations the potential for considerable cost savings. Not only does it reliably automate another process, it also enables revenue protection to be carried out automatically, as underpaid mail is detected and customers can then be charged for the difference in price.

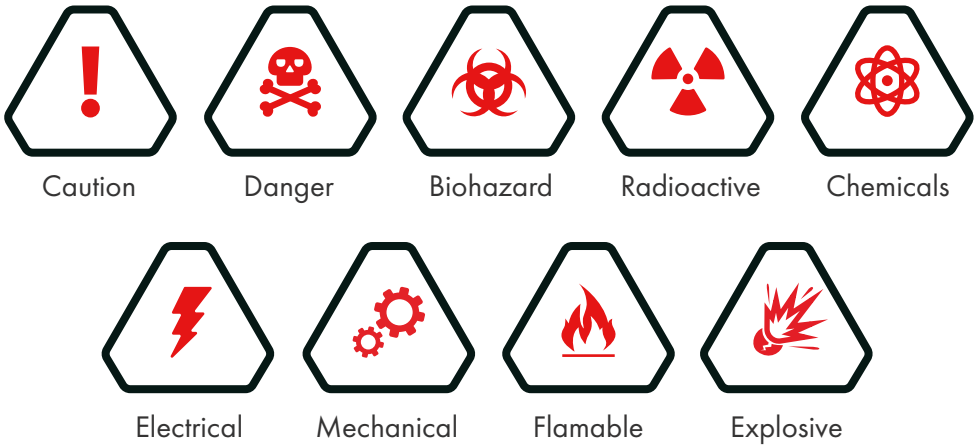
- Recognition of individual or multiple indicia
- Identification of more than 95% of stamps
- New stamps can be added easily
- Customer manages own database with stamp configuration tool
- Enables detection of under-stamped mail and a multitude of revenue protection applications

# HAZMAT VISION

## REDUCES THE NUMBER OF DANGEROUS GOODS PARCELS ENTERING THE AUTOMATED SORTING SYSTEM

Our Hazmat Vision application aims to reduce the number of dangerous goods parcels entering the automated sorting system.

Dangerous goods present many threats to posts' personnel, automation solutions and facilities. Therefore, the segregation and special handling of these goods is critical for maintaining safety. Clear labelling of packages containing hazardous materials is a prerequisite for transport conditions for most companies.




- Increases read rates and decreases error rates on letters and parcels
- Even the most difficult mail can be read
- Less items are sent to video coding
- Our developers make use of the latest AI techniques
- Higher performance and tailored solutions

# QUALITY VISION

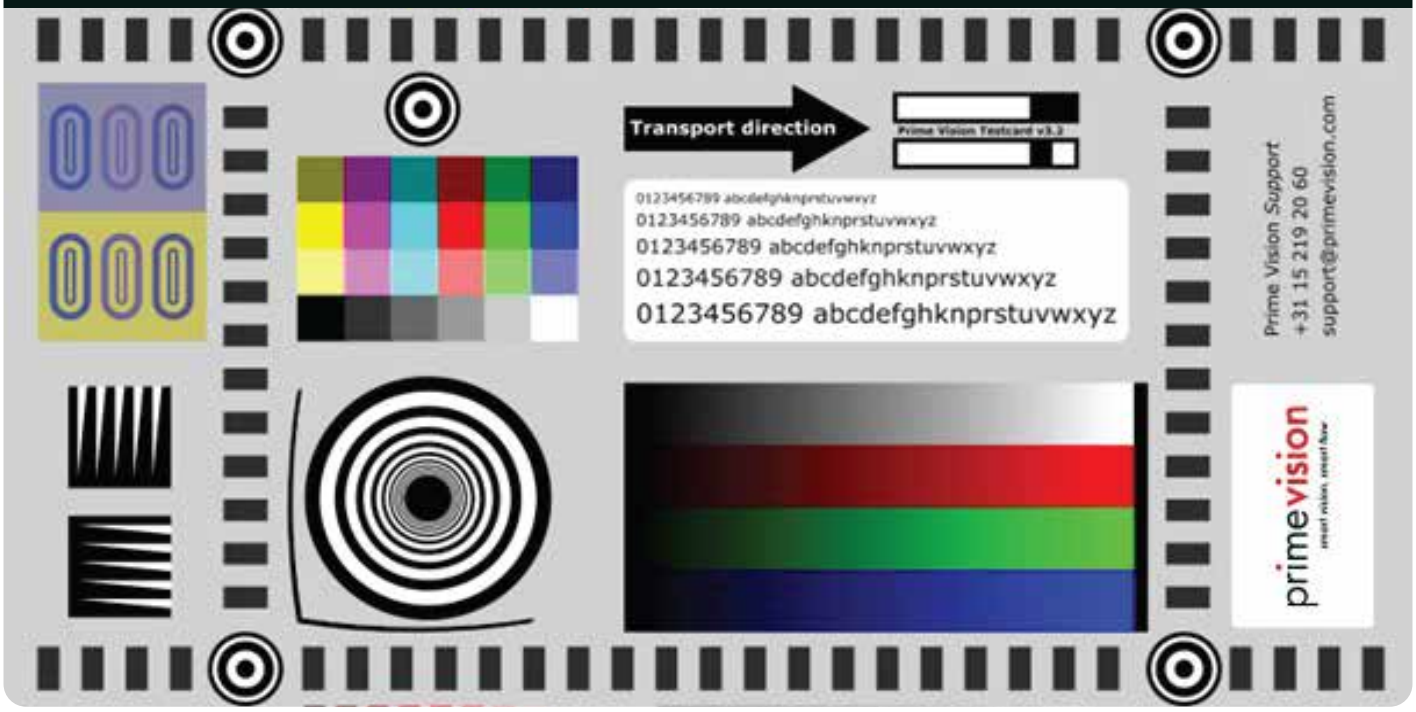
## A FULLY AUTOMATED EARLY-WARNING SYSTEM FOR CAMERA DEGRADATION

The camera is one of the most important components of a sorting line; whenever there is an issue with it, the rest of the chain will be immediately affected. Quick detection of camera degradation is therefore vital. Prime Visions unique Quality Vision solution does just that: it offers a fully automated early-warning system for camera degradation, specifically designed for common vision applications such as destination OCR, automated Object Detection, Video Coding and much more.

Quality Vision consists of physical test objects and a software-analysis suite. The test object is recorded by the camera, followed by the analysis software that automatically detects the object in the image and will perform image-based measurements on the object. The result is a summary of the most important image features.

What makes Quality Vision special, is that it runs your site-specific Computer Vision solutions on the test object. This directly informs you how the performance of the Computer Vision solution is affected by the camera quality. Any drop in performance caused by camera degradation will be detected immediately when the test object is processed, allowing for quick intervention. The detailed image-quality measurements help engineers to efficiently find the root cause of the degradation.

- 24/7 automated monitoring of camera image quality
- Deficit detection at the moment they occur
- Direct translation of the camera performance to the operational process
- Accurate and objective measurements of relevant camera features (focus, illumination, deformation)



primevision

*smart vision, smart flow*

## ABOUT Prime Vision

Prime Vision is a world-wide market leader in robotics and computer vision integration for e-commerce and logistics.

As award winning company, Prime Vision designs and integrates solutions using the latest in recognition, identification and robotic techniques for optimizing the automation of sorting processes.

The company's headquarters are located in Delft, The Netherlands where more than 170 experts offer extensive market and domain knowledge to digital businesses around the globe.



a: Olof Palmestraat 10, 2616 LR Delft, The Netherlands t: + 31 (0) 15 219 2090 - e: info@primevision.com - w: www.primevision.com