

AXIS ANALYTICS SOLUTIONS

Find what you're looking for

EASY ACCESS TO
ACTIONABLE INSIGHTS

[Enter >](#)



What do you **want** to **find**?

Someone who committed a crime, a person in a restricted area, workers not wearing protective equipment, a vehicle you want to track, or the moment an accident took place? You can spend tedious – costly – hours viewing vast amounts of video footage. Or you can choose a better way. A faster, more efficient way.

Video analytics based on AI accelerate investigations and enhance operations by automating and streamlining searches. By recognizing types of objects in video footage, such as humans, bags, vehicles, and so on, hours of video can be reviewed, easily searched, and quickly comprehended. When you use analytics, you can find what you're looking for in minutes – or even seconds. Analytics are ideal for a wide range of businesses and industries and offer many possibilities.

This brochure demonstrates how Axis analytics and analytics from our numerous partners can accelerate video and audio search.

Axis Scene Intelligence technology puts market-leading expertise in image processing to work. It delivers quality data even under challenging surveillance conditions – like low light and backlight. The result is analytics that perform consistently with fewer false alarms.



The promise of analytics

Analytics use data from video and audio to create value. Analytics can support physical security, help organizations operate efficiently, and protect the safety of employees and the public. All analytics rely on the quality of the data they make use of.

What analytics do for you

Analytics give you access to actionable insights in important areas: safety, security and operational efficiency, while also automating processes.



Safer and more secure

Secure people, sites, and buildings and protect them from intentional harm in real-time. Keep people and the environment safe from accidental harm and support policy adherence and regulatory compliance. Rapidly detect, verify, and evaluate threats so they can be handled effectively and efficiently.



More efficient operations

Improve efficiency, productivity, and cost-effectiveness. Make more informed decisions and understand precisely what's happening to improve customer experiences, make better use of resources, optimize and automate processes, and reduce downtime. This eBrochure focuses on how to use analytics to find what you're looking for.



Before you dive in

If you want to know more about analytics check out our Axis analytics eBrochure, which covers the technologies that power Axis analytics.

[Browse Axis Analytics eBrochure](#)

Use cases: let the search begin

The coming pages explore some of the most important use cases when it comes to quickly finding what you're looking for in video content. It's not an exhaustive list, but rather an indication of some of the ways analytics can be used today. Use cases for analytics continue to expand and future possibilities are virtually endless. Whether for safety and security or operational efficiency, analytics provide results in minutes or even seconds, dramatically cutting analysis costs and time.

Analytics can narrow down your search by letting you change and combine search criteria using various search parameters. Analytics support search techniques spanning from basic location and time scenarios to more detailed ones involving objects of interest.

Based on their characteristics and combinations of characteristics, you can:



Find people



Find vehicles



Find inanimate objects





Find people

Do you need to find a person based on limited information such as the color of their clothing? Perhaps you're looking for someone wearing black clothing seen shoplifting in your store? Or a person with a backpack who was seen acting suspiciously before a terrorist attack?

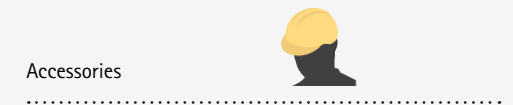
With analytics, you can quickly narrow down your search to a limited number of candidates. And the higher the quality of the video and audio used as input the more accurate and faster the results will be. You can search for people based on different characteristics. Whether it's workers who weren't wearing protective clothing like hard hats, or a person who was detected in a restricted area right before an incident, analytics can speed up your searches and investigations.

How does it work?

Analytics can be trained to roughly estimate people's age and gender* and describe specific characteristics like the color of their clothing or if they're wearing face masks or carrying bags. Analytics at the edge (in the camera) can be used to efficiently search through multiple video streams and find a person of interest very quickly.

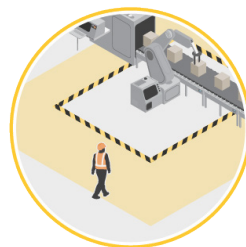
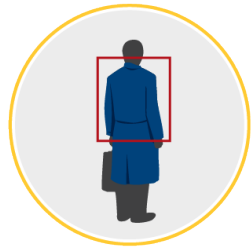
**Performance for age and gender can vary greatly.*

Search parameters for finding people



Who are you **looking for?**

Here are some more examples of how you can use different characteristics to narrow down your search.



Find people based on physical characteristics

Find people based on physical characteristics such as the color of their clothing. For instance, you can search for a person wearing a blue coat.

Find people based on the color of certain kinds of apparel or the lack thereof. For instance, employees wearing hi-vis jackets, construction workers without hard hats, people not wearing facemasks, or a person holding a gun.

Find people in motion

Detect slips, trips, and almost-falls on a construction site, for example, to keep track of workers who tend to fall, or areas where falls are common, in order to improve safety and educate people at risk.

Find people who were in an area they shouldn't be. For instance, on critical infrastructure sites, you can search for people in a restricted area or moving toward a restricted perimeter. Or use analytics to confirm if damage was caused by a person or a wild animal.

Find a person who entered or exited a building, if someone entered your offices after hours, for example.

Find people based on actions and sounds

Find people who were loitering, for instance, if you're investigating an act of vandalism. Find an intruder by searching for people wearing a color that differs from the color of your uniform, for example.

Find people involved in violent incidents based on audio. For instance, find the moment a fight broke out between two individuals based on sounds of verbal aggression or gunshots.

Determine the nature of an incident by combining audio cues with visual information. For example, if an image of people in a clinch is accompanied by yelling, they are more likely to be fighting than hugging.



Find vehicles

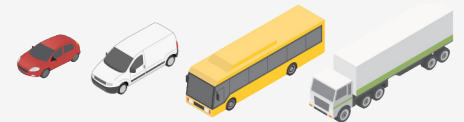
Do you need to find a vehicle based on limited information such as its color or some characters of its license plate? Are you looking for a vehicle matching the description of one involved in a hit-and-run accident? Or a vehicle driving in a pedestrian zone right before the accident? Maybe you need to find a stolen vehicle that was speeding through a city?


With analytics, you can quickly narrow down your search for the vehicle you're looking for. You can search for vehicles based on characteristics such as color, type, and license plate. Whether you're looking for a stolen car or a truck that was involved in a crime, analytics can quickly help you find the vehicle you need to find.


How does it work?


Analytics can be trained to describe the specific characteristics of vehicles such as their type (bicycle, motorcycle, car, bus, and so on), size, and color. This makes it possible to efficiently search for and find a specific vehicle quickly.

Search parameters for finding vehicles

Type 

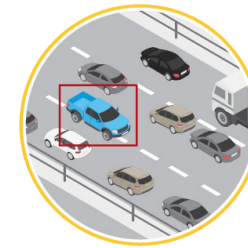
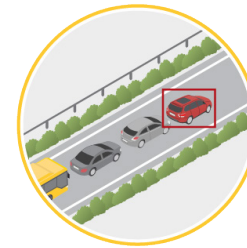
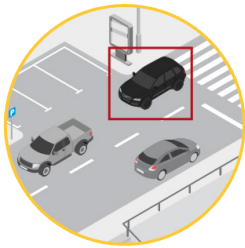
Color 

Direction of travel 

Make 

Find that car!

Here are some more examples of how you can use different characteristics to narrow down your search.



Find vehicles based on physical characteristics

Find vehicles based on their color and what type of car it is. For instance, you can search for a black truck.

Find vehicles based on their license plate characters. For instance, you can find a car you suspect was used in a crime with a license plate containing the characters "XZ5."

Find vehicles based on their movement

Find slow- or fast-moving vehicles. For instance, you can find a vehicle that may have caused an accident by searching for ones driving below or above a certain speed.

Find vehicles driving dangerously. For instance, you can find a car or a motorbike seen driving the wrong way on a highway ramp.

Find inanimate objects

Do you need to find an inanimate object? With analytics, you can quickly narrow down your search. And as always, the higher the quality of the data, the more accurate and fast the results will be.

How does it work?

Metadata can describe the specific characteristics of inanimate objects (for example, bags, packages, or freight containers) such as their shape or color. This makes it possible to efficiently search for and find a specific object in minutes – or even seconds.

Search parameters for inanimate objects

Bags



Packages

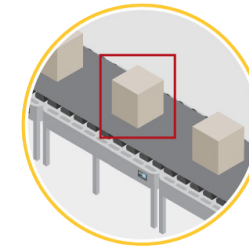


Freight containers



Where did it go?

Here are some more examples of how you can use different characteristics to find the inanimate object you're searching for.



Find inanimate objects based on physical characteristics

Find an inanimate object based on its type. For instance, you can search for a bag or a weapon.

Find inanimate objects based on a set of characters

Find an inanimate object based on an identifying code. For instance, you can search for and locate a lost freight container, or a package based on an identifying code.

Object class: vehicle
 Type of vehicle: car
 Color: white
 License plate: ABC123

How does it work?

Analytics use deep-learning-based AI to analyze live and recorded video, audio, and other types of input to generate metadata – or descriptions – of what’s happening in a scene. So, how is this possible? In this context, AI allows algorithms to detect, classify and recognize an object of interest throughout a video. For AI to be successful, you need vast amounts of data. This data is used to train a neural network until it can perform what it has been trained to do. A result of this process is metadata.

Metadata can include information about which objects (such as people or vehicles) are present in a scene or information about events. It can be used to highlight relevant objects, trigger automatic responses, and effectively store and search for video content of interest. It can also be used to see where an object is and in which direction it is moving. In fact, accurate object tracking is one of the most important tasks for video analytics. Metadata can also include information about specific object characteristics such as the color of clothing, or the type of vehicle (truck, bus, or bike).

```

<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <meta http-equiv="X-UA-Compatible" content="ie=edge">
  <meta name="description" content="...">
  <meta name="keywords" content="...">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  </html>

```

Why is metadata important?

Metadata makes it possible to find what you're looking for in minutes – or even seconds – because you don't have to manually scan hours of video. You can instead use various search parameters, such as which objects were present within a certain time frame, for example.

Faster and better

With metadata, you can efficiently highlight relevant content and drastically reduce the amount of video to be reviewed. This is particularly valuable when you have hours and hours of video to search through. For example if you have limited knowledge of exactly when an incident of interest took place, or when you need to search through video from multiple sources.

“

We expect metadata to become increasingly important and widely deployed. With the advances in AI technology, it will be possible to generate even richer metadata, providing more insight about what's in the scene.”

Petra Bennermark
Manager, Analytics Solutions at Axis



Search is better with AI

Compared with traditional analytics, AI-based analytics deliver more detailed metadata. While traditional analytics contain information about when and where an object was detected, their ability to pinpoint the type of object is extremely limited. For instance, an object might be perceived as a human if it has a certain height or width and moves at a certain pace. This imprecise method can result in many false alarms. A shadow from a swaying tree or an animal can easily be mistaken for a human or a vehicle, for example.

Higher probability

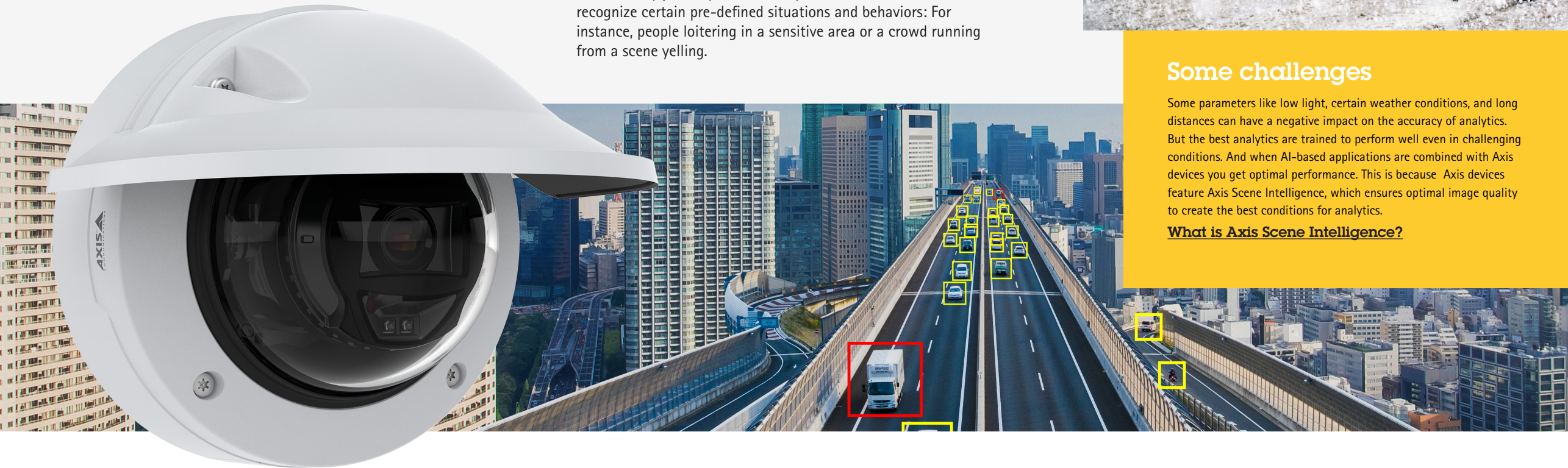
AI-based analytics use a more sophisticated method to classify objects with a higher degree of probability. Some AI-based analytics provide more granular object classification because they can classify humans and vehicles as well as different types of vehicles including cars, trucks, buses, and bikes. This is ideal for busier scenes and more demanding requirements. These analytics also offer better detection and classification for people in unusual positions (crawling, for example) as well as objects that are only partially visible. Analytics can also be trained to recognize certain pre-defined situations and behaviors: For instance, people loitering in a sensitive area or a crowd running from a scene yelling.



Some challenges

Some parameters like low light, certain weather conditions, and long distances can have a negative impact on the accuracy of analytics. But the best analytics are trained to perform well even in challenging conditions. And when AI-based applications are combined with Axis devices you get optimal performance. This is because Axis devices feature Axis Scene Intelligence, which ensures optimal image quality to create the best conditions for analytics.

What is Axis Scene Intelligence?





The importance of training

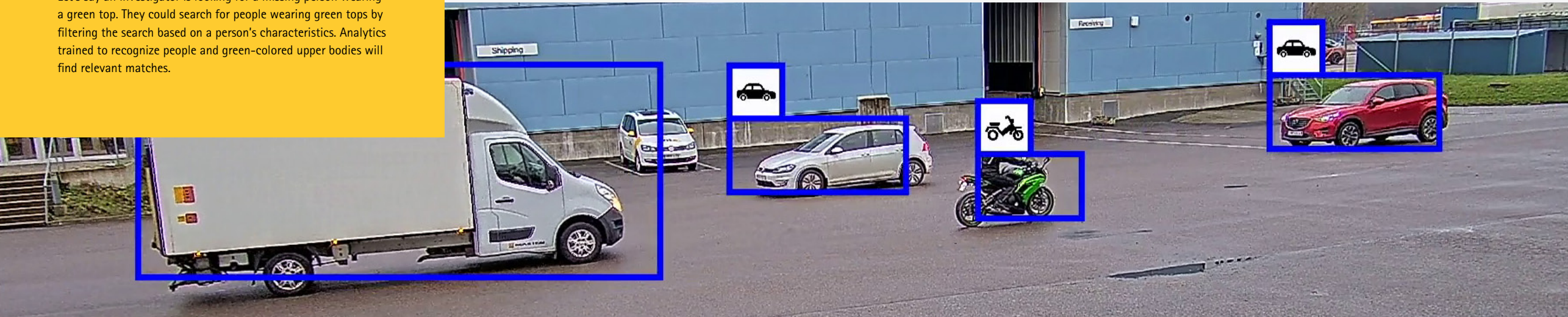
AI-based analytics can be trained to recognize specific objects, such as people or vehicles. That's why they can quickly search through video. The better they're trained, the more accurate the search results. For object detection and recognition with video analytics, the training data is video footage itself. Video is broken down into frames to extract every object in the scene and train the algorithm to associate specific objects of interest with their classification and characteristics.

Quality matters

It's important to understand that both the amount, the quality and variety of training data matter during the development of analytics. Data needs to include examples of the object in different sizes, from different angles, in different lighting, and even partially hidden (for instance).

An example of a search

















Let's say an investigator is looking for a missing person wearing a green top. They could search for people wearing green tops by filtering the search based on a person's characteristics. Analytics trained to recognize people and green-colored upper bodies will find relevant matches.



A history of innovation

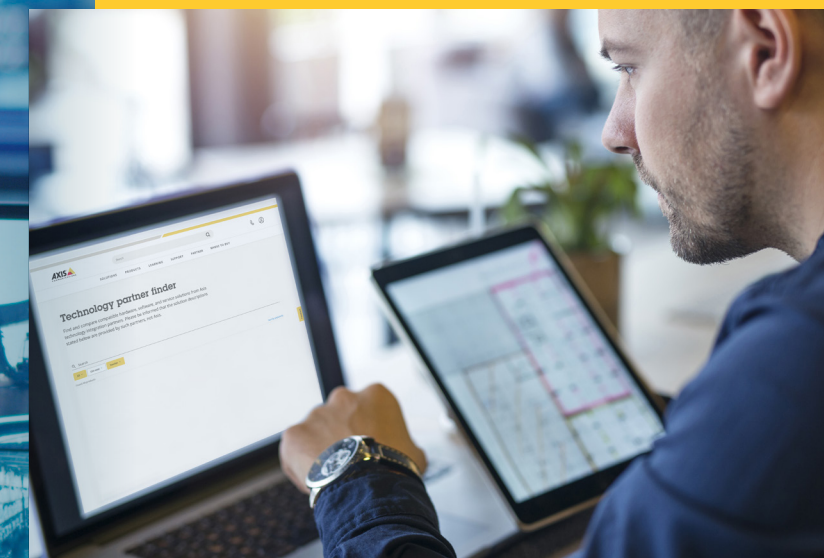
In 1996, Axis launched the world's first network video camera and changed the landscape of video forever. As society grew more connected, we began to explore what could be done with the data gathered by our networked devices. In the year 2000, we added motion detection analytics to our cameras, and we've been working to deliver and facilitate valuable analytics applications ever since.

Today, the value of data from network video cameras is well known. At the same time, the power, and accuracy of analytics that make sense of data outstrip any other point in history.

<p>1996 World's first network camera</p> 	<p>1999 World's first network video chip World's most sold security camera 5 years in a row</p> 	<p>2000 Video motion detection introduced in Axis cameras, bringing smarter analysis at the edge</p>	<p>2008 First use of H.264 compression for network cameras</p> 	<p>2010 First thermal network camera</p> 	<p>2013 Physical access control</p> 	<p>2020 Axis launches its first deep learning analytics with AXIS Object Analytics</p> 	<p>2020 First truly open body worn camera system</p> 	<p>2022 World's first radar-video fusion device</p> 
<p>1998 World's first video encoder</p> 	<p>2006 First product with app platform</p> 	<p>2009 Introduction of open platform with 1st generation ACAP First network cameras with HDTV, remote focus and zoom functions</p> 	<p>2011 Axis Lightfinder technology</p> 	<p>2015 Axis Zipstream technology</p> 	<p>2017 World's first security radar device</p> 	<p>2018 Axis Lightfinder 2.0 Axis 7th generation ARTPEC chip</p> 	<p>2021 Axis 8th generation ARTPEC chip with deep learning</p> 	

Find the analytics you need

Discover enhanced video and audio search using Axis's comprehensive range of analytics or those from our numerous partners. Our intuitive analytics adhere to open standards, seamlessly integrating with major video management systems and third-party applications, ensuring custom solutions tailored to your needs.

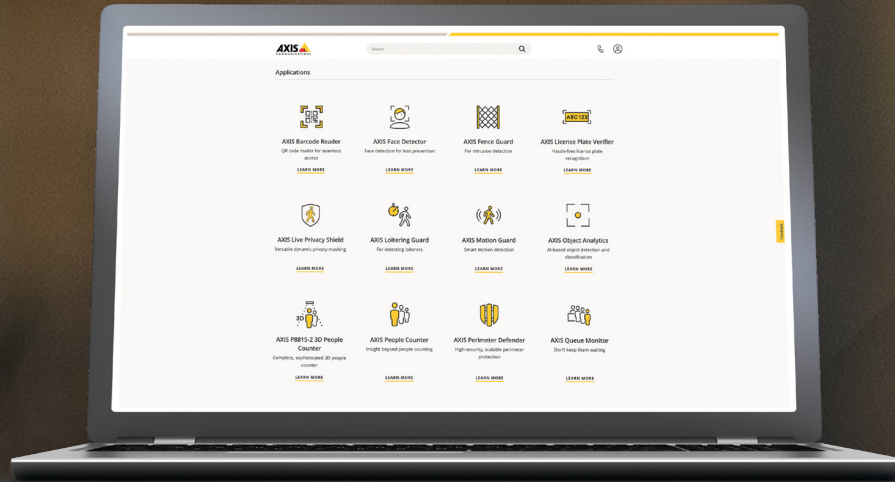


What's right for you?

Together with our partners, we offer a wide range of flexible and scalable analytics on the market, including:

- > Axis analytics
- > Partner analytics built on our ACAP development platform
- > Partner analytics built on cloud platforms
- > Completely custom or customized analytics provided with the help of Axis Professional Services

You can browse for analytics solutions from our many partners using the technology partner finder tool on axis.com. Or contact your local Axis office or one of our partners to discuss what analytics best suit your needs and where to find them.

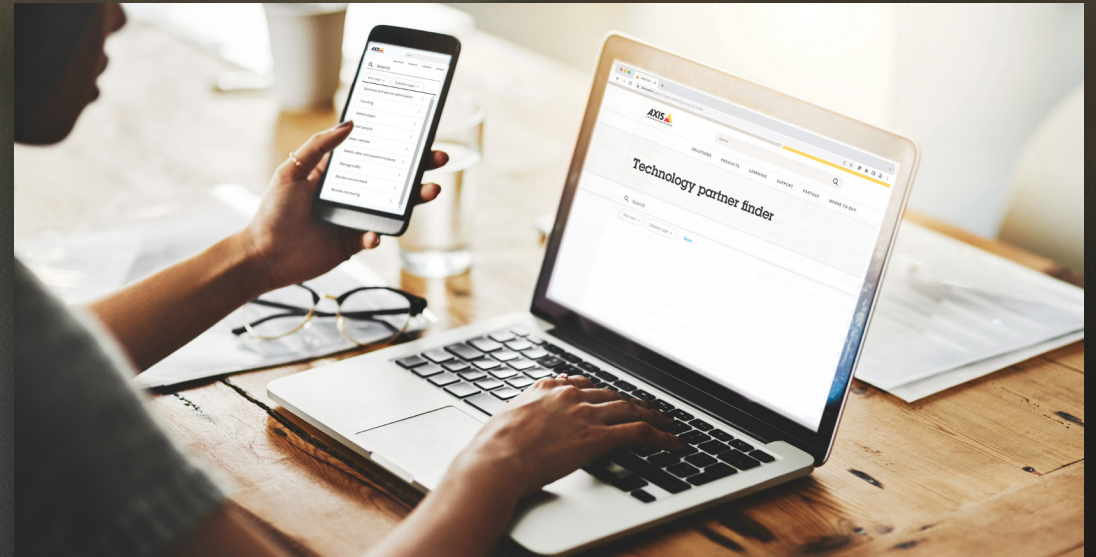


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About Axis Communications

Axis enables a smarter and safer world by creating solutions for improving security and business performance. As a network technology company and industry leader, Axis offers solutions in video surveillance, access control, intercom, and audio systems. They are enhanced by intelligent analytics applications and supported by high-quality training.

Axis has around 4,000 dedicated employees in over 50 countries and collaborates with technology and system integration partners worldwide to deliver customer solutions. Axis was founded in 1984, and the headquarters are in Lund, Sweden.