Computer with a Lens….

Intelligence in cameras translates to saving time and money

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Axis Communications

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www.axis.com

Axis – continuously driving innovation

1996

World's first network camera

1998

World's first video encoder

1999

World's first network video chip

2004

First MPEG-4 and Motion JPEG compression camera

2008

First H.264 compression standard for network camera

2009

First network cameras with HDTV, and with remote focus & zoom functions

HDTV NETWORK VIDEO

SMPTE

2010

First thermal network camera

2011

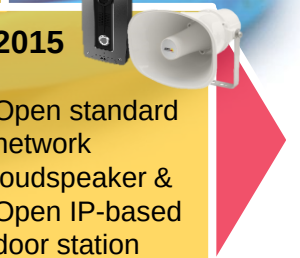
Lightfinder technology

2012

Unique high-performance WDR camera

2012

AXIS Camera Companion: unique small installation solution



2012

First network camera with active cooling

2013

Physical Access Control

2015

Zipstream technology & Sharpdome technology

2015

Open standard network loudspeaker & Open IP-based door station

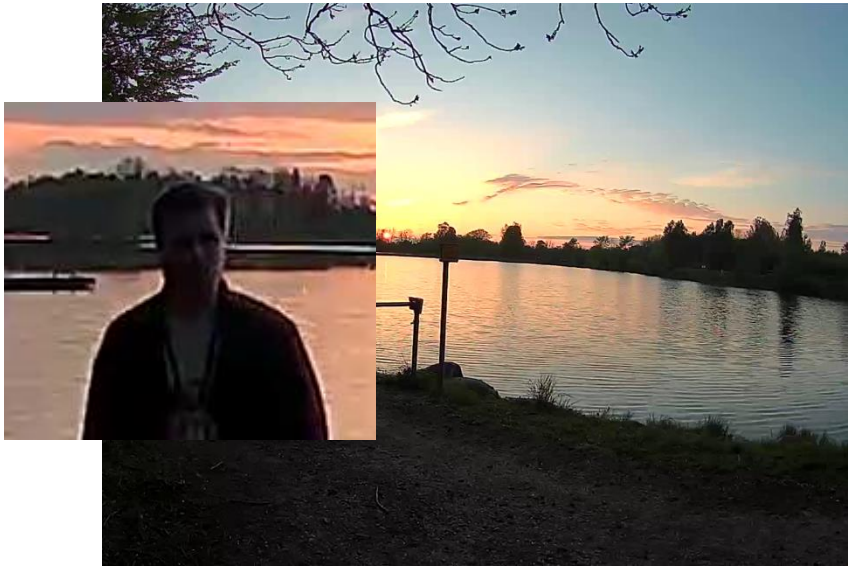
AXIS COMMUNICATIONS

Low light Technology

Extreme light sensitivity

Wide Dynamic Range: Back & Blinding Light conditions

Enables extreme level of detail in both dark and bright areas of a scene



High-end security camera with conventional WDR

Camera with WDR-Forensic Capture

Apps for security cameras?

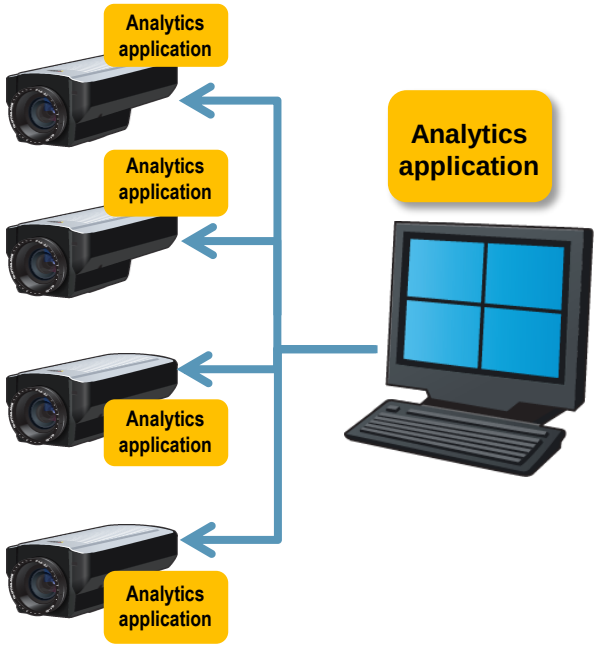
Open Camera Application Platform

Microprocessor

Distributed intelligence strategy

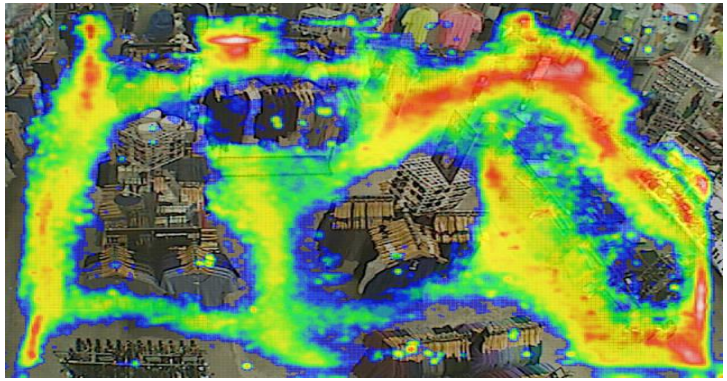
> Analytics ”at-the-edge”
  - Processing significant portions of video @ camera
  - Streaming event metadata and only required video

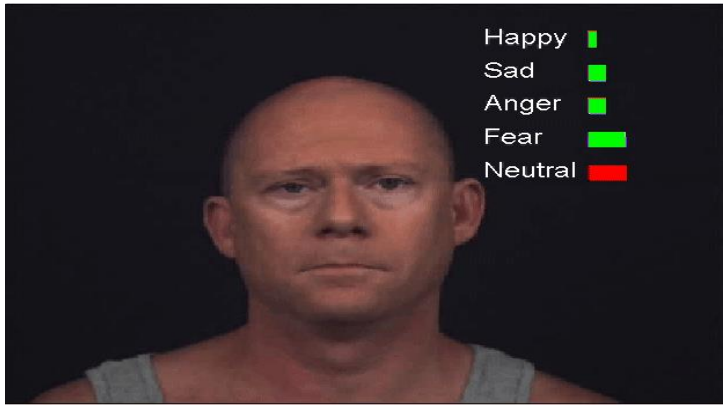
> Benefits
  - Overcome limitations of centralized intelligence
  - Reduce bandwidth and storage consumption
  - Reduce system cost and complexity
  - Design truly scalable deployments



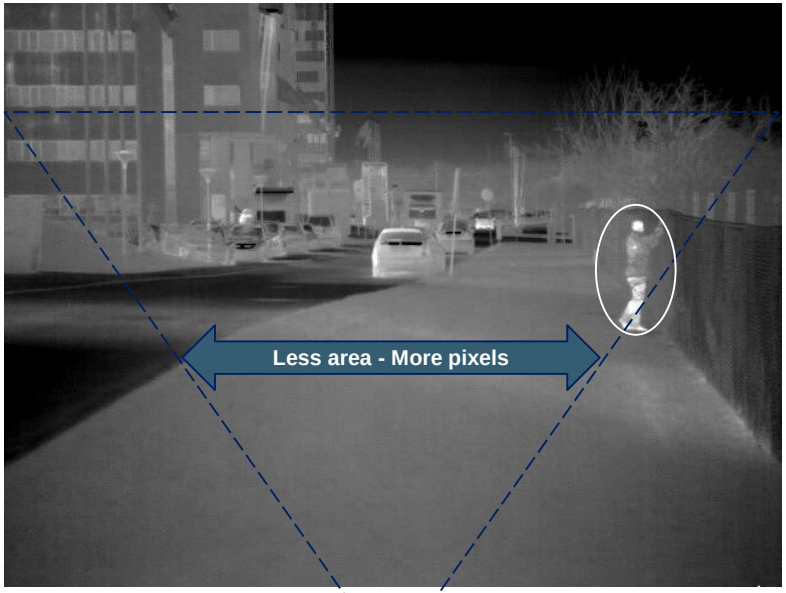
Uses of Edge intelligence

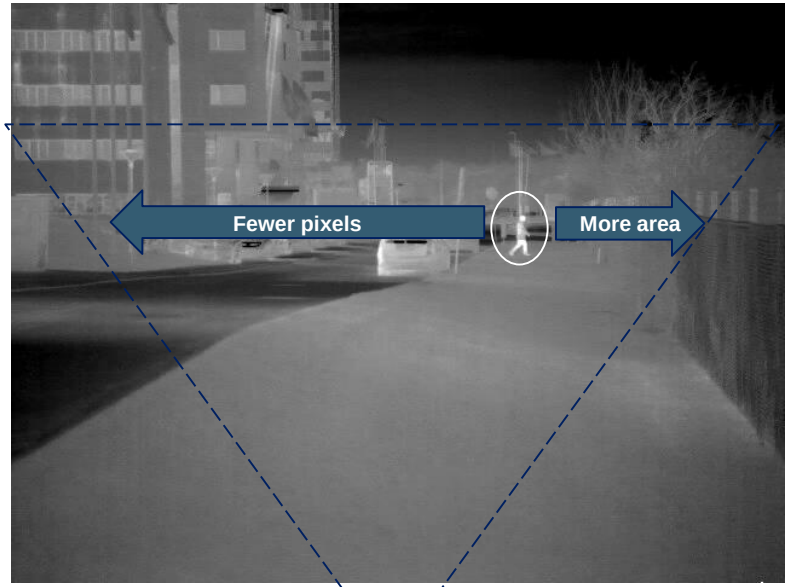
- Classic Uses:
  - Vehicle / People counting
  - Traffic incident detection
  - License Plate Recognition
  - Queue / Dwell Managment
  - Heat mapping
- Newer Use Examples:
  - Perimeter / long range detection
  - Smoke & Fire Detection
  - Explosion Detection
  - Flare Analysis
  - Facial Expression Analysis





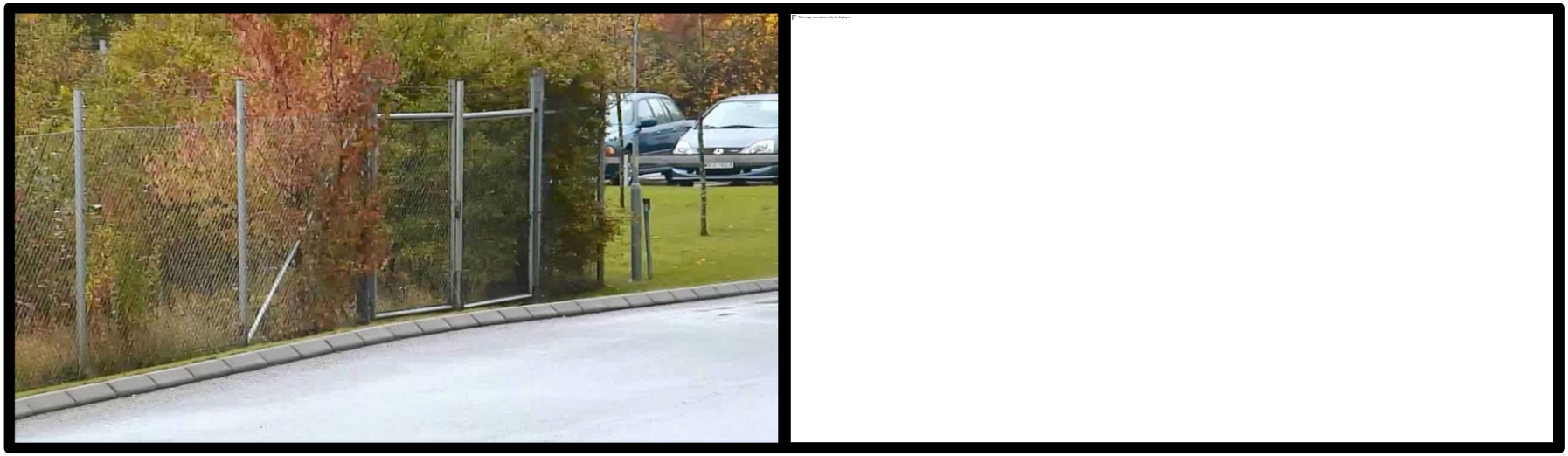
Detection, field of view relation





Area protection – not only perimeter

Electronic Image stabilization (EIS)



Without EIS

With EIS


Bandwidth
Storage


Bitrate
Reduction
KARSTADT
SATURN
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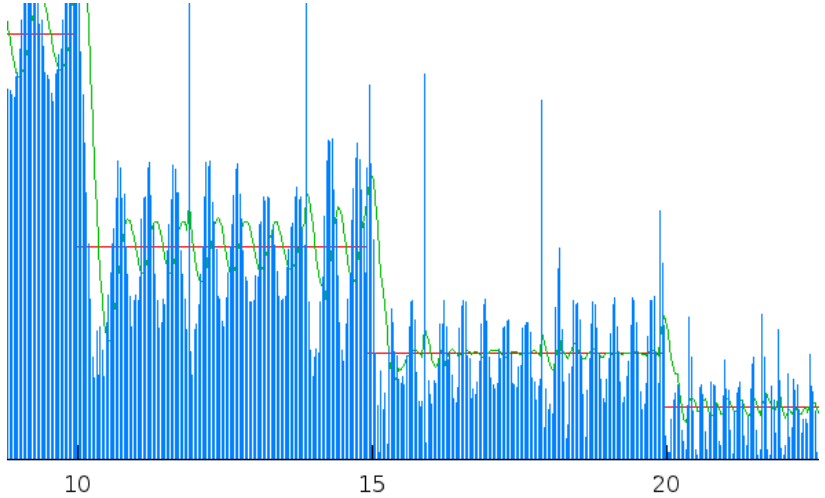
Efficient
Compression
www.axis.com
AXIS
COMMUNICATIONS

Bitrate

- > Low Bitrates are appreciated
- > Bitrate consumption is unpredictable
- > Low in static scenes
- > Higher in scenes with…
  - … large motion share
  - … high image complexity
  - … a high noise level



GOAL: How to control the bitrate and make it predictable?

H.264
+
MBR

Setting MBR – Maximum Bitrate

> Artificial cap for the dynamic bitrate

> Intention: Make bitrate controllable + predictable by adding an upper limit.

> Everything above the limit is compressed harder in order to lower the bitrate

> Everything below is untouched

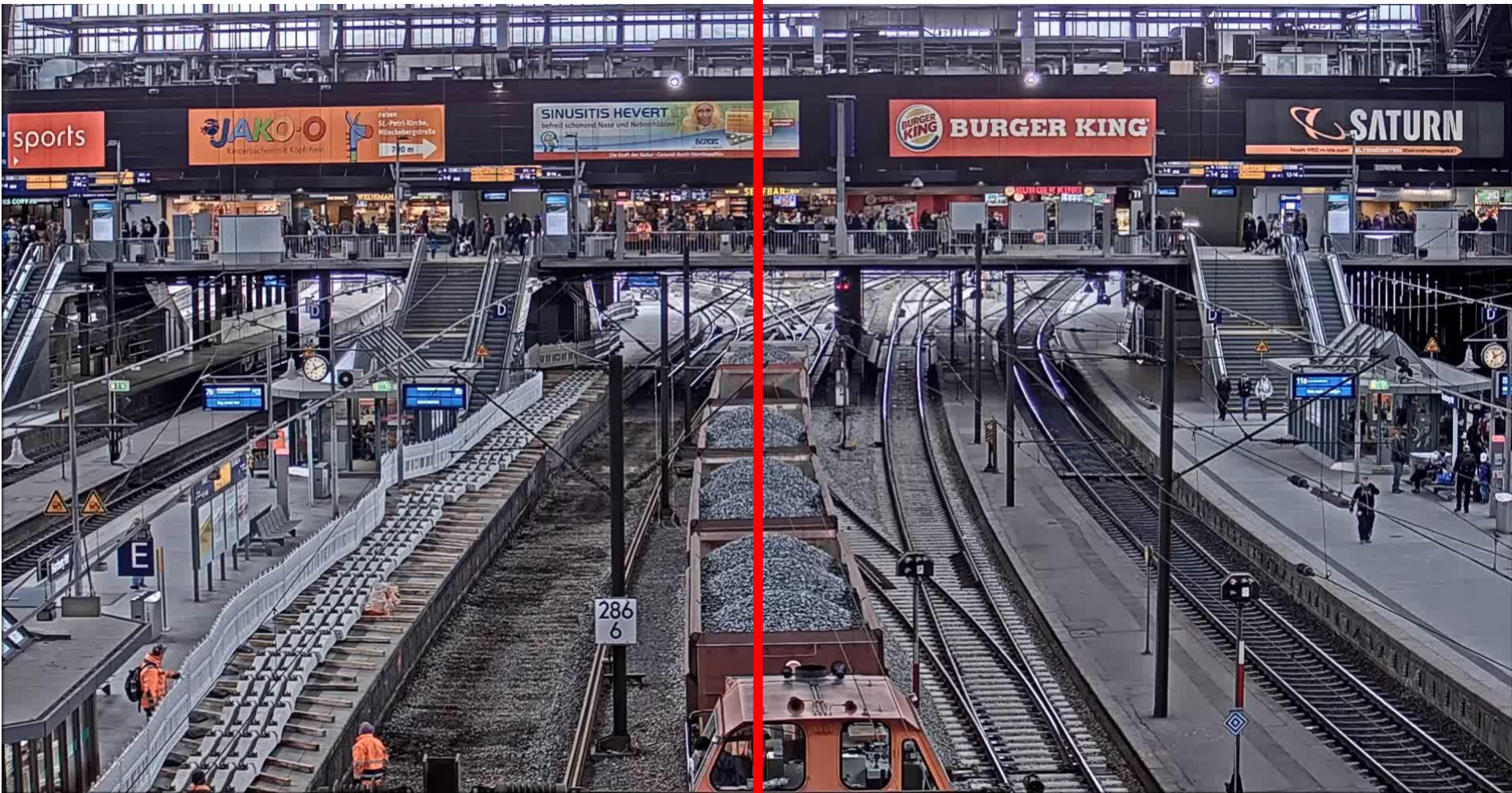
PROBLEM: compression level is permanently adjusted even if actual bitrate is going above the limit or falls again below

Manually setting Region of interest compression (Static ROI)

- Different zones manually defined with higher compression
- Zones are static once defined
- Problem: Difficult to predict / define an irrelevant area in professionally deployed camera
  - entire image could be typically relevant
  - event may happen in a human predicted irrelevant area, which is no good.
- So, setting MBR or static ROI is not a good thing!
- *Leave the intelligence to the algorithm!*

ON

OFF


sports
JAKO-O
SINUSITIS HEVERT
befreit schonend Nase und Nebenhöhlen
BURGER KING
SATURN
286
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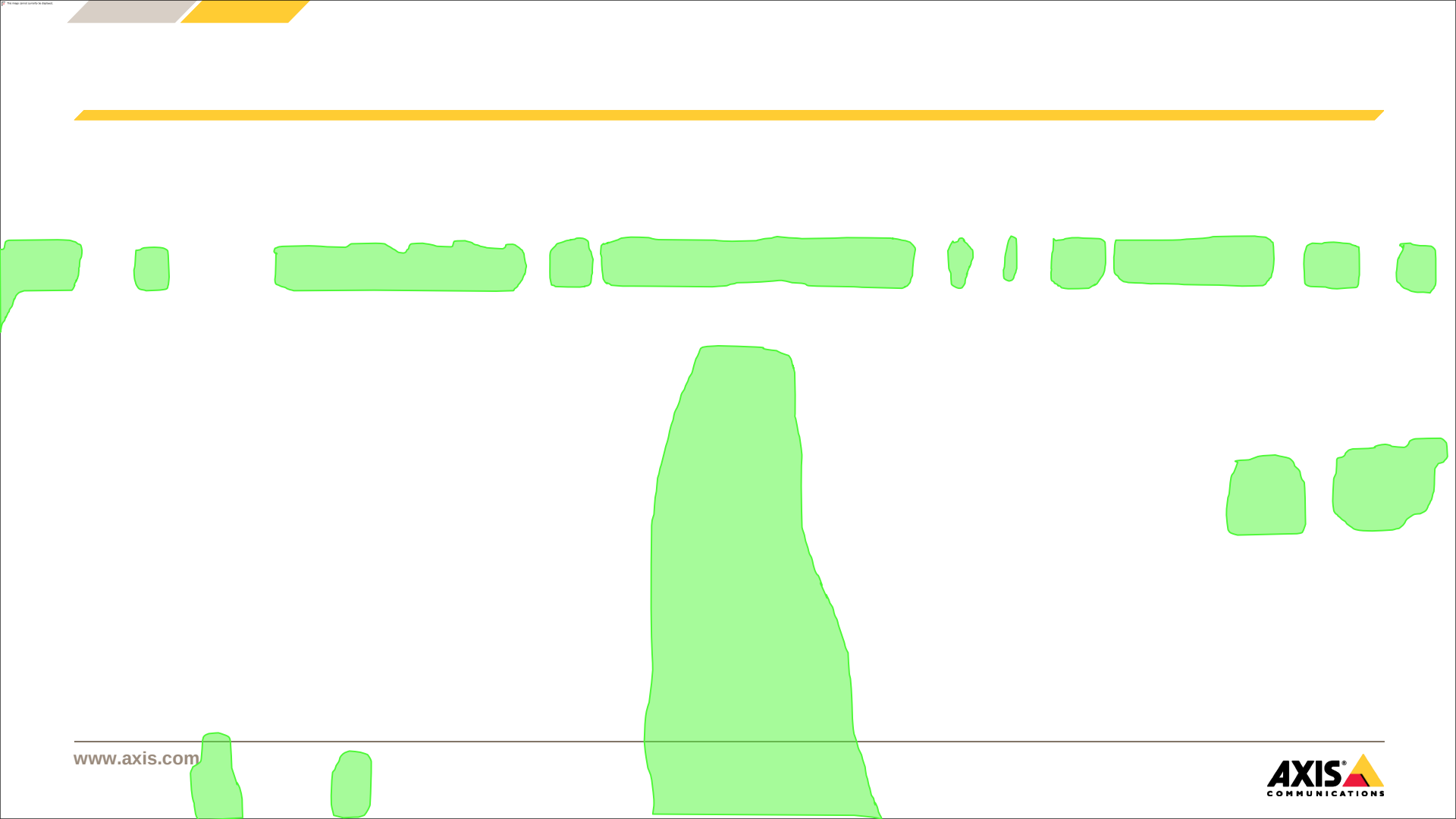
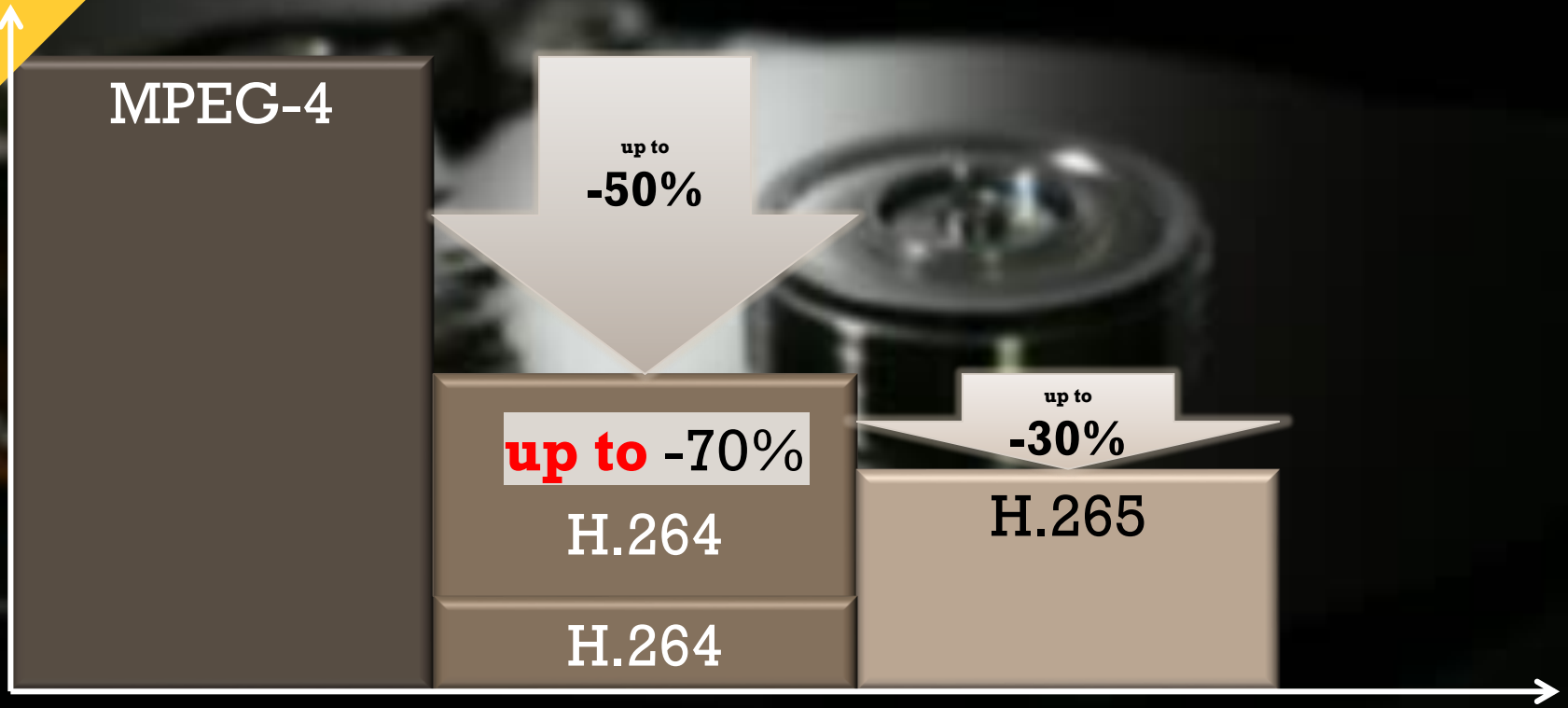


Algorithm off – Bitrate:

Algorithm high – Bitrate:

Large bandwidth savings due to noise reduction

..... in the H.265 context



Compression Algorithm summary

- Highest impact: Static and high noise scenes
- Reduce storage & bandwidth by an avg. 50%+
- Will not add delay
- Dynamic GOP
- Does not guarantee a certain bitrate reduction nor apply limits to the bitrate
- Algorithm prevents relevant details from being destroyed


Megapixel
Quality
Ease of use
Network video
Reliability
open
Innovation
Easy installation
Protect
Service
all the way
support
integration
Thank you!
Image
usability
Thermal
Convergence
HDTV
Access
control
World
Leader
Partners
Quality
Intelligent
Competence
Focus
Video
encoder
Safe
Cameras
Outdoor
Secure
Global