

# Inteligența artificială în tehnologiile video



Moderator: Stelian Arion

Panel sponsorizat de



**IA – inteligență sau simpli algoritmi?**

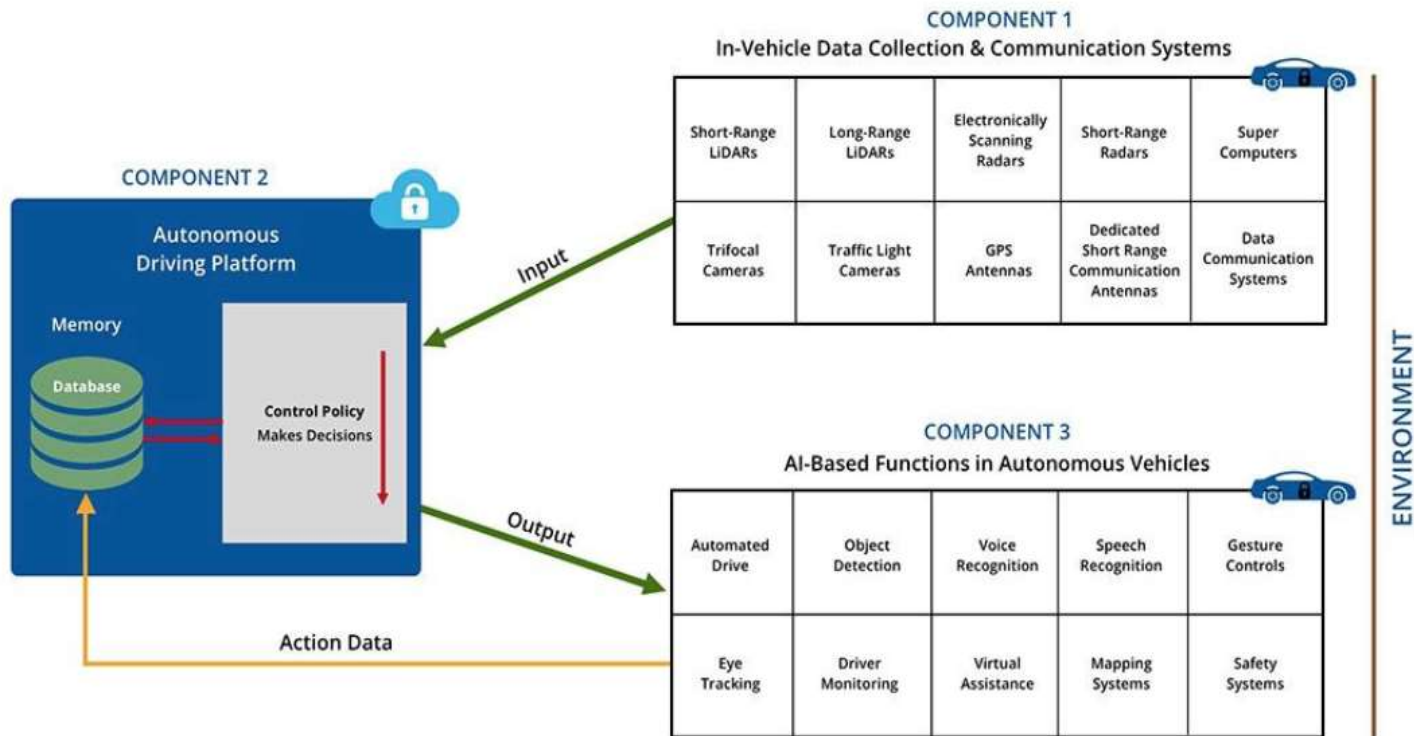
**Poate IA să ia decizii în circumstanțe reale?**

**Modelul ‘Autonomous and Data Rich Vehicle**

ARTIFICIAL  
INTELLIGENCE

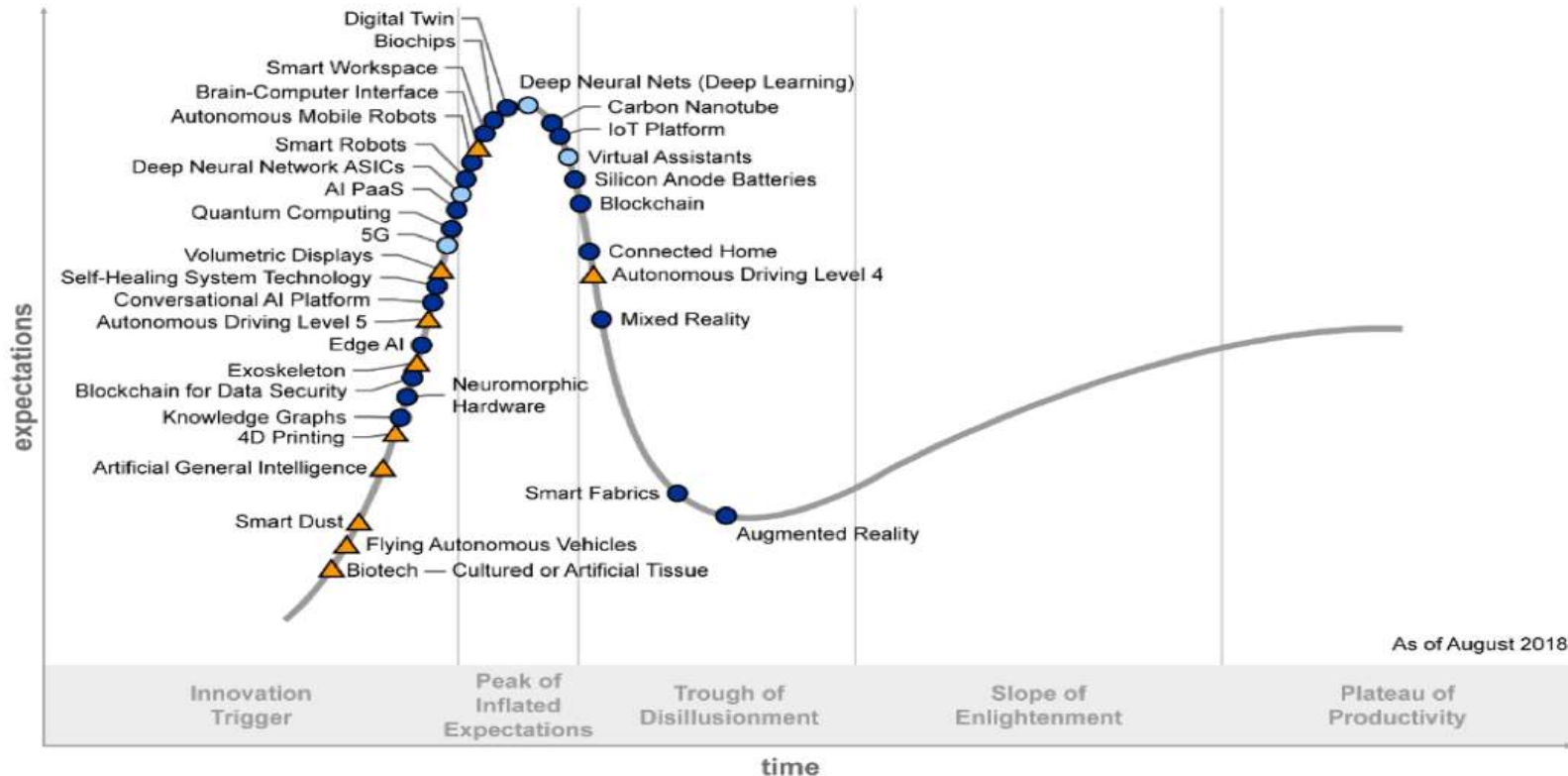
# Autonomous and Data Rich Vehicle

<https://medium.com/datadriveninvestor/artificial-intelligence-and-autonomous-vehicles-aeb77feb6cd2>



# Platoul de productivitate – Gartner Hype Cycle

4



As of August 2018

Plateau will be reached:

- less than 2 years
- 2 to 5 years
- 5 to 10 years
- ▲ more than 10 years
- ⊗ obsolete before plateau

# Inteligența artificială în supravegherea video

5

Rule based AI  
Non rule based AI  
Machine vision  
Machine Learning  
Deep Learning  
Neuronal networks  
Edge processing

Creșterea eficienței VSS  
Roboți de securitate  
Aplicarea legii  
Sprijin pt procese de business  
Identificarea persoanei

**Stadiu actual, limitări, tendințe, cadrul legal**

## Invitați

- ▷ **Alina Iancu** – Senior Associate NIPAA S.C.A.
- ▷ **Bogdan Gavril** - Sales Engineer and Trainer for CEE Region Axis
- ▷ **Bogdan Visan** - Business Development Manager Hickvision
- ▷ **Doru Asmarandei** - Director general Azitrend
- ▷ **Slavko Pandurov** - Regional Sales manager , Balkans & Middle Europe Avigilon

**[intrebari@arts.org.ro](mailto:intrebari@arts.org.ro)**

# Ce este Inteligența artificială?

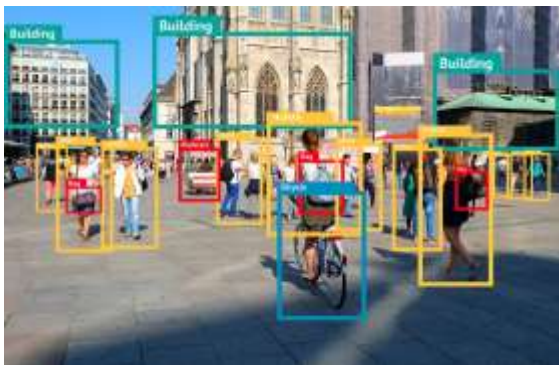


“Capacitatea unui sistem de a interpreta corect datele externe, de a învăța din astfel de date și de a folosi ceea ce a învățat pentru a-și atinge obiective și sarcini specifice printr-o adaptare flexibilă”

Kaplan si Haenlein



# Domenii de aplicare ale Inteligenței Artificiale



Procesarea imaginilor



Recunoaștere facială



Medicină



Procesarea limbajului



Masini autonome



Data mining



Finanțe



Industria militară





# Domenii de aplicabilitate ale analizei video



RETAIL



PAZA ELECTRONICĂ



HORECA



INDUSTRIAL



SMART CITY



BANKING



PARCĂRI



CONTROL ACCES



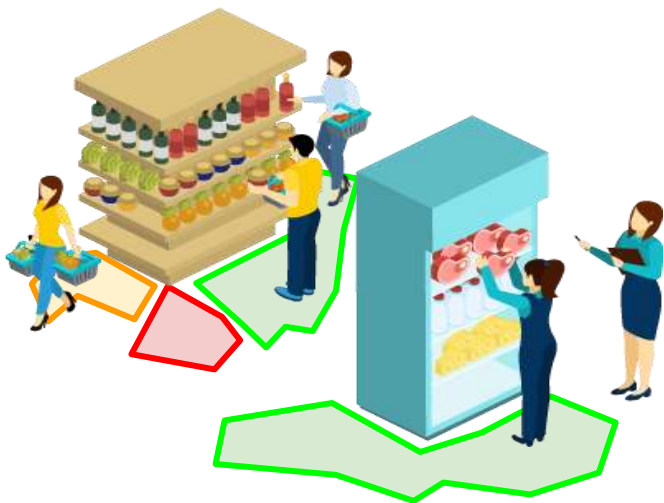
DEPOZITE





# Soluții pentru RETAIL

- Detectie numar persoane la coada
- Numaratoare personae, clasificare vizitatori/angajati
- HeatMap pe intreaga harta a magazinului
- Analiza fete – vizitatori unici, sex/varsta
- Integrarea cu tranzactiile de la POS
- Export video cu fete blurate (GDPR)
- Recunoastere faciala



**TRASSIR** | Map: Mapa 2D GRU | Zoom: 90% | picktoach

Heatmap Settings

Type: Stationary

Threshold: 100%

Radius: 0,5m

Speed threshold: 0,8m/h

Time Filter

Presets: Last 12 Hours

Specify time

Start: 1/13/19 8:55:00

End: 1/13/19 17:18:00

Door labels: Door 0415\_25AC-07218V5aw II, Door 0416\_25AC-07218V5aw II, Door 0414\_35AC-07218V5aw II, Door 0416\_25AC-07218V5aw II

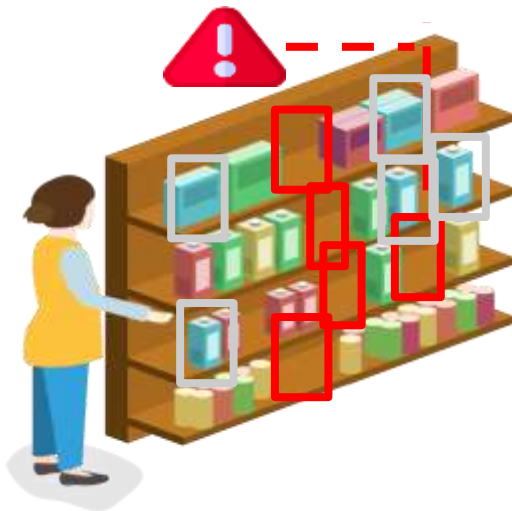
Bottom right: A·ZITREND logo and a circular inset image of a camera dome.





## Soluții pentru RETAIL

- Identificare produse
- Recunoaștere produse
- Verificare planograma
- Disponibilitate la raft
- Identificare produse lipsa stoc
- Starea rafturilor
- Localizare produse
- Expunere produse la nivelul ochilor



A stylized blue logo icon consisting of two overlapping, slightly offset rectangular shapes, resembling a square with a smaller square inside it, rotated 45 degrees.

# Intelligence

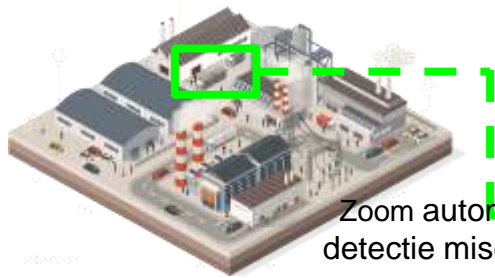
## Retail



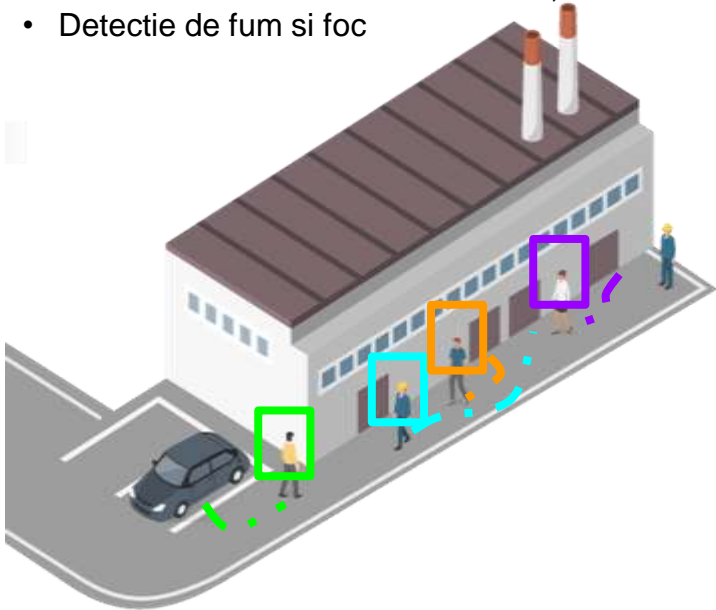


# Soluții pentru OBIECTIVE INDUSTRIALE

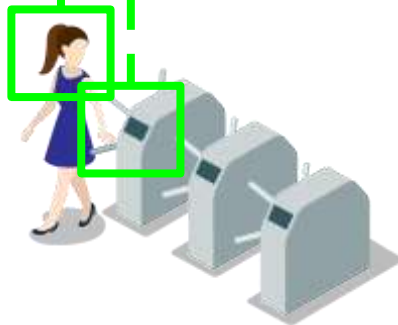
- Automatizare acces - LPR
- Automatizare camera PTZ
- Paza perimetrală
- Control acces biometric
- Automatizări mașini industriale
- Protecția muncii – identificare căști, veste
- Detectie de fum și foc



Zoom automat  
detectie miscare



Iesire: 17:08 / 05.06.2019  
Angajat: Marina Popa





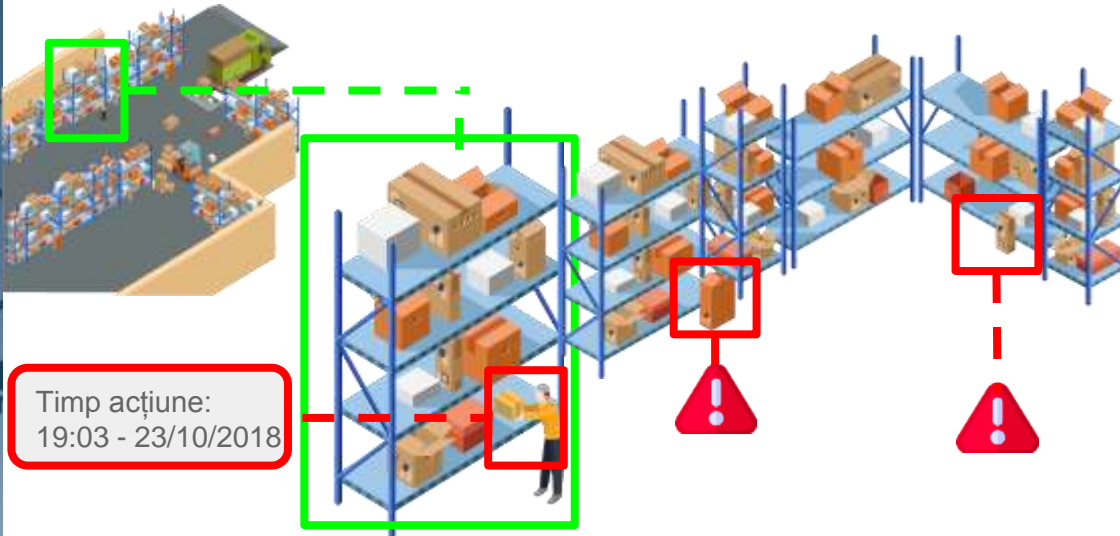
# Soluții pentru DEPOZITE SI LOGISTICA



- Integrare evenimente din WMS
- Verificare rapida tranzactii
- Verificare rapida miscare in zone de interes
- Detectie coduri Aruco – identificare obiecte
- Control acces LPR
- Integrare cu sistemele de control acces
- Protectia muncii -verificare echipamente protectie
- Detectie de fum si foc



B49FCA  
Intrarea permisă



Timp acțiune:  
19:03 - 23/10/2018







## Soluții pentru SMART CITY

- Gestionare parcare
- Detectie stationari neregulamentare
- Cautare in arhiva eficienta a unui incident
- Face recognition
- Detectie de fum si foc
- Estimare trafic pietonal
- Numarare autoturisme si clasificare
- Optimizare trafic auto
- Export fete blurate

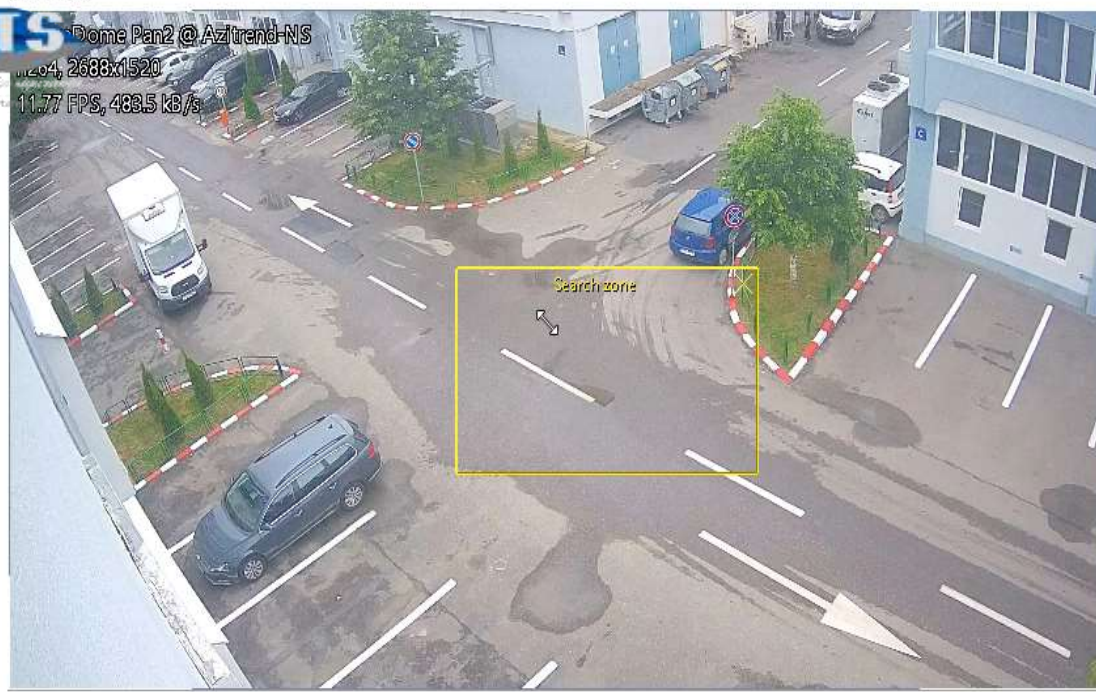


Search area:



Arta do Brasil  
Associação dos Artistas

18



Results:

Start time	Duration

Results playback:

Simultaneous Playback:

Show motion area

Motion search   Motion Heatmap   Objects search

Time Filter

Preset:

Specific time:
   
 Start:  
  
 End:

Length Filter

Result longer than

Search by Speed

Faster than 
  
 Slower than

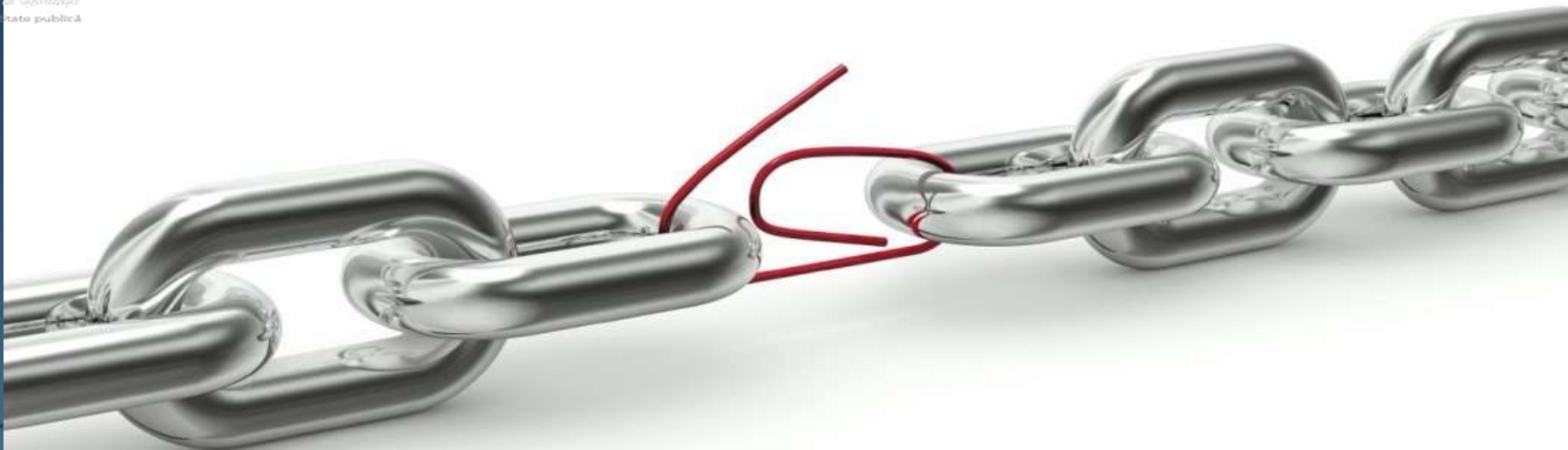
Search by Size

Bigger than 
  
 Smaller than



## Elemente necesare analizei video

19



Imaginea  
video



Transmisie  
date



Implementare



Mentenanța



Hardware



Software



Operatori  
reguli

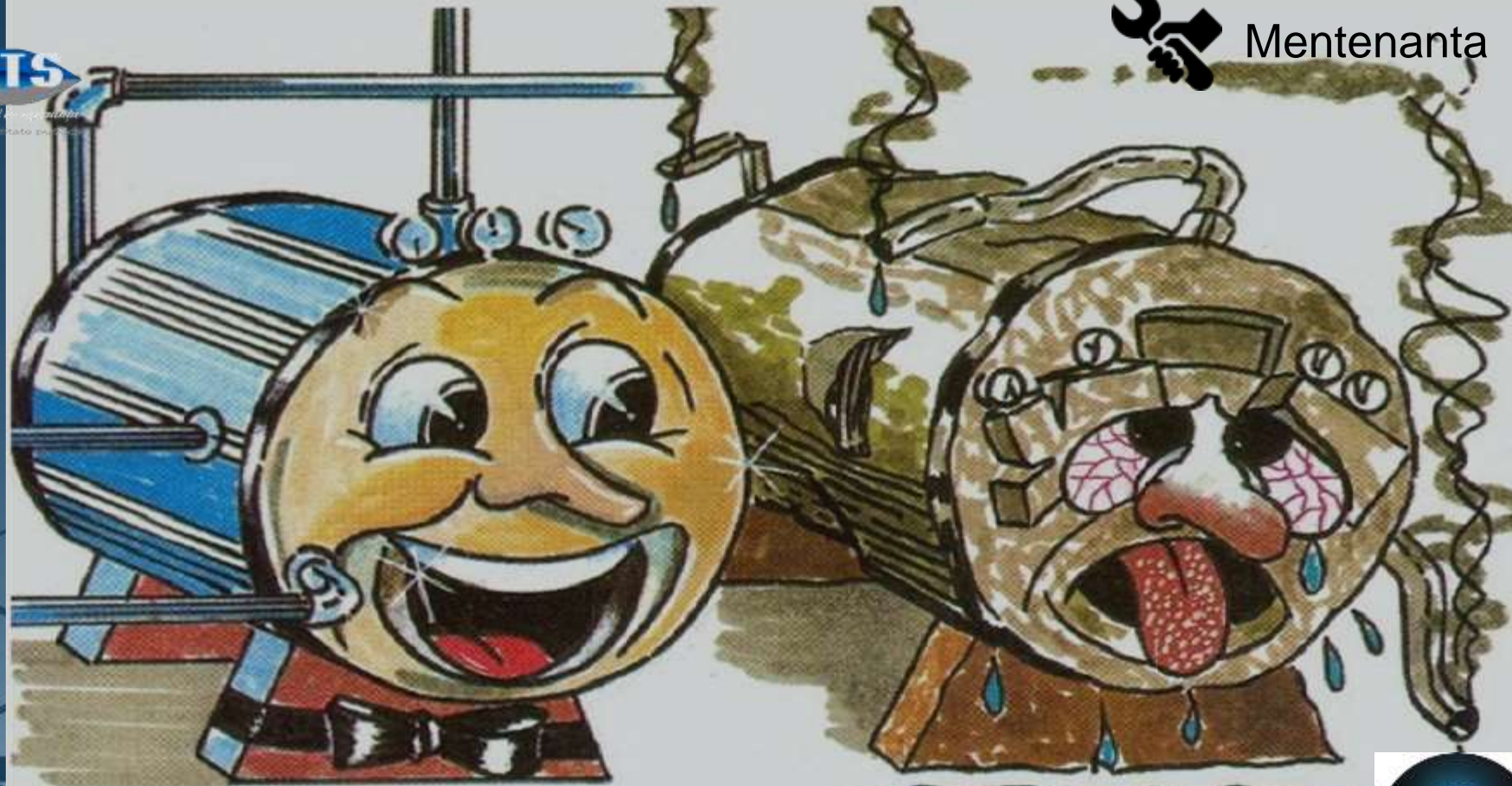


Know how













Your PC ran into a problem and needs to restart. We're just collecting some error info, and then we'll restart for you.

0% complete



For more information about this issue and possible fixes, visit <http://windows.com/stopcode>

If you call a support person, give them this info:  
Stop code: MANUALLY\_INITIATED\_CRASH









Mulțumesc!



**Întrebări?**

[doru.asmarandei@azitrend.ro](mailto:doru.asmarandei@azitrend.ro)



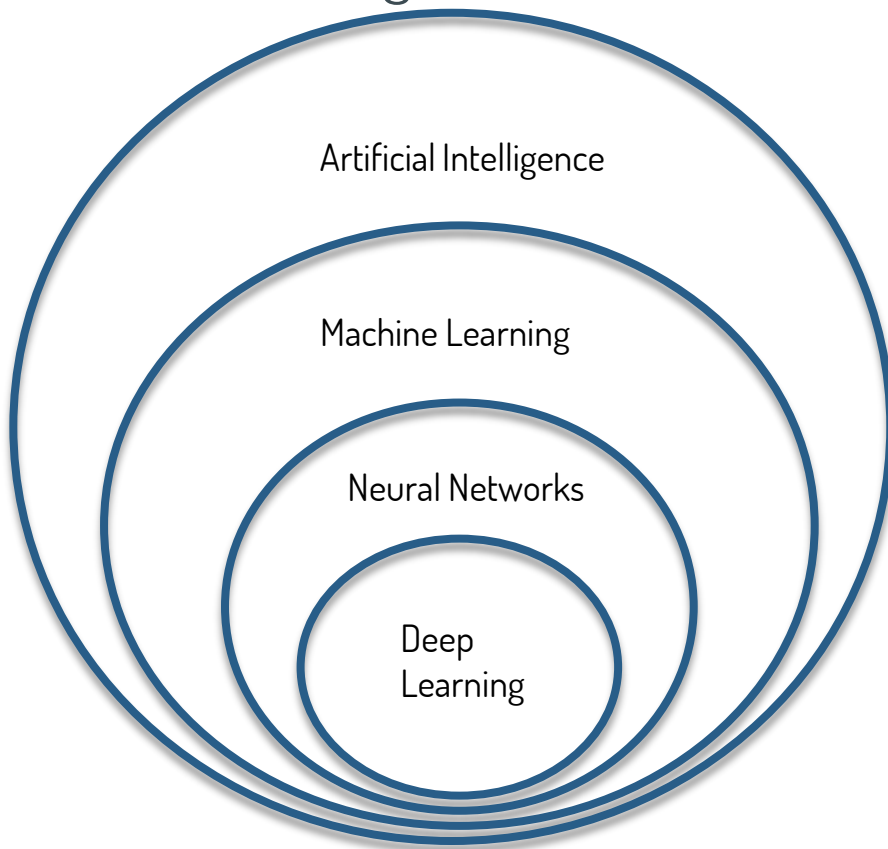
# Ce este Inteligența artificială?



Bogdan Visan - Business Development Manager Hickvision



# Ce este Inteligența Artificială?



**Artificial Intelligence**  
Denumire generală



**Machine Learning**  
Subdomeniu de cercetare



**Neural Networks**  
Procesare computerizată bazată pe modele



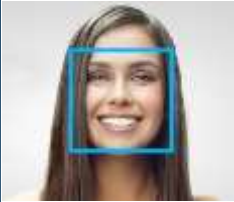
**Deep Learning**  
Clasă de algoritmi pentru rețele neuronale particulare

Clasificare primară:  
1. Narrow AI (Weak AI)  
2. General AI (Strong AI)

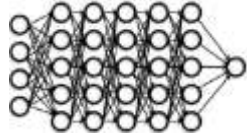
Clasificare funcțională:  
1. Reactive Machines  
2. Limited Memory  
3. Theory of Mind  
4. Self-awareness

# Recunoașterea feței

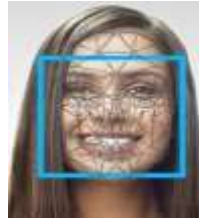
31



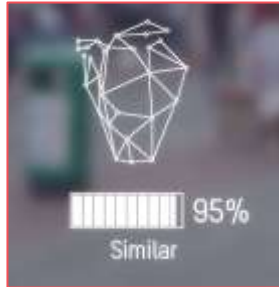
Face Photo



Deep learning

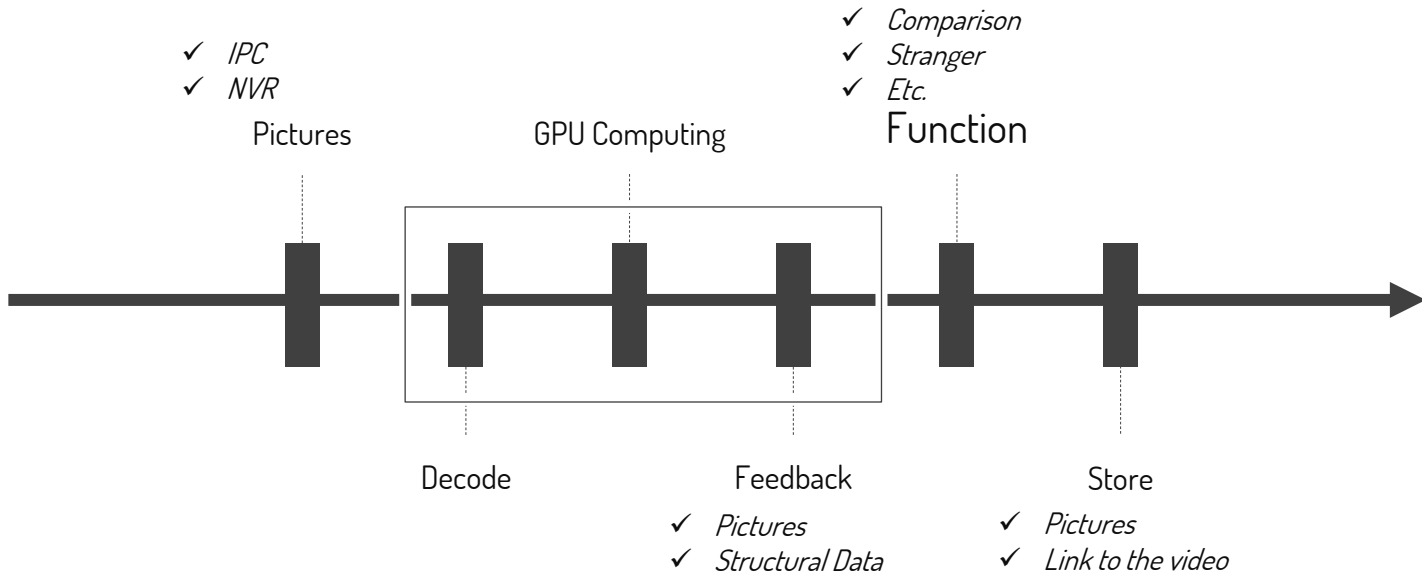
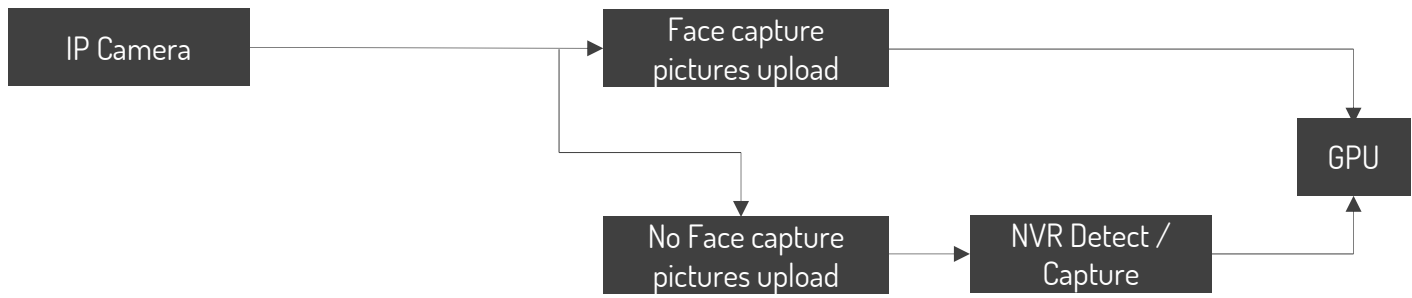


Face feature specified



# Recunoașterea feței

32





## Acces biometric prin Recunoașterea Fetei



- ▷ Rapid
- ▷ Usor
- ▷ Sigur



# Analiza comportamentala complexa destinata domeniului bancar



Masked face



Multiple faces



Tailing



Fall down



With sunglasses



On phone



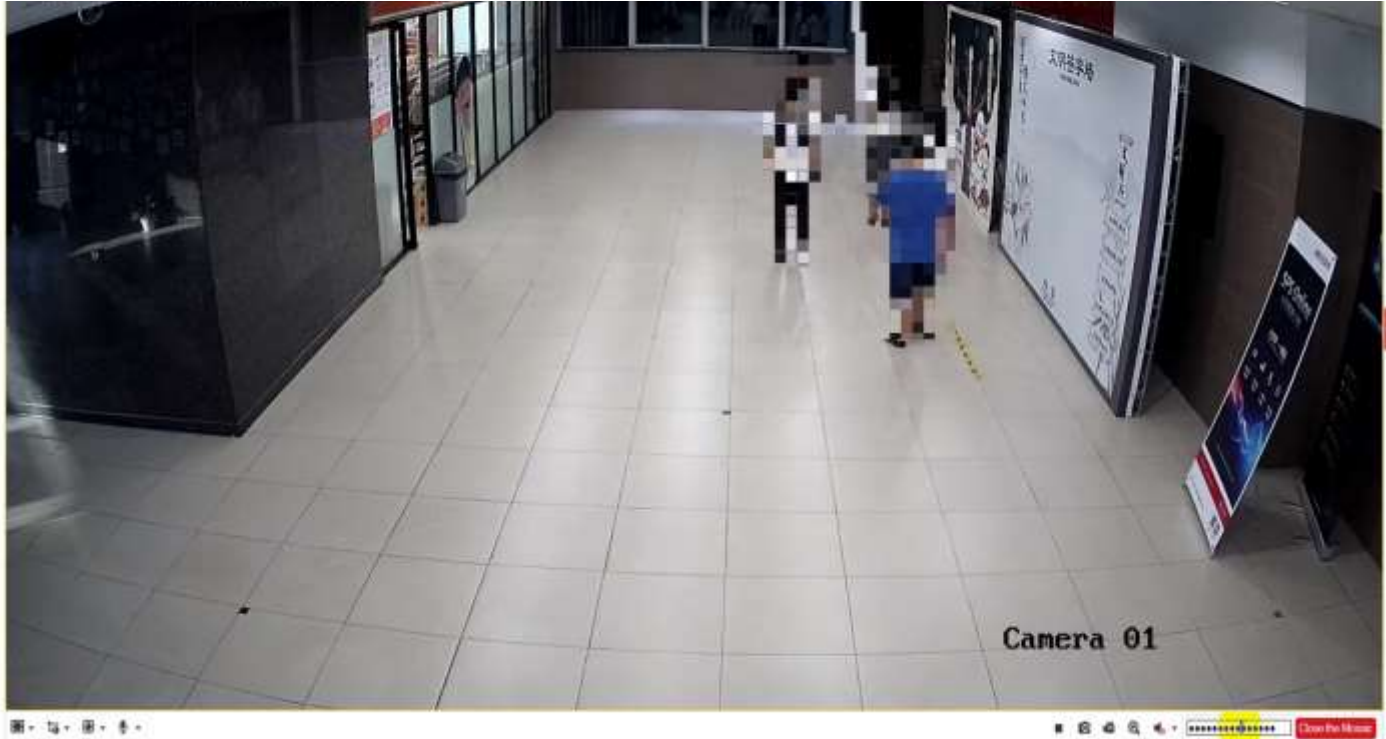
Loitering



Violent motion

# "Privacy Protection"

35



# Inteligența Artificială “At The Edge”

36



Arhitectura  
Centralizata

At The Edge  
(IoT)

Mulțumesc!



**Întrebări?**

Bogdan Visan - Business Development Manager Hickvision

# Artificial Intelligence

**Bogdan Gavril**  
Sales Engineer & Trainer CEE  
[bogdan.gavril@axis.com](mailto:bogdan.gavril@axis.com)





**AI today**

# This is where we can find AI today

- > Image recognition
- > Object detection/recognition
- > Character recognition
- > Speech recognition
- > Pattern recognition





A person is seen from behind, climbing a dark, craggy rock face. The climber is silhouetted against a bright, cloudy sky at sunset or sunrise. The background shows a vast, mountainous landscape under a dramatic sky with streaks of light and dark clouds. The overall mood is one of challenge and perseverance.

# Challenges for AI

# A tool, not a solution

## Complicated applications

- Bigger challenges
- > Data relevance
- > Self-learning
- > Higher accuracy
- > Compute power demands



An aerial, high-angle photograph of a multi-lane highway during sunset. The sun is low on the horizon, creating a warm, golden glow and long shadows. Several cars are visible on the road, including a prominent white sedan in the foreground on the right. The road has multiple lanes separated by a central divider and dashed white lines. The overall scene conveys a sense of motion and modern infrastructure.

**Axis and AI**

# Challenges in the surveillance industry

- > 24/7/365
- > Weather and insects
- > Different seasons
- > Varying light conditions
- > Camera types and settings
- > Every installation is unique



Is this a cat?

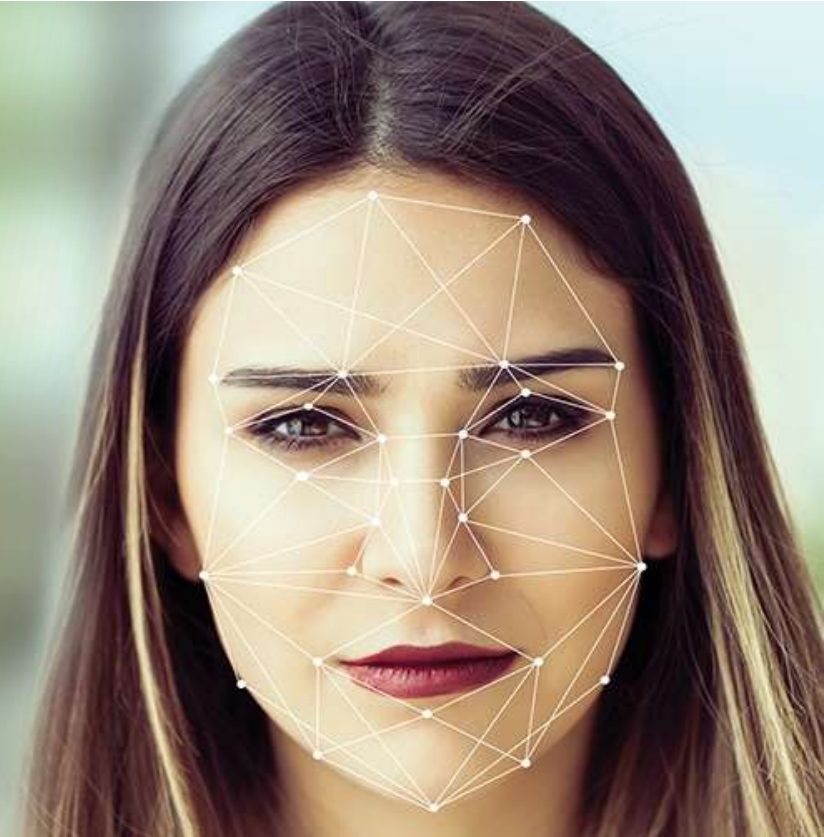


# Where are the cars?



# What is needed for successful AI applications within surveillance?

- > Good light conditions
- > Pixel density requirements
- > Defined use case
- > Additional server hardware for complex applications



# AI in traffic – Citilog Automatic Incident Detection, AID and TDC





# Training AID



# Summary

1

AI works well when the aim is very specific.

2

Future within surveillance: specific use cases.

3

Tool, not a solution.



Întrebări?

**Bogdan Gavril**  
Sales Engineer & Trainer CEE  
[bogdan.gavril@axis.com](mailto:bogdan.gavril@axis.com)



# AVIGILON AI SOLUTIONS



Speaker: Slavko Pandurov

# AVIGILON™

a Motorola Solutions Company

# ABOUT AVIGILON

Avigilon, a Motorola Solutions company, designs, develops, and manufactures solutions in video analytics, AI, network video management software and hardware, surveillance cameras, and access control.



# AVIGILON CAMERA PORTFOLIO

- Cameras with resolutions from 1 to 30 megapixels (MP), including the security industry's first single-sensor 7K (30 MP) camera.
- Box, bullet, dome, PTZ, panoramic, multi-sensor form factors.
- Efficient bandwidth management technology.
- Embedded with self-learning video analytics for accurate classified objects detection.



# NVR's WORKSTATIONS & APPLIANCES

## NVRs and Workstations

Our network video recorders have [Avigilon Control Center \(ACC\)™](#) preloaded and configured for maximum performance and reliability. They are easily integrated into any new or legacy Avigilon security system.

## HD Video Appliances

Avigilon HD Video Appliances provide all-in-one turnkey solutions with ACC installed, simplifying system design and reducing costs and installation times.



# AVIGILON CONTROL CENTER VMS

## Built from ground up as:

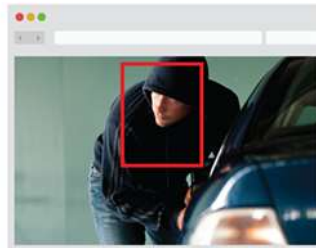
- Multi-megapixel environment
- Access control as integrative part of the end-to-end solution
- Open for 3<sup>rd</sup> party integrations and legacy camera import
- Fastest on the market, responsive video management platform
- Patented technology that addresses bandwidth challenges and allows AI ease of use





# SELF-LEARNING ANALYTICS

- Detecting classified objects
- Self-calibrating
- Self-learning
- Adapts to environment
- Pattern based classification



# AI APPEARANCE SEARCH

## Search Made Simple

- Find What You're Looking for Faster
- Search Using Physical Descriptions
- Face Analytics Included in Search
- Appearance Search Technology Integrates with ACM
- Appearance Search Blurred Export



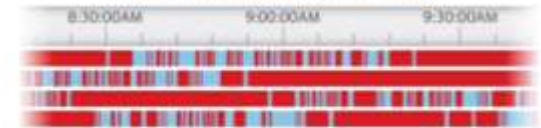
# AI UNUSUAL MOTION DETECTION

## Bringing a new level of automation

- Reveal Events You May Have Missed
- Gain Valuable Insights from Your Video Data
- Powerful AI Technology That's Easy-to-Use
- UMD on H4 Platform Cameras



### ACC™ TIMELINE WITHOUT UMD



*Timeline shows all recorded motion events*

### ACC TIMELINE WITH UMD ENABLED



*Timeline shows only recorded motion events that are unusual for a particular time*

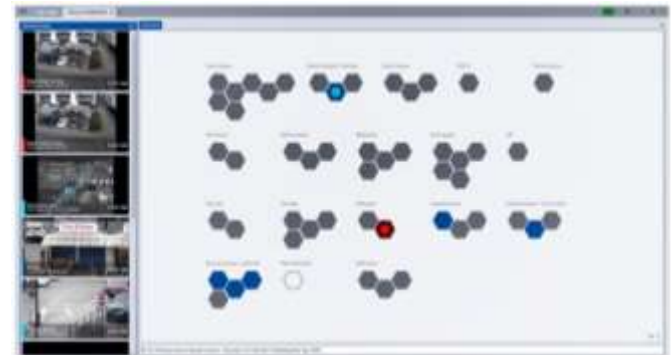
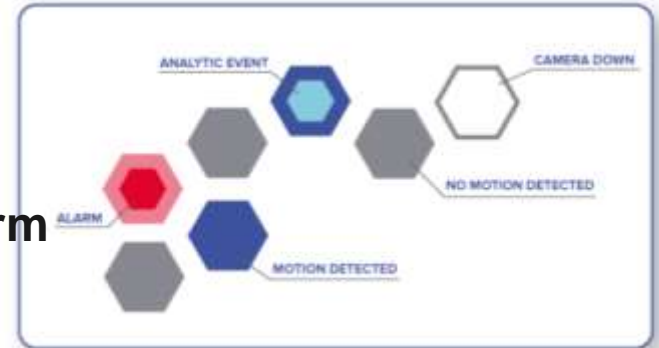
# ACC7 – FOCUS OF ATTENTION INTERFACE

## New Live Monitoring Video Interface

- Focus of Attention Interface

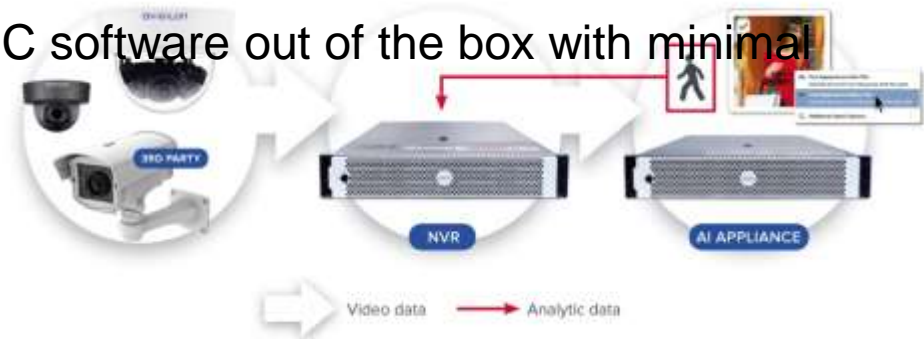
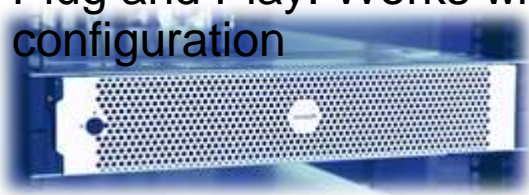
## ACC 7 Video Management Software Platform

- Avigilon Appearance Search™ Technology
- Self-Learning Video Analytics
- Unusual Motion Detection
- ONVIF® Profile S and Profile T Compliant VMS
- ACM™-ACC interoperability
- Light and Dark UI Themes



## Evolve Legacy Camera Systems into Powerful AI Solutions

- Appearance Search and Video Analysis for Non-Analytic Cameras: Brings the intelligence of video analytics to 3<sup>rd</sup> party supported cameras
- High capacity: Two variants support enterprise scalability with up to sixty 2 MP streams per appliance.
- Plug and Play: Works with ACC software out of the box with minimal configuration



# GAME CHANGING DIFFERENCES – VMS DATABASE

**AVIGILON™**  
a Motorola Solutions Company



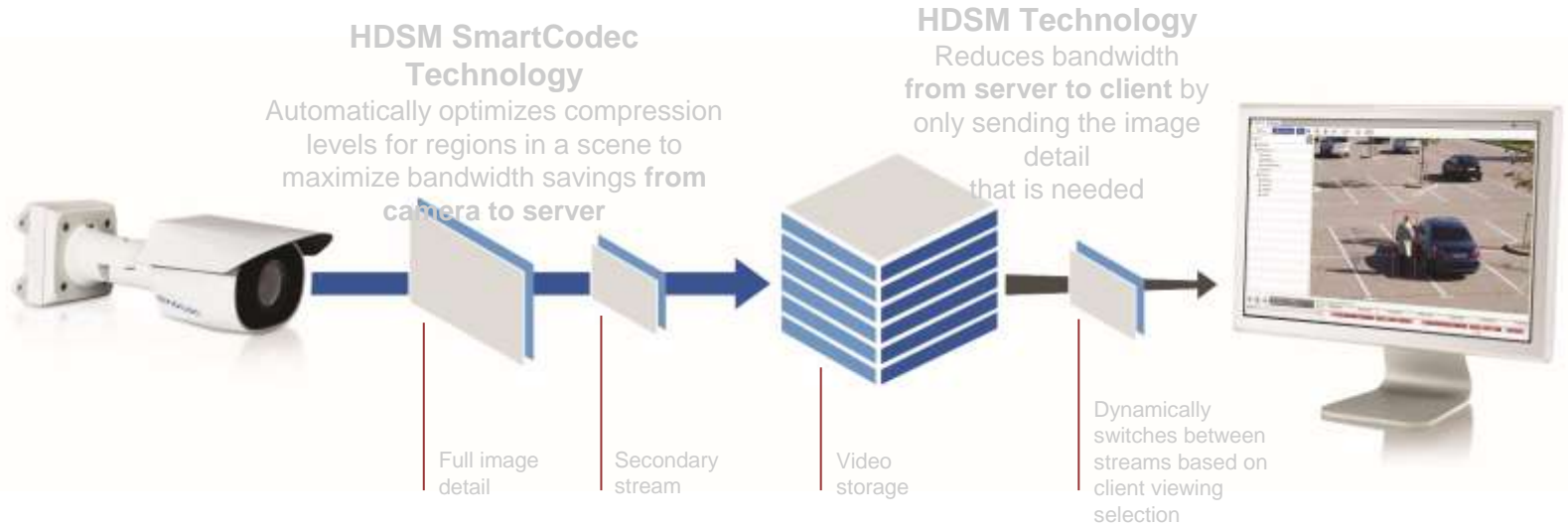
**MADE FOR  
MULTIMEGAPIXEL**

**OTHER  
S**



# GAME CHANGING DIFFERENCES – HDSM

Efficient bandwidth management delivered through the use of our patented High Definition Stream Management (HDSM)™ and HDSM SmartCodec technology.



# SUPPORTING ALL SPECIFIC SECURITY NEEDS



STADIUMS



HEALTH CARE



CRITICAL  
INFRASTRUCTURE



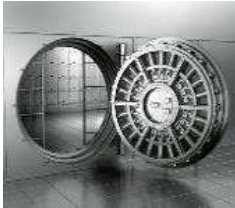
AIRPORTS



LOGISTICS



RETAIL



BANKS



COMMERCIAL CITY SURVEILLANCE



CASINOS



PUBLIC  
TRANSIT



EDUCATION



Thank you for your  
focused attention



Slavko Pandurov  
Avigilon Regional Sales Manager  
slavko.pandurov@avigilon.com

**AVIGILON**<sup>TM</sup>

a Motorola Solutions Company

# Limitări în aplicarea IA în supravegherea video – aspecte legale



Alina Iancu – Senior Associate NIPAA S.C.A.



## Cadrul Legal European și Național.

- ▷ Legislația aplicabilă în domeniul prelucrării datelor cu caracter personal
- ▷ Legislația aplicabilă sistemelor de supraveghere video

## Principiile GDPR referitoare la prelucrarea datelor cu caracter personal

- ▷ principiul legalității, echității și transparenței;
- ▷ principiul limitării prelucrării datelor legate de scop;
- ▷ principiul reducerii la minimum a datelor;
- ▷ principiul exactității datelor cu caracter personal;
- ▷ principiul limitării legate de perioada de stocare;
- ▷ principiul integrității și confidențialității;
- ▷ principiul responsabilității operatorului.

## Reguli speciale privind prelucrarea unor categorii de date cu caracter personal

- ▷ Prelucrarea datelor biometrice.
- ▷ Prelucrarea datelor cu caracter personal în contextul relațiilor de muncă în cazul în care sunt utilizate sisteme de monitorizare prin mijloace de supraveghere video la locul de muncă.
- ▷ Inteligența Artificială și Evaluarea impactului asupra protecției datelor cu caracter personal (DPIA).

## Drepturile persoanelor fizice prevăzute de Regulamentul general privind protecția datelor în relația cu operatorii

- ▷ Dreptul de acces;
- ▷ Dreptul la rectificare;
- ▷ Dreptul la ștergere – “dreptul de a fi uitat”;
- ▷ Dreptul la restricționarea prelucrării;
- ▷ Dreptul la portabilitatea datelor;
- ▷ Dreptul la opoziție;
- ▷ Dreptul de a nu face obiectul unei decizii bazate exclusiv pe prelucrarea automată.

# Inteligența artificială și aplicarea legii prin funcții automate.

▷Constatarea contravențiilor la regimul circulației pe drumurile publice cu ajutorul mijloacelor tehnice omologate și aplicarea sancțiunilor .

## Concluzii

- ▷ In prezent există un cadru legal atât național, cât și comunitar pentru utilizarea tehnologiilor IA.
- ▷ Regulamentul general privind protecția datelor detaliază principiile și condițiile care stau la baza unei utilizări etice și legale a datelor obținute prin utilizarea IA.
- ▷ Legislația Uniunii Europene va urma un proces de adaptare la noile tehnologii, ca parte a Strategiei europene privind inteligența europeană.



# Limitări în aplicarea IA în supravegherea video – aspecte legale



Alina Iancu – Senior Associate NIPAA S.C.A.



# GDPR IN NUMBERS

The General Data Protection Regulation (GDPR) applies since 25 May 2018. Reports of massive data breaches and the mishandling of personal data by large online platforms remind us what is at stake: from preserving our private life to protecting the functioning

of our democracies and ensuring the sustainability of our increasingly data-driven economy.

On the occasion of Data Protection Day we take a close look at compliance, enforcement and awareness of the new rules.

## COMPLYING WITH THE RULES

### Number of complaints to Data Protection Authorities (DPAs) under the GDPR\*

Complaints can come from any individual who believe their rights under GDPR have been violated, but the GDPR also introduced the possibility for an organisation mandated by individuals to introduce such complaints. This possibility has been used immediately after the entry into application of the GDPR.



Accumulated number over time.\*\*  
From all data protection authorities in Europe.

### Most common type of complaints\*

These are the activities in which most complaints have been reported so far.



Telemarketing



Promotional e-mails



Video surveillance/CTV

### Number of data breach notifications\*

When personal data for which a company is responsible is accidentally or unlawfully disclosed, that company is obliged to report that data breach to their national DPA within 72 hours after finding out about the breach.

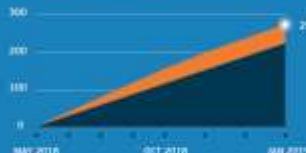


Accumulated number over time.\*\*  
From all data protection authorities in Europe.

## ENFORCING THE RULES

### Cross-border cases\*

Many companies, such as social media platforms, provide their services in more than one EU country. The GDPR provides that in most cases one national data protection authority takes the lead to investigate a case process ("one-stop shop"), while the other concerned authorities support the investigation. If there is a disagreement between authorities, the European Data Protection Board will arbitrate.



- Investigations initiated by Data Protection Authorities.
- Investigations by Data Protection Authorities on the basis of individual complaints.

### Fines issued under GDPR\*



Several high level cases are ongoing and could cause fines up to 4 % of the annual of a business, if there is a serious infringement. So far three fines have been issued.



A social network operator for Twitter to ensure users' data. **GDPR 25,000,000**



Spain's betting odds for influential video advertisements. **GDPR 8,200,000**



Google for lack of consent on AdSense. **GDPR 50,000,000**

### Adaptation of the national laws in the Member States

Being an EU Regulation the GDPR is directly applicable in all EU countries. However, it also requires countries to adapt their national legislation. Whilst 23 Member States have adopted the required national legislation, five are still in the process of doing so (Bulgaria, Greece, Slovenia, Portugal, Czechia).



## AWARENESS OF THE RULES

### Media coverage

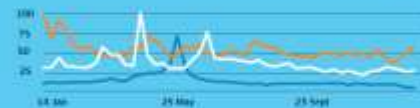
GDPR received a lot of attention in 2018. So much that even some celebrities had to stand in its shadow.



Annual search results mentions in the media.  
Source: Factbook.

### Google searches

During the peak month of May 2018 GDPR was searched more often on Google than American superstars Beyoncé and Kim Kardashian.



Relative index between 0-100, based on number of searches on Google.  
Source: Google Trends.

Relative index between 0-100, based on number of searches on Google.  
Source: Google Trends.



europa.eu/dataprotection

\*Source: The European Data Protection Board.

\*\*Disclaimer: We were not able to verify if all the reported figures relate to cases prior 25 May, when GDPR entered into application. Some of them can also relate to the former data protection directive.

***Arta de a trăi în siguranță!***



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