

Ayonix-APS

World's fastest 3D Face surveillance application

Feb.13th, 2017

What is APS

- ◎ Ayonix Public Security(APS) is a All-in-one Face recognition product which recognizes people from IP cameras, Image and Video streams
- ◎ APS is a security product which allows to enroll thousands of people in database with one click
- ◎ APS is an assistant to security people. It gives instant alerts when someone is found in the database

APS Features

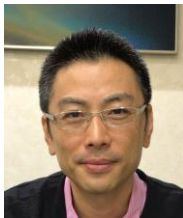


Image Inspector

Image to Image matching



97%



Video inspector

Match from a video file



Camera match

Real-time match from IP cams



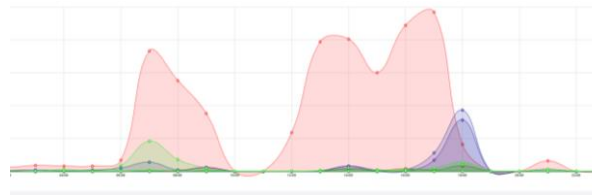
Alerts (email, popup)

Popup/Email/Sound alerts



Statistics

Weekly/monthly reporting



Log of Unknowns

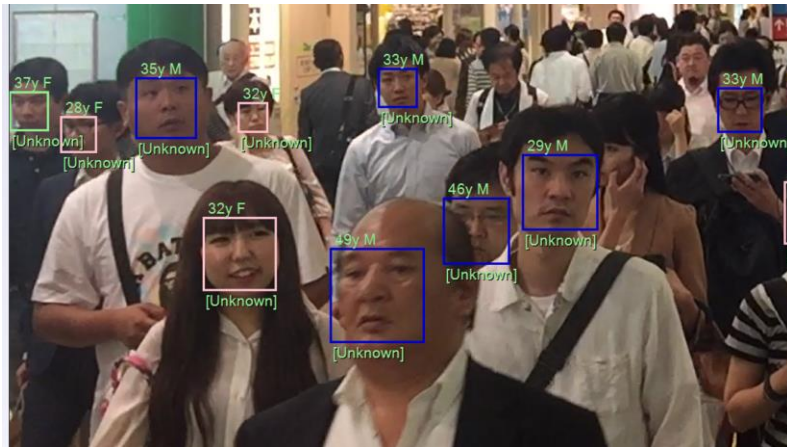
Automated face recordings for unknown person detection



Functions of APS

Face detection

Detection of multiple faces



Face identification

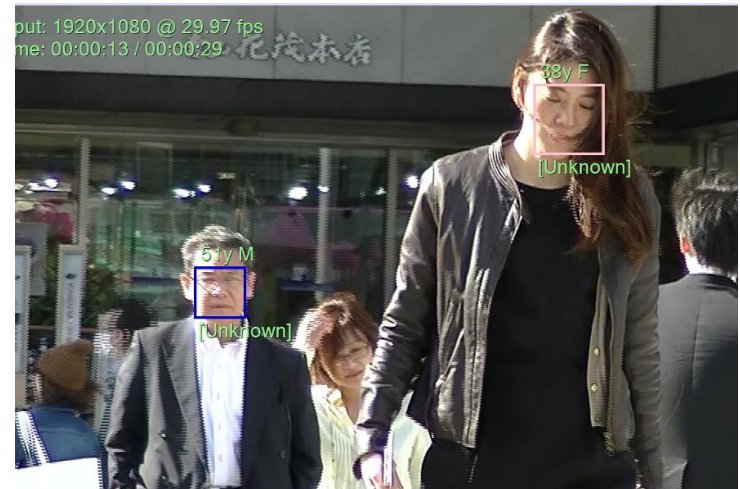
“Real time face identification”



“

Gender&Age estimation

“Gender and age detection”



Face tracking

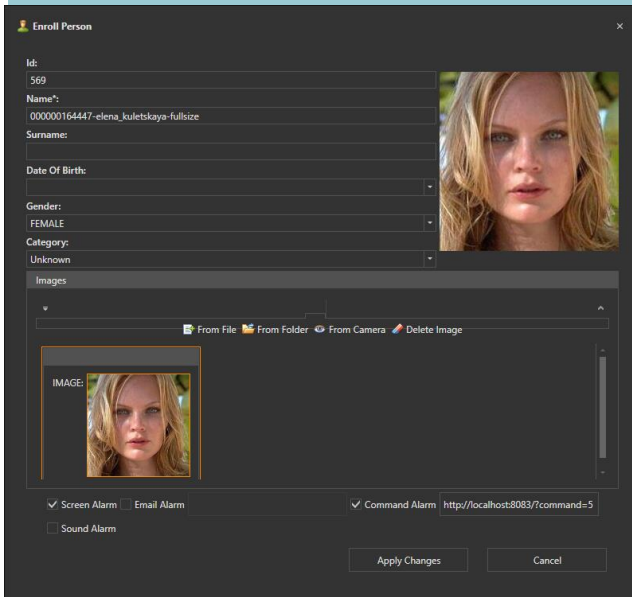
“Multi face tracker”



Enrollment

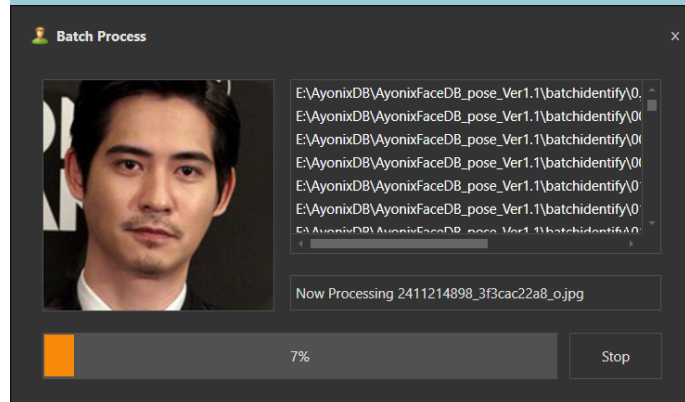
☉ Enrollment is done in three ways

FROM IMAGE



Each individual can be enrolled in a very simple and easy way under seconds.

FROM BATCH



Batch enrolls millions of faces automatically to face database.

FROM CAMERA

Multiple face match

◎ APS is capable of processing multiple faces at once

◎ Multiple faces from Video streams or IP cameras



Input: 1920x1080 @ 59.96 fps
Time: 00:00:05 / 00:00:08

The video stream shows a busy street scene with several people. Four faces are highlighted with bounding boxes and labels:

- 34y M (Joel) - circled in red
- 18y F (Unknown)
- 31y F (Unknown)
- 32y F (Unknown)

The matching panel on the right displays a table of detected faces and their matches:

Detected	Score	Match	Name
	81.0 %		Joel
	-		[Unknown]
	-		[Unknown]
	-		[Unknown]
	-		[Unknown]
	-		[Unknown]

Advanced log system

All recognition events and alerts are logged into the database.

When a face is found, person identity, gender, age, expression, face position, face pose and possible candidates are all detected and logged for further inspection



Image inspector

Image inspector allows you to search a person from the database records within the seconds.

Approximate speed is 100ms from 6million people!

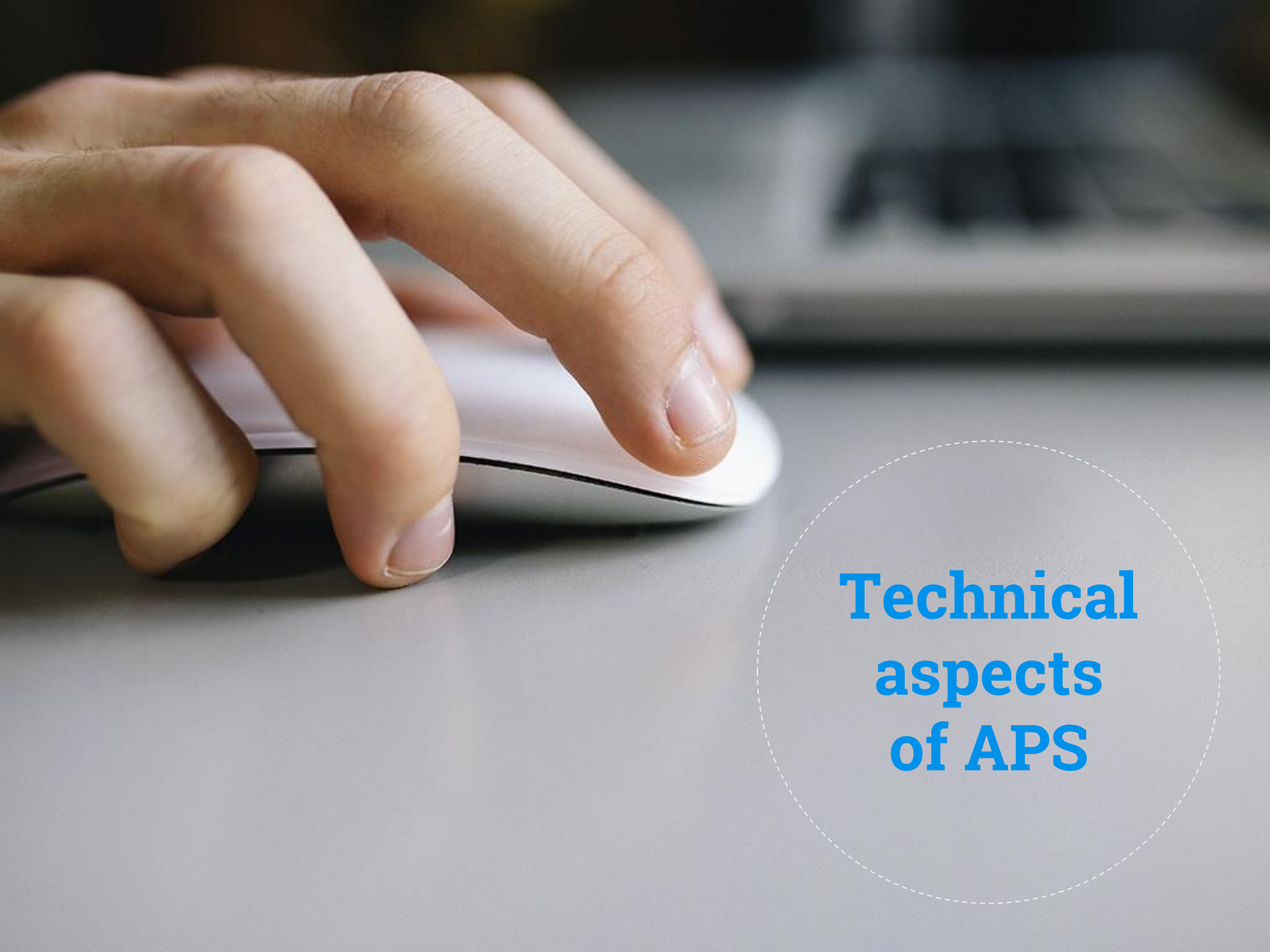


- Video inspector analyzes your videos and finds the people by comparing your face database.



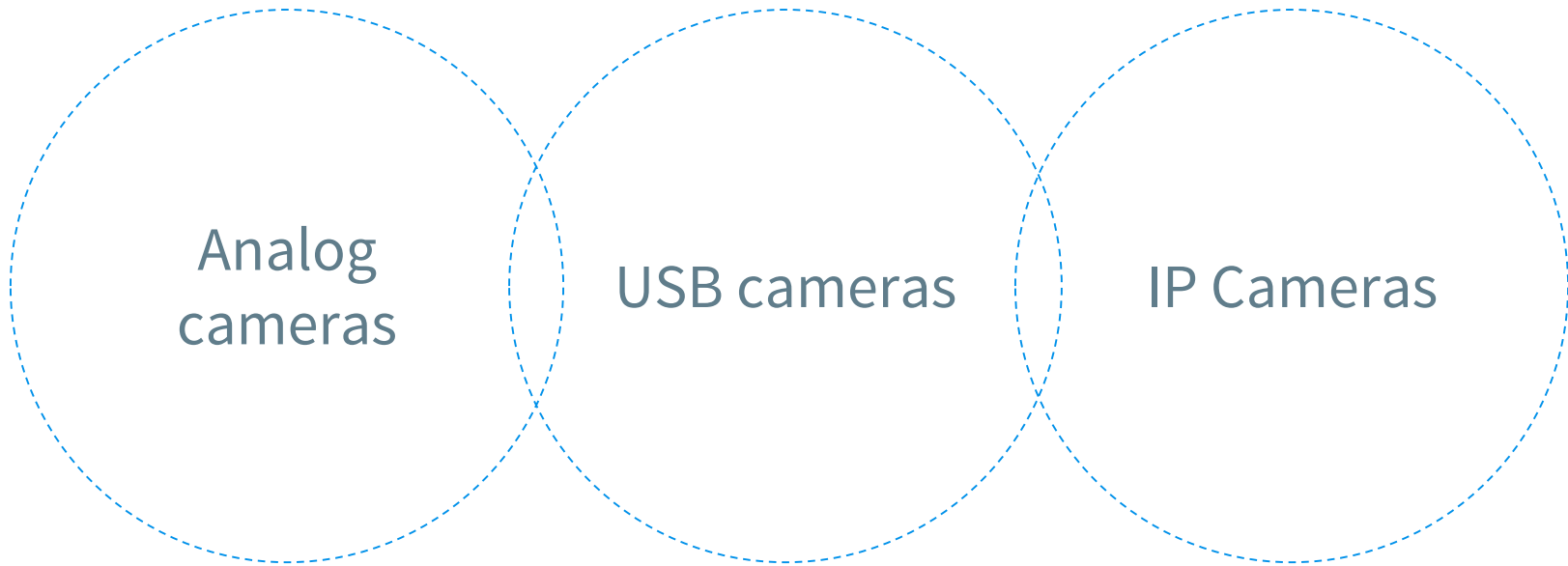
Supported Video types

Any(Surveillance, records, cctv and others)



**Technical
aspects
of APS**

APS supported cameras



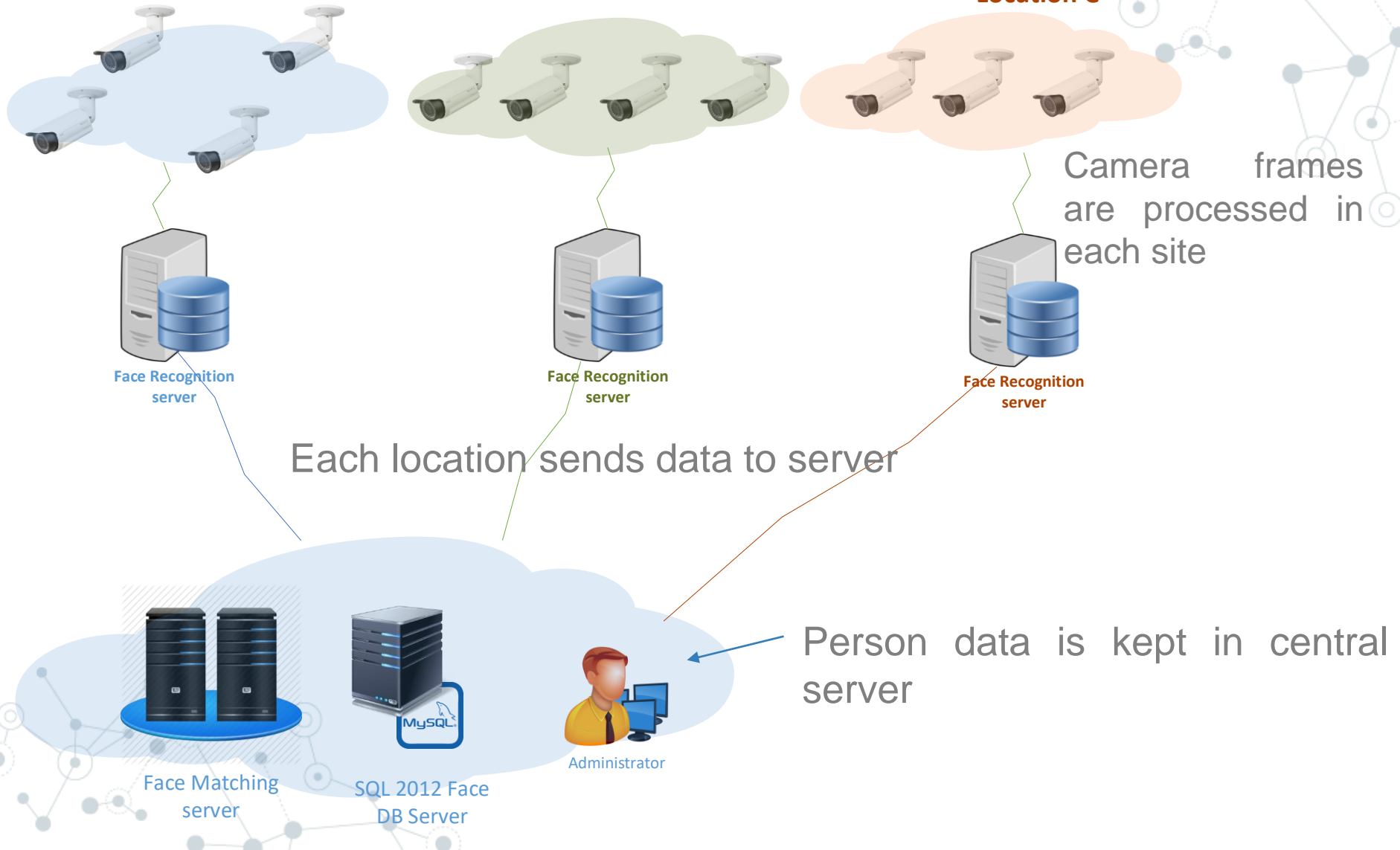
APS now supports any Onvif-compliant camera, USB camera and analog camera.

APS System architecture

Location A

Location B

Location C



VMS Support



milestone
The Open Platform Company



**APS Face
recognition**

Genetec

VMS Support



Online alarm and video playback for event is instantly provided

APS turns entire VMS system a face recognition system quickly

Milestone XProtect Smart Client 2014 2016/08/05 10:38:39

Live Playback Sequence Explorer Alarm Manager

XProtect 新規ビュー-(1 + 2*)

Views

Search views and cameras...

Private

Shared

Default Group

Default View

新規ビュー-(1 + 2*)

Cameras

Server

Audio

Vivotek CC8130 Live

Axis P3354 Live

Alarms

Quick Filters

New (0)

In progress (2)

On hold (0)

Closed (0)

Servers

Server

In progress (Filter Applied)									
Time	Priority Level	State Level	State Name	Message	Source	Owner	ID		
9:28:35 2016/08/05	2	4	In progress	Person detected	Axis P3354	test (test)	12824		
9:28:01 2016/08/05	2	4	In progress	Person detected	Axis P3354	test (test)	12817		

APS milestones VMS plugin shows all alerts inside the Milestones VMS software.

Milestone XProtect Smart Client 2016 R3 1/11/2017 3:09:23 PM


Live Playback Sequence Explorer Alarm Manager LPR System Monitor

XProtect Ayonix 1

Ayonix FaceId Plugin - Enrollment

Current Enrollments: Page 1 of 1 (Total Records: 1)

Refresh << < > >>

Enroll Mugshot	Name/Surname	Category	Gender
	Malithi	User	Male

☒ Alarm Popup

Unknown Persons

New Enrollment

Batch Enrollment

Alarms

Quick Filters

- New (19)
- In progress (0)
- On hold (0)
- Closed (0)

Servers

- AASL-MGMT-SVR


Time	Priority Level	State Level	State Name	Message	Source
1:15:53 PM 1/11/2017	1	1	New	Face Detecte	69125PIER1
1:15:34 PM 1/11/2017	1	1	New	Face Detecte	69125PIER1
1:15:08 PM 1/11/2017	1	1	New	Face Detecte	69125PIER1
1:15:03 PM 1/11/2017	1	1	New	Face Detecte	69125PIER1
1:14:43 PM 1/11/2017	1	1	New	Face Detecte	69125PIER1
12:26:13 PM 1/11/2017	1	1	New	Face Detecte	70190TRANSIT1
12:26:13 PM 1/11/2017	1	1	New	Face Detecte	70190TRANSIT1
12:25:56 PM 1/11/2017	1	1	New	Face Detecte	70190TRANSIT1
12:25:41 PM 1/11/2017	1	1	New	Face Detecte	70190TRANSIT1
12:25:41 PM 1/11/2017	1	1	New	Face Detecte	70190TRANSIT1
11:59:29 AM 1/11/2017	1	1	New	Face Detecte	70032DEPWLK1
11:59:18 AM 1/11/2017	1	1	New	Face Detecte	70032DEPWLK1
11:59:09 AM 1/11/2017	1	1	New	Face Detecte	70032DEPWLK1
11:58:59 AM 1/11/2017	1	1	New	Face Detecte	70032DEPWLK1
11:58:49 AM 1/11/2017	1	1	New	Face Detecte	70032DEPWLK1
11:58:28 AM 1/11/2017	1	1	New	Face Detecte	70032DEPWLK1
11:57:28 AM 1/11/2017	1	1	New	Face Detecte	70032DEPWLK1
11:57:00 AM 1/11/2017	1	1	New	Face Detecte	70032DEPWLK1
11:56:25 AM 1/11/2017	1	1	New	Face Detecte	70032DEPWLK1

70190TRANSIT1

55871
PC4517
250553

69180VVP092

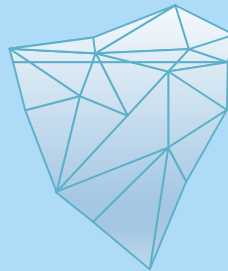
55871
PC4517
250553



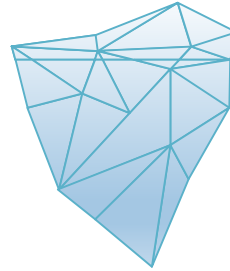
All alarms are instantly given in Alarm manager of Milestones VMS

Camera specs

Recommended		Camera param	APS Camera specs	
Max. camera height	2 meters		Recommend ed cameras	Arecont, Avigilon, Axis, Panasonic, Sony
Camera lens	Varifocal			
Shutter type	Global shutter			Min. Resol. Full-HD(1980x1080)
Iris value	0.45			Min. fps 10fps
IR light	Not applied			Streaming H264
Backlight comp.	Yes			Ethernet PoE LAN
WDR	Yes			Zoom 10X optical zoom



APS Runtime PC specs



APS Server machine specs

OS	Windows 2012 server
CPU	Intel i7Core 3.6Ghz
RAM	16GB
HDD	SSD 500GB
GPU	Nvidia Tesla M40 series
Database	MSSQL 2012/2014
Network	TCP/IP, UDP

Engine specs

Recognition rate	99.4%
Error rate	1.12%
Recognition speed	150ms
Enrollment speed	700ms
Min. face size	80x80 pixel
Matching mode	1:N, N:N
# of enrolling images	From 1 image

Comparison with other vendors

	Ayonix	A	B
Video Inspector	Yes	No	Yes
IP Camera	Yes	Yes	Yes
Analog camera	Yes	No	Yes
Batch enrollment	Yes	Yes	Yes
Full-HD Face Tracker	Yes	No	No
H264 Video support	Yes	No	No

Technology Comparison



	Ayonix	Cognitec	NEC
Recognition (※1,2)	99.9%(※1) 94.1%(※2)	97.9%(※1) 73%(※2)	97.9%(※1) 16%(※2)
Speed	200ms/person	835ms/person	1427ms/person
Template size	2KB	3KB	5KB
Match time(※3)	468ms	870ms	1200ms

※1 Feret-DB

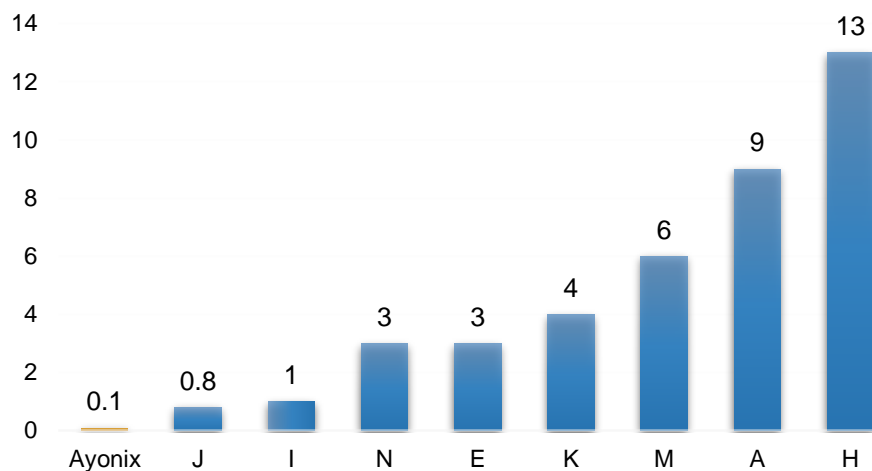
※2 FRGC-DB

※3 Measured by using 1million face dataset

NIST 2015 Preliminary results



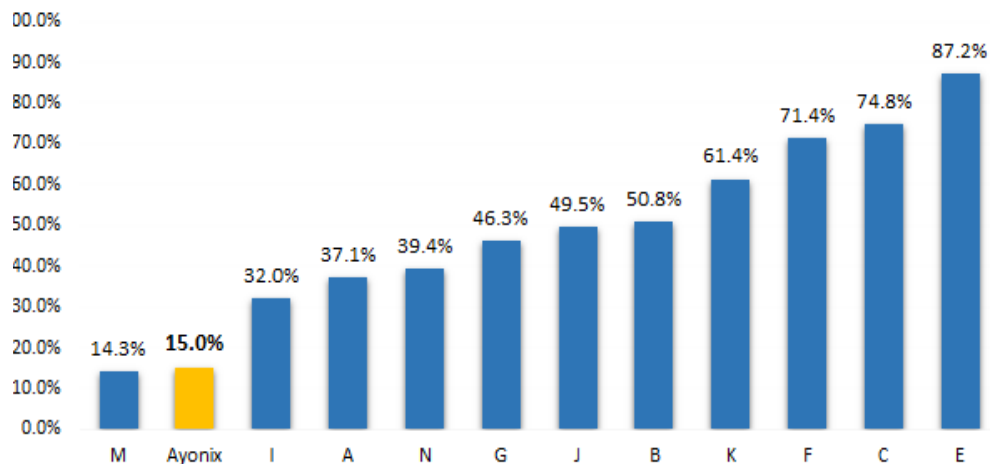
NIST 2015 Speed



Achieved 8 times faster speed than the nearest competitor in NIST-FIVE Phase-2

Ayonix's independent indexing topology enables customers to search a face in big databases

NIST 2015 Error rate(angle-DataP-Lowmount)



Ayonix is the best three companies in the world during NIST-FIVE Phase-2

Ayonix can be used in all locations where there is a need for reliability and accuracy

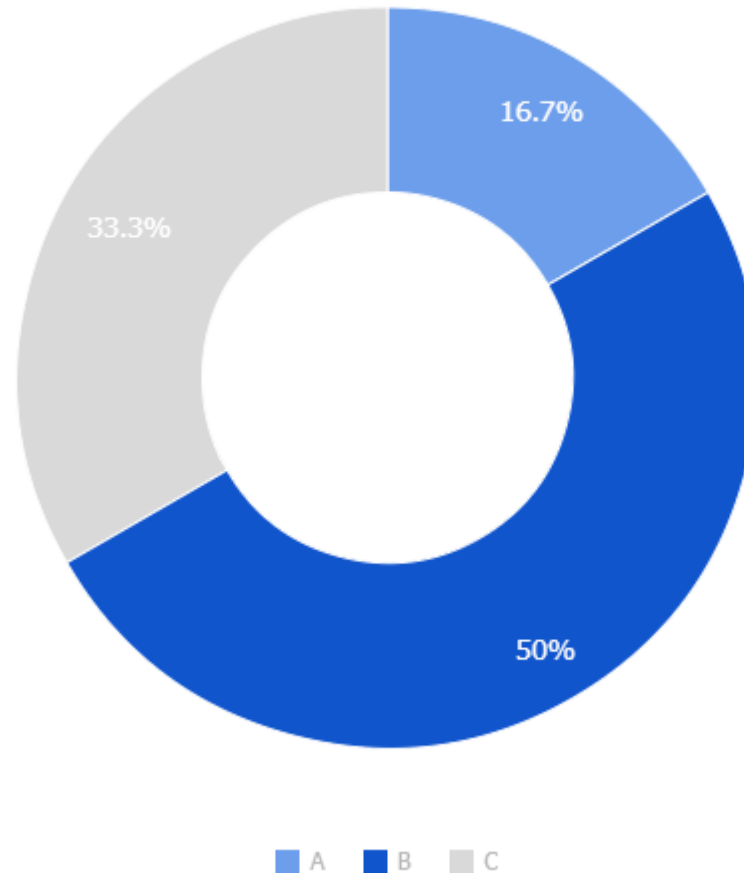
APS is securing the world



APS editions

	Basic	Standard	Enterprise
Online Alerting	○	○	○
USB/IP Camera	○	○	○
Access control	○	○	○
Gender/Age output	X	○	○
Batch enrollment	X	○	○
Email alarm	X	○	○
API for integrations	X	X	○
N:N face match	X	X	○
Image/Video match	X	X	○
Network SQL support	X	X	○
Milestones plugin	X	X	○
NVR/DVR support	X	X	○

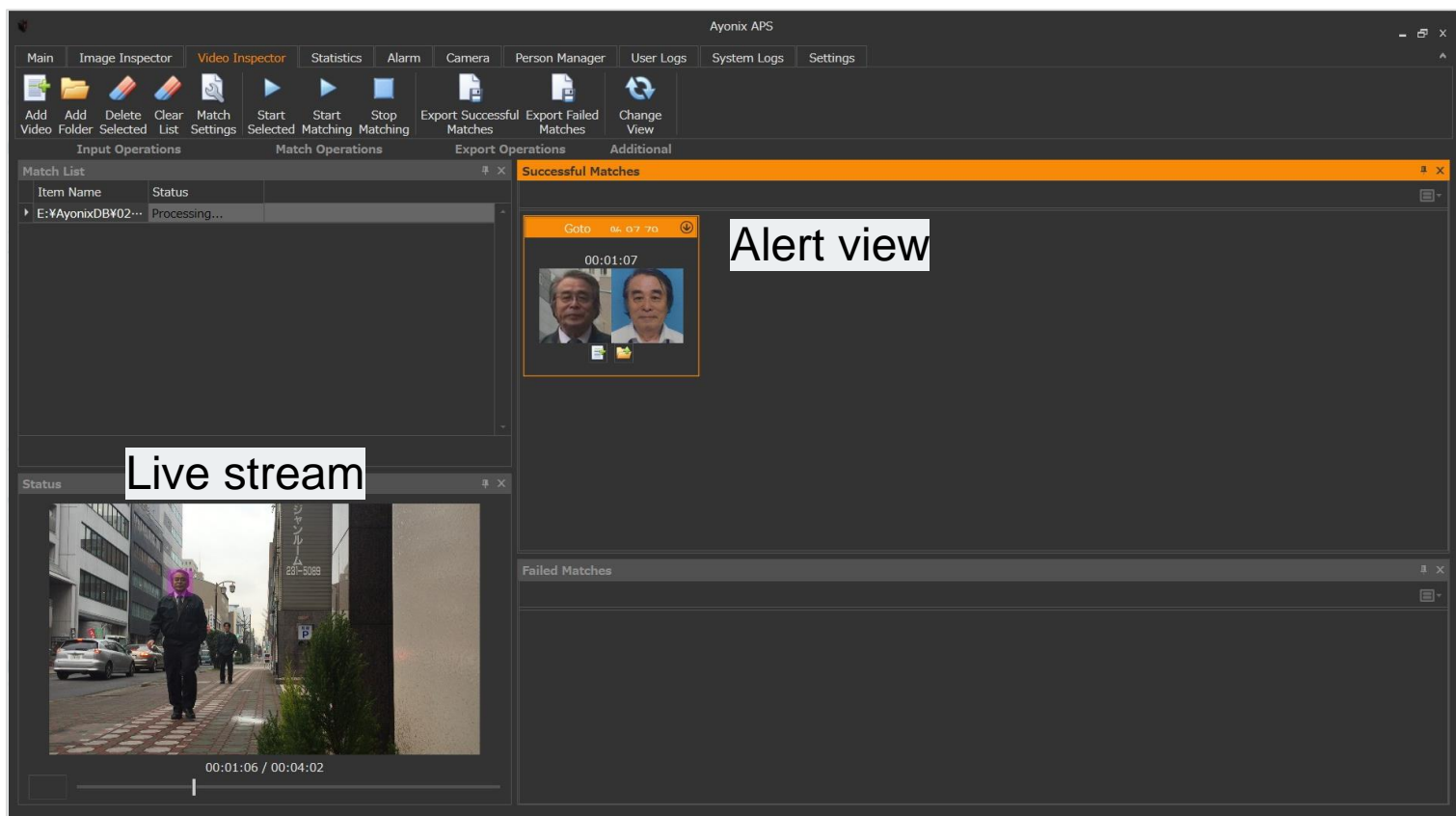
Who is using APS



A: Police departments

B: Private companies

C: Supermarkets, Shopping malls



APS Live view

APS recognizes and instantly gives alert.



APS Gender and Age analysis

APS not only finds people identities but also their gender and ages (Blue: Male, Pink: Female)

APS Alarm view

All alarm archive

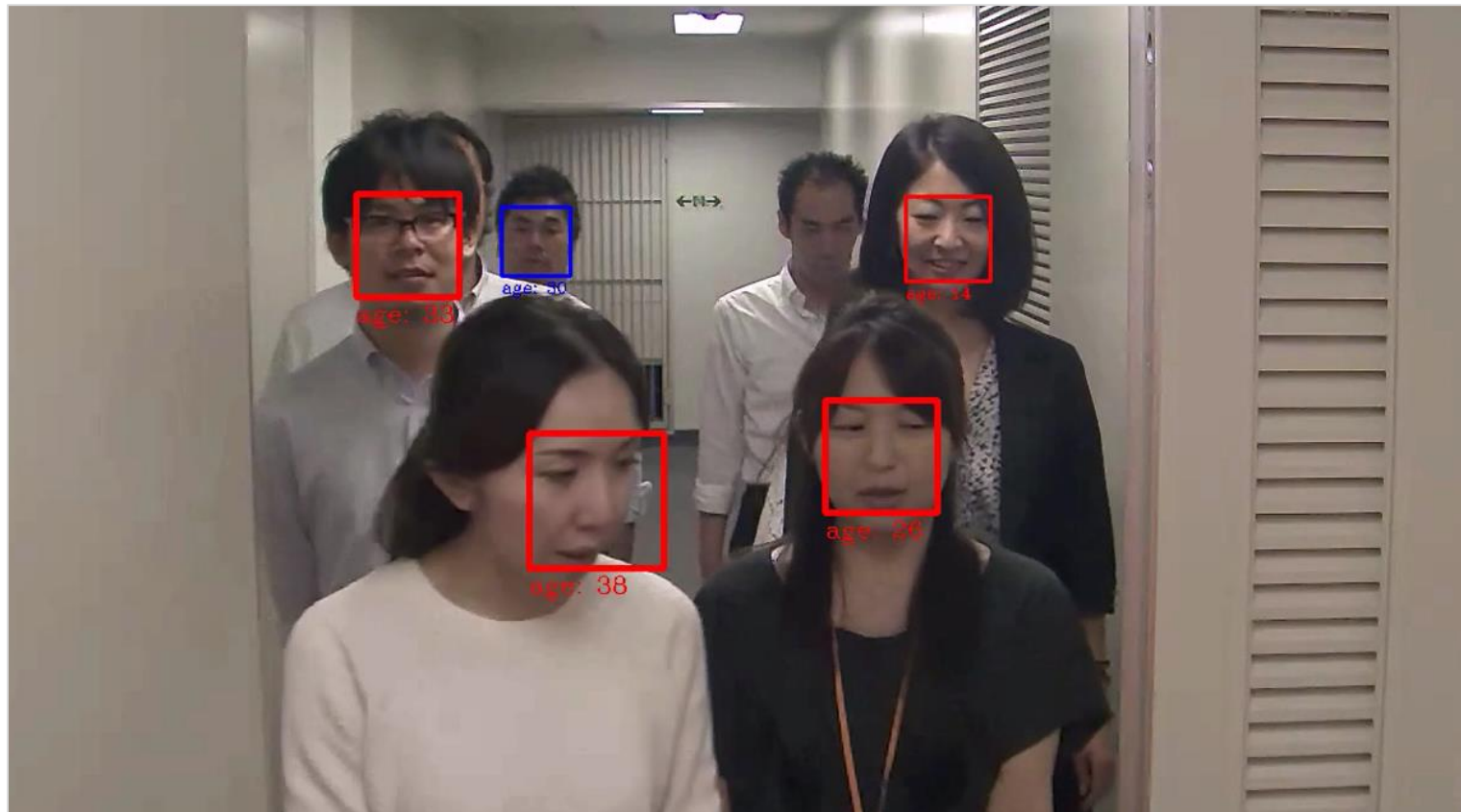
Successful Matches

Match Name	Match Image	Score	Image Time	Image Name	Person Image
Goto		% 98.46	00:00:37	20150213_1...	
免許写真_橋本		% 96.46	00:00:40	20150213_1...	
免許写真_橋本		% 94.01	00:00:43	20150213_121200_nFs_ch1.avi	
免許写真_福田		% 78.22	00:00:45	20150213_1...	
免許写真_大島		% 72.68	00:00:45	20150213_1...	
免許写真_福田		% 58.48	00:01:45	20150213_1...	

Failed Matches

APS Alarm view

APS shows all alarms in single window for the given date.
All alarms can be exported to pdf or xls as file.



APS Video streaming

APS can process multiple faces at one time from video streams

Some of installations in 2015



NKC Factory(Japan) Access Control



Azerbaijan(BAKU) country security

Thanks!

Any questions?



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