



# Bigger Data: Demystifying the World of Video Big Data

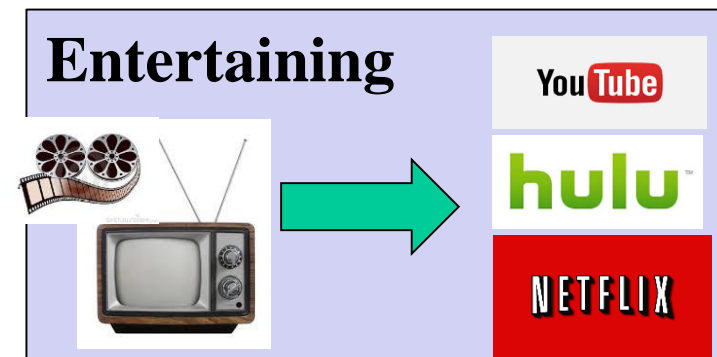
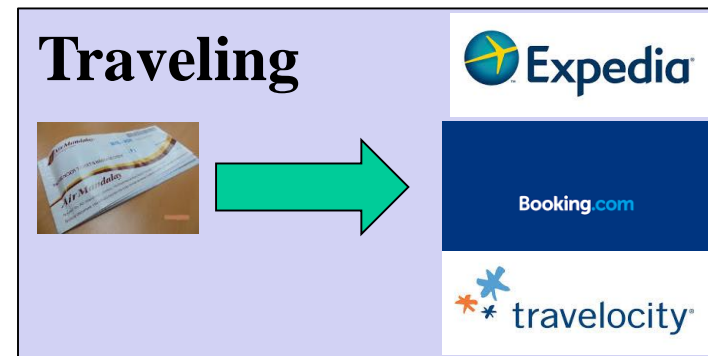
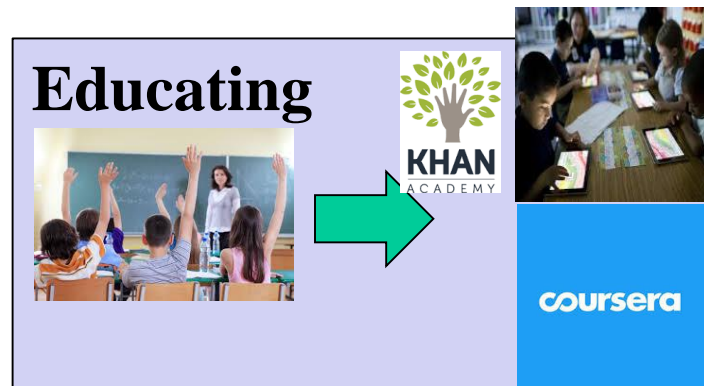
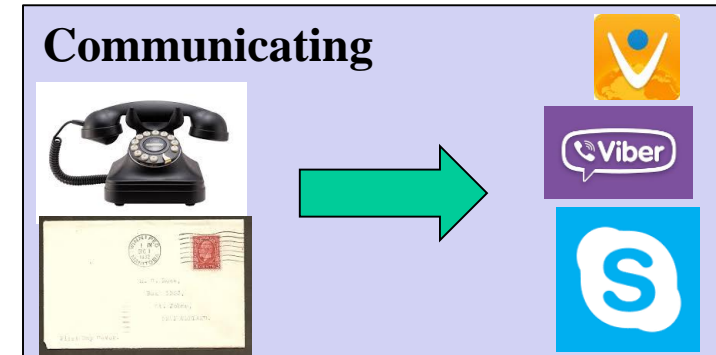
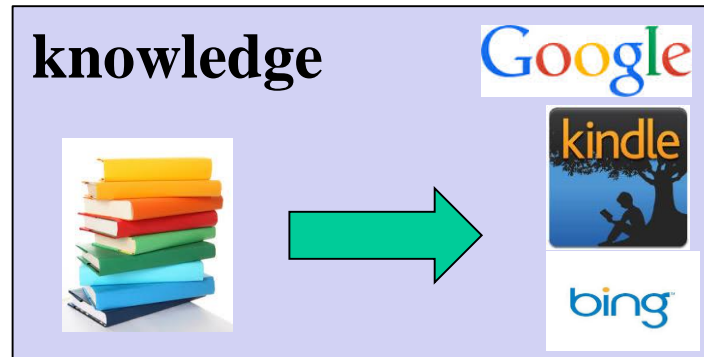
*Hani Elgebaly, Ph.D.*

*Hani.elgebaly@avidbeam.com*

*CEO, AvidBeam Technologies*

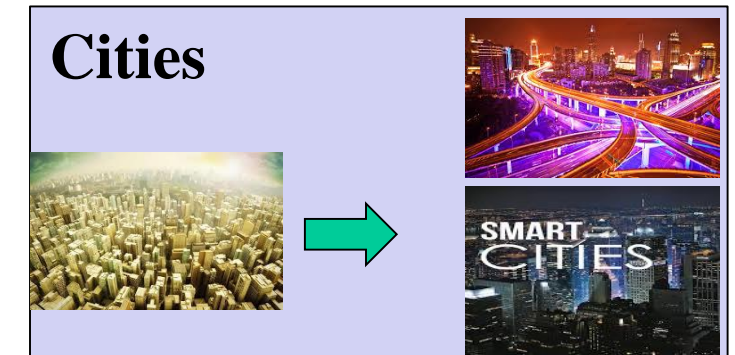
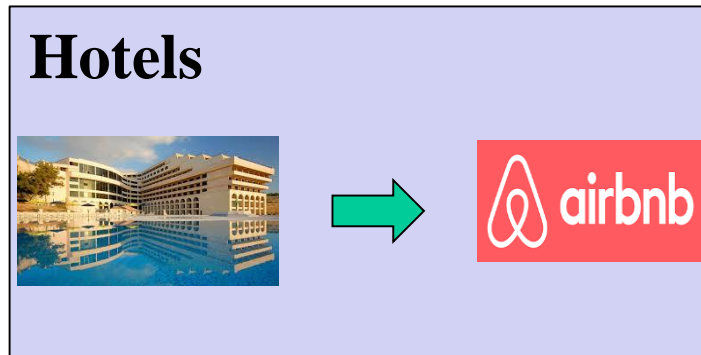
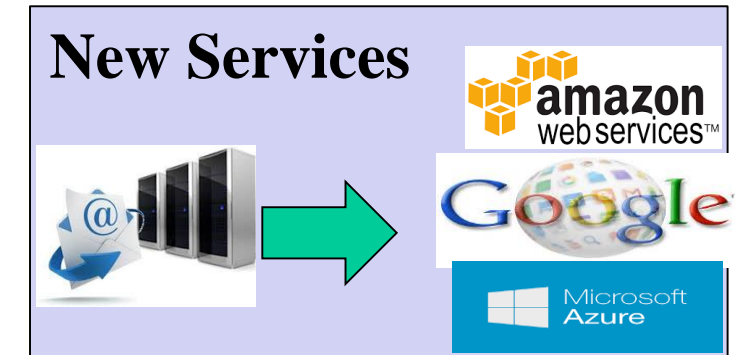
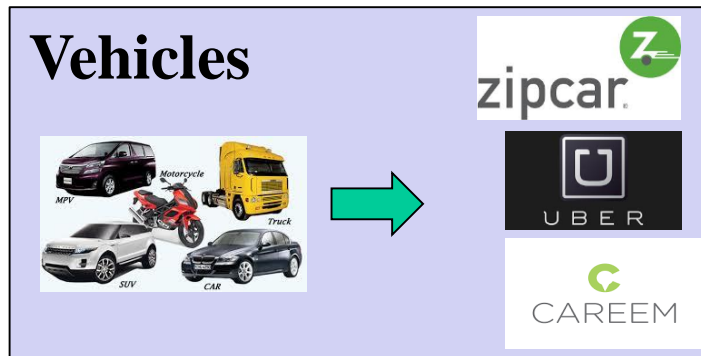


# Reimagining the World at Light Speed



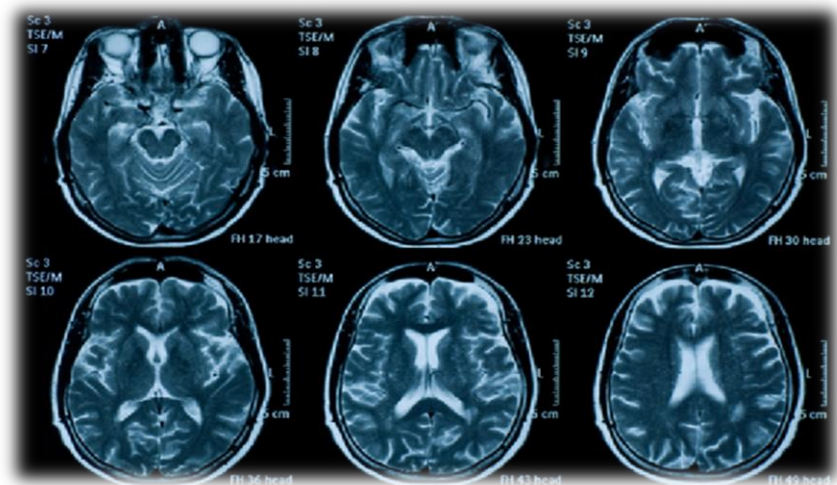
**Industries established over a century  
Was re-architected in under a decade**

# Reimagining the World at Light Speed



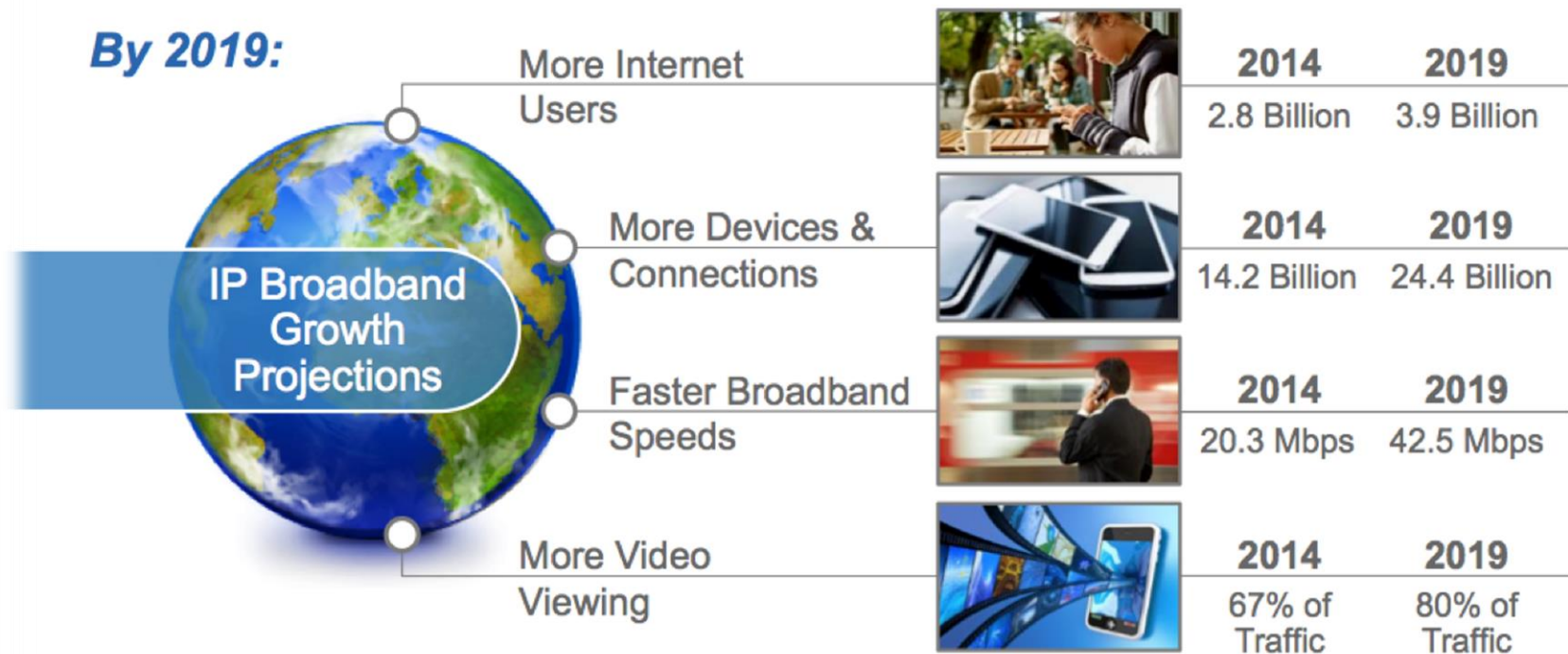
**From the Obvious to the not So Obvious;  
When the Impossible becomes Possible**

# The Case for Video Analytics



## Global IP Traffic & Service Adoption Drivers

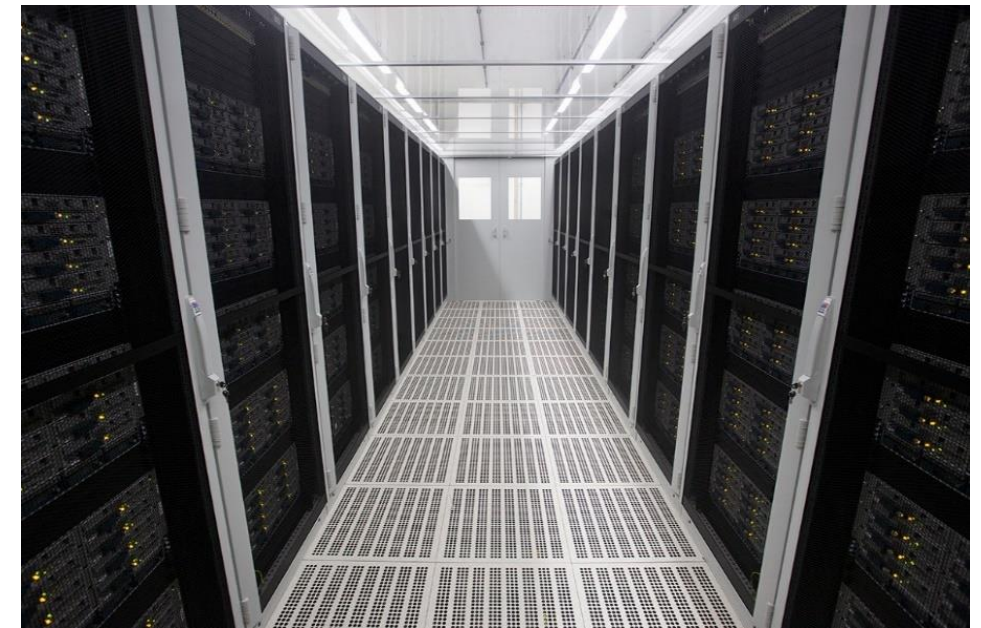
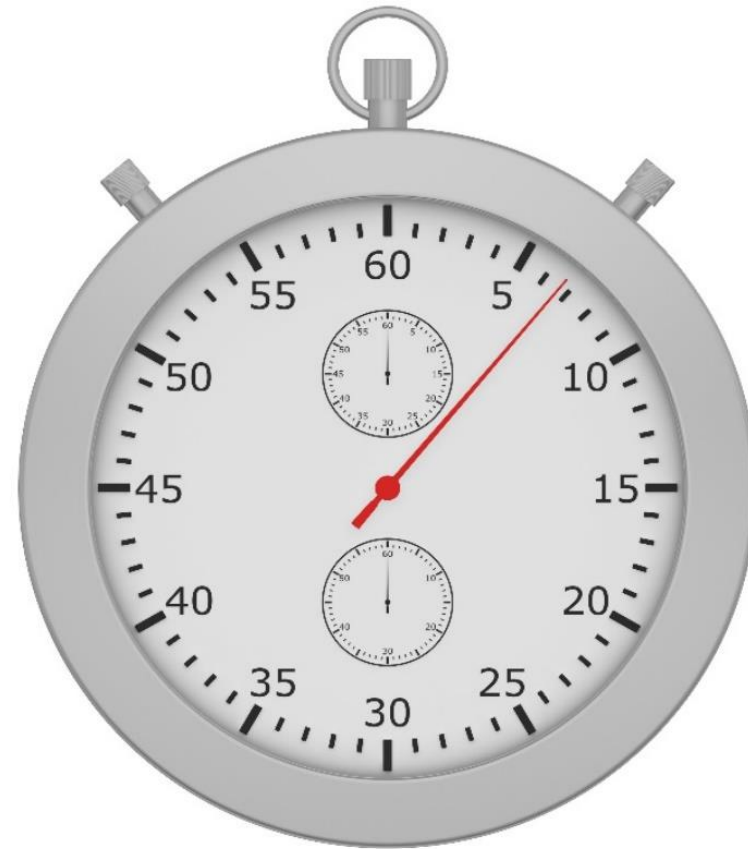
**By 2019:**



Source: Cisco VNI Global IP Traffic Forecast, 2014–2019  
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Much of the World's data is now Visual  
The Next Big Thing is the application of Data Analytics to Video

# Video Analytics Challenges



Intense volume

Time consuming

Unstructured video data → complex processing

# Big Data Cloud Analytics Tools



- Open Stack
- Apache Hadoop
- Apache Spark Streaming
- StreamingSQL
- Apache Storm,
- R Database, Cassandra, MongoDB
- Apache Mahout
- Virtualization technologies
- Big Data Analytics
- Pig





# A Scalable Video Analytics Platform



Saving Video Processing Time



Saving Hardware Resources



Saving Total Cost of Ownership

ATUN™ : To process and analyze thousands of videos efficiently, in real-time;  
To extract real-time intelligence in the blink of an eye

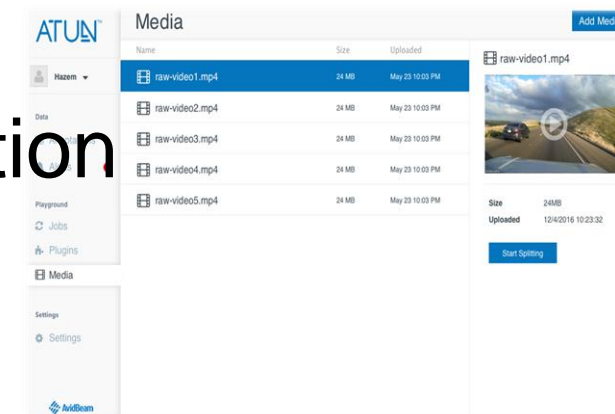


Live Video Feeds

Streaming  
Real-time



Visualization



Offline processing

Video storage files



ATUN™ Scales Processing and Virtualizes Video Sources over Available Hardware Resources

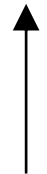




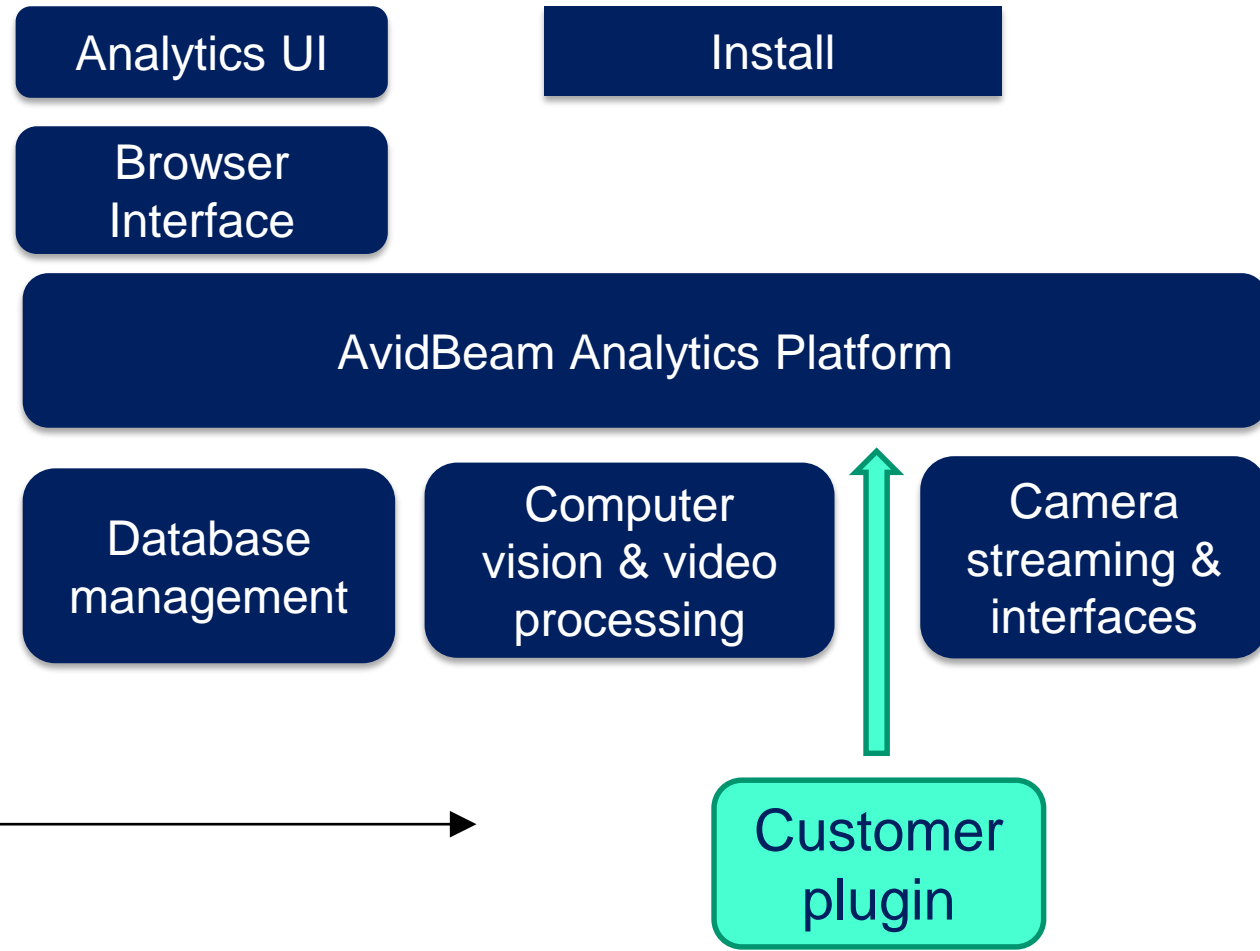
OnCreate()

OnFrame()

OnDestroy()



**Add plugin  
using  
simple API**



**Execute &**



**Scaling Computer Vision Algorithms with ATUN Open API**

# Video Big Data Analytics Targeted Markets



Autonomous Vehicles



Medicine & Healthcare



Factories & Warehouses



Large Manufacturing  
Facilities



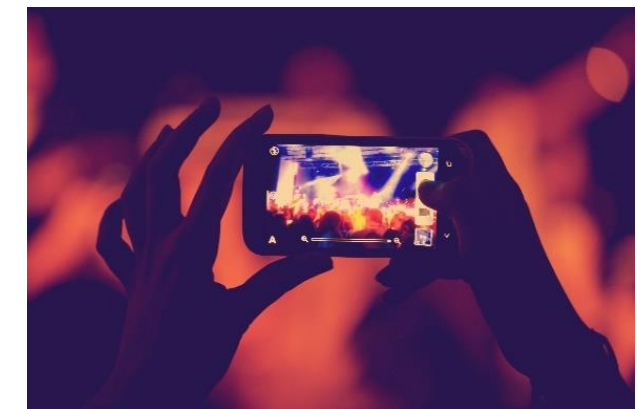
Retail  
Stores



Technology Parks



Smart Cities



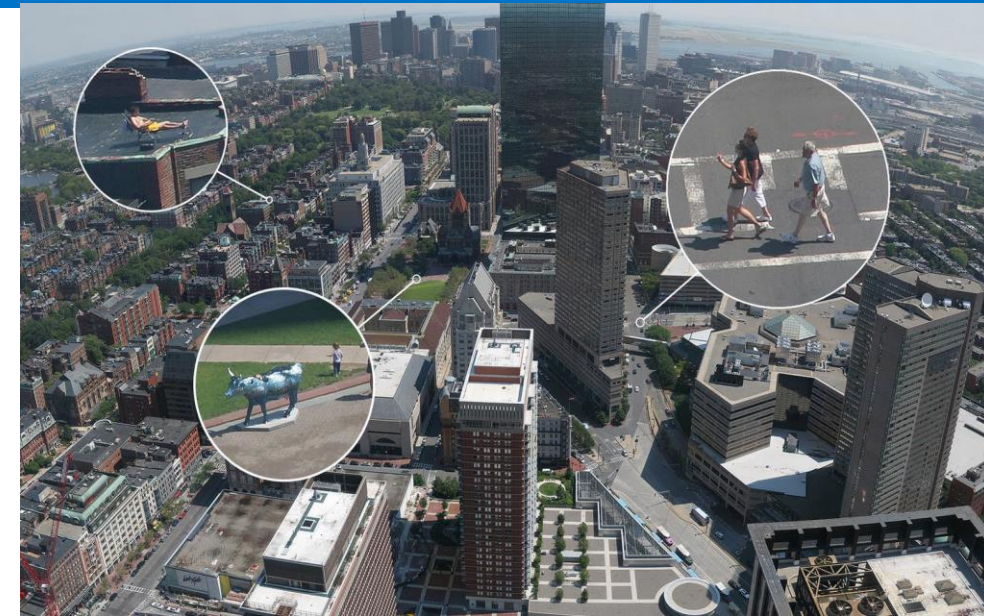
Media Entertainment

serves wide variety of industries

# Scalable City Surveillance



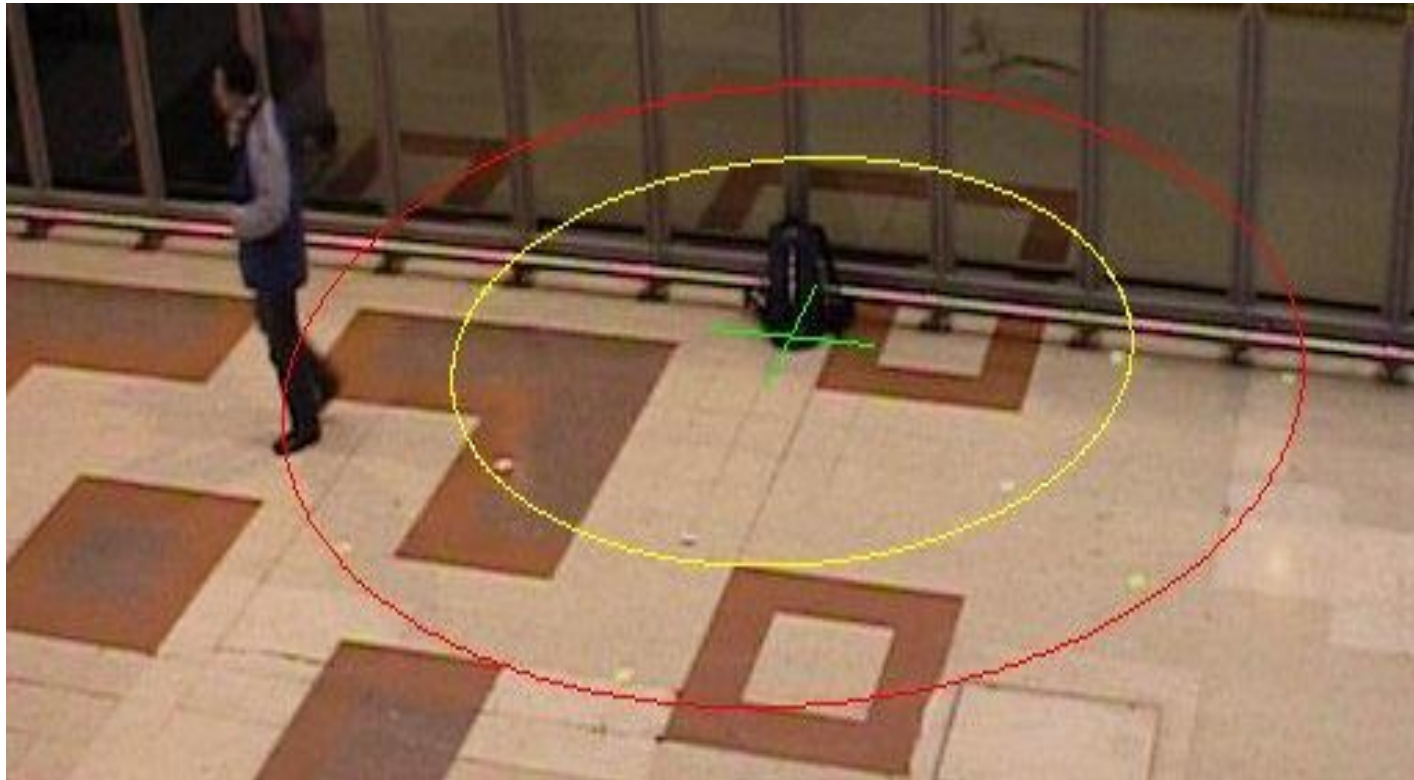
- Monitor traffic anomalies & act quickly to resolve problems
- Generate alerts for incidents requiring attention
- Generate alarms for crimes and suspicious activities
- Enormous amount of data to be processed
- Real-time alerts are essential



# Objects & Intrusion Detection

## Abandoned Luggage Detection

Detection of objects left behind in areas under surveillance areas under surveillance

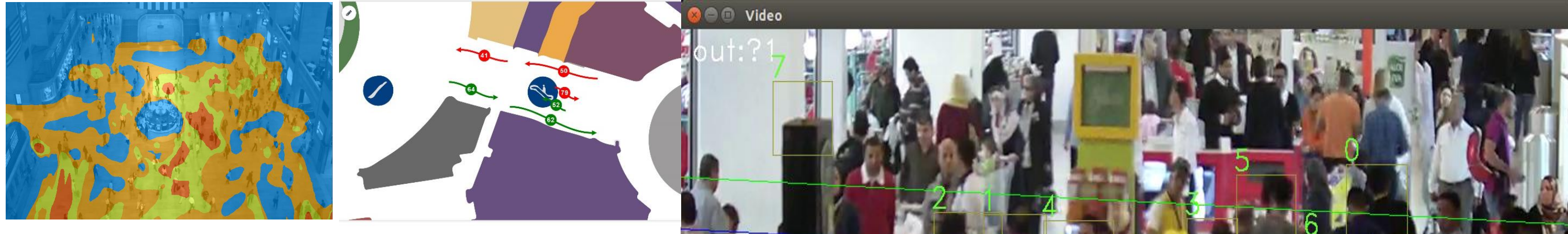


## Intruder Detection

Detection of Intruder in areas under surveillance



# Scalable Retail Analytics



**VIBE™** DASHBOARD LOG SEARCH **COUNT SEARCH** CAMERAS VIDEOS SETTINGS demo@avidbeam.com

**People Count Search**

Camera Name:

Start Time:

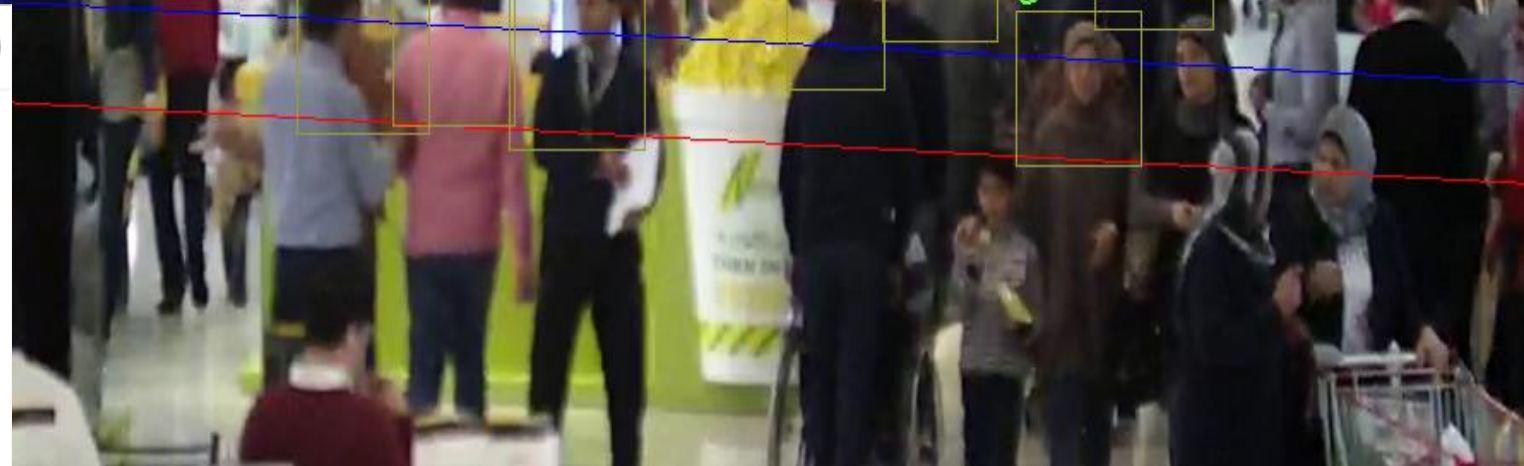
End Time:

**COUNT RESULTS (4)** 10 Second Minutes 15 Minutes 1 Hour

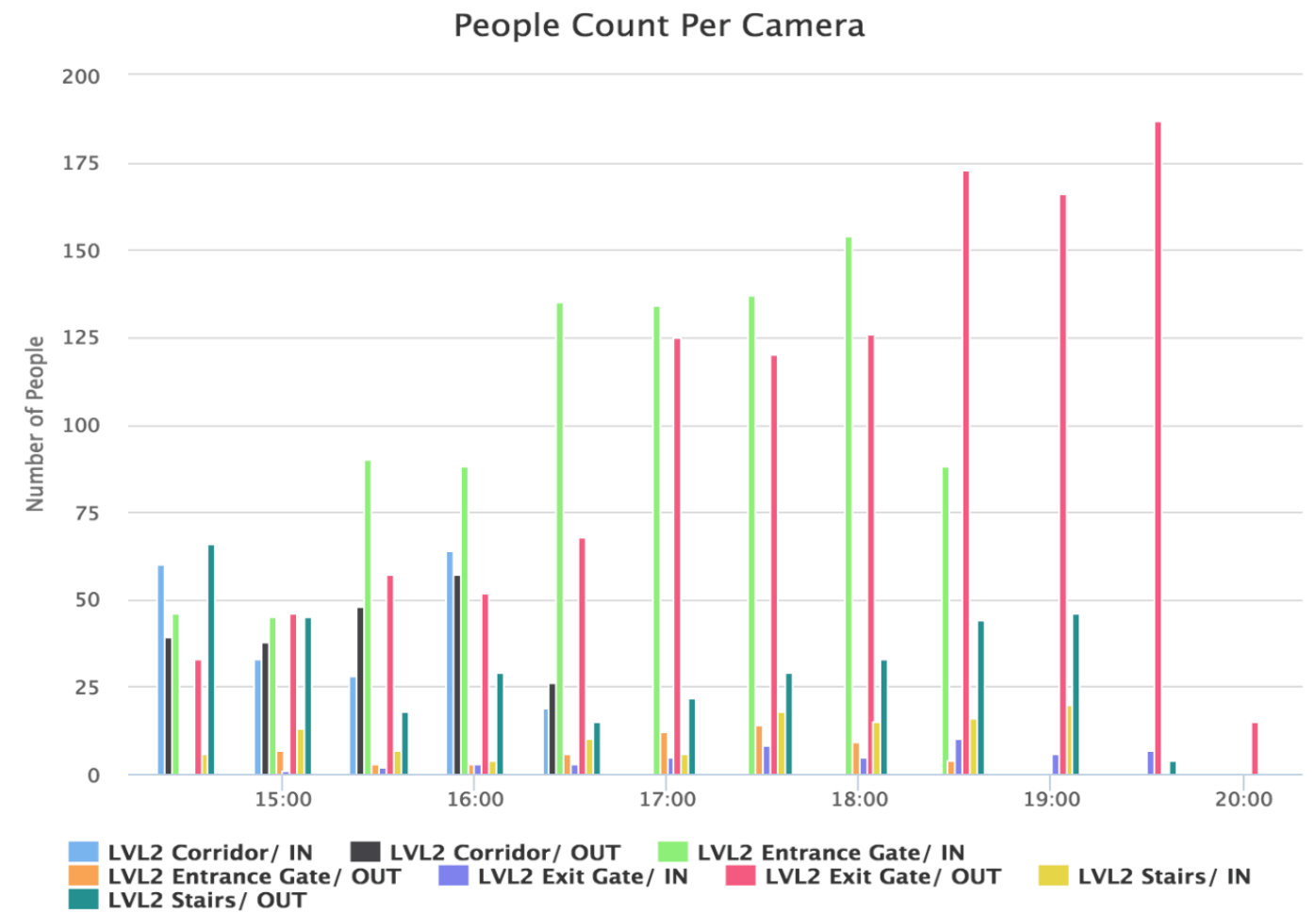
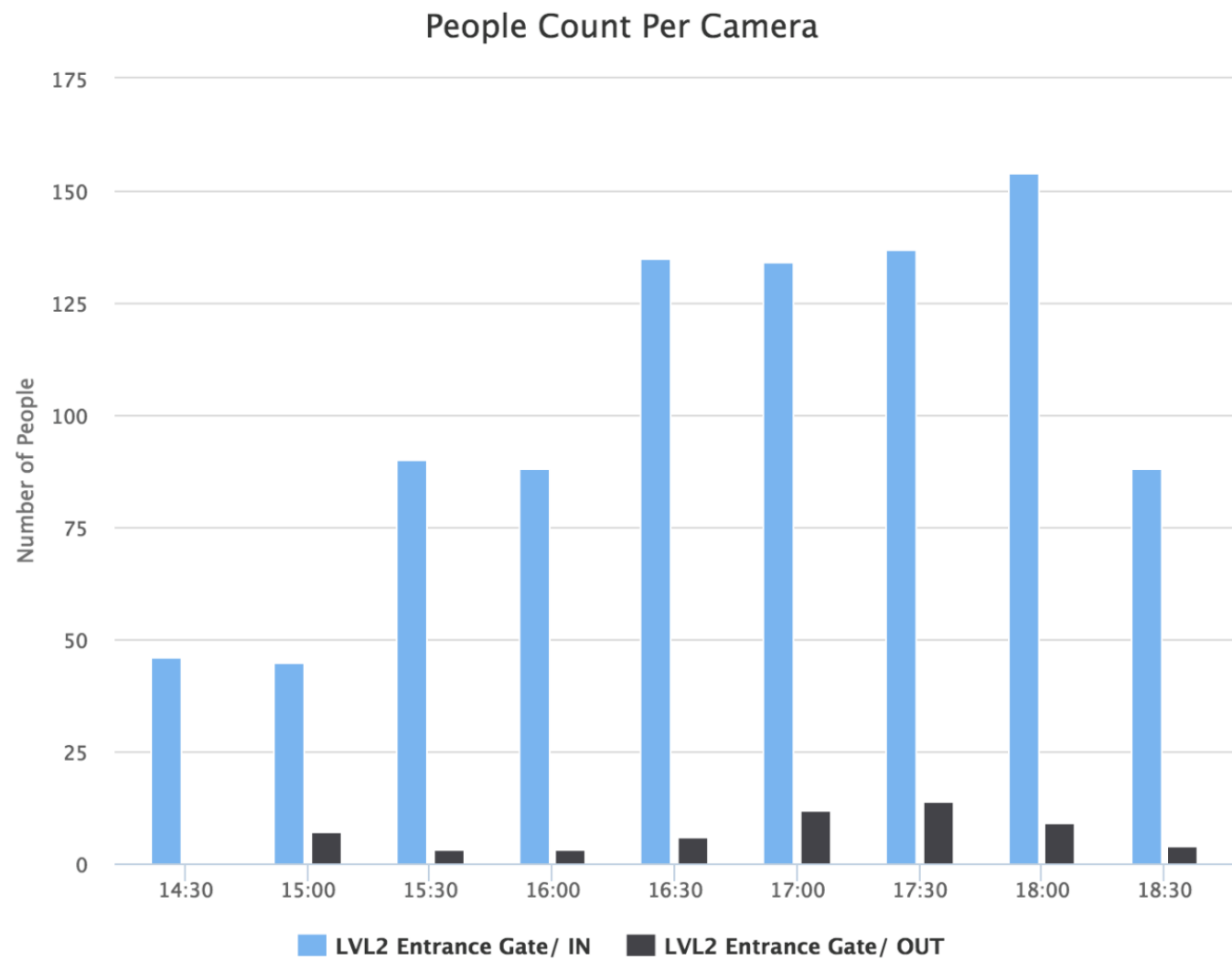
**Number of People In Per Camera**

Monday, Apr 11, 10:55  
Carrefour: 746

Time	Carrefour	FCourtKentaky	Mazaya Corridor	FCourtPizzaHut
10:40	100	50	50	100
10:45	350	100	100	150
10:50	550	150	150	200
10:55	746	200	200	250
11:00	900	250	250	300
11:05	1050	300	300	350
11:10	1200	350	350	400
11:15	1400	400	400	450
11:20	-	450	450	500
11:25	-	500	450	550
11:30	-	400	450	600
11:35	-	400	450	650
11:40	-	400	450	700



# Visual Representation of Visitors Count



# Detailed Generated Reports



- lists all cases of people detection in a provided area
- Spotted time, date and location
- Easily customized
- Ability to be automated



## Results



OUT : 3  
IN : 1  
DateTime : 11/04/2016 11:58:15  
MediaSource : MazayaCorridor

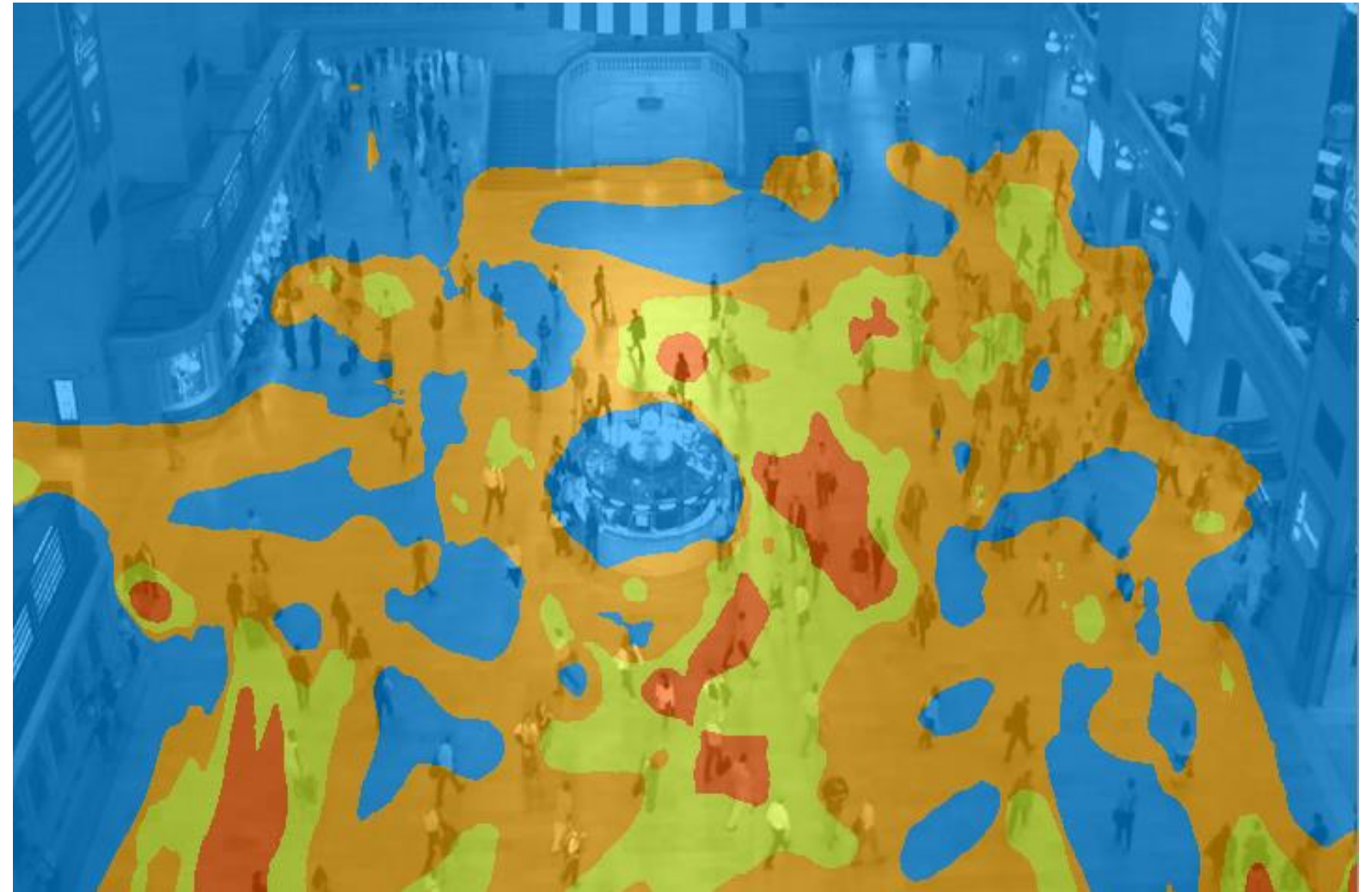


OUT : 3  
IN : 3  
DateTime : 11/04/2016 11:58:25  
MediaSource : MazayaCorridor



OUT : 5  
IN : 5  
DateTime : 11/04/2016 11:58:45  
MediaSource : MazayaCorridor

# Detecting Retail Heat Maps



Heat maps are used to show crowd distributions at different designated areas over a period of time



# Traffic Tracking & Analytics



VIBE

DASHBOARD

SEARCH

SETTINGS

QUERY Choose the criteria of the data you are looking for.

15/1/2015 09:00

س ل و ٩١٥

SEARCH

Licence Plate

Start Date

End Date

Location

Results (1) Choose the criteria of the data you are looking for.

List

Car	Licence Plate	Location	Status	Datetime	Spotted
-----	---------------	----------	--------	----------	---------



س ل و ٩١٥

main gate exit

Out

1/15/2015 2:25:22 PM

4

main gate exit

Out

1/15/2015 2:25:22 PM

parking lot 1 exit

Out

1/15/2015 1:43:30 PM

parking lot 1 entrance

In

1/15/2015 1:34:55 PM

main gate entrance

In

1/15/2015 10:03:26 AM



# Traffic Analytics & Reports



**ATUN™**

Hazem ▾

Data

Search

Analytics

Alerts

Playground

Jobs

Plugins

Media

Settings

Settings

## Search

Powered by: **SAP HANA**

License Plate:

## Results (10):

Governorate: Giza

id	Date	Weekday	Hour	Camera
1	2016-05-19	Thursday	7	2
2	2016-05-19	Thursday	12	10
3	2016-05-22	Sunday	6	2
4	2016-05-22	Sunday	12	10
5	2016-05-23	Monday		
6	2016-05-23	Monday		
7	2016-05-25	Wednesday		
8	2016-05-25	Wednesday		
9	2016-05-26	Thursday		
10	2016-05-26	Thursday		

**ATUN™**

Hazem ▾

Data

Search

Analytics

Alerts

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Settings

Settings

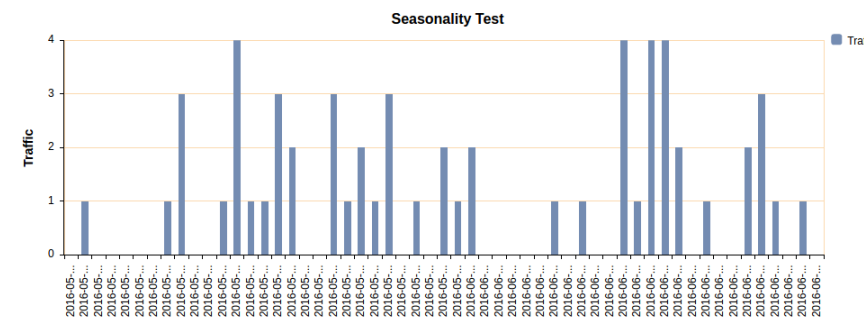
## Analytics

Powered by: **SAP HANA**

Governorate:

Select Algorithm:

Cycle: 4      Mode: Additive



**ATUN™**

Hazem ▾

Data

Search

Analytics

Alerts

Playground

Jobs

Plugins

Media

Settings

Settings

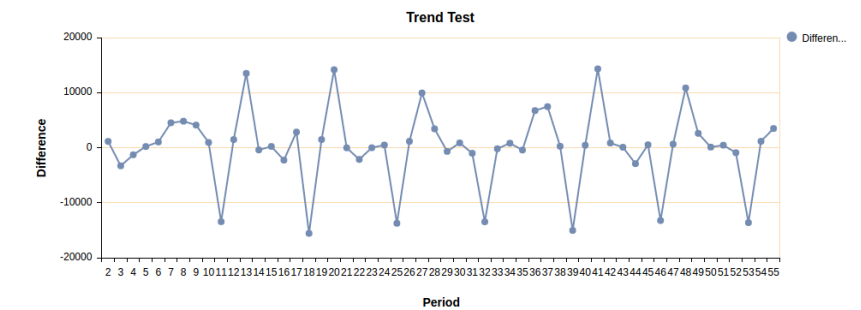
## Analytics

Powered by: **SAP HANA**

Governorate:

Select Algorithm:

Traffic has an increasing trend over time.



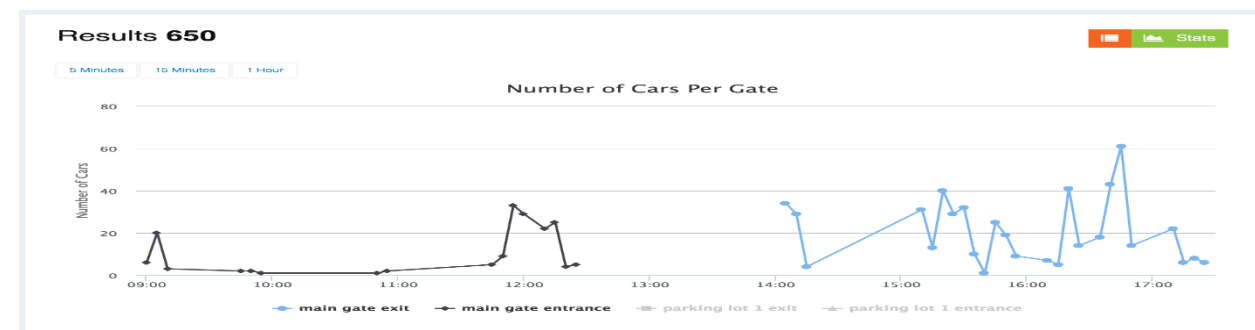
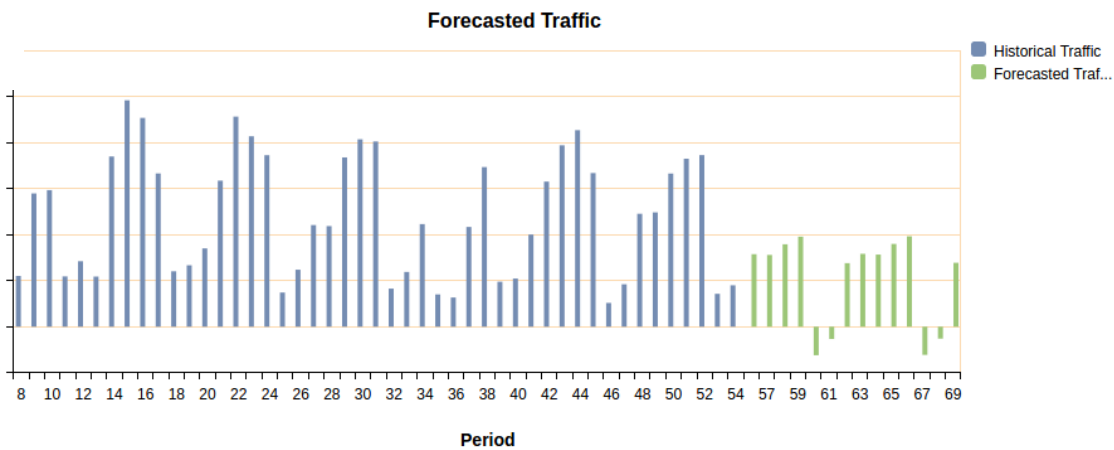
## CS

Powered by: **SAP HANA**

Governorate:

Select Algorithm:

The forecasted traffic for upcoming 14 days based on the historical data.



Playground

Jobs

Plugins

Media

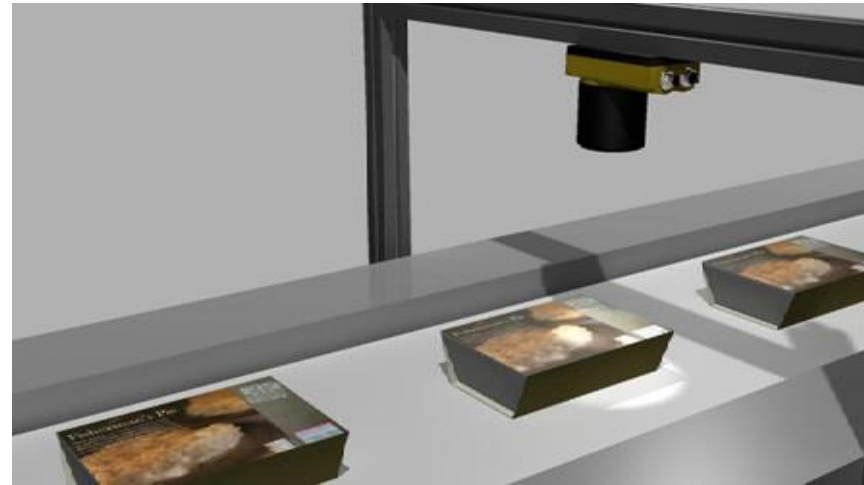
Settings

Settings

# Other Usage Scenarios



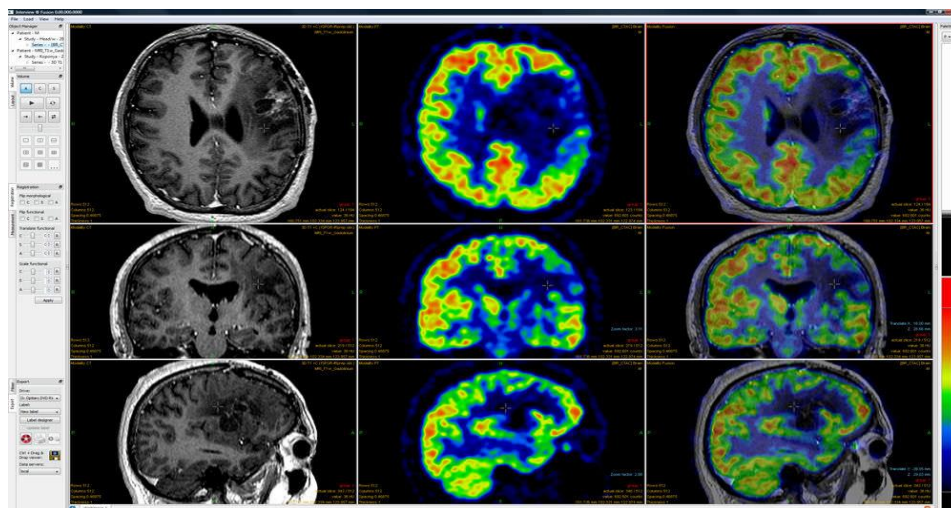
Manufacturing: Reduce Defects



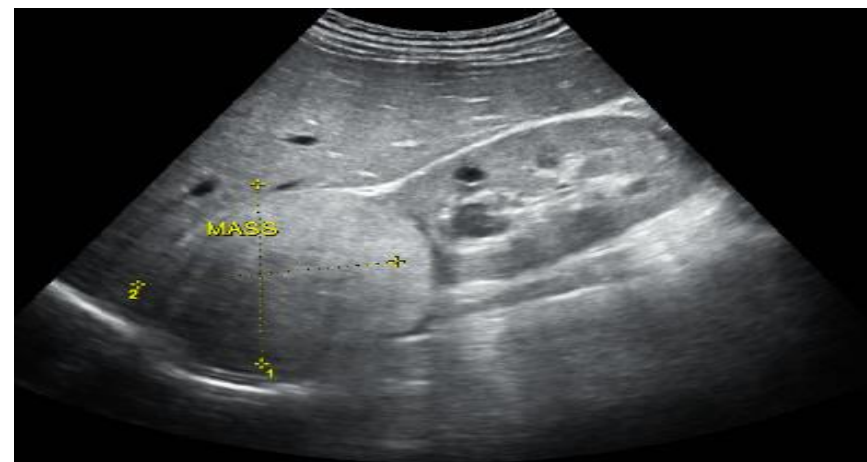
Manufacturing: Track parts



Sports: Soccer Analytics



Medical: Image matching/comparison



Medical: Detecting Masses



Entertainment: Inserting Ads



- Efficiency drives scalability and sustainability
- We are barely scratching the surface on video analytics applications
- Big Data tools pave the way for solving these mysteries and uncertainties



# Thank you



**AvidBeam**

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[info@avidbeam.com](mailto:info@avidbeam.com)



If you want good in your life,  
do good in your life.  
The energy you create is the energy that  
the universe returns to you.

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