

# **Video Analytic Platform for CCTV Security**

Midway Report

# Team

- **Investigators:**
  - Matthew Dailey, AIT  
Video analytics, software engineering
  - Mongkol Ekpanyapong, AIT  
Embedded systems, high-performance computing, networking
  - Supakorn Siddhichai, NECTEC  
Image processing, video surveillance systems
- **Engineers:**
  - Lakindu Boteja, AIT
  - Anjana Tissera, AIT
  - Jednipat Moonrinta, AIT
- **Consultants:**
  - Nikom Suvonvorn, PSU  
Open VMS development
  - Commercial VMS consultants (not yet needed)

# Cameras everywhere





Too Much Data





WALKING

GRAFFITI DETECTION

OBJECT DETECTION  
IN A CROWD

FACIAL DETECTION  
IN A CROWD

SLIP & FALL



TODAY'S COUNT=2648

Detection

Identification

Convergence

# Enter Video Analytics

# VMS Proliferation

- To manage video storage and analysis for multiple cameras, we use a **Video Management System (VMS)**:
  - Digital video recording
  - Live visual monitoring
  - Analytics



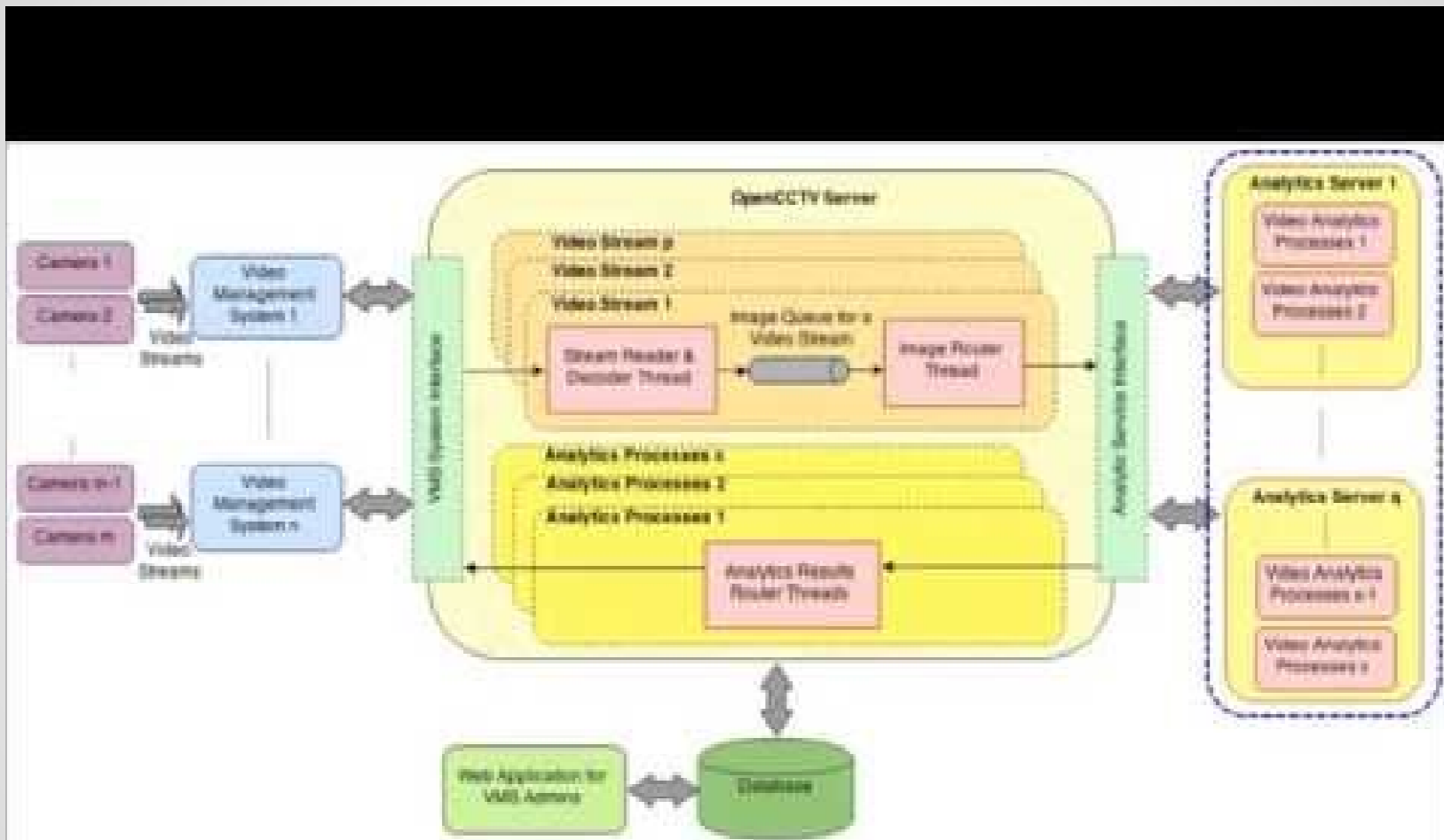
- VMSs work well. What is the problem?

The Open Platform Company

- Separate networks** are connected to **different VMSs**
- Your VMS **may not support** the analytic you want.
- You may want to apply **one analytic** to **many video streams** across different (nationwide?) VMSs and **consolidate the results**.

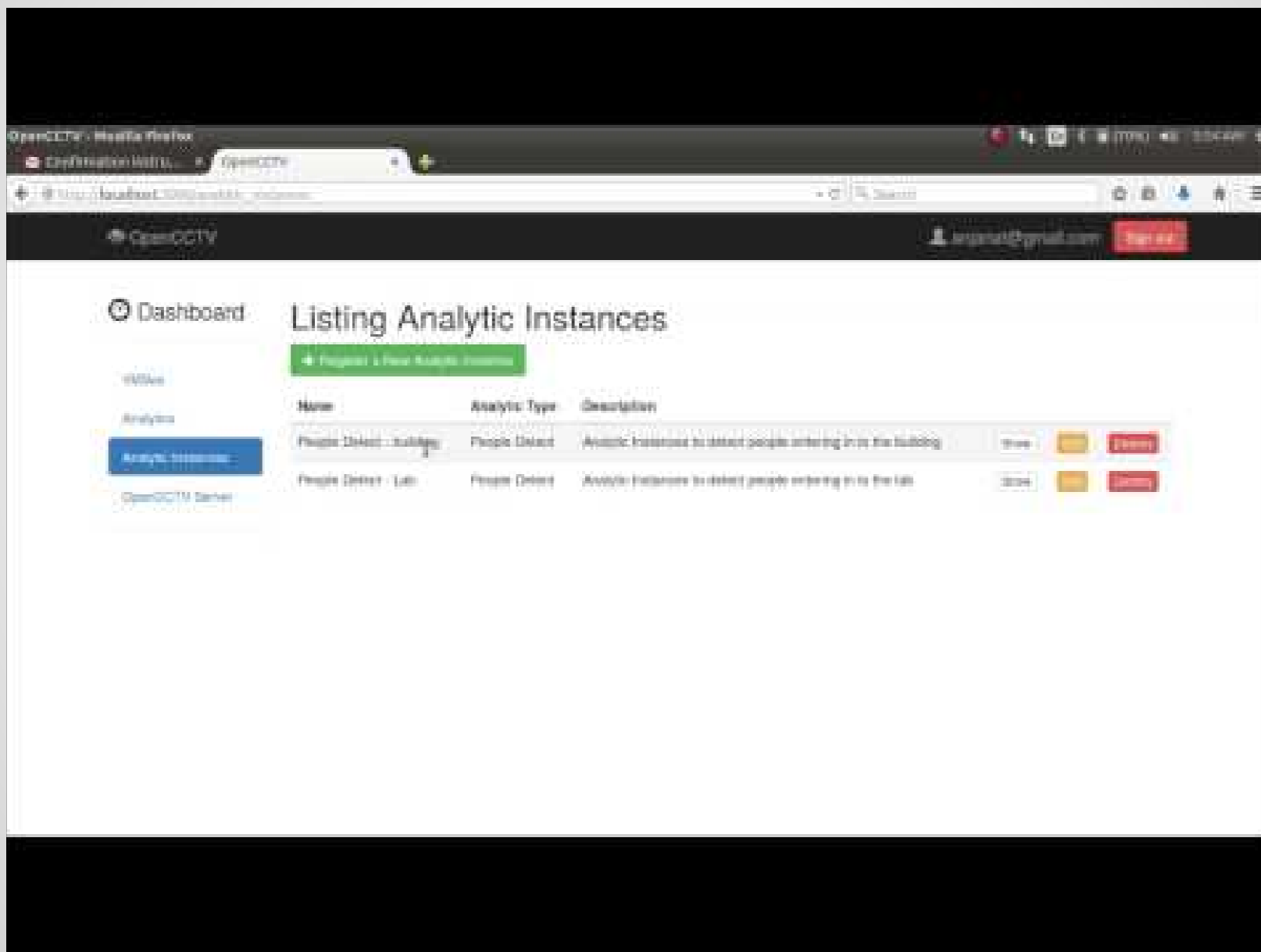


# Solution: OpenCCTV Design



Also, the analytics are no longer running inside the VMS process,

# Solution: OpenCCTV Demo



The screenshot displays the OpenCCTV web interface. At the top, there is a navigation bar with the OpenCCTV logo on the left and a user profile for 'argenat@gmail.com' with a 'Logout' button on the right. Below the navigation bar, the main content area is divided into a sidebar and a main panel. The sidebar on the left contains a 'Dashboard' link (selected) and other menu items like 'Video', 'Analysis', 'Analytic Instances', and 'OpenCCTV Server'. The main panel is titled 'Listing Analytic Instances' and features a green '+ Register a New Analytic Instance' button. Below this is a table with the following data:

Name	Analytic Type	Description	View	Stop	Delete
People Detect - Garage	People Detect	Analytic Instance to detect people entering into the building	View	Stop	Delete
People Detect - Lab	People Detect	Analytic Instance to detect people entering into the lab	View	Stop	Delete



# Original Objectives

- Design and develop Video Analytics Open Platform for CCTV integrating with four existing VMS such as Milestone, OpenVSS, Zoneminder, etc.
- Test the platform with Video Analytics systems such as AIT Video Analytics and NECTEC Video Analytics
- Design standard analytics/VMS connector APIs for the platform
- Develop custom connectors for each VMS

# Original R&D Plan

- Supported VMS (4 systems)
  - OpenVSS
  - Zonemider
  - Milestone
  - Teleste

# Original R&D Plan

- Supported Video Analytics (3 systems)
  - V-Watch
  - AIT abnormally detection
  - NECTEC analytics software (License Plate Recognition)

# Original R&D Plan

- Main deliverables:
  - At 6 months: 1 VMS (Milestone), 1 Analytics (AIT/NECTEC V-Watch), integrated, up and running, testing
  - At 12 months: complete system
- Data sources:
  - V-Watch: Din Daeng, Taling Chan, PTT-PL
  - Abnormal behavior detection: Cameras at AIT
  - License plate recognition: NECTEC database

# Original Project Timeframe

Goal	Months				
	1	2-4	5-6	7-9	10-12
1 Develop AnalyticsConnect system	X	X	X	X	
2.1 Study Milestone connector API	X				
2.2 Develop Milestone connector plugin		X			
3 Integration testing		X	X	X	X
4.1 Study other VMS connector APIs		X	X		
4.2 Develop other VMS connector plugins				X	
5 Acceptance testing			X	X	X



# Project Status

6-month goals are achieved:

- OpenCCTV core 80%
- Milestone connector 100%
- ZoneMinder connector 50%
- Abstract analytics connector 80%
- AIT analytics for smoke detection, pedestrian detection 100%

OpenCCTV project is open for all:

- Source code at [github.com](https://github.com)
- Home page on Google+
- Videos on YouTube

Remaining work:

- OpenVSS, Mirasys (?) connectors
- More analytics
- Real-world testing