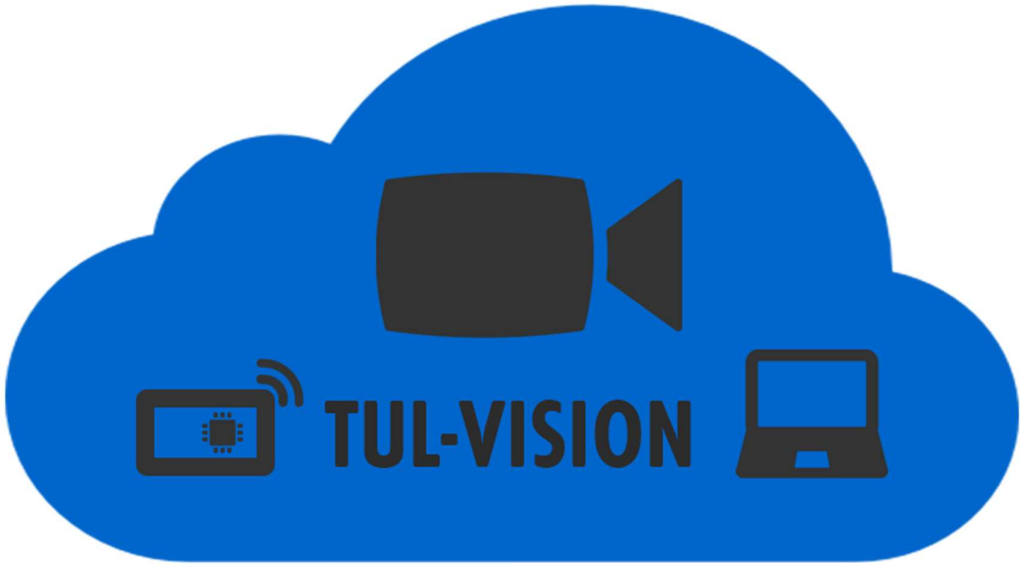
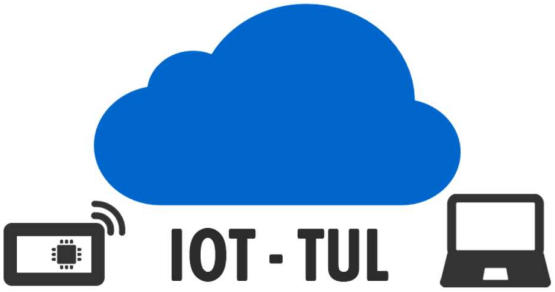
TUL-Vision – the advanced video-based surveillance system



Politechnika Łódzka



AIoT Developer InnoWorks

University Co-Creation

ADVANTECH

WISE-PaaS

IoT Edge Intelligence

An entry in "Advantech AIoT Developer InnoWorks 2019" contest

Authors

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Project background

At the time when terrorism is a serious threat to our society, many people worries about their safety in public places. A suspicious behaviour of the individuals only leads to heavy losses incurred by entrepreneurs and the state. Now, when the international community is showing signs of being fatigued by the growing threat of terrorism, it is time to place on the market our smart city solution, TUL – Vision.

Our problem

To prevent acts of terrorism and reassure the society about their safety we need easy to maintain advanced video-based surveillance system. System that will inform the security guard only about suspicious activities, letting him decide which one is truly dangerous for the society. System that will eliminate human error. System that will alleviate our fears of terrorism.

Our main problem will be monitoring public space more efficiently, analysing footages and creating easy to use user interface.

Our solution

Our project based on public space monitoring and IoT Edge, with which reporting of dangerous situations and things will be more effective.

When TUL – Vision detects some hazardous activities or baggage left alone, a short footage will be delivered to security guard or administration. This person will be able to decide if there is a threat for people crossing nearby. Why is it so important? Our solution saves the manpower to deal with real threat, not unsubstantiated one.

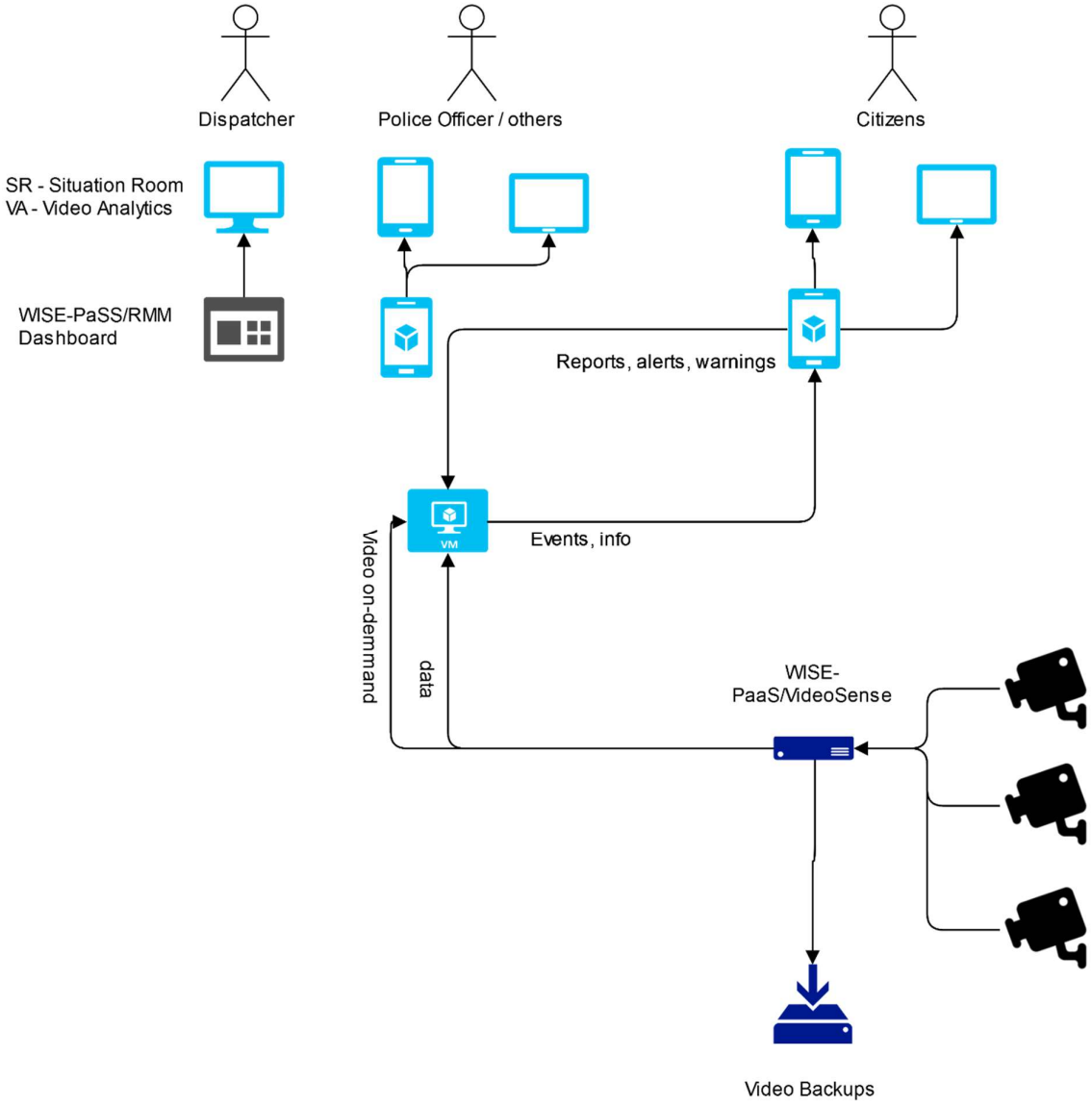
Architecture

Most important part of our solution is data processing on edge – thanks to this we can reduce the amount of data and inform only in case of suspicious situation. From edge to cloud we send only information about position of suspicious objects and situations. Dispatcher on demand can watch live stream video straight from camera and manually decide to raise alarm and inform law enforcement about circumstances. Moreover, every citizen can download our application and he can be inform about dangerous situation (based on GPS). Similar application was developed by Polish Ministry of Foreign Affairs, their app can help take care about Polish citizen abroad. (More information about applications “iPolak” from Polish Ministry of Foreign Affairs https://www.msz.gov.pl/pl/p/msz_pl/informacje_konsularne/ipolak/)

FPGA Video Accelerators https://www.advantech.com/products/fpga-video-accelerators/sub_43d339fb-73b4-4282-92bb-420aea6aa03d

VEGA-7000 https://www.advantech.com/products/2dc1acc7-591f-4c62-a9a3-25a90939ab8a/vega-7000/mod_14b5ba6b-0fe4-436e-9fa1-8e85d9606ebf

VEGA-3311 https://www.advantech.com/products/7002552e-4890-4c95-ace5-29ebdad7f992/vega-3311/mod_0d085fb1-f713-429b-9fcc-8f0c2c431adf


Dispatcher
Police Officer / others
Citizens
SR - Situation Room
VA - Video Analytics
WISE-PaSS/RMM
Dashboard
Reports, alerts, warnings
VM
Events, info
Video on-demmand
data
WISE-
PaaS/VideoSense
Video Backups