

Lodz University of Technology

# TUL – VISION Team

AIoT Developer InnoWorks Advantech 2019



# TUL - VISION

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# Idea

**TUL-Vision – the advanced video-based surveillance system designed for:**

- **Medium and large companies**
- **Public buildings**
- **Goverments**



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**What your project does and who your project is for?**

**Our project can help maintenance services and law enforcement secure buildings and react quickly in case of danger**





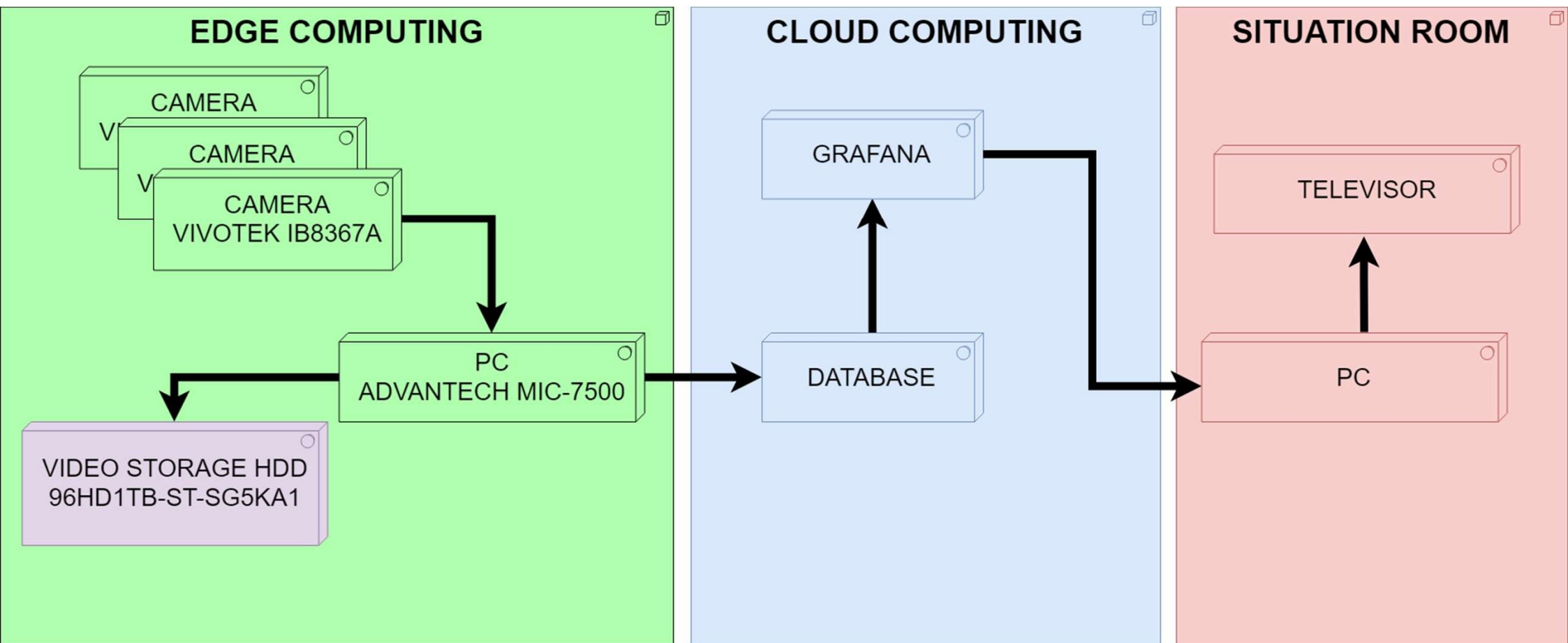
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# Current project status:

**TUL-Vision just is ready to deployment and can start support services in their daily dutes**

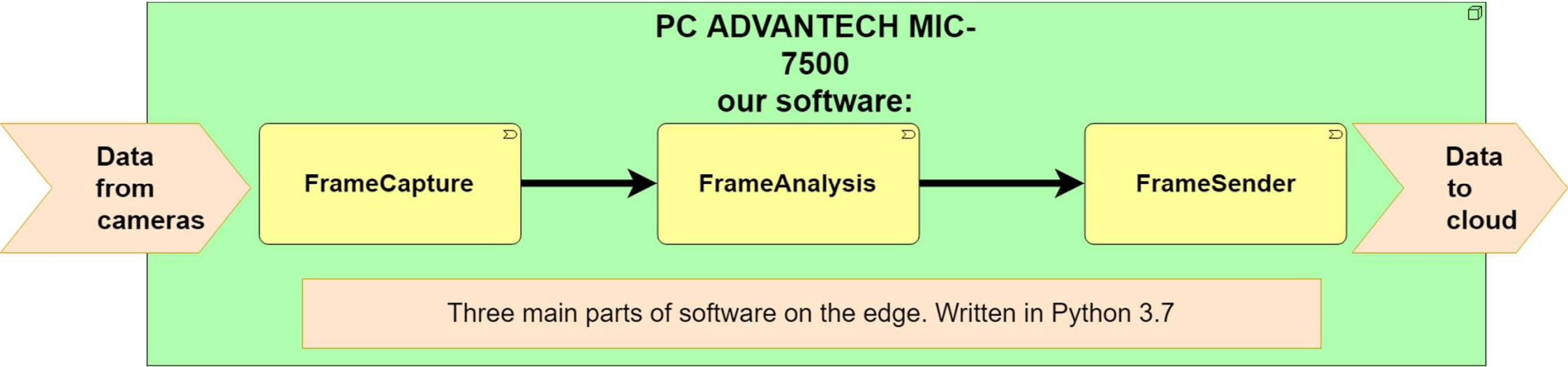


# Solution architecture (hardware)



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# Solution architecture (software)





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## What we do at the edge computing?

- Camera management
- Intercept video stream
- Storage video stream locally
- Image analysis
- Data filtration to offload the link between edge computer and cloud
- Send picture and text description to cloud
- Send piece of archived stream on demand



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# What we do in the cloud computing?

- Database - Storage picture and text data
- Grafana - Present statistics data and events at the dashboard
- IoT Hub - connect sensors, palmtops and other device to system
- TensorFlow - support statistic analyse an predict occurrences





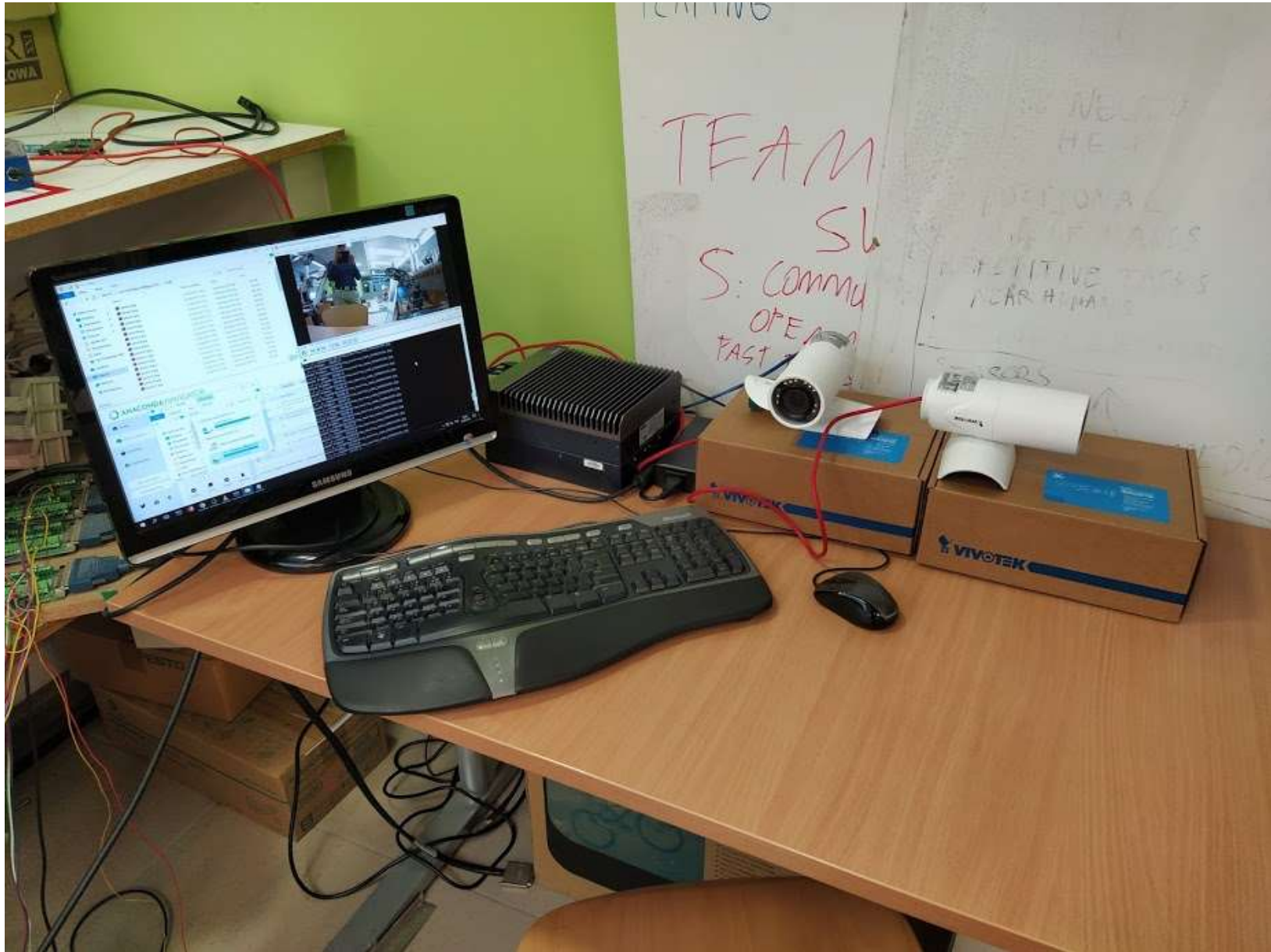
### Camera status

eventID	camName	time_sec	value	latitude	longitude	altitude
686.00	cam1	1.57 Tri	0	51.75	19.19	15.81
685.00	cam0	1.57 Tri	0	51.75	19.45	15.80
683.00	cam1	1.57 Tri	0	51.75	19.19	15.81
682.00	cam0	1.57 Tri	0	51.75	19.45	15.80
680.00	cam1	1.57 Tri	0	51.75	19.19	15.81
679.00	cam0	1.57 Tri	0	51.75	19.45	15.80

### OCCURENCES

id	statusText	timestampMsg	description
1	info	2019-09-15T20:28:14Z	anyone open emergency door No #2
2	info	2019-09-15T20:28:14Z	trash No #05 is full





# Hardware

- Cameras - Vivotek IB8367A
- Edge Intelligence Server
- Smartbands or mobile phones for duty services
- Graphics card to support AI



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# Development progres (June)

- Designing project architecture with Wise-PaaS
- Chosen Advantech hardware
- First version of Dashboard



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# Development progres (June-September)

- Designing project architecture with Wise-PaaS
- Chosen Advantech hardware
- First version of Dashboard
- Connect and configure CCTV
- Prepare Python workspace and do main software scripts
- Redesign WISE-PaaS Dashboard project
- Redesign database
- Setup database
- Connect DB to Grafana
- Visualise data on Grafana
- Add „occurrence” component
- Add "law enforcements" component
- Prepare solution to duplication and implementation
- Improve OpenCV alghoritms
- Add sensors to solution
- Add ML and prediction





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