ITEA Office
High Tech Campus 69 - 3
5656 AG Eindhoven
The Netherlands

T + 31 88 003 6136
E info@itea3.org
W www.itea3.org

ITEA 3 is a EUREKA strategic ICT cluster programme

Exploitable Results by Third Parties

15026 PS-CRIMSON

Project details

Project leader:	Christopher Geelen
Email:	christopher.geelen@vinotion.nl
Website:	www.ps-crimson.com

Name: Person Re-Identification in Different Cameras		
Input(s):	Main feature(s)	Output(s):
▪ Timestamped video streams from multiple cameras ▪ Bounding boxes of detected pedestrians ▪ UUID of each detected pedestrians	▪ The component is able to detect a person and find his/her previous appearances in the recordings from other cameras in a multi-camera network.	▪ For each queried pedestrian: all previous detections in different cameras, i.e. UUID of each previous detection. ▪ Timestamped moving trajectory of a pedestrian

UNIQUE SELLING PROPOSITION(S):	▪ State-of-the-art accuracy in person re-identification ▪ Real-time ▪ Robust to changes in person gait, appearance, pose, illumination and camera orientation. ▪ The trained neural network only minorly reduces its re-identification accuracy when applied on the multi-camera setups different from the training multi-camera setup.
INTEGRATION CONSTRAINT(S):	▪ Accurate timestamping of the captured video is required ▪ SW constraints: no ▪ HW constraints: NVIDIA GPU, 8 GB GPU RAM
INTENDED USER(S):	▪ ViNotion ▪ Police, surveillance and security operators ▪ Research community (via open source)
PROVIDER:	▪ TU/e (Eindhoven University of Technology)
CONTACT POINT:	▪ e.bondarev@tue.nl
CONDITION(S) FOR REUSE:	▪ Licensing

Latest update: January 13, 2020

Name: Geo-localization by Image Retrieval		
Input(s):	Main feature(s)	Output(s):
▪ Database of geo-tagged city/rural images ▪ Query image for geo-localization	▪ The component is able to detect the latitude and longitude of a taken photo with a mean accuracy of 7 meters.	▪ Latitude and longitude of the place from which the image was taken.

UNIQUE SELLING PROPOSITION(S):	▪ High geo-localization accuracy due to of advanced feature extraction by neural network ▪ Robust to varying illumination conditions
INTEGRATION CONSTRAINT(S):	▪ Requires geo-tagged image database of the region ▪ Hardware: no ▪ Software: no
INTENDED USER(S):	▪ CycloMedia ▪ Police, emergency services ▪ Research community (via open source)
PROVIDER:	▪ TU/e (Eindhoven University of Technology)
CONTACT POINT:	▪ e.bondarev@tue.nl
CONDITION(S) FOR REUSE:	▪ Licensing

Latest update: January 13, 2020

Name: 3D Smart Model and 3D Scene Application		
Input(s):	Main feature(s)	Output(s):

▪ Strata plans with detail floor plan and site plan –on paper (PDF), CAD drawing or BIM model
▪ Street level and/or Aerial LiDAR
▪ Parcel boundary
▪ Building footprints
▪ DEM (Digital Elevation Model)
▪ Ortho and/or Oblique high-resolution imagery
▪ Third party data integration through ETL (extract, transform and load) or API
	▪ Conversion workflow established which converts paper strata plans to 3D smart model using digitization or COGO process
	▪ Conversion workflow established which converts digital strata (condominium or unit) plan (CAD or BIM) to 3D smart model
	▪ Creation workflow established allowing creation of 3D smart model in which both the building and units are physically correct (correct building and unit measurements) and spatially accurate (accurate point on the earth for each unit).
	▪ Creation of 3D Transportation Model
	  ○ Train stations
	  ○ Railway and highway
	▪ 3D Web application with visualization and analytic functions that includes:
	  ○ 3D textured complex buildings down to unit level
	  ○ Link to building and unit information
	  ○ Floor and unit filter
	  ○ 3D color rendering on any unit attribute
	  ○ Shadow and sunshine analysis
	  ○ 3D view analysis
	  ○ 3D zoning and building height capacity analysis
	  ○ 3D routing and wayfinding (evacuation routes & emergency responder routing)
	  ○ 3D flood zone analysis
	  ○ 3D underground water and sewer network
		▪ 3D Smart model in Esri Geodatabase
		▪ I3S, Indexed 3D Scene Layer
		▪ Web based 3D Scene application with surrounding Neighborhood
		▪ Hosting services of the 3D Smart model and 3D Scene
		▪ Analytic capabilities to aggregate data held and analyzed in the scene – impact analysis

UNIQUE SELLING	▪ Highly accurate: physically, spatially and visually correct	

PROPOSITION(S):	▪ Advanced methodologies for converting residential or commercial plans (condo/strata/leasehold/rental) into 3D Smart models.
	▪ 3D transportation models.
	▪ Analytics to assist government agency decision making and response
	▪ Scalable, automated and innovative process to allow creation of 3D complex mode for large urban areas in a timely fashion
	▪ Ability to use the scene as a digital twin spanning other users groups such as Transportation Planners, Building & City Planning, Engineering Services etc.
	▪ I3S was adopted as an OGC Community Standard
	▪ 3D Web Application with visualization and analytic functions
	▪ 3D Web scene platform with proven partners technology integration
	  ○ ViNotion camera and real-time crowd traffic
	  ○ Sorama acoustic sensor and real-time traffic heatmap
	  ○ CycloMedia street level LiDAR and 3D texture mesh
	  ○ Atos Smart City platform (Unity)

INTEGRATION CONSTRAINT(S):	▪ Streaming of massive data (LiDAR, Complex 3D model, real-time traffic) ▪ Control on data and information per difference level of users
INTENDED USER(S):	▪ Local government: planning and public work ▪ Public safety: police, fire, ambulance, emergency services ▪ Public transportation authority ▪ Assessment organization ▪ Developer, bank and Insurance ▪ Value-added business partner, system integrator ▪ General public
PROVIDER:	▪ Esri Canada Limited
CONTACT POINT:	▪ Michael Lomax – mlomax@esri.ca ▪ Elton Yuen – eyuen@esri.ca
CONDITION(S) FOR REUSE:	▪ Subscription and/or license with maintenance ▪ Professional services to support configuration and analytics from the scene

Latest update: January 22, 2020

Name: Street Level 3D Textured Mesh Process		
Input(s):	Main feature(s)	Output(s):
▪ Geometrically correct street level panoramic images ▪ Geometrically correct street level Lidar point clouds ▪ Accurate sensor trajectories	▪ Fully automated ▪ Scalable	▪ Street Level 3D Textured Meshes

UNIQUE SELLING PROPOSITION(S):	▪ Highly accurate ▪ Visually correct ▪ Fully automated process ▪ Scalable to large (urban) areas
INTEGRATION CONSTRAINT(S):	▪ Inputs as specified ▪ Platform for 3D display and manipulation (e.g. Unity or Esri platform)
INTENDED USER(S):	▪ Emergency services ▪ Cities ▪ Planners
PROVIDER:	▪ CycloMedia Technology B.V.
CONTACT POINT:	▪ bbeers@cyclomedia.com
CONDITION(S) FOR REUSE:	▪ Commercial product

Latest update: January 14, 2020

Name: Detecting Public safety risks using sound cameras		
Input(s):	Main feature(s)	Output(s):
▪ Timestamped audio streams from multiple sound cameras ▪ Classification of aggressive sound	▪ Sound cameras listen to the specific surrounding and are able to detect and classify aggressive behavior using sound classification software. ▪ Detection and event alarms can be used to inform police or other public authorities through a user platform (e.g. Unity or Esri platform)	▪ Metadata information ▪ Short (max 2 minutes) pre- and post alarm audio recording.

UNIQUE SELLING PROPOSITION(S):	▪ Creating situational awareness using sound ▪ Robust localization and classification of sound sources ▪ Real-time ▪ Privacy robust solution using only metadata and short audio clips as output ▪ Multiple classifiers can be used to trigger events (Aggression, car alarms, gunshots, vehicle detection, drones). ▪ Integration with multiple platforms through API
INTEGRATION CONSTRAINT(S):	▪ Integration through API ▪ SW constraints: no ▪ HW constraints: NVIDIA GPU, 8 GB GPU RAM
INTENDED USER(S):	▪ Police, surveillance and security operators ▪ Municipalities ▪ Traffic monitoring
PROVIDER:	▪ Sorama B.V.
CONTACT POINT:	▪ paul.van.dooren@sorama.eu
CONDITION(S) FOR REUSE:	▪ Hardware (sound cameras) ▪ Licensing (API and classification software)

Latest update: January 15, 2020

Name: Visual-based public safety event detection		
Input(s):	Main feature(s)	Output(s):
▪ Video stream from surveillance camera	▪ Detect events of loitering, crowdedness and running crowds to classify potential public safety hazards. ▪ Monitor presence and counts of pedestrians and vehicles in embedded hardware. ▪ Alarms can be used to inform police or other authorities through a user platform.	▪ Public safety events over API ▪ Presence/counts over API
UNIQUE SELLING PROPOSITION(S):	▪ Only video analytics with embedded, on-the-edge hardware. ▪ Public safety events create situational awareness. ▪ Low-latency and real-time public safety events, accessible from any (VMS) platform. ▪ Video is completely anonymized through privacy-by-design. ▪ Detections robust against lighting conditions, appearances, and installation angles.	
INTEGRATION CONSTRAINT(S):	▪ Camera calibration is required for accurately calculate speeds. ▪ Camera quality should be sufficient for local light conditions.	
INTENDED USER(S):	▪ Public safety observation rooms ▪ Crowd management offices ▪ Smart City Platforms (e.g. MyCity or Esri platform)	
PROVIDER:	▪ ViNotion B.V.	
CONTACT POINT:	▪ sales@vinotion.nl	
CONDITION(S) FOR REUSE:	▪ Commercial product.	
	Latest update: January 27, 2020	

Name: MyCity - User Platform with Data Standardization and Data Integration		
Input(s):	Main feature(s)	Output(s):
▪ Sensor location and orientation ▪ Video stream from surveillance camera ▪ Video-based public safety events over API ▪ Video-based presence/counts over API ▪ Timestamped audio streams from multiple sound cameras ▪ Sound metadata information ▪ Short (max 2 minutes) pre- and post alarm audio recording.	▪ Standardize location and orientation of sensors according to global GIS standards ▪ Standardize presence of classified actors in a 3D environment ▪ Standardize events according to European Data standards (ETSI NGSI-LD) ▪ Data fusion to obtain metadata like noise levels, traffic flows and others ▪ Pass-through video / audio metadata streams to a 3D visualization environment ▪ Integration of FIWARE and Esri GeoEvent	▪ Standardized multimodal sensor location and orientation over API ▪ Standardized multimodal actor presence over API ▪ Standardized multimodal events over API ▪ Standardized metadata on individual events and aggregates on areas ▪ Privacy-by-Design video / audio metadata streams

UNIQUE SELLING PROPOSITION(S):	▪ Open (ETSI, OGC) standards, open (extendible) architecture ▪ Standardized data fully compliant to EU minimal interoperability mechanisms (SynchroniCity) ▪ Low-latency delivery of input information to output ▪ Cloud-native – fully scalable
INTEGRATION CONSTRAINT(S):	▪ Data inputs should be mappable to ETSI datamodels ▪ Sufficient bandwidth for input metadata video / audio streams present
INTENDED USER(S):	▪ Cities / municipalities ▪ 3rd party developer
PROVIDER:	▪ Atos NL
CONTACT POINT:	▪ jan-joost.vankan@atos.net
CONDITION(S) FOR REUSE:	▪ Commercial product.

Latest update: January 30, 2020

Name: MyCity – 3D Crowd Monitoring		
Input(s):	Main feature(s)	Output(s):
▪ Standardized multimodal sensor location and orientation over API ▪ Standardized multimodal actor presence over API ▪ Standardized multimodal events over API ▪ Standardized metadata on individual events and aggregates on areas ▪ Privacy-by-Design video / audio metadata streams ▪ Street Level 3D Textured Meshes ▪ 3D GIS Model	▪ Integrate 3D GIS Model with 3D Textured Meshes ▪ Fuse data of actors, events and metadata for visualization ▪ Pass-through of Privacy-by-Design video / audio metadata streams ▪ Alerting and feedback functionality	▪ Combined visualization 3D GIS and 3D textured meshes (toggled) ▪ Visualize multimodal information on actors, events and metadata in one overview (single-pane-of-glass) ▪ Privacy-by-Design video / audio metadata streams ▪ Visual feedback on location and type of events in 3D environment ▪ Feedback report per event

UNIQUE SELLING PROPOSITION(S):	▪ Crowd monitoring in 3D environment with sensor fusion ▪ Events generate unobtrusive alerts per sensor ▪ Direct feedback on events can be logged for future evaluation ▪ Extendible to scenario analysis ▪ Low-latency delivery of input information to output
INTEGRATION CONSTRAINT(S):	▪ Data inputs should be mappable to ETSI datamodels ▪ Sufficient bandwidth for input metadata video / audio streams present
INTENDED USER(S):	▪ Cities / municipalities ▪ Public safety observation rooms ▪ Crowd management offices ▪ Urban planning
PROVIDER:	▪ Atos NL
CONTACT POINT:	▪ jan-joost.vankan@atos.net
CONDITION(S) FOR REUSE:	▪ Commercial product.

Latest update: January 30, 2020