



Surveillance and video analytics: work accomplished from 2012 to 2016

*ERNICIP Thematic Group
Video Surveillance for
Security of Critical
Infrastructure*

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Acknowledgements

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1. Introduction

In 2012 it was decided to create a thematic group for video analytics and surveillance within the ERNCIP framework. This group would fall under the auspices of the Joint Research Centre (JRC) and would endeavour to form the basis of European standards for video analytics within the security sector. Membership of this group includes government, academia and industry but does not preclude any other expert or person with knowledge or expertise in this field who may add value to the thematic group.

The initial group was formed with representatives from eight European countries: Belgium, France, Germany, Italy, the Netherlands, Sweden, Switzerland and the United Kingdom

The representatives from the above countries agreed to give their time and effort gratis with the intention of putting structure behind a technological area that impacts directly on the critical infrastructure of all countries in the European Union, with a view to maintaining a standard approach to evaluation and to enhancing opportunities for European suppliers.

This short report outlines the work undertaken by the thematic group up to August 2016.

1.1. Main tasks

The main task of the group was to develop a common approach to the testing and evaluation of video analytics standards for the purposes of security and to encourage the development of innovative technology in this area. Specific requirements would be to develop common methods and approaches to confirm that solutions comply with requirements.

The group has analysed the use of video surveillance technologies in the context of the protection of critical infrastructure. A report identifying a number of surveillance use cases clustered around several application areas was produced. A major issue that has been identified by the group concerns the performance of video surveillance solutions. Consideration was given to the collation of experiences from industry and academia, with their commentary on their successes or failures in a given scenario. However, a consistent form of validation of such claims is needed, but the group identified that there is no central body or authority that is able to do this. Since the inception of this thematic group, this has been the most debated issue with all representatives agreeing it is needed. The most common and repeated reasons for the lack of such a validation body appear to be legislative, financial and cultural, with differing privacy laws throughout Europe and, more importantly, differing interpretations of the legislation.

It was identified that there was a clear lack of universal data sets that could be utilised for research purposes by industry or academia, and that this issue must be addressed. The existing databases, datasets and sources of data that are used to evaluate video analytics were identified.

2. Results

As a result of the above, the thematic group produced five main deliverables to assist and enhance the research and work of industry and academia in the field of video analytics, which will in turn assist the custodians of critical infrastructure sites and law enforcement agencies responsible for their security.

The deliverables are:

1. an end-user guide to video analytics [¹];
2. a report on current data sets within Europe [²];
3. a report on standards within video analytics for industry and academia [³];
4. a report on factors that influence the performance of video analytics [⁴];
5. a report on use cases for video analytics [⁵].

All draft deliverables were promulgated around the thematic group and to the video analytics community to ascertain if they were considered valuable for the development of video analytic systems and products and also end users. Anecdotal reports have proved not only that members of the community find the reports assist them in ensuring they provide the most viable product to the end user but also that they are vital for the planning of procurement of video analytic systems by the critical national infrastructure custodians.

All five deliverables are currently on or in the process of being uploaded to the JRC website, with thematic group members ensuring that the work of this group is discussed at relevant conferences and workshops throughout Europe.

3. Further work

In its final meeting, the group decided that while all five deliverables would have a significant impact upon the creation of video analytics products and would be invaluable to the end users, these outputs could be enhanced further with by-products that would greatly assist the community and help to increase security at critical infrastructure sites.

It was agreed that the focus of the thematic group in the next phase would be the consolidation of the recent direction.

The suggestions for the specific tasks to be undertaken in the future include the following:

1. Collection, understanding and sharing of use cases
 - (a) Survey critical infrastructure practitioners and law enforcement agencies (LEAs) to determine what video content analysis (VCA) solutions they need;
 - (b) Validate a specific set of use cases, among them use cases concerning counter terrorism;
 - (c) Draft a survey of all seventh framework programme (FP7) and Horizon 2020 VCA-related projects, asking questions pertaining to what was produced such as type of analytic/data set used, how it was tested and to what level of calibration;
 - (d) Publish a series of case studies from research and end users outlining their experience with VCA, perhaps in parallel with some site visits.
2. Prepare an infrastructure for relevant data sets
 - (a) Compile a manual for creating viable data sets;
 - (b) Compile a manual for collecting and maintaining oversight of viable datasets.
3. Prepare a procurement framework
 - (a) Create certification procedure of video analytics products and services for the EU.
4. Create EU standards for surveillance of critical infrastructure
 - (a) Specifically for metadata standards.

It is anticipated that the above suggestions can be coalesced into four distinct work packages.

References

- (¹) ERNCIP Thematic Group Video Analytics and Surveillance, 'Video analytics adoption: key considerations for the end-user', JRC, Ispra, 2016, JRC102121.
- (²) ERNCIP Thematic Group Video Analytics and Surveillance, 'Access to data sets', JRC, Ispra, 2016, JRC103341.
- (³) ERNCIP Thematic Group Video Analytics and Surveillance, 'Video surveillance standardisation activities, process and roadmap', JRC, Ispra, 2016, JRC103650.
- (⁴) ERNCIP Thematic Group Video Analytics and Surveillance, 'Surveillance and video analytics: factors which influence the performance of surveillance systems', JRC, Ispra, 2015, JRC100399.
- (⁵) ERNCIP Thematic Group Video Analytics and Surveillance, 'Surveillance use cases: focus on video analytics', JRC, Ispra, 2015, JRC100401.
- (⁶) D. Lyon, *Surveillance studies: An overview*, Polity, 2007.

List of abbreviations and definitions

Term	Definition
Surveillance	The focused, systematic and routine attention to personal details for purpose of influence, management, protection or direction [6]. In the context of ERNCIP, surveillance is only covered when used for safety and security purposes.
Video analytics	(Video content analysis) is processing of video to determine spatial and temporal aspects of and relations between objects in a scene. In this report, threat assessment, i.e. generating alerts, is considered to be a separate process.

Abbreviation	Full text
ERNCIP	European Reference Network for Critical Infrastructure Protection
LEA	law enforcement agency
TG (VAS)	thematic group (video analytics and surveillance)
VCA	video content analysis

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