

# InVID - Verification of Social Media Video Content for the News Industry



Issue 3

December 2018

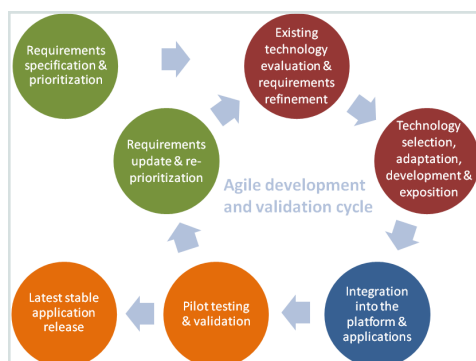
InVID project  <https://www.invid-project.eu>

## Welcome!

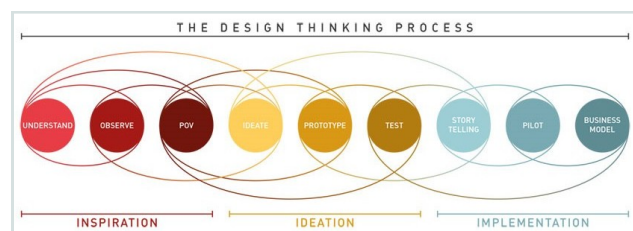
Welcome to the third issue of the InVID Newsletter. The aim of this issue is to inform the community, our readers and supporters, about the complete and validated versions of the integrated InVID technologies for media collection and verification. Initially, we outline the adopted software development methodology. Subsequently, we present the latest versions of the InVID tools, namely, the Visual Analytics Dashboard, the InVID Verification Plugin, the InVID Verification Application and the InVID Mobile Application. Following, we report on the consortium's dissemination activities over the last year of the project - activities that targeted both the relevant industry and the research / academic community - and the project's collaborations. The current issue ends with details about the InVID consortium and how to get in touch with us.

## Progress Summary

Over the last 12 months, the progress made in InVID was fully aligned with the work-plan of the project. Based on the utilized agile development and innovation methodology (see figure at the bottom) the members of the InVID consortium further advanced, tested and validated the individual analysis components and the integrated technologies of the project that address different aspects of the journalistic workflows for the verification of user-generated content. Moreover, guided by the adopted design thinking process (see figure on the right) and the feedback that we got from a large group of testers that are external to the project consortium regarding the efficiency of the InVID tools, we secured that the developed technologies meet the analysis requirements of the media verification community and fulfill the innovation goals of the project. The outcomes of this effort include four integrated solutions that assist the collection, management and verification of newsworthy user-generated content. During



*The steps of the adopted agile methodology for the development and validation of the InVID technologies.*



*The steps of the adopted design thinking methodology for the development and exploitation of the InVID technologies.*

*Courtesy © Paris d.school*

the last year in InVID we also put an effort towards the dissemination and exploitation of these results. As a consequence, our InVID Verification Plugin is now used by more than 8.300 media verification experts. The wide adoption of the InVID technologies - even by large media organizations - combined with the consortium's plans for technology maintenance and exploitation in the future, ensure the seamless operation of the InVID tools and their successful entrance in the market as a complete and effective solution for media verification.

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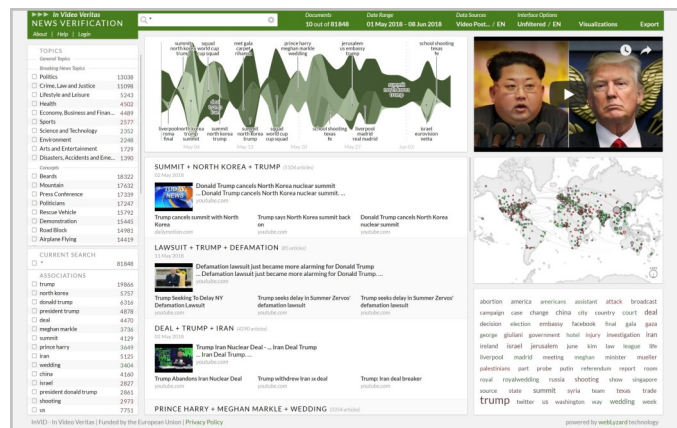
## InVID Integrated Tools



### Visual Analytics Dashboard

The Visual Analytics Dashboard of InVID is an integrated solution for newsworthy video collection and management. It supports story detection across several social media channels including Twitter, YouTube, DailyMotion and Vimeo. The identified emerging stories are presented also in terms of their geographic distribution, allowing users to gain insights into global information flows.

For each detected story the tool applies a newsworthy video identification process. The collected media are submitted to an automatic metadata extraction and indexing procedure, and the available information (including both the collected media and the extracted metadata) is shown to the user through the visualization functionalities of the tool. Video context exploration is enabled via the embedded video player of the tool and supported at both video- and video-fragment-level using a multimodal (text- and visual-based) searching mechanism. Any

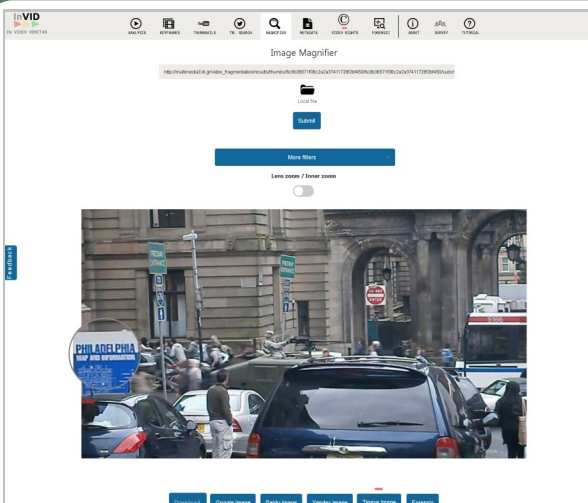


*The content visualization and exploration functionalities of the Visual Analytics Dashboard.*

collected or searched information can be exported in PDF format using the automated report generation mechanism of the tool.

Finally, a set of user-selected newsworthy videos can be submitted for verification through the integrated link to Verification Application of InVID.

Find this tool at: <https://invid.weblyzard.com>



*Investigation of image details using the image magnifier.*

- Find more related videos around a news story, via a user-friendly interface that enables advanced Twitter search using a time interval up to 1'.

**More than 8.000 users are currently utilizing the tool for debunking fake news videos shared online!**

Get it free: <https://www.invid-project.eu/verify>

### InVID Verification Plugin



The InVID Verification Plugin (a browser extension available for both Chrome and Firefox users) has been designed as a verification "Swiss army knife" that helps journalists to save time and be more efficient in their fact-checking and debunking tasks on social networks when verifying videos and images. The final version of this tool allows its users to:

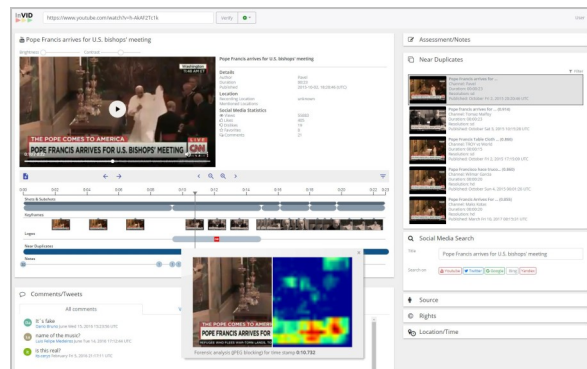
- Check for any prior use of a video by applying reverse video search on the Web using both YouTube thumbnails and a rich set of InVID-extracted keyframes;
- Check contextual information about a video through mechanisms that support social-media-based contextual analysis, extraction of location, time and other video metadata, and keyframe / image inspection through a digital magnifying glass;
- Check the video copyright status by collecting information about the content uploader, the reuse terms and conditions, and any copyright exceptions;
- Check image forensics to get clues about potential tampering of the visual content, with the help of a set of integrated keyframe/image forensic filters;

## InVID Integrated Tools

### InVID Verification Application

The InVID Verification Application is a complete tool for advanced video verification. Through its new interactive user interface, which keeps the video at a central position, it offers a set of additional verification functionalities that go beyond those of the free Verification Plugin. The final version of the tool enables its users to:

- Check for any prior video use of a video by performing reverse video search also in the InVID repository using advanced deep learning methods for near-duplicate video (and video-fragment) detection, and to perform a careful inspection of the retrieved duplicates by parallel playback of query and duplicate video;
- Check the video's origin and rights based on video logo detection and a rights management mechanism that allows the user to contact the content uploader and negotiate terms for video reuse;
- Check video forensics to get insights about potential tampering of the video content, with the help of advanced video forensic filters and frame-level video inspection in the player;

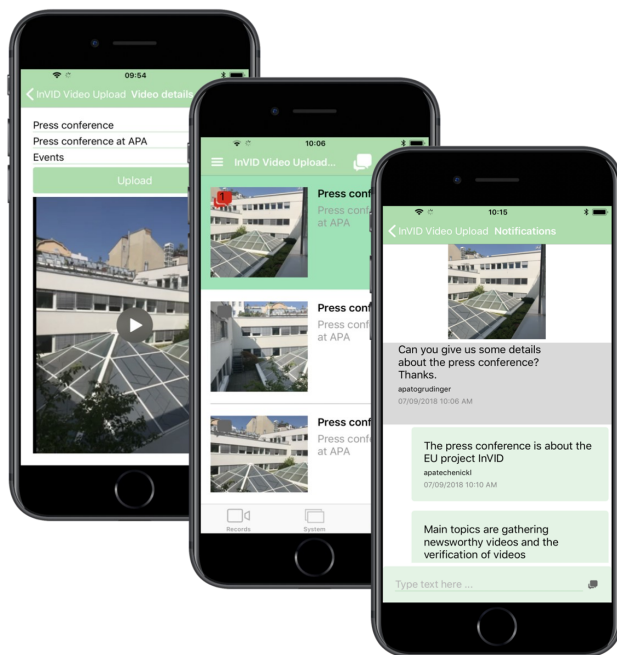


*Analyzing a video with the Verification Application. The user interface of this tool enables the user to get the video fragments, find near duplicates, check contextual information, apply forensic filters on the extracted keyframes, perform a social media search about the video, and check the source and rights of the video.*

- Check additional contextual information about the video, assessing also historical weather data that can help the user to evaluate the veracity of the video.

Find this tool at: <http://invid.condat.de>

### InVID Mobile Application



*The different interfaces of the InVID Mobile Application, for having a captured video annotated and uploaded to the news agencies' CMS, and for providing more details about the video through the notification channel of the application.*

The InVID Mobile Application is a native iOS and Android application which is used to provide trusted video contributions.

This tool allows authorized users (such as the subscribers of a news agency or media organization) to capture videos of breaking or evolving stories, which are automatically enriched with time, location and device metadata. Moreover it makes possible the annotation of the captured videos using both free text and a set of pre-selected labels, enabling the users to provide more details about the recorded event. Finally, the captured trustworthy and metadata-enriched videos can be submitted to the content management systems of news agencies and media organizations, in order to be incorporated in their news flow.

With the procedure described above, users who happen to be in the right place at the right time, can act as reporters, contributing to the time-efficient and precise coverage of a breaking news story.

Get the app for both iOS ([goo.gl/pW4G8e](https://goo.gl/pW4G8e)) & Android ([goo.gl/HH7QKN](https://goo.gl/HH7QKN)) devices



## InVID Dissemination Activities

### Summary and Highlights

During the past 12 months, InVID has achieved excellent results with regards to dissemination and in raising international awareness.

The project consortium reached a wide audience in its dissemination activities: this ranges from EC staff to people active in other research efforts, and the academic community and industry stakeholders. In particular the fact that there were useful project outcomes to demo from a relatively early stage onwards (the InVID Verification Plugin) has facilitated dissemination efforts considerably. Further, the fact that the topic of misinformation (often – sadly – referred to as “fake news”) has been very high on both the political and public agenda in a way played into our hands: frequently, we were invited to speak at conferences and events about the topic in general, and outline what we were doing for counting misinformation and the spreading of lies.

In total, consortium members attended more than 35 events of varying scale and scope in the aforementioned period. Events varied significantly in type, ranging from attendance of large trade shows (e.g. IBC 2018 in Amsterdam - represented with a booth), to EC events (e.g. ICT 2018 in Vienna - represented with a booth and a networking session), and from scientific conferences (e.g. Int. Conf. on Multimedia Modeling, Int. Conf. on Web Intelligence, Mining and Semantics) to workshops (e.g. a hackathon at the IGF hosted at UNESCO, Paris) and industry/journalism-focused events (e.g. the Int. Journalism Festival in Perugia).



At the time of writing this newsletter a considerable number of consortium individuals are in the process of writing an entire book about InVID and the topic of

video verification, including respective challenges and outcomes to date. The book, expected to be published by Springer (scientific publishing) in Q2/2019, will carry the InVID legacy forward and is considered a nice completion of the project in terms of publications.



Co-operation with other projects and initiatives that deal with related topics and matters has also been ongoing throughout the reporting period. This includes EC co-funded research (e.g. COGNITUS project), the First Draft News initiative (<https://firstdraftnews.org/>), and the International Factchecking Network at Poynter (<https://www.poynter.org/tags/international-fact-checking-network>).

Finally, via usability tests and evaluations, as well as in “hands-on workshops”, word was spread to both individuals active in the verification sphere (e.g. to members of Amnesty International’s Digital Verification Corps – who participated in evaluations) and companies dealing with factchecking and verification (e.g. Storyful).

Also, continuous dissemination activities were ongoing via the consortium’s own channels, in particular the project website (<https://www.invid-project.eu/>) and the Twitter channel ([https://twitter.com/InVID\\_EU](https://twitter.com/InVID_EU)), which – at a count in mid December 2018 – had a follower base of 1.234 followers.

Finally, InVID was mentioned in publications and dissemination activities by third parties who reported about what we do and got up to (again as an example: InVID was featured in a 4-page article in the broadcast trade magazine Feed in the October 2018 issue).

Summing up, and as can be seen from the overview above, the consortium feels confident to say that dissemination activities have been highly successful and exceeded the original expectations and plans significantly.

## InVID Dissemination Activities

### InVID's Presence in Industrial Events

- [NEM Initiative Annual Summit](#), Madrid, Spain, Nov. 29-30, 2017
- [Sciences-Po Journalism School #NPDJ Conf.](#), Paris, France, Dec. 4, 2017
- [UN experts' meeting on "Digital Image Authentication and Classification"](#), Geneva, Switzerland, Dec. 6-7, 2017
- [2<sup>nd</sup> workshop on Big Data, Psychometrics and the Future of Democracy](#), JRC Ispra, Italy, Jan. 18-19, 2018
- [2<sup>nd</sup> Media Labs Day](#), Munich, Germany, Feb. 2-3, 2018
- [The Near Future Summit](#), Zürserhof, Austria, Mar. 12, 2018
- [Media Innovation Unconference BBC News Lab](#), London, UK, Mar. 22, 2018
- [IPTC Spring Meeting](#), Athens, Greece, Apr. 23-25, 2018

Our presence in these events allowed us to get in touch with potential customers of the InVID technologies, such as mainstream television groups, providers of social media feeds for broadcasters and international TV networks.

Over the last year the InVID project and results were promoted, among others, in the following industrial events:

- [re:publica](#), Berlin, Germany, May 3, 2018
- [W3C Advisory Group Meeting](#), Berlin, Germany, May 15, 2018
- [Thessaloniki Technology Forum](#), Thessaloniki, Greece, May 16, 2018
- [GEN Summit 2018](#), Lisbon, Portugal, May 31, 2018
- [IFCN Global Fact V](#), Rome, Italy, Jun. 20-22, 2018
- [IBC 2018](#), Amsterdam, Netherlands, Sept. 14-18, 2018
- [3<sup>rd</sup> Workshop on Social media targeting and Democracy](#), JRC Ispra, Italy, Oct. 8-9, 2018
- [WAN-IFRA World Expo](#), Berlin, Germany, Oct. 9-10, 2018
- [Web3 Summit](#), Berlin, Germany, Oct. 22-24, 2018
- [ICT 2018](#), Vienna, Austria, Dec. 4-6, 2018

The publicly released InVID Verification Plugin was presented and demonstrated at the following events:

- [UN OHCHR: Experts' Meeting on Digital Image Authentication and Classification](#), Geneva, Switzerland, Dec. 6, 2017
- [Media Informatics Lab meeting on "Tools for detecting-verifying videos shared on social networks"](#), Thessaloniki, Greece, Dec. 14, 2017
- [2<sup>nd</sup> workshop on Big Data, Psychometrics and the Future of Democracy](#), JRC Ispra, Italy, Jan. 18-19, 2018
- [Workshop on Media Verification Tools](#) at Journalists' Union of Daily Newspapers of Macedonia – Thrace, Thessaloniki, Greece, Jun. 6, 2018

### Demonstration of the InVID Verification Plugin

- [IBC 2018](#), Amsterdam, Netherlands, on Sept. 14-18, 2018
- [3<sup>rd</sup> Workshop on Social media targeting and Democracy](#), JRC Ispra, Italy, Oct. 8-9, 2018
- [WAN-IFRA World Expo](#), Berlin, Germany, Oct. 9-10, 2018
- [EJTA Teachers Conference](#), Thessaloniki, Greece, Oct. 19, 2018
- [Seminar on Fake News](#), Moscow, Russia, May 18, 2018
- [IFCN Global Fact V](#), Rome, Italy, Jun. 20-22, 2018
- [7<sup>th</sup> media festival Naprej/Forward](#) Ljubljana, Slovenia, Nov. 23, 2018
- [ICT 2018](#), Vienna, Austria, Dec. 4-6, 2018

### Published InVID Results

Over the last year, scientific results of InVID have been published or accepted for publication in:

- 4 peer-reviewed international journals: **Multimedia Tools and Applications**; **Int. Journal of Multimedia Information Retrieval**; **Journal of Visual Communication and Image Representation**; **IEEE Trans. on Circuits and Systems for Video Technology**
- 5 peer-reviewed international conference proceedings: **24th Int. Conf. on Multimedia Modeling**; **8th Int. Conf. on Web Intelligence, Mining and Semantics (2 papers)**; **25th Int. Conf. on Multimedia Modeling (2 papers)**

The InVID publications and datasets are available at:

- the InVID Community on Zenodo: <https://zenodo.org/communities/invid-h2020>
- the project website: <https://www.invid-project.eu/publications> & <https://www.invid-project.eu/invid-datasets>

The InVID Verification Plugin has been released as open source under an MIT License via the GitHub page of InVID: <https://github.com/invideu/invid-verification-plugin>

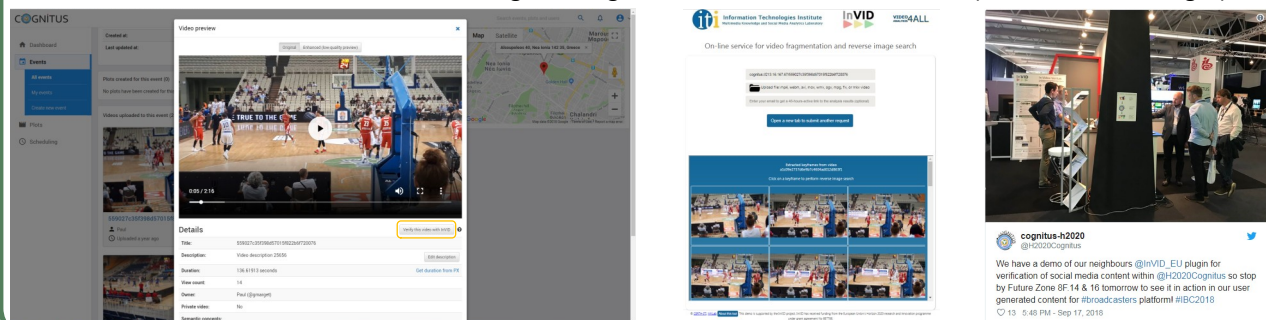
## InVID Collaborations

### InVID - COGNITUS integration

The COGNITUS project (<http://cognitus-h2020.eu/>) aims to combine the advances in UHD broadcasting technologies with the explosion of user-generated content to create new interactive, immersive modes of production. Motivated by the common basis between InVID and COGNITUS, namely the analysis of user-generated video, we collaboratively worked for integrating the InVID technologies into the COGNITUS platform. Through this integration, the users of the COGNITUS platform will be able to assess the authenticity and veracity of a user-generated video, before enhancing its visual quality and using it in the subsequent content production steps.

In particular, after selecting an event and a video from the COGNITUS platform, the user is able to directly submit the video to our tool for fragment-level reverse video search by simply clicking on the added button **“Verify this video with InVID”** that is shown under the video player (see image on the left). This process initiates the analysis of the video via the InVID tool for video fragmentation and reverse image search (see image in the middle). The extracted keyframes facilitate the quick identification of any prior occurrences of the same video on the Web, thus helping the user to assess the originality and trustworthiness of the video.

A live demo of the InVID - COGNITUS technological integration was done at the IBC 2018 (see tweet on the right).



The InVID project, in collaboration with Truly Media (<http://www.truly.media>), the WeVerify project (<https://weverify.eu>) and the European Observatory against Disinformation (<http://www.disinfobservatory.org>) co-organized a networking session at ICT 2018. Positioned within the theme of “Inspiring a digital society”, this session aimed to bring together participants with an interest in the highly important topic of online disinformation. It featured a number of experts presenting the latest scientific and technological advances that can help mitigate it, and propose solutions and initiatives that tackle information manipulation.

Key questions discussed, included: a) definition and types of mis/disinformation, case studies and lessons learned from past disinformation incidents; b) tools and services for debunking misleading online content and inaccurate information; c) latest scientific advances from the fields of AI, web mining, big data, multimedia forensics, and social network analysis that can help tackle the problem; and d) open challenges and future research directions.

Dr. Vasileios Mezaris, the Coordinator of InVID, outlined the key concept, objectives and results of the project. Denis Teyssou from Agence France-Presse presented the InVID Verification Plugin and real-life cases of using it for fake news debunking. Nikos Sarris from ATC and Jochen Spangenberg from Deutsche Welle discussed about the Truly Media platform for collaborative verification of digital content. Finally, Zlatina Marinova from OntoText introduced the WeVerify project that also targets media verification.

### Networking session at ICT 2018





## InVID Featured in Media and Verification Initiatives

### Presence in Media

InVID has also raised much awareness in other media. Video clips about the project and its features / components, articles in online and offline magazines, or mentions on social media channels have further “spread the word”. This short overview highlights a selection of the attention the project got over the last year.

A four-page article entitled “F is for F\* off to Fake News” has been published by the **Feed Magazine**, Issue 08, October/November 2018 (below, we provide a screenshot from the print magazine). A shortened online version can be found here: <https://feedmagazine.tv/index.php/future-shock/f-is-for-f-off-to-fake-news/>

The **Greek editorial team of Deutsche Welle** published an article about InVID on [dw.com](http://dw.com) on 3 Sept. 2018. For it, the author interviewed Dr. Vasileios Mezaris (CERTH) and Jochen Spangenberg (DW). Title: Αντιμετωπίζοντας τα fake news (translates literally to something like “Face up to fake news”). The article can be found here: <https://www.dw.com/el/>

The French outlet **Le Monde** wrote about InVID in August 2018 and how the InVID Verification Plugin works. The article “Comment fonctionne le service de «fact-checking» de l’AFP” can be found here: [https://www.lemonde.fr/big-browser/article/2018/08/23/a-l-agence-france-presse-plongee-dans-le-service-fact-checking\\_5345538\\_4832693.html](https://www.lemonde.fr/big-browser/article/2018/08/23/a-l-agence-france-presse-plongee-dans-le-service-fact-checking_5345538_4832693.html)

The German media magazine **Journalist** portrayed First Draft News in its 05/2018 edition. InVID was featured in the article and how it supports video verification (the magazine is only available for paying subscribers).

The Observers France published an online article on March 30, 2018, that showcases how the “Keyframes” tool of the InVID Verification Plugin can help to debunk a fake news video. The article is available here: <https://observers.france24.com/en/20180330-verification-guide-factchecking-how-verify-online-video>

Another German media magazine is the so-called **Medium Magazin**. In January 2018, Johanna Wild published an article about fact-checking, resources and journalistic working practices. InVID and its use for journalism were featured prominently in the piece.



### OSINT Landscape v.1 February 2018

Open Source Intelligence (OSINT) – Open Source Investigation



Moreover, since Sept. 2016 InVID is a member of the First Draft News partner network. The network aims to tackle issues of trust and truth in reporting information that emerges online. The InVID team joined its efforts for developing technologies for video verification, with a group of over thirty major news and technology organizations including (but not restricted to) Google News Lab, Facebook, Twitter, YouTube, The New York Times, The Washington Post, CNN, ABC News, AFP and The Telegraph.

### Presence in Verification Initiatives

InVID is inter alia listed in **Bellingcat's Online Investigation Toolkit** – a collection of useful tools and services used for Open Source Investigations. InVID is named as a tool for the verification of images, videos and metadata, and the InVID Verification Plugin is explicitly mentioned as a useful tool to also analyse Tweets due to its advanced search by time interval up to the minute.



## InVID Consortium

The list of the project partners with links to their official websites is given here.

A more detailed presentation of the InVID partners, with a description of their expertise and roles in the project can be found on the project website (<https://www.invid-project.eu/consortium>).

### Find us online!

Web: <https://www.invid-project.eu>

Twitter: @InVID\_EU

[https://twitter.com/InVID\\_EU](https://twitter.com/InVID_EU)

LinkedIn: InVID Project

<https://www.linkedin.com/in/invid-project-1a712513b>

SlideShare: InVID Project

[http://www.slideshare.net/InVID\\_EU](http://www.slideshare.net/InVID_EU)

YouTube: InVID Project

<https://www.youtube.com/channel/UCFp4OyFkV7cwQsDLCFRyBJQ>

Zenodo: InVID H2020 Project

<https://zenodo.org/communities/invid-h2020>



**Centre for Research & Technology Hellas - Information Technologies Institute**  
<http://www.iti.gr>



**Modul Technology**  
<http://www.modultech.eu>



**Universitat de Lleida**  
<http://www.udl.cat>



**Exo Makina**  
<http://www.exomakina.fr>



**webLizard Technology**  
<https://www.weblyzard.com>



**Condat AG**  
<http://www.condat.de>



**APA-IT Informations Technologie**  
<https://www.apa-it.at>



**Agence France-Presse**  
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**Deutsche Welle**  
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**Full title:** "In Video Veritas – Verification of Social Media Video Content for the News Industry"

**Project identifier:** H2020-687786

**Start date:** 1st January 2016

**Duration:** 36 months

**Funding agency:** The InVID project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 687786.

