

# Webcams support open-source analysis

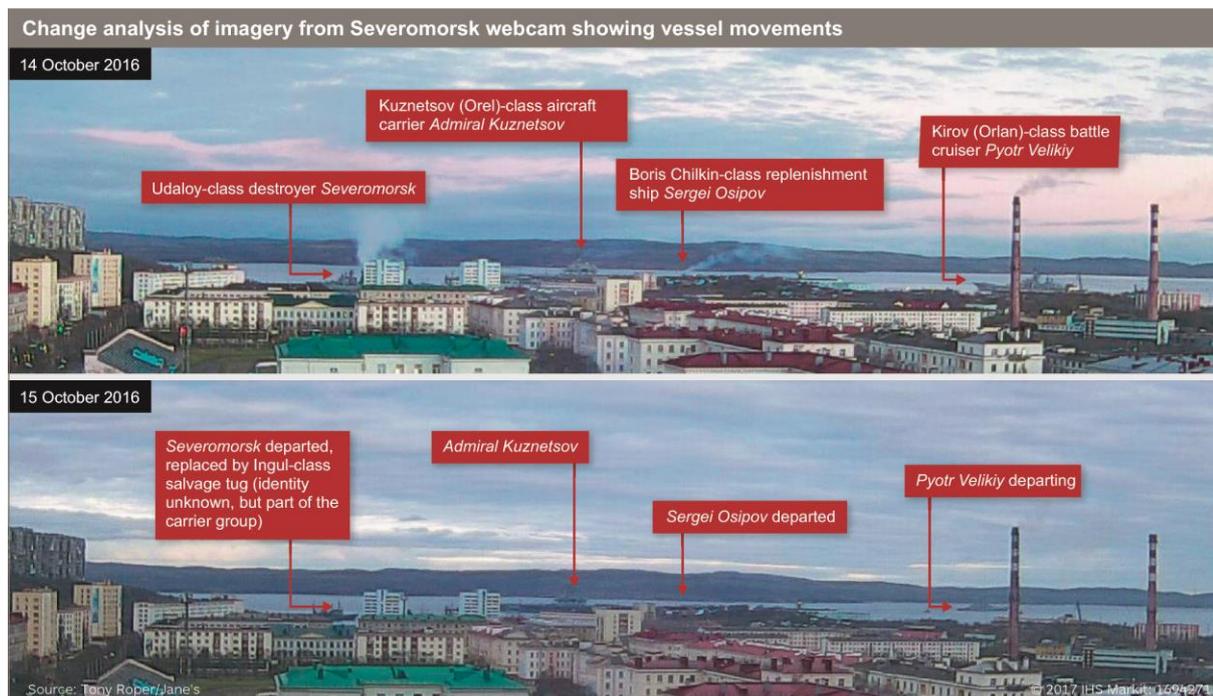
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The availability of openly accessible webcams in many parts of the world has opened up new channels of information for open-source analysts to explore. *Tony Roper* examines the value and limitations of the structured monitoring of webcams as a source of timely visual intelligence on secure facilities

On the morning of 14 October 2016, international media reported the departure of the Russian Orel-class aircraft carrier *Admiral Kuznetsov* from its home port of Severomorsk, northeast of Murmansk on the Barents Sea, en route to the Mediterranean. However, by using live webcam imagery of Severomorsk, it was possible to determine at the time that *Admiral Kuznetsov* was still in harbour and did not leave port until the following morning.

There are many public webcams that were set up specifically to allow people anywhere in the world to observe a particular location in near-real-time. A search of the internet reveals that thousands of ports (including military establishments), government buildings, airports, bridges, high streets, and major tourist locations around the world have webcams whose imagery is readily available to view - much of this provided by the operators of the facilities or locations themselves.

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Change analysis of imagery from Severomorsk webcam showing vessel movements (Tony Roper/Jane's)

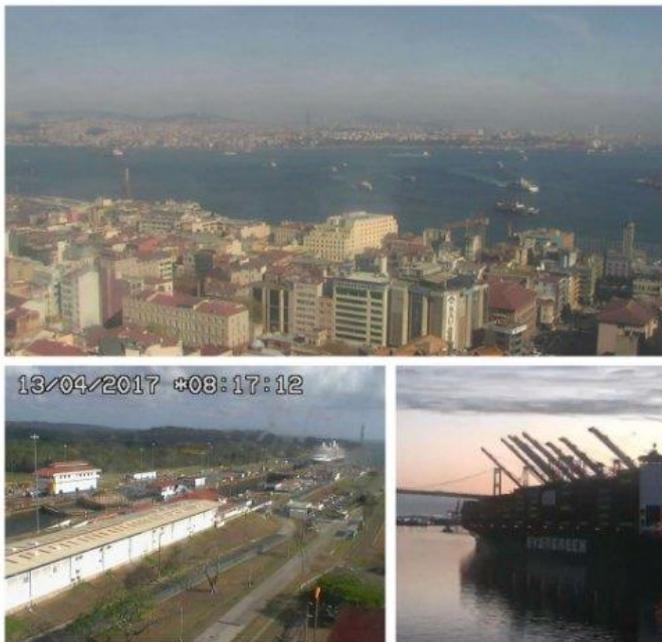
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## Value of webcams

There are some parallels between social media imagery and the use of webcams. The former is more flexible and, in most cases, a person on the street with a camera phone will be able to

provide more useful imagery than a webcam, which is fixed in position and - for privacy reasons - tends to show wide views rather than close detail.

However, precisely because they are fixed in position and function constantly, webcams can be a useful source of information on a certain set of targets. Webcams tend to be most useful as sources of information when placed at important choke points that are likely to experience a high level of traffic of people or objects of interest. One example is the series of webcams that has been set up along the Bosphorus strait. The Istanbul Tourist Board alone operates seven webcams along approximately 12 km of the Bosphorus in Istanbul. Open-source analysis can use these to obtain information on the movements of Russian naval ships between the Black Sea and the Mediterranean. Since 2015, this has been a key supply route for Russia's military operations in Syria.



*A montage of images taken from publicly available webcams showing the Bosphorus Strait at Istanbul (top), the Panama Canal (bottom left), and a ship entering port in Los Angeles (right). (Jane's)*

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Used in conjunction with social media and online platforms showing live images of movements of ships installed with an automatic identification system (AIS), webcam imagery can provide a clear picture of what is happening on the Bosphorus. In addition, photographers in the area often tweet images that they have taken of ships in transit. These images will usually be of better quality than those taken from the webcams, aiding in the identification and examination of vessels.

Another example is an accessible webcam that provides live imagery of the whole of the harbour area of Vladivostok. It is highly unlikely that any Russian Navy surface vessel could enter or leave the harbour without being captured by the webcam. This is all the more interesting given that Vladivostok was closed to foreigners during the Cold War, with the United States and its allies investing significant resources in human intelligence networks and vast amounts of money in technical intelligence collection capabilities in an effort to discover what can now be viewed online for free at any time.

Other webcams near Russian naval bases such as Severomorsk and Severodvinsk, in the north of Arkhangelsk oblast - both used by the Russian Navy's Northern Fleet - have been located and exploited by amateur enthusiasts to track vessel movements.

Some webcams are truly live, providing full-motion imagery, while others provide still images taken to a timed schedule, such as one every minute. For the purposes of collection, ideally this period should be no longer than one minute, as even a slow moving ship may be missed if it passes through the capture area in that time. At the other end of the spectrum are the webcams, such as the ones on the Bosphorus and in the port at Vladivostok, that provide full-motion video, with the camera heads even rotating for a wider picture.



*The Russian Navy's Sierra II (Kondor)-class Project 945B nuclear-powered attack submarine (SSN) Pskov can be seen on the right in this image taken from a webcam in Severodvinsk, Russia, on 14 June 2016. The vessel to the left is the tug Aleksandr Zryachev, which was visible on AIS during this period. (Tony Roper/Jane's)*

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## **Other uses**

Beyond their exploitation by open-source analysts, there are many other uses to which webcams could be put. The exploitation of webcam imagery allows for the surveillance of geographical locations without the risk of being detected by physical security. It is conceivable, for example, that a criminal group could use webcams to engage in surveillance of a business that it is planning to rob.

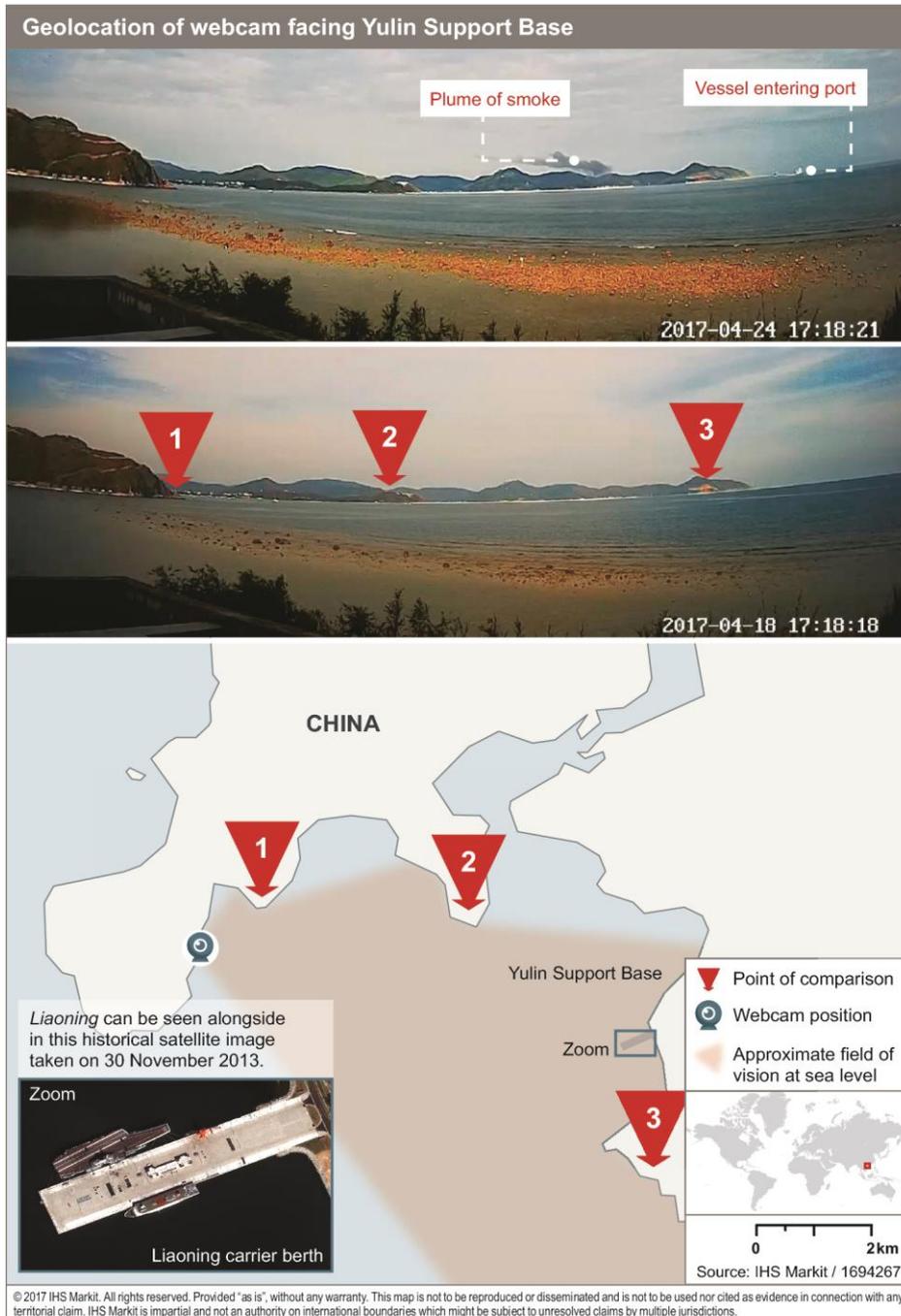
Similarly, given that webcams are often placed in areas with large flows of commercial traffic or sites of interest to tourists, it is likely that they could be used for reconnaissance and planning by terrorist groups seeking to target precisely these kinds of places. Remote observation could also potentially reveal security arrangements such as patrol routes, the locations of static guard posts, and the time of changeovers at the end of guards' shifts.

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## **Vulnerabilities**

However, as with all aspects of online activity, there remains the possibility of a webcam user being identified by network security experts. Indeed, it is conceivable that a webcam directed at a

location of significant interest for a particular group or organisation could be set up specifically to act as an online trap. Visitors to the web site could be targeted with malware aimed at revealing their identities or accessing their data. This could apply to webcams of interest in monitoring the actions of both state and non-state actors.



*Geolocation of webcam facing Yulin Support Base (©2017 IHS)*

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As with many aspects of technology, the spread of webcams around the world has rapidly outpaced the laws governing their use. There are millions of webcams around the world and yet most countries have no legislation specifically governing their use. The Data Protection Act 1998 is the nearest there is to such a law in the United Kingdom, but this relates to invasion of privacy

using closed-circuit television (CCTV), rather than the possible misuse of webcams for acts of terrorism or crime. As with commercially available unmanned aerial vehicles, which also have the potential to be used for remote observation, the legal uncertainty around aspects of the usage of webcams presents an underlying risk for open-source analysts seeking to exploit their potential.

Webcams are an inherently fragile source of intelligence - they can be switched off at any time by their operators. This could be for technical reasons or simply because the owner moves. Equally, in some jurisdictions, local authorities may move to shut down some webcams, the risk of which is likely to be highest in the case of webcams that provide the most valuable intelligence.

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## **Outlook**

The use of webcams has accelerated so rapidly that the laws governing their use, and law enforcement and intelligence agencies, have not been able to keep pace. The proliferation of webcams has provided open-source intelligence analysts with the ability to remotely observe many areas of interest, including in parts of the world where they would in the past have been denied access. Used in a structured way as part of an intelligence collection process, webcams around the world could be used for a number of purposes, including gathering intelligence on the movements of military assets, such as naval vessels, in their day-to-day operations. Gathering this type of information could also help to identify potential build-ups of forces before military action, as part of an indicators and warnings process.

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