



# UPDATE ON THE INFORMATION DOMAIN

## Issue 06/23 (June)

### Commercialisation of Satellite Imagery: Potential Risk and Misinformation

#### INTRODUCTION

1. Intelligence gathering on and off the battlefield - through avenues such as maps, photographs, troop movements and in recent decades, satellite imagery - has been a key priority for militaries as it can be instrumental to the outcome of conflicts. Those with access to the most accurate and comprehensive intelligence are usually at an advantage since the information will enable them to plan for more effective and timely counter strategies and responses.
2. With development in space exploration coupled with regulatory changes allowing commercial companies to launch, operate and sell space-based remote sensing data, satellite imagery from private companies have become more easily accessible as alternate sources of intelligence. According to *Georgetown Journal of International Affairs*, a fundamental change took place after the Cold War when the US and Russian governments authorised the sale of high-resolution satellite images by commercial enterprises to foreign customers. Older military reconnaissance images were also declassified and made publicly available from government archives. In 2005, Google Earth also started providing similar images for free, making a large

collection of imagery, including satellite, aerial, 3D sources publicly available<sup>1</sup>.

### *Quality and Timeliness of Satellite Imagery*

3. Google Earth combines images taken by satellites into a “mosaic of images taken over multiple days or months”, to create a smooth image in a way that provide users with a contiguous experience. Nonetheless, there are limitations to the accuracy of the information that can be gleaned, as the images are not updated in real time.

4. There are also differences in the quality of satellite imagery between free and paid services. Figure 1 illustrates the differences between low, medium and high spatial resolution satellite images.

Figure 1



Source: EOS Data Analytics (2022)

5. Free satellite imagery, such as those from Sentinel and Landsat satellites are typically of low and medium resolution.<sup>2</sup> The EOSDA Landviewer satellite data web service is an example of a free

<sup>1</sup> <https://support.google.com/earth/answer/6327779?hl=en#zippy=%2Csatellite-aerial-images>

<sup>2</sup> <https://eos.com/blog/spatial-resolution/#low-medium>

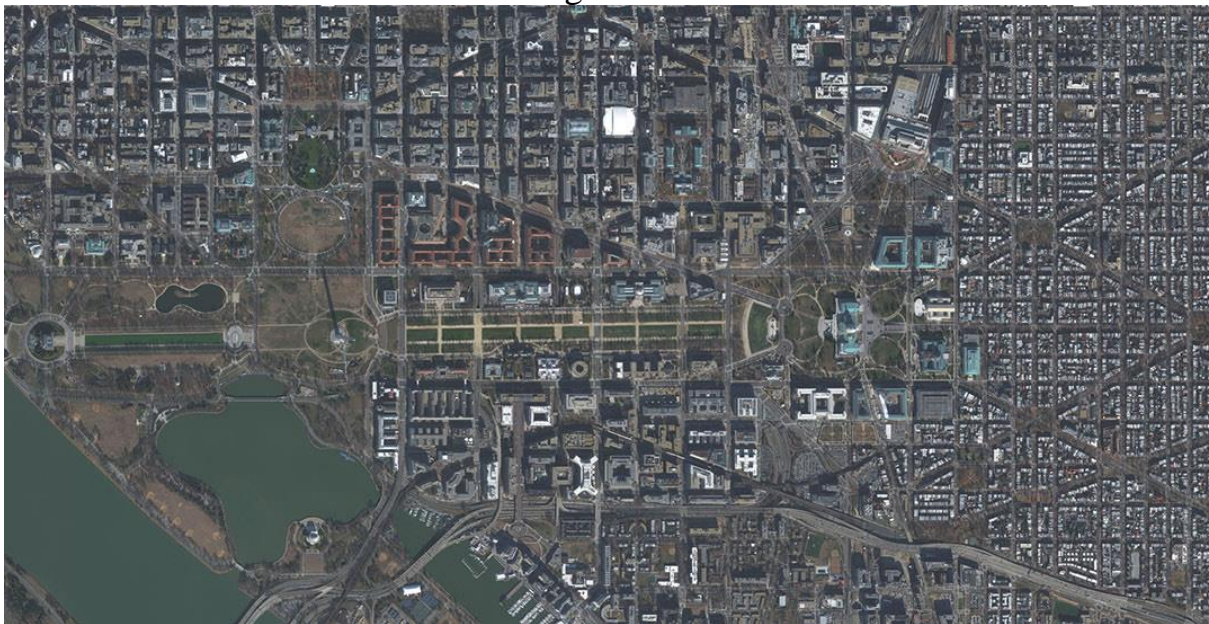


repository that provide images with a spatial resolution of 10-500m/pixel.

6. High spatial resolution satellite imagery is usually chargeable due to the high-cost factor, making it less accessible to the general public. According to *EOS Data Analytics*, they usually cover a small area but include minute details such as street signs, trees, vehicles, buildings, etc. It is also possible to view specific locations at a particular time.

7. For instance, private firm Maxar Technologies is able to provide high quality satellite images to support the security and defence industry in “powering multidomain, multforce operations”. Maxar Technologies is the prime contractor for the US Army’s One World Terrain programme. It provides 3D terrain and information services to the US Army with a complete accessible model of the Earth (see [Figure 2](#) below).

Figure 2



Source: Maxar, (2022)

### *Risk from the Proliferation of High-Resolution Satellite Imagery*

8. The increased accessibility to high spatial resolution satellite imagery has numerous benefits for various industries, ranging from

the detection of crop diseases or pests in precision agriculture to the identification of erosive soil processes, to urban planning and 3D city modelling. Nonetheless, the availability of high spatial resolution satellite imagery to anyone who can afford to pay, diminishes the control over who can access and utilise such imagery. This potentially provides an avenue for adversaries to gather and analyse sensitive information regarding critical infrastructures, military installations, fortifications and troop movements.

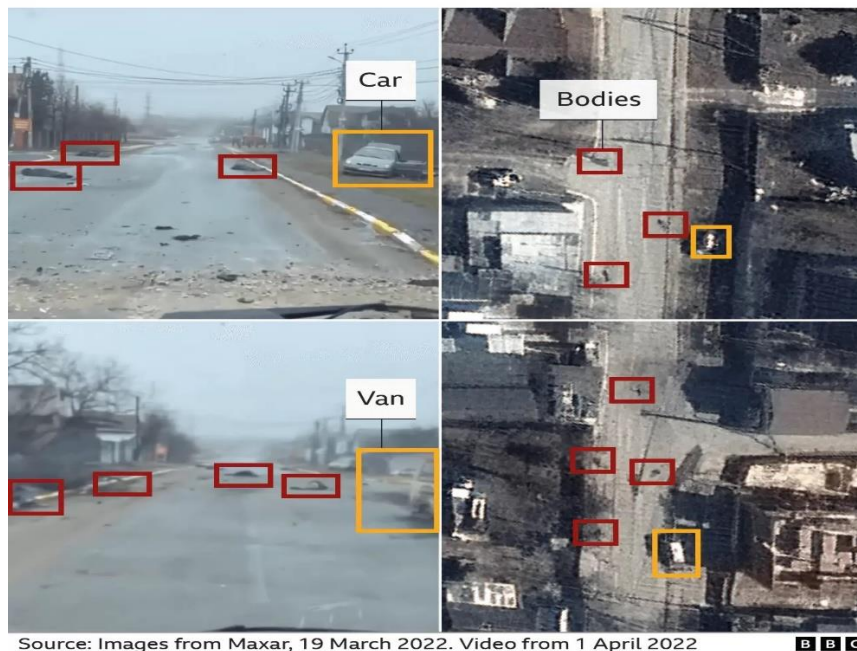
### *Satellite Imagery as a Tool for Disinformation and Misinformation*

9. According to *The Verge*, geographers are concerned about the spread of fake, AI-generated satellite imagery, which can potentially mislead in a variety of ways. Such fake images may be used to create hoaxes about wildfires or floods, or to discredit stories based on real satellite images.

10. In the Russia-Ukraine conflict, there are numerous examples of fake videos and images used to spread disinformation with the intention to weaken, confuse and mislead. Satellite images are no exception and can be easily edited for malicious purposes. With satellite images being perceived as providing an accurate bird's eye view with greater credibility, it increases the likelihood of individuals believing the disinformation.

11. Russian media and its supporters had tried to spread disinformation about the Bucha massacres, by claiming that the 'dead bodies' on the road moved and were actors instead of actual corpses, in their bid to sway public opinion. News reports from Western media had painted Russia in a bad light as the alleged perpetrators of the Bucha massacre. As reported by *BBC*, the images from Maxar showed bodies already lining the streets of Bucha two weeks before the Russians retreated, debunking claims by the Russian government that the images were fake.

### Bodies in video match image taken before Russian withdrawal



Source: Images from Maxar, 19 March 2022. Video from 1 April 2022

Source: BBC (2022)

12. To ensure the credibility of satellite images, the Eyes on Russia map, designed by the Centre for Information Resilience (CIR<sup>3</sup>), helps to “collect and verify videos, photos, satellite imagery or other media related to Russia’s invasion of Ukraine.”<sup>4</sup> The Eyes on Russia interactive map also brings together information and media from other sites like Bellingcat and GeoConfirmed, supported by Advance Democracy, Inc<sup>5</sup>, to provide verified information on the Russian invasion of Ukraine.

13. The widespread availability of high spatial resolution satellite imagery in the public domain may be a security concern if the images are misused for malicious purposes. Commercial satellite imagery will also remain an integral part of military surveillance and intelligence gathering. With private firms having increased ability to collect and disseminate high spatial resolution satellite imagery, it is critical that militaries are aware of the threats posed by the sale and availability of such satellite imagery and deploy appropriate measures to mitigate such threats.

<sup>3</sup> <https://www.groundstation.space/the-truth-of-satellite-data-in-information-wars/>

<sup>4</sup> <https://eyesonrussia.org/about>

<sup>5</sup> *ibid*



## CONTACT DETAILS

All reports can be retrieved from our website at [www.acice-asean.org/resource/](http://www.acice-asean.org/resource/).

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# REFERENCES

1. Russia warns West: We can target your commercial satellites  
[Link: <https://www.reuters.com/world/russia-says-vests-commercial-satellites-could-be-targets-2022-10-27/>]
2. Spatial Resolution In Remote Sensing: Which is Enough  
[Link: <https://eos.com/blog/spatial-resolution/#low-medium>]
3. Maxar Satellite Access  
[Link: <https://www.maxar.com/products/satellite-access>]
4. Google Earth: How images are collected  
[Link: <https://support.google.com/earth/answer/6327779?hl=en#zippy=%2Csatellite-aerial-images>]
5. Bellingcat Guide  
[Link: <https://www.bellingcat.com/category/resources/how-tos/>]
6. A Beginner's Guide to Social Media Verification  
[Link: <https://www.bellingcat.com/resources/2021/11/01/a-beginners-guide-to-social-media-verification/>]
7. Bucha killings: Satellite image of bodies site contradicts Russian claims  
[Link: <https://www.bbc.com/news/60981238>]
8. The truth of satellite data in information wars  
[Link: <https://www.groundstation.space/the-truth-of-satellite-data-in-information-wars/> ]

9. The Eyes on Russia Map  
[Link: <https://eyesonrussia.org/about>]
10. How a fleet of private satellites can help secure the US military's future  
[Link: <https://www.atlanticcouncil.org/blogs/new-atlanticist/how-a-fleet-of-private-satellites-can-help-secure-the-us-militarys-future/>]
11. Commercial Observation Satellites: Dual-Use Technology in an Age of Global Transparency  
[Link: [https://ciaotest.cc.columbia.edu/olj/gjia/gjia\\_sumfal03q.pdf](https://ciaotest.cc.columbia.edu/olj/gjia/gjia_sumfal03q.pdf)]
12. Deepfake satellite imagery poses a not-so-distant threat, warn geographers  
[Link: <https://www.theverge.com/2021/4/27/22403741/deepfake-geography-satellite-imagery-ai-generated-fakes-threat>]