



**Pekka Kallioniemi** @P\_Kallioniemi

Jun 26 · 22 tweets · [P\\_Kallioniemi/status/1673395390534631424](https://twitter.com/P_Kallioniemi/status/1673395390534631424)

In today's #vatniksoup, I'll talk about Starlink. First I thought I would just add this to the second part of the @elonmusk soup, but it is such a complex topic that I think it requires a thread of its own.

1/22



On 26 Feb 2022, Minister of Digital Transformation of Ukraine @FedorovMykhailo tweeted Musk about providing Starlink to replace the Internet services destroyed by the Russians.

2/22



Starlink responded fast, activating country-wide service and delivering the first Starlink terminals (the device that establishes the connection to the satellites, thus providing internet access) already on the 28th of Feb.

3/22

The screenshot shows a CNBC news article. The main headline is "SpaceX shipment of Starlink satellite-internet dishes arrives in Ukraine, government official says". The article is dated Monday, Feb 28, 2022, at 3:52 PM EST. The author is Michael Sheetz. The article includes a "KEY POINTS" section with three bullet points: 1. A shipment of SpaceX's Starlink satellite-internet dishes arrived in Ukraine on Monday, according to a top government official. 2. The Starlink kits came less than 48 hours after CEO Elon Musk announced the company would send support. 3. Ukraine digital minister Mykhailo Fedorov posted a photo showing more than two dozen boxes of Starlink user kits in the back of a truck. There are also social media share icons and a "TRENDING NOW" section on the right.

Building (it is still incomplete) and running Starlink is by no means cheap: in order to provide high-speed connection to its users, the company needs to launch a lot of satellites.

4/22

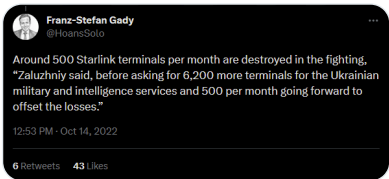
The screenshot shows a PCMag article. The main headline is "SpaceX's Starlink Now Has Over 4,000 Satellites in Orbit". The article is dated May 4, 2023, and is written by Michael Kan. The article includes a sub-headline: "As capacity for the first-gen Starlink constellation reaches its limit, SpaceX also signals that it's preparing numerous launches for the second-generation network." Below the text is a photograph of a bright, curved arc of light in the night sky, likely representing the Starlink constellation. The photo is credited to Paul Hennessy/NurPhoto via Getty Images.

SpaceX has launched 41 rockets with Starlink satellites over the past year, and each launch costs around 25-30 million USD + the cost of the satellite. And dealing with war-related issues like Russian cyber attacks & jamming increases the SpaceX cost of operating the system.

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In addition to this, Ukraine needs a lot of terminals to provide internet access to both civilians and military personnel. A lot of these terminals are also destroyed on the battlefield. Usually, these terminals come with a monthly fee, but Ukrainians don't have to pay this..

6/22



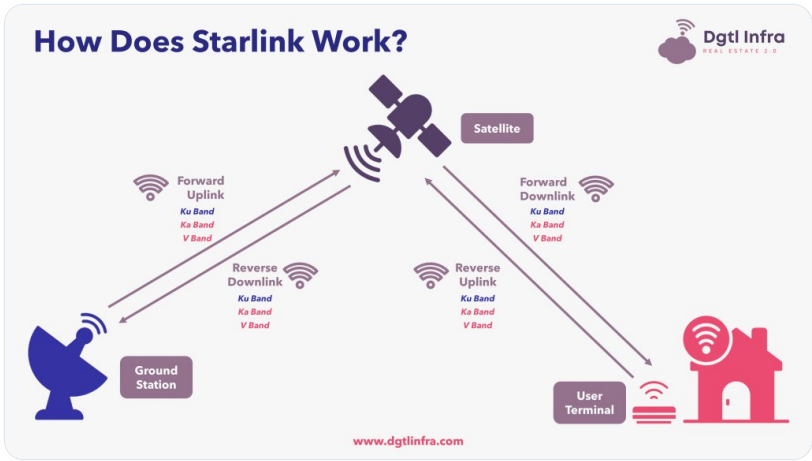
...during the war. The terminals donated to Ukraine by volunteers and other countries may still have to pay these fees, though. It is not known how much money the company currently makes from these monthly fees.

7/22

That's not all: you also need ground stations that distribute all that data to the internet via high-bandwidth connections to telco companies that need to be paid for the service.

To conclude: getting Starlink data to internet costs a LOT of money to SpaceX.

8/22



By May 2022, Starlink was used by 150 000 Ukrainians on a daily basis. It was used, among other things, to deliver president Zelensky's daily broadcasts online. It was also used during the siege of Mariupol to report the dire conditions inside the city.

9/22



Ukrainian Army has always used Starlink for military purposes. According to The Times, the Ukrainian military was using the service to connect its drones used to attack the Russian forces. It was also used to coordinate artillery fire.

10/22

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WAR IN UKRAINE

## Specialist Ukrainian drone unit picks off invading Russian forces as they sleep

Charlie Parker

Friday March 18 2022, 12:01am GMT, The Times

Russian tanks, top, were left stranded after the elite drone unit Aerorozvidka destroyed Russian supply trucks. "We strike at night, when Russians sleep," its commander said

An elite Ukrainian drone unit has destroyed dozens of "priority targets" by attacking Russian forces as they sleep, *The Times* can reveal.

Aerorozvidka, a specialist air reconnaissance unit within the army, has been picking off tanks, command trucks and vehicles carrying electronic equipment since the invasion began.

Scholar Franz-Stefan Gady (@HoansSolo), who visited the front lines in Ukraine, has said that the Ukrainian military operations are hugely dependent on having internet access, and one Ukrainian soldier said that "Starlink is our oxygen".

11/22

#### Seeker to shooter

Franz-Stefan Gady, of the International Institute for Strategic Studies, a think-tank, recently visited the Ukrainian front lines and saw an example of what cheap, ubiquitous connectivity makes possible: a sort of Uber for howitzers. Ukrainian soldiers upload images of potential targets via a mobile network enabled by Starlink. These are sent to an encrypted group chat full of artillery-battery commanders. Those commanders then decide whether to shell the target and, if so, from where. It is much quicker than the means used to co-ordinate fire used up until now.

The system also makes drone warfare much easier. In September a Ukrainian naval drone washed up in Sevastopol, the Crimean headquarters of Russia's Black Sea Fleet with what looked like a Starlink terminal attached to its stern. In late October seven similar drones were used to mount a successful attack on the port. Ukraine published a video of the attack shot from the boat's bow. "Ukrainian military operations are hugely dependent on having access to the internet," says Mr Gady, "so Starlink is a most critical capability." A Ukrainian soldier puts it more starkly. "Starlink is our oxygen," he says. Were it to disappear "Our army would collapse into chaos."

By Apr 2022, SpaceX had sent over 5000 terminals to Ukraine, of which they donated 3667 (the rest were bought by USAID). The company's support to Ukraine is estimated to be worth about 100 million USD, but it allegedly no longer offers the service for free - these costs...

12/22




In May 2023, Pentagon declared that it has agreed to buy Starlink terminals for use in Ukraine. They declined to offer any additional information regarding the price, scope or the timeline of the delivery of the equipment.

14/22

The image is a screenshot of a CNBC news article. At the top, the CNBC logo is on the left, and a search bar with the text 'Search quotes, news & videos' is on the right. Below the logo is a navigation menu with links for 'MARKETS', 'BUSINESS', 'INVESTING', 'TECH', 'POLITICS', 'CNBC TV', 'INVESTING CLUB', and 'PRO'. The article is categorized under 'SPACE'. The main headline reads 'Pentagon awards SpaceX with Ukraine contract for Starlink satellite internet'. Below the headline, it says 'PUBLISHED THU, JUN 1 2023-12:54 PM EDT | UPDATED THU, JUN 1 2023-1:53 PM EDT'. The authors are listed as Amanda Macias (@AMANDA\_M\_MACIAS) and Michael Sheetz (@THESHEETZTWEETZ). There are social media share icons for Facebook, Twitter, LinkedIn, and Email. A 'KEY POINTS' section contains three bullet points: 1) The Pentagon said Thursday that it has agreed to purchase Starlink satellite internet terminals from Elon Musk's SpaceX for use in Ukraine. 2) The Pentagon declined to offer additional contract details, including the price, scope and timeline of the delivery. 3) Starlink is SpaceX's global network of over 4,000 satellites that provides service to more than 50 countries. On the right side, there is a 'TRENDING NOW' section with three items: 'Russia Prigoz walkin Ian Bre', 'Eat lov chain f says H nutritic', and 'Storms facilit'.

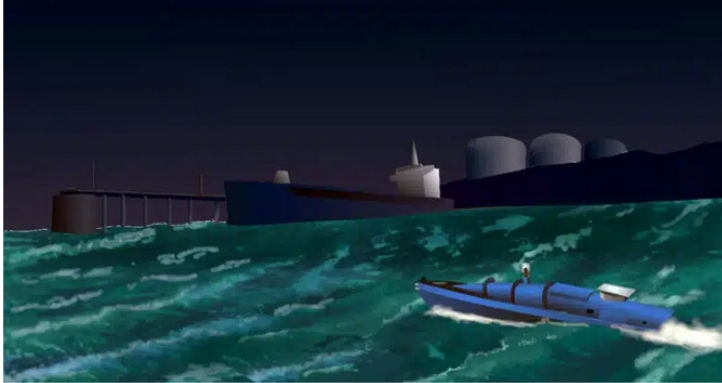
In Feb 2023 SpaceX revealed that it implemented restrictions against integrating Starlink terminals directly into weapons like naval kamikaze drones. Previously, Ukraine had attacked Russian vessels by using this type of naval drones in Novorossiysk, Russia.

15/22



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Home » News » Ukraine's Maritime Drone Strikes Again: Reports Indicate Attack On Novorossiysk



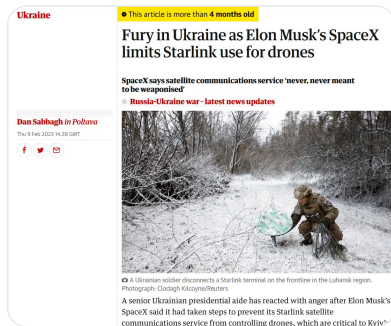
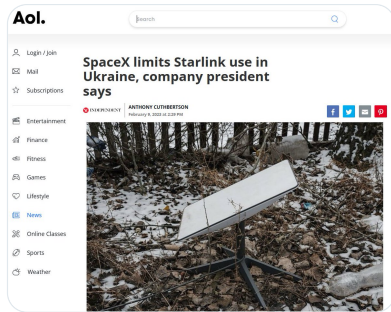
Artist's Impression of the Ukrainian Navy maritime drone attack on Novorossiysk, November 18 2022

### Ukraine's Maritime Drone Strikes Again: Reports Indicate Attack On Novorossiysk

It appears that a Ukrainian maritime drone, similar to those using in an attack on Sevastopol, has struck Novorossiysk. This would be strategically important, showing that more of the Russian Navy is under threat. Efforts may be underway to suppress this story in Russian media.

SpaceX/Elon considered this a potential "escalating action" & restricted the direct military use of Starlink on weapons systems. Before this, SpaceX President stated that Starlink was never supposed to be "weaponized", as it was originally intended strictly for civilian use.

16/22





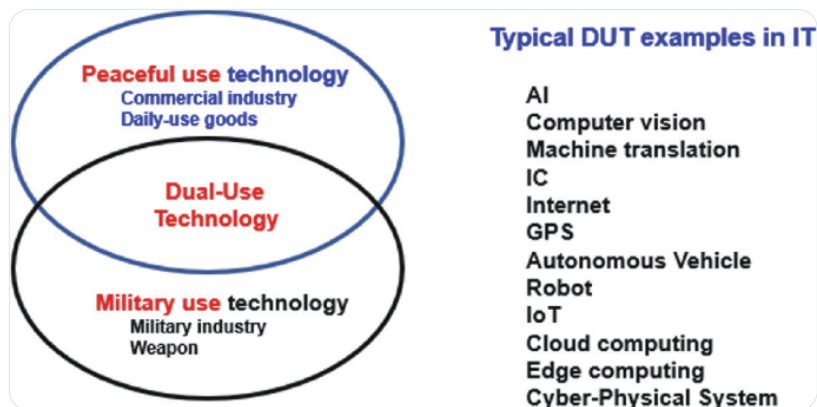
The company didn't object to it being used for military communication - just against integration into weapons like Ukraine did with the naval drones. There is also a good business-related explanation for this restriction: if they were allowed to be integrated into weapons..

17/22

The screenshot shows the Naval News website header with a navigation menu including 'NEWS', 'EVENT NEWS', 'INTERVIEWS', 'VIDEOS', 'ADVERTISING', 'ABOUT US', and 'CONTACT US'. The article breadcrumb is 'Home » News » Starlink Limits Ukraine's Maritime Drones At Time Of New Russian Threat'. The main image is an artist's impression of a Russian maritime drone being towed by a Raptor Assault Boat, while another drone races towards it. The caption reads: 'Click to enlarge. Artist's impression showing a Russian maritime drone being towed towards the Ukrainian coast by a Raptor Assault Boat. Another drone is already racing towards its target, crossing the humanitarian grain corridor to/from Odesa. Exact details to be confirmed.' The article title is 'Starlink Limits Ukraine's Maritime Drones At Time Of New Russian Threat'. The first line of the article text is: 'Two things are happening in the Black Sea which together could shift the dynamic in Russia's favor. Russia has copied Ukraine's maritime drones and started using'.

...systems, Starlink terminals could be classified as "dual-use products" (technology that can be used for both civilian and military applications), which would restrict their export and use in some countries.

18/22



To conclude: Musk's SpaceX has made substantial financial contributions to support Ukraine. Just by providing Starlink, the company has helped Ukraine's war effort significantly, and they've also donated plenty of Starlink terminals to the country.

19/22



Allowing their use in weapon systems like kamikaze drones, albeit being useful to Ukraine, could be extremely bad for SpaceX's business ventures. President Zelensky has thanked Musk for providing Starlink service to Ukraine, and @FedorovMykhailo called Elon Musk...

20/22

INDEPENDENT

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## Ukraine's Zelensky thanks Elon Musk for sending Starlink systems

'I'm grateful to him for supporting Ukraine with words and deeds,' president says

Zoe Tidman • Sunday 06 March 2022 12:54 • Comments

INDEPENDENT tv

### President Volodymyr Zelensky speaks with SpaceX CEO Elon Musk

.."one of the biggest private donors of [Ukraine's] future victory."

But this donation shouldn't render @elonmusk (or anyone else) immune to criticism, and his rather uninformed hot takes on Crimea & Donbas should be discussed. And they will be, in part two of his #vatniksoup.

21/22

**KanekoaTheGreat** @KanekoaTheGreat · Apr 11

In April 2019, Ukraine's parliament approved a new law restricting the use of the Russian language despite Russian being the most commonly used language in southern and eastern Ukraine.

Human Rights Watch warned that the law failed to protect the linguistic rights of Russian... [Show more](#)

Macroregion	Usage of Russian Language (%)
West	5.0%
Center	25.6%
East-Center	59.3%
East	92.7%
South	84.5%

Usage of the Russian language in macroregions of Ukraine (KIIS survey, 2003)

- the Russian language dominates absolutely
- the Russian lang. dominates
- the Ukrainian language dominates absolutely

377 2,938 7,877 698.3K

**Elon Musk** @elonmusk · Apr 11

Almost no one among the cognoscenti even knows this.

Why does our western press insist on pushing such a lopsided view of the conflict?

They must either think that the public is too dumb to understand nuance or the press themselves lack a deep understanding.

2,413 4,398 19.7K 965.8K

I want to thank Jakub Janovsky aka @Rebel44CZ for providing his expertise and help on this topic.

22/22

Support my work:

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Past soups: <https://t.co/9k5rQx4cgb>



A blue banner with white text and icons. At the top left are icons for Twitter, YouTube, and music notes. On the right is a circular illustration of a chef in a kitchen. Below the name is a coffee cup icon and a URL.

# Pekka Kallioniemi

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**Pekka Kallioniemi**  
Support me in creating daily vatnik soups! All donations will be spent on research and production of vatnik soup or in the creation of web portal (vatniksoup.com)...

<https://buymeacoffee.com/PKallioniemi>



A stylized illustration of a chef in a white uniform and black hat, leaning over a large pot on a stove. Steam is rising from the pot. The background is a warm orange and red color.

**The Soup Central**  
The Soup Central gives you in-depth knowledge on disinformation, bad actors and information operations.

<https://youtube.com/@TheSoupCentral>

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