



# Digitalization and Innovation in International Peace and Security

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# Outline

1. Why Innovation in International Peace and Security?
2. Emerging Tools for Conflict Resolution



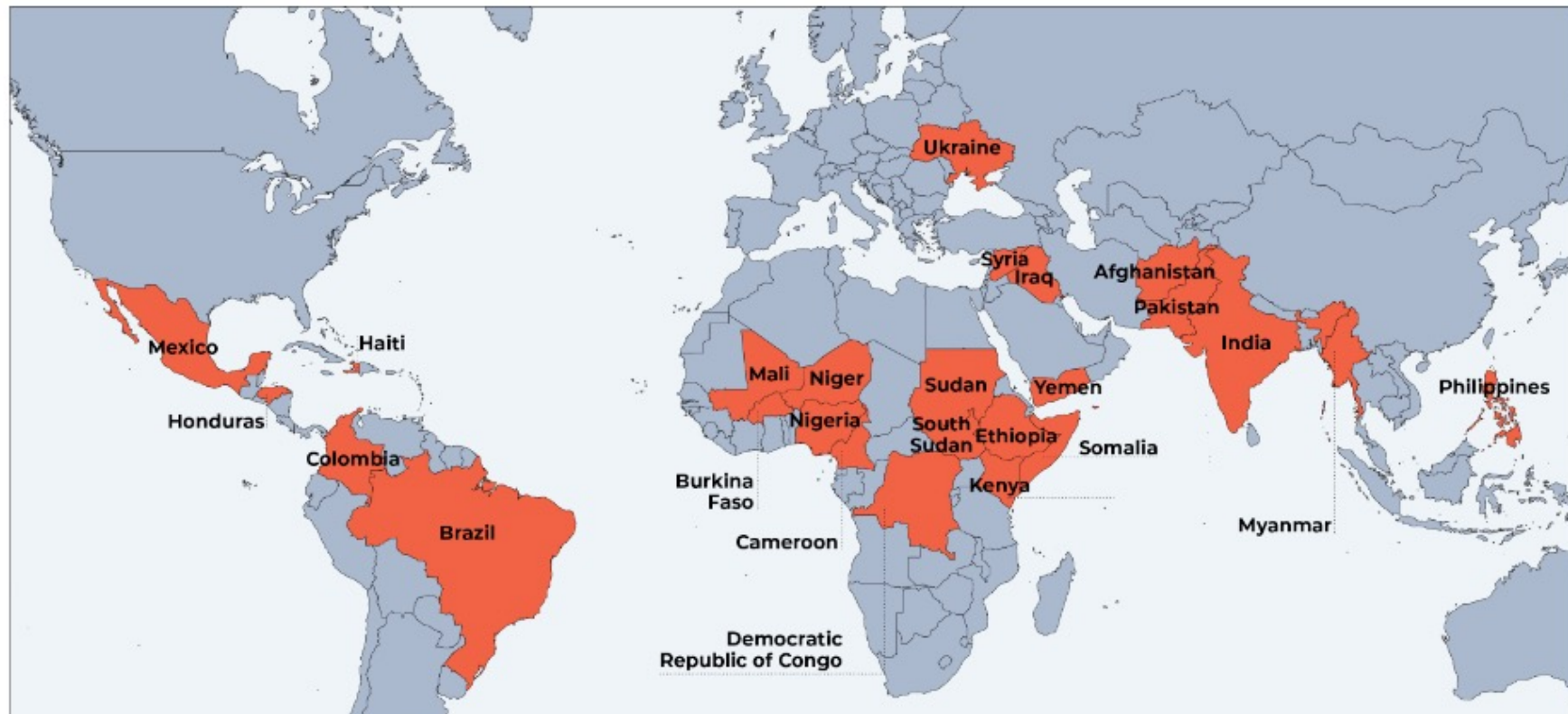


# Changing Nature of War and Violence – Need for Cross-Disciplinary Approach



<https://acleddata.com/acled-conflict-index-mid-year-update/>

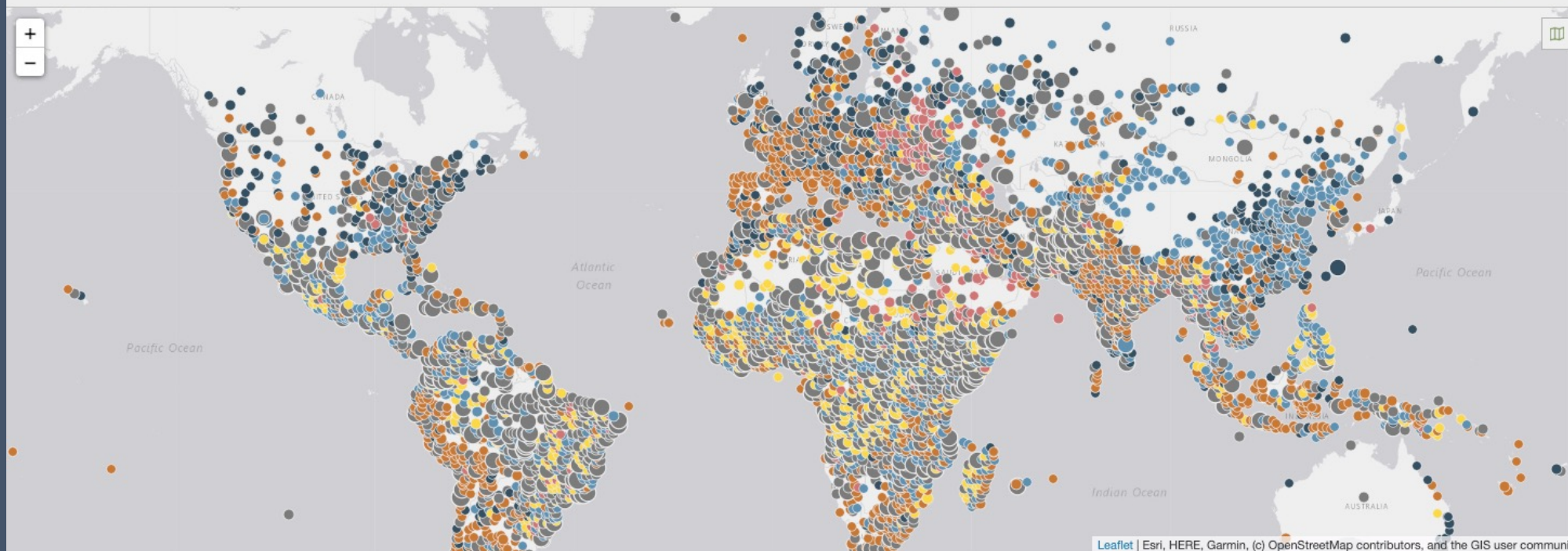
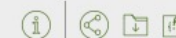
## ACLED Conflict Index: Top 25 Country Rankings by Deadliness



<https://acleddata.com/acledd-conflict-index-mid-year-update/>

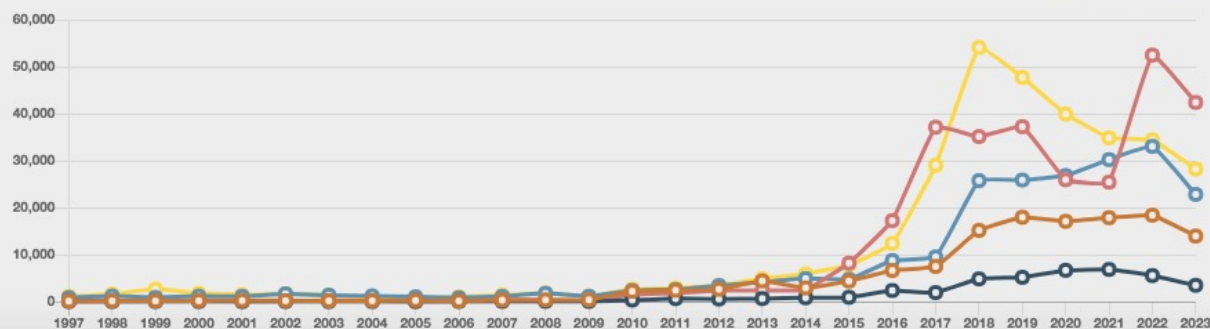


TIME PERIOD: 01/01/1997 - 29/09/2023 | EVENTS: 1,023,352 ↓7% ↑272.1% | FATALITIES: 1,838,670 ↓0.3% ↑116.2%



Leaflet | Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community

EVENT COUNT



Point Layer

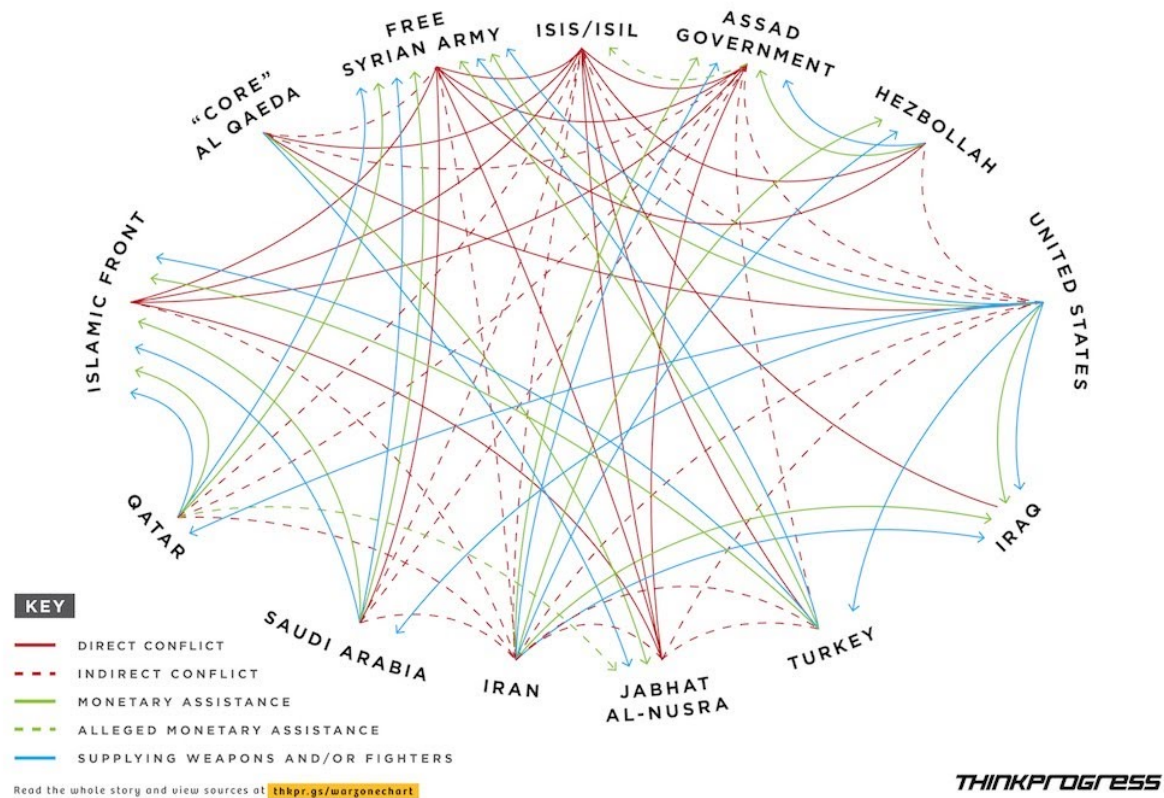
- Battles
- Violence against civilians
- Explosions/Remote violence
- Riots
- Protests
- Strategic developments
- Multiple event types

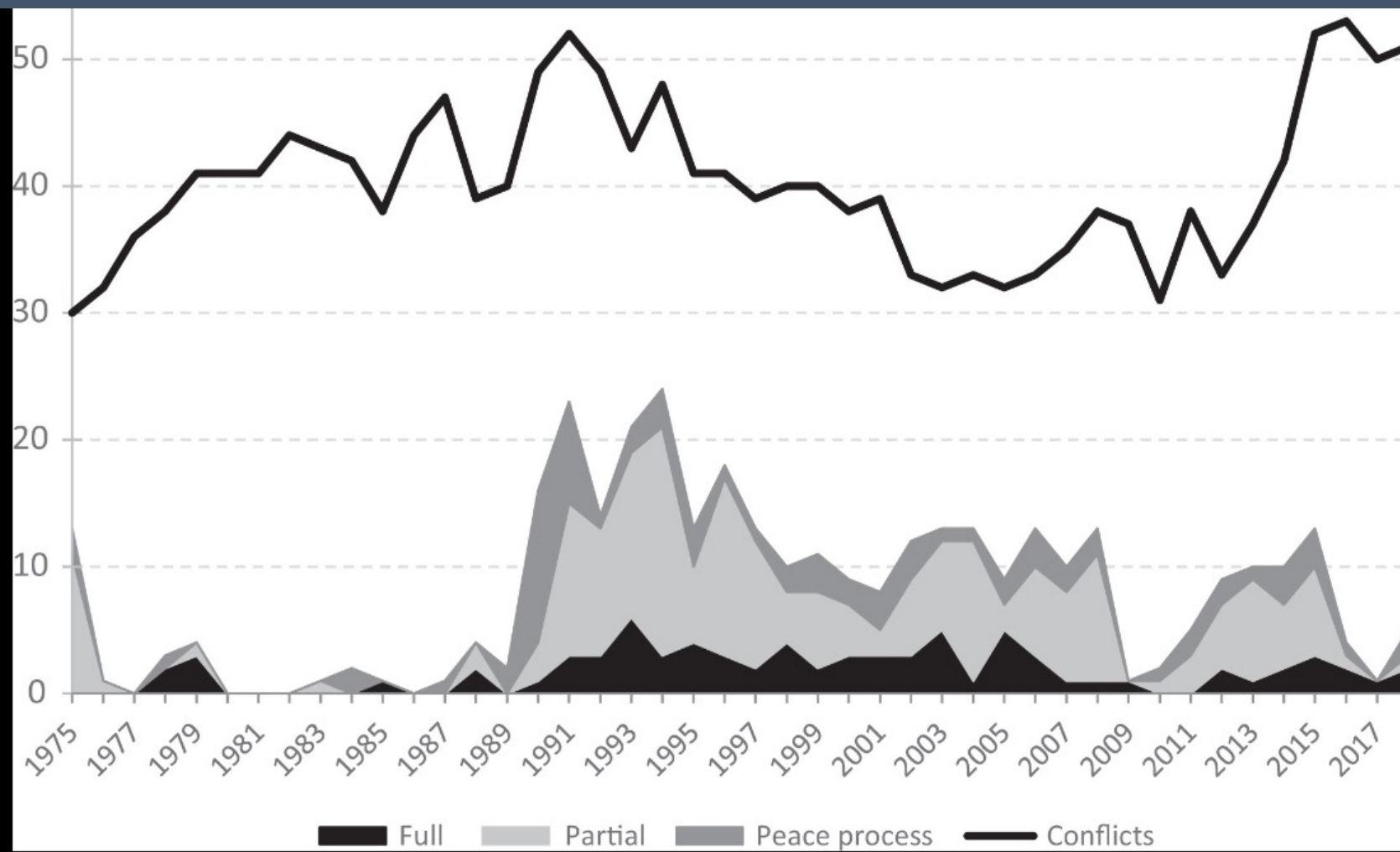
Country Layer

- from 1 to 4,862 events
- from 4,863 to 20,783 events
- from 20,784 to 45,049 events
- from 45,050 to 72,973 events
- from 72,974 to 117,081 events

Data source: The Armed Conflict Location & Event Data Project (ACLED) <https://acleddata.com/#/dashboard>

## THE TANGLED WEB IN THE FIGHT FOR SYRIA'S FUTURE





Pettersson, T., Högladh, S., & Öberg, M. (2019). Organized violence, 1989–2018 and peace agreements. *Journal of Peace Research*, 56(4), 589-603.





ALJAZEERA

News ▾

Ukraine war

Features

Economy

Opinion

Video

## 'Largest drone war in the world': How airpower saved Tripoli

*LNA's goal of seizing the capital abruptly ended after Turkey's intervention with its supply of armed Bayraktar drones.*



By Alex Gatopoulos  
28 May 2020



Military Strategy Magazine / Volume 7, Issue 4 / Drones in the Nagorno-Karabakh War: Analyzing the Data

## Drones in the Nagorno-Karabakh War: Analyzing the Data

*Eado Hecht - Israel Defense Forces Tactical Command College*



*Image from Radio Free Europe at <https://bit.ly/3Fdx2t4> - Still released by Azerbaijan's Defense Ministry, October 6, UAV.*

*To cite this article:*

Hecht, Eado, "Drones in the Nagorno-Karabakh War: Analyzing the Data," *Military Strategy Magazine*, Volume 7, Issue 4, winter 2022, pages 31-37.



## Technology and Peace

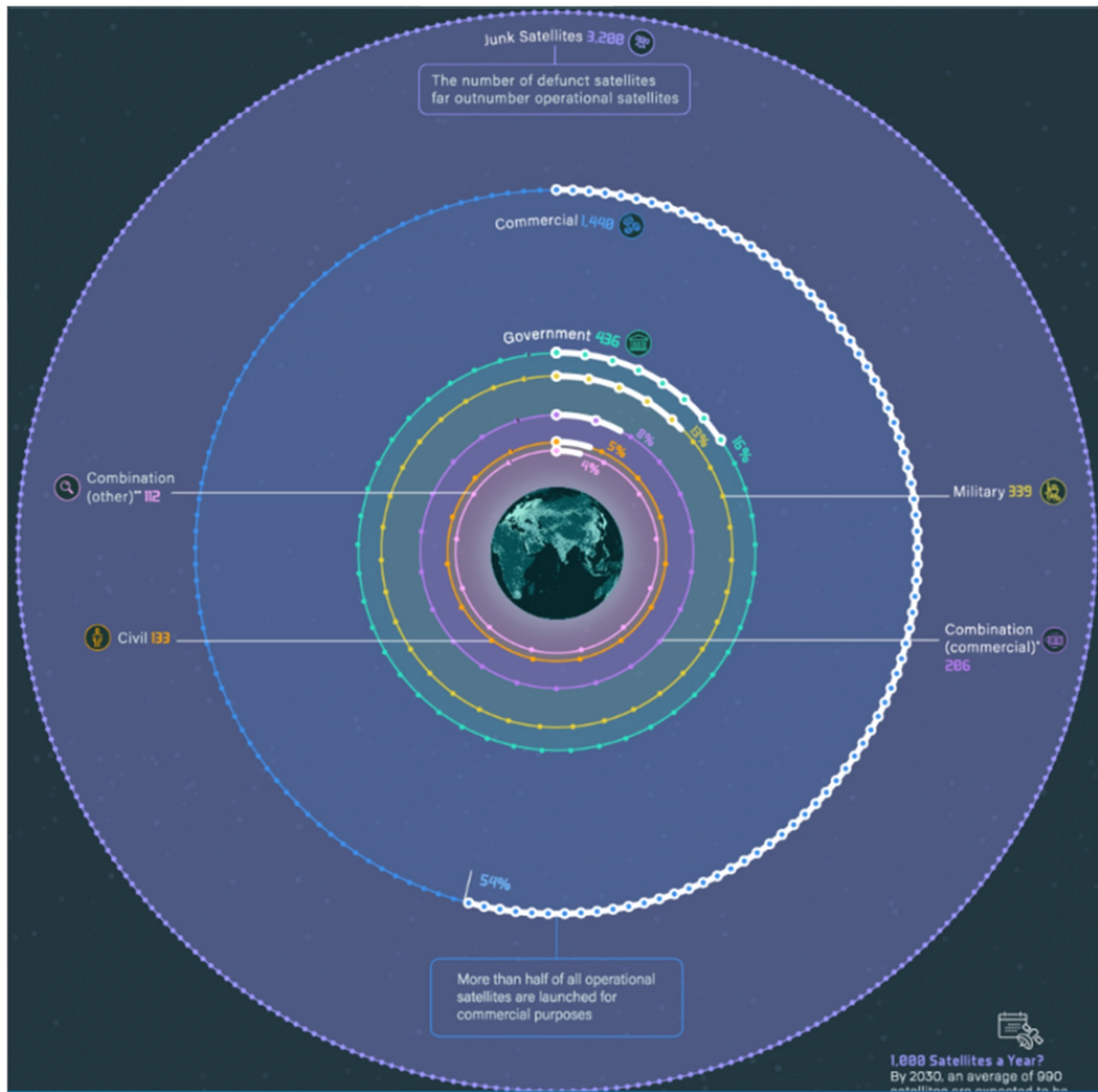
- Geospatial Information Technology and Analysis
- Open Source Intelligence (OSINT)
- Crisis Mapping (crowdsourcing)
- AI for dialogue



## Rapid Development of Digital Transformation

- 2000 Launch of the first commercial satellite (now Digital Globe)
- 2001 IT venture for civilian use of satellite technology (now Google Earth)
- 2003 First HR report using satellite photos (North Korea )
- 2004 Amnesty International starts using satellite photos (Darfur)



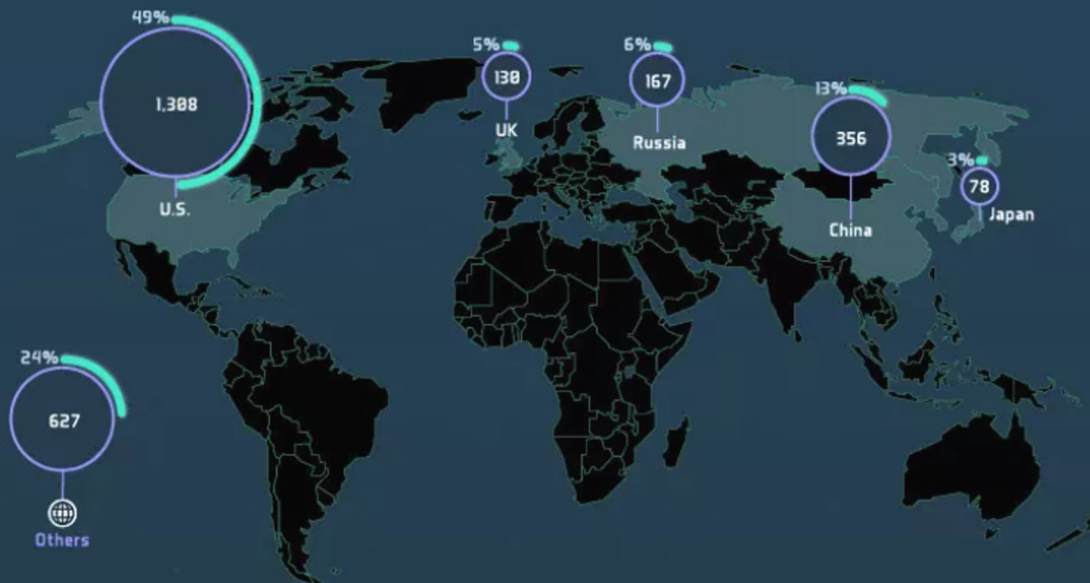


**“Who owns our orbit: Just how many satellites are there in space?”**

World Economic Forum, 30 June 2020

# Countries that Dominate Earth's Orbit

**i** How to read this  
5% — Operational satellites  
130 — Operational satellites of April 2020  
Comparative size bubble



## Affordable Space

With the success of its reusable rockets, SpaceX is on track to reduce launch costs by as much as US\$6 million per flight.



## Commercial Launch Options Skyrocket

China leads the world in orbital rocket launches, while in 2018, the U.S.'s SpaceX broke the record for most commercial rocket launches in a year.

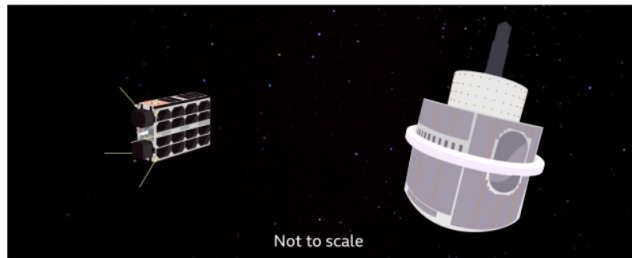
Source: Euroconsult, ESA



**“Who owns our orbit: Just how many satellites are there in space?”**

World Economic Forum, 30 June 2020

# Satellites are becoming smaller and cheaper



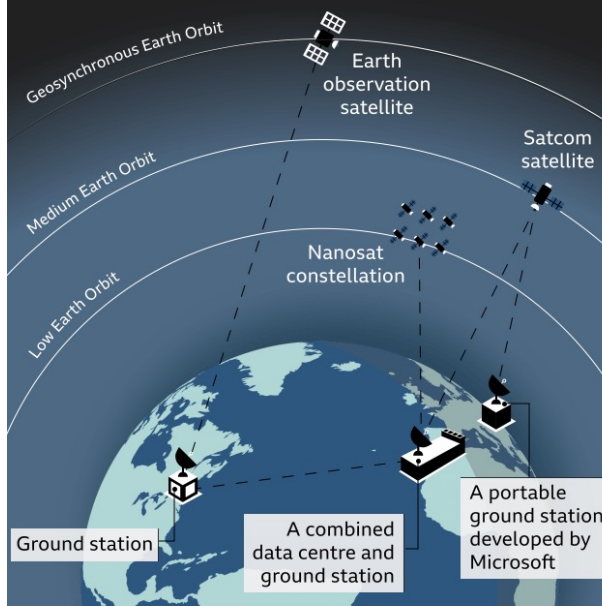
Nano satellite		Traditional satellites (communication and observational)	
25-50kg	<b>Weight</b>	2-6 tonnes	
≈ 2 shoe boxes	<b>Dimension</b>	≈ 1 bus	
\$100,000 - \$1m (£73,000-£730,000)	<b>Price</b>	\$500m-\$3bn (£365m - £2.2bn)	
Low-Earth orbit 160km-1,000km above the Earth	<b>Orbit</b>	Geostationary orbit 35,786km above the Earth	

Source: BBC Research

BBC

## How space cloud would work

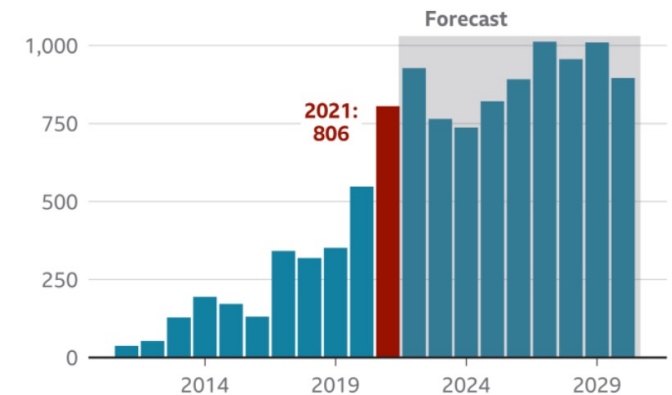
- 1 Observation satellites, communication satellites and nanosats collect data in their respective orbits.
- 2 The data is transmitted to ground stations down on Earth.
- 3 Using data centres and the cloud, tech firms can process the data and send it directly to people's devices.



BBC

## The rise of small satellites

Launches of satellites and nanosat constellations from 2011-2020, and projections from 2020-2030



Source: PwC Launch database, 2019

BBC

"Satellite boom attracts technology giants", By Mary-Ann Russon, BBC News, 29 January 2021



## Chinese attack submarine under satellite scrutiny

Satellite images from April 24 to May 4, 2022, confirm that a probable nuclear-powered attack submarine (SSN) was in drydock at a shipyard at Huludao Port in northeast China, about 430km east of Beijing. Analysts say it could be a new type of vessel or an upgrade of an existing model.

The vessel's shape resembles the profile of a Shang-class, or Type 93, submarine



Satellite Images from Planet Sources: Reuters reporting  
Anand Katakam | Reuters, May 10, 2022

Satellite images from April 24 to May 4, 2022, confirm that a probable nuclear-powered attack submarine (SSN) was in drydock at a shipyard at Huludao Port in northeast China, about 430km east of Beijing.

China

### Satellite images raise prospect of new class of Chinese submarine

By Greg Torode

May 11, 2022 2:35 AM GMT+9 · Updated 2 years ago



A satellite image taken by Planet Labs show a dry dock in Huludao Port in Liaoning province, China, May 4, 2022. Planet Labs PBC/Handout  
[Acquire Licensing Rights](#)

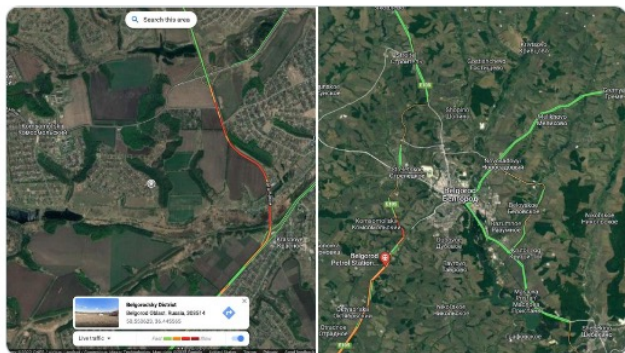


Dr. Jeffrey Lewis

@ArmsControlWonk · Follow



According to [@googlemaps](#), there is a "traffic jam" at 3:15 in the morning on the road from Belgorod, Russia to the Ukrainian border. It starts *exactly* where we saw a Russian formation of armor and IFV/APCs show up yesterday. Someone's on the move.



10:26 AM · Feb 24, 2022



6.9K



Reply



Copy link

Read 163 replies



Radar imagery showed a large Russian military unit south of Belgorod before it moved toward the border with Ukraine. Capella Space/Middlebury Institute of International Studies



# Open Source Intelligence (OSIT)

- 2010 Forensic Architecture (<https://forensicarchitecture.org/>)
- 2011 Bellingcat (<https://www.bellingcat.com/>)
- 2014 Amnesty International OSINT team
- 2017 First ICC arrest warrants based on OSINT





#### I.34 CHEMICAL ATTACKS IN DOUMA



DATE OF INCIDENT 07.04.2018	LOCATION Douma, Syria	FORUMS Media
COMMISSIONED BY The New York Times	Allegations of chemical attacks lead inevitably to conflict and discord on social media, and competing claims from reporters and politicians around the world. Working with the New York Times, we developed innovative new techniques to help cut through the confusion with material facts.	

<https://forensic-architecture.org/category/airstrikes>





[https://youtu.be/ukUNo7tUp\\_E?si=MQsetPNXiRBsjBqM](https://youtu.be/ukUNo7tUp_E?si=MQsetPNXiRBsjBqM)



# The Young Man in The Blue Shorts: Execution-Style Killing Inside a Nigerian Military Barracks

November 1, 2023 Geolocation Human Rights

**WARNING:** This report contains graphic images and footage as well as references to killing, mutilation and sexual violence that some readers might find distressing.

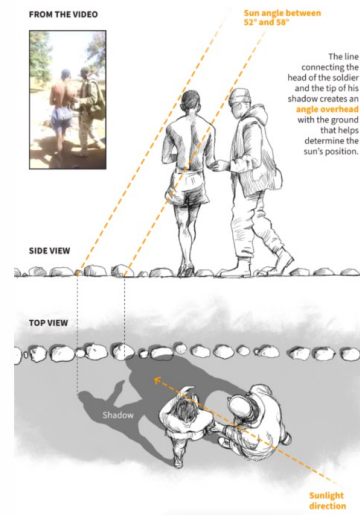


Satellite imagery showing the site of the killing, inside the Abogo Largema Military Cantonment in Biu, Borno State, Nigeria. Satellite Image: Google Earth Pro - Maxar Technologies. Still from video.

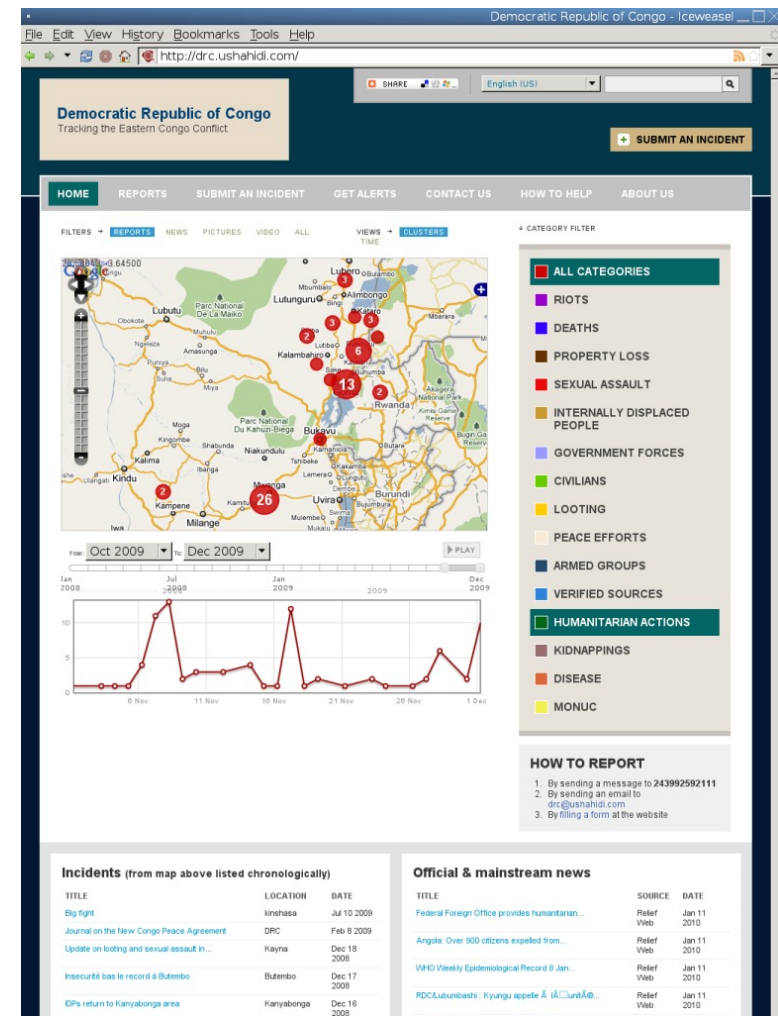
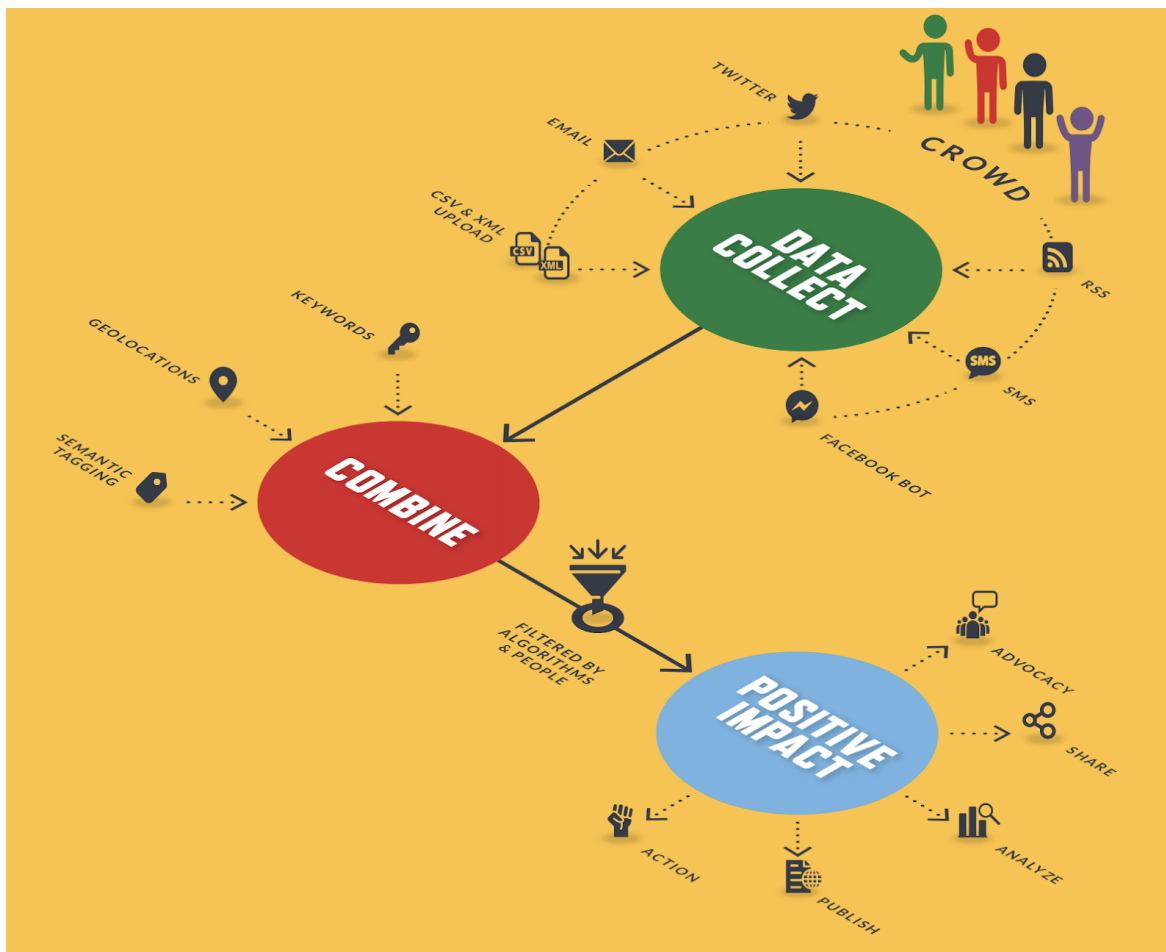
<https://www.bellingcat.com/news/2023/11/01/>



Comparison of rifle markings seen in social media posts by soldiers associated with the 231 Tank Battalion and 331 Artillery Regiment in Biu. The 231 markings are written in black whereas the 331 markings are written in white. Source: Facebook



Top: Two images found on social media circulated in the aftermath of the alleged Boko Haram clash in Biu Town on January 14, 2015. A yellow box has been placed around one man wearing a matching outfit to that worn by the shooter. Bottom: A comparison between video frames and the two images circulated on January 14 suggests that the uniform worn by the soldier in the green shirt and hooded jacket matched the uniform worn by the shooter. Visual information indicates it is likely both soldiers are the same individual.





<https://standbytaskforce.wordpress.com/2011/09/01/libya-crisis-map-report/>

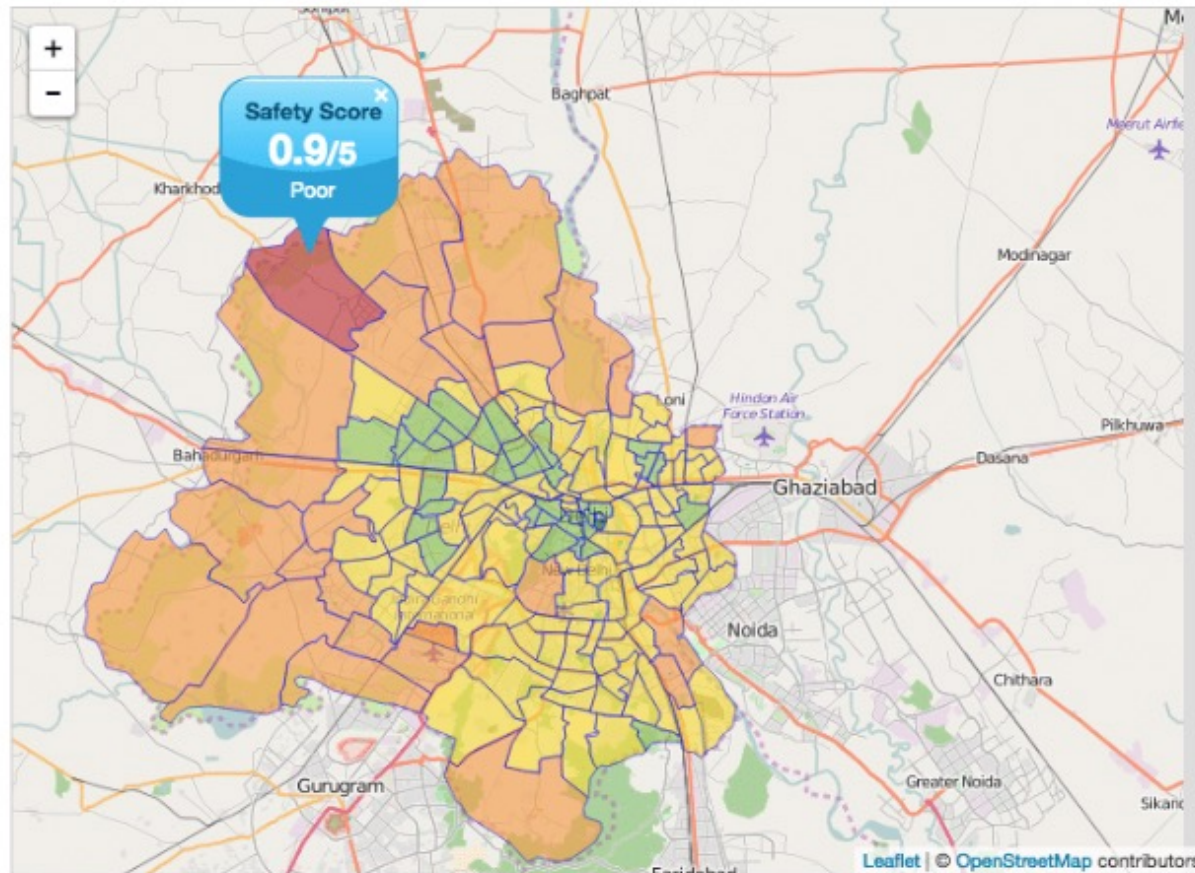


Select Data Set

Police Station Jurisdiction

Select Parameter

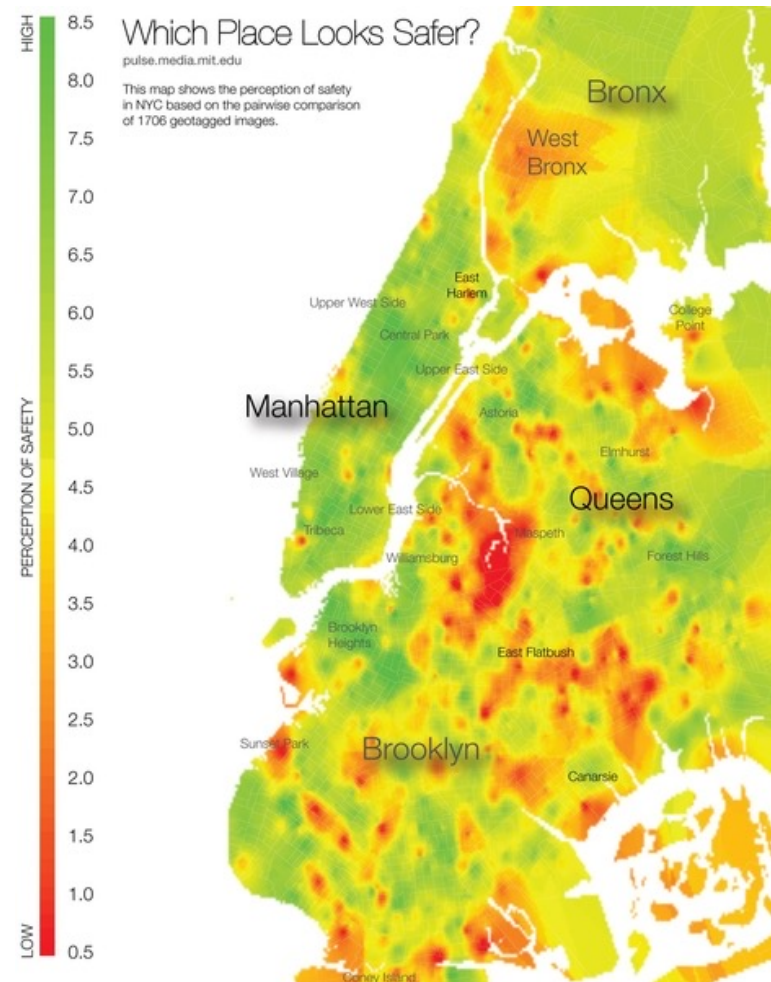
Address: Bawana, Delhi, New Delhi



## CITY SAFETY ANALYSIS

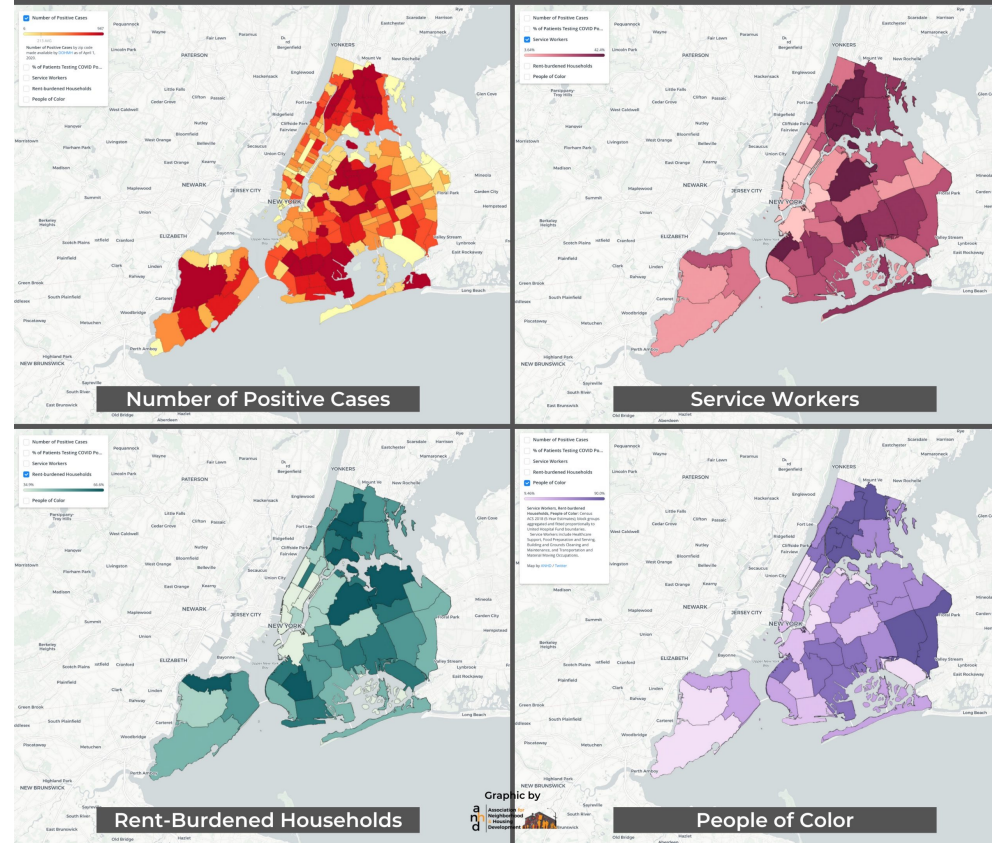


<https://safetipin.com/>



MIT News, July 24, 2013 <https://news.mit.edu/2013/quantifying-urban-perceptions-0724>

Neighborhoods with the **highest rates of positive COVID-19** cases also have some of the highest numbers of **service workers, rent-burdened households, and people of color.**



Source: Association of Housing and Neighborhood Development;  
<https://anhdnyc.carto.com/builder/f7994ecc-fc14-4e3c-a5d6-c90196e20b2f/>



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# Futuring Peace

## AI & PEACEMAKING

[Digital Dialogues](#) [Data Analysis](#) [Digital Transformation](#) [VR/AR/XR](#)

Exploring the use of AI for real-time 1-on-1 consultations in local dialects & languages to involve public voices in peace negotiations. Real-time analysis based on demographic interests.

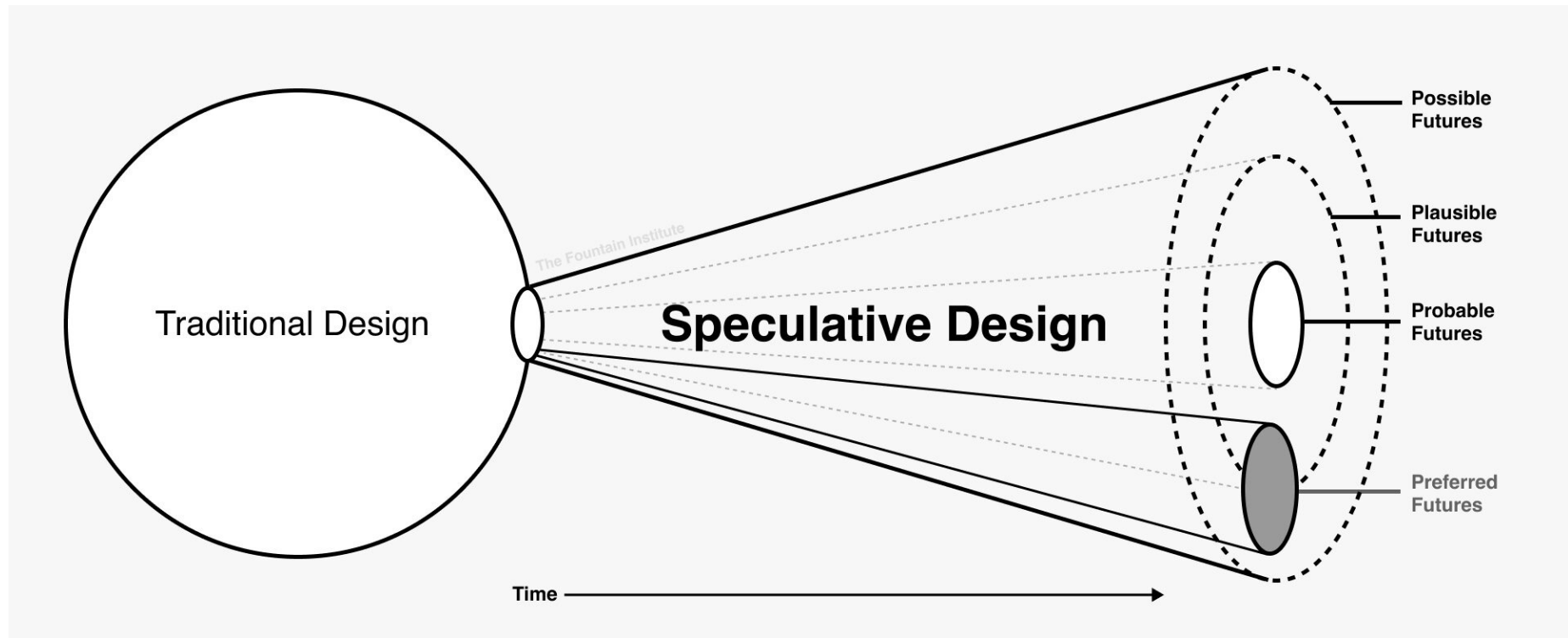


<https://futuringpeace.org/project/project-digital-dialogues-yemen>



<https://vimeo.com/674337115>

# Speculative Design







What Mumbai might look like in 2050. From [Earth 2050](#)



BIG's project Oceanix exhibited at MORI Art Museum. From [Oceanix](#)



One of the Neo Fruits designed by Maydan Levy. From [Neo\\_Fruits](#)



Speculative urbanisation of [Akon City](#)