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Revolutionizing Location Intelligence

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Oskari Häkkinen

Innovating in Defence & Intelligence and Geospatial Analytics 🚀

CEO - Spatineo Inc, Helsinki, Finland

Chairman - Geoforum Finland

Non-governmental Expert - CapTect, European Defence Agency (EDA)

Board Member - Location Innovation Hub (EDIH)

Board Member - FLIC (Finish Location Information Cluster of Technology Industries of Finland)

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Security in Europe

There is ware in Europe and the whole Europe is in hybrid war;
blur the line between war and peace

Threatening countries:

- Russia, Belarus, China, North Korea, Iran

Threatening groups:

- Terrorists (far right, islamistic, ...)

Other threats:

- Climate change
  - Extreme weathers
  - Immigration

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European nations denounce Russian hybrid attacks, cable cut probes launched

By **Andrius Sytas**, **Barbara Erling** and **Johan Ahlander**

November 19, 2024 6:35 PM GMT+2 · Updated 19 hours ago

[1/2] The C-Lion1 submarine telecommunications cable is being laid to the bottom of the Baltic Sea by cable ship Ile de Brehat on the shore of Helsinki, Finland, October 12, 2015. Lehtikuva/Heikki Saukkomaa/via REUTERS/File Photo

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EU, NATO say Nord Stream gas pipelines were sabotaged

As gas continues to spew into the Baltic Sea the cause remains far from clear, but some are pointing at Russia.

Pipes at the landfall facilities of the 'Nord Stream 1' gas pipeline in Lubmin, Germany [File: Hannibal Hanschke/Reuters]

28 Sep 2022 Al Jazeera

Finland investigates suspected sabotage of Baltic-connector gas pipeline

10 October 2023

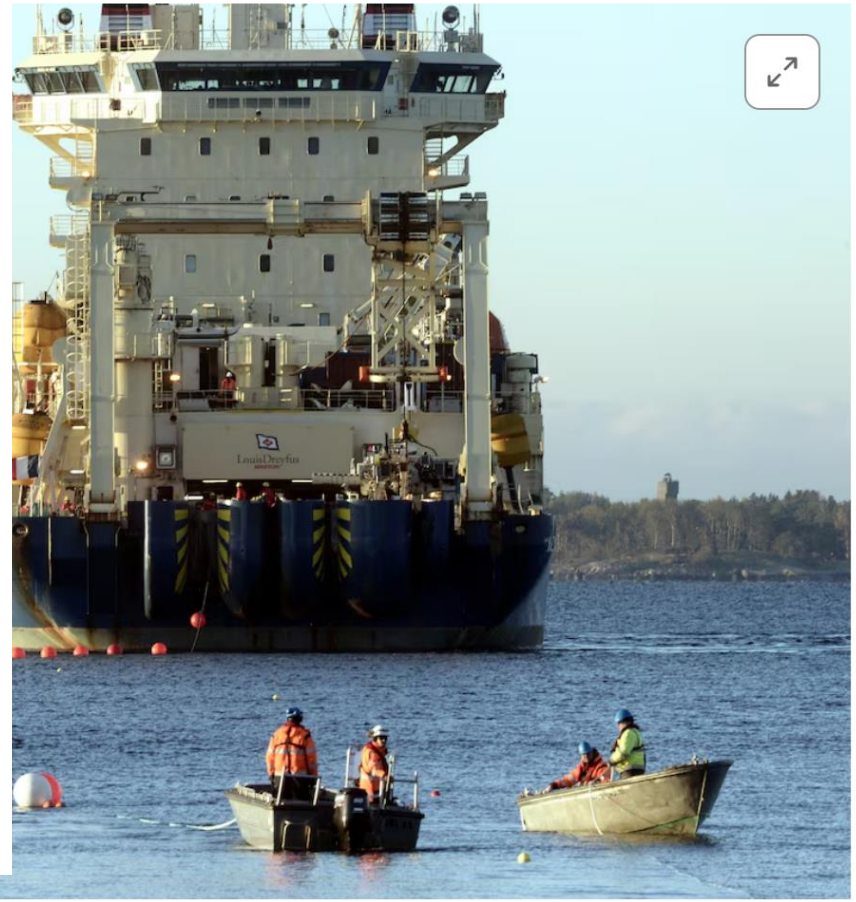
The Baltic-connector gas pipeline opened in 2020 and is used by both Finland and Estonia BBC

Map showing the route of the Balticconnector pipeline. Image: Samuli Huttunen / Yle, Mapcreator, OpenStreetMap

ns denounce Russian cable cut probes

ohan Ahlander

d 19 hours ago



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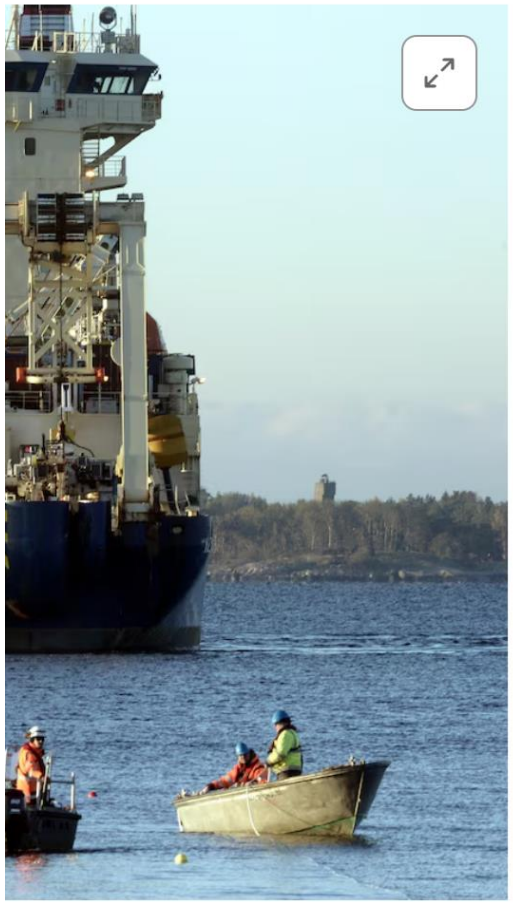
Deutsche Bahn says sabotage behind massive train disruption

10/08/2022

The German rail operator blamed cable sabotage for a major train disruption and said security authorities had taken over the investigation. It had earlier reported that the "technical fault" had been repaired.

Long-distance train journeys were disrupted at the start of the weekend

Image: Carsten Koall/picture alliance/dpa



Baltic Sea by cable ship Ile de

Brehat off the shore of Helsinki, Finland, October 12, 2015. Lehtikuva/Heikki Saukkomaa/via REUTERS/File Photo

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Russia plotting sabotage across Europe, intelligence agencies warn

Assessments suggest Kremlin agents preparing covert bombings, arson and attacks on infrastructure

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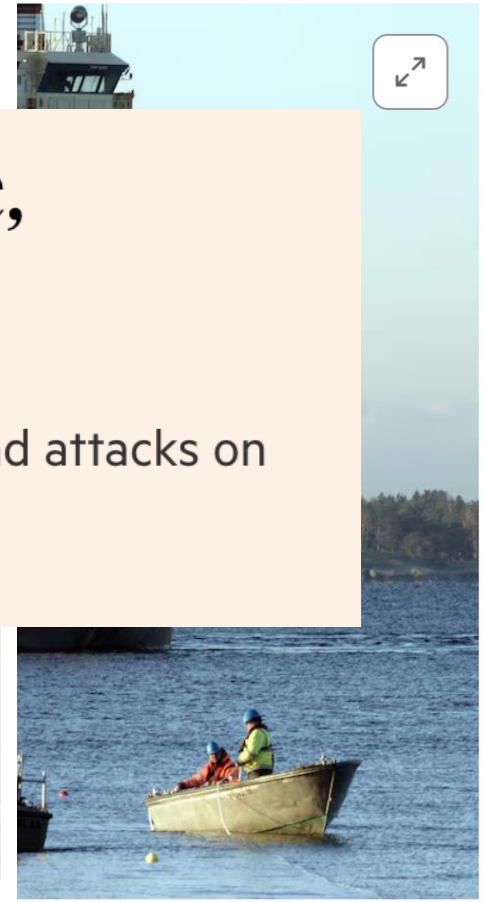
Image: Carsten Koall/picture alliance/dpa



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Deutsche Bahn says sabotage behind

Málaga evacuates thousands as Spain issues more flood alerts

8 days ago

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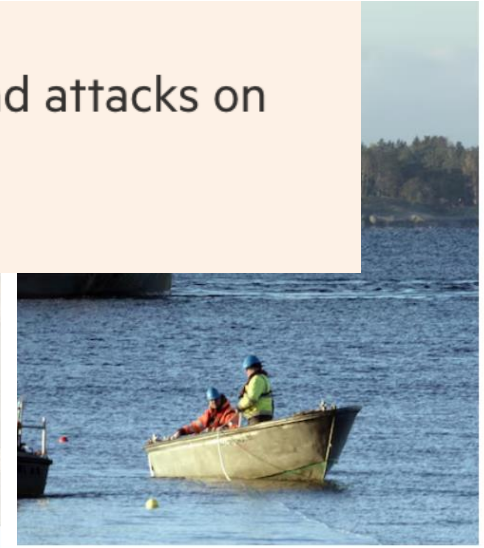

…ic Sea by cable ship Ile de Brehat on the shore of Helsinki, Finland, October 12, 2015. Lehtikuva/Heikki Saukkomaa/via REUTERS/File Photo

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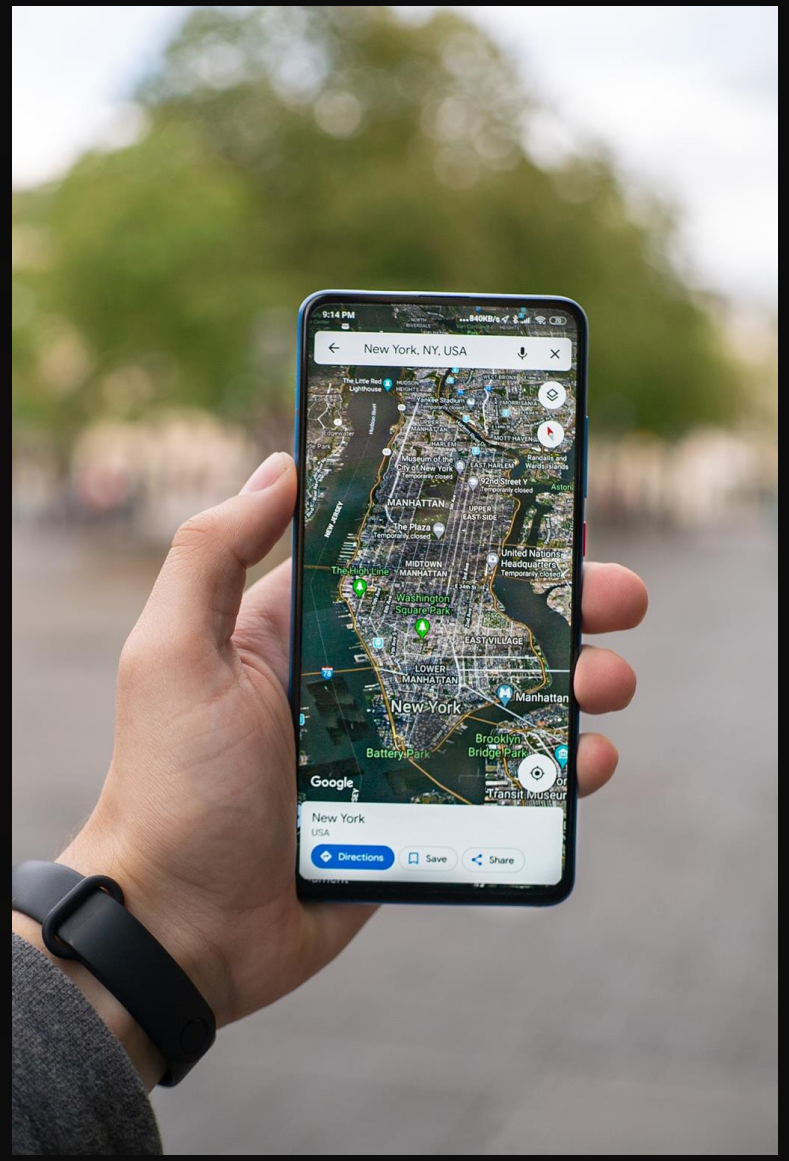
These threats are geospatial

- Climate phenomena is geospatial
- Planning a sabotage needs geospatial information

So how would one plan a sabotage?

- Find all open information about the target
  - Articles, maps, location information, public meeting notes, images (also satellite)
- Buy missing information
  - Satellite images, aerial images, location information
- Break relevant information systems
- Get information before in the target location by walking, car, drone etc.



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Open source intelligence can be revealed

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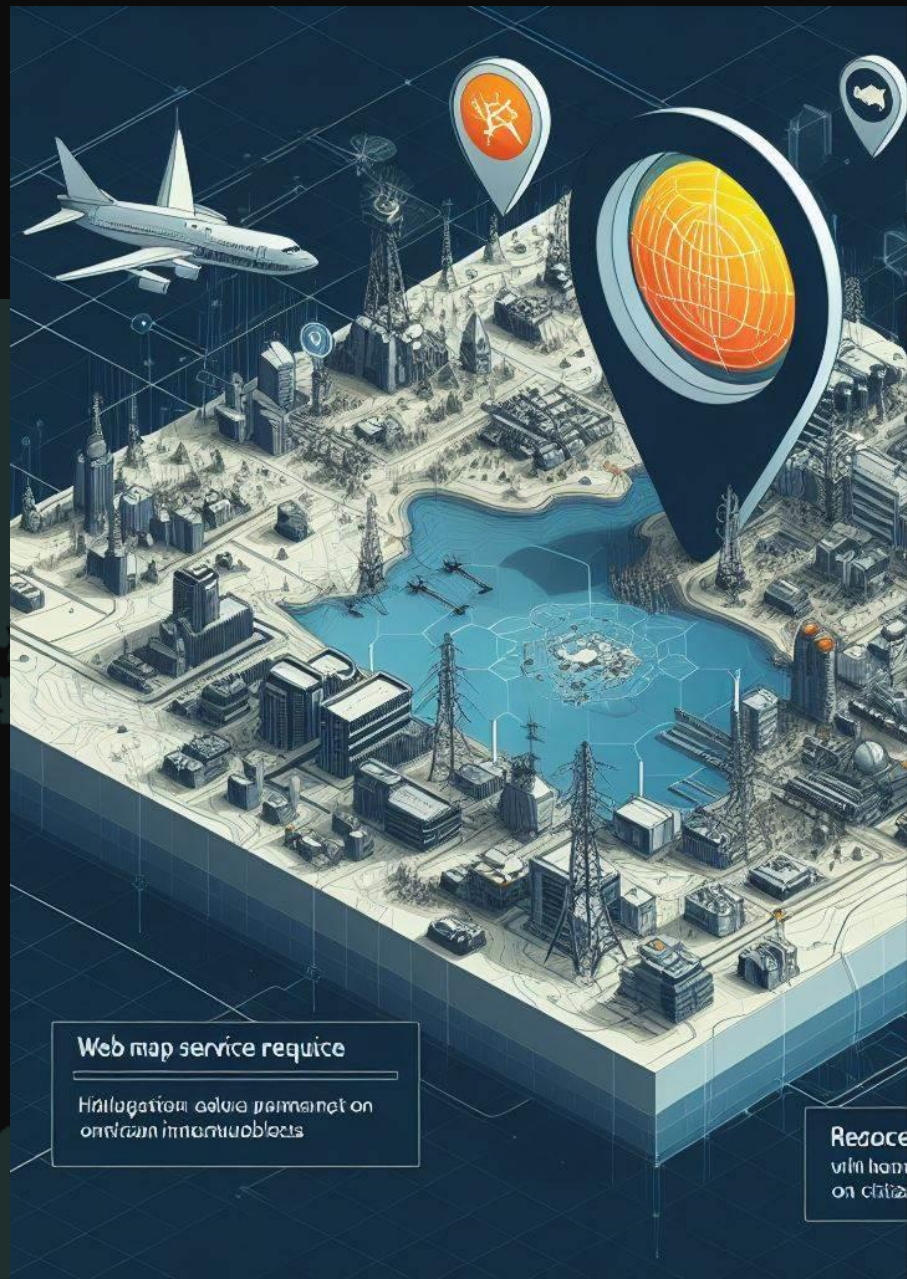
OPEN DATA API USE ANALYSIS

How much are APIs used for retrieving information related to critical infrastructure objects? Which are the datasets, user groups, origin countries?

Which APIs and datasets are being used together to gain information on the surroundings of critical infrastructure?

Trends and anomalies in non-domestic Open Data usage coinciding with certain geopolitical events?



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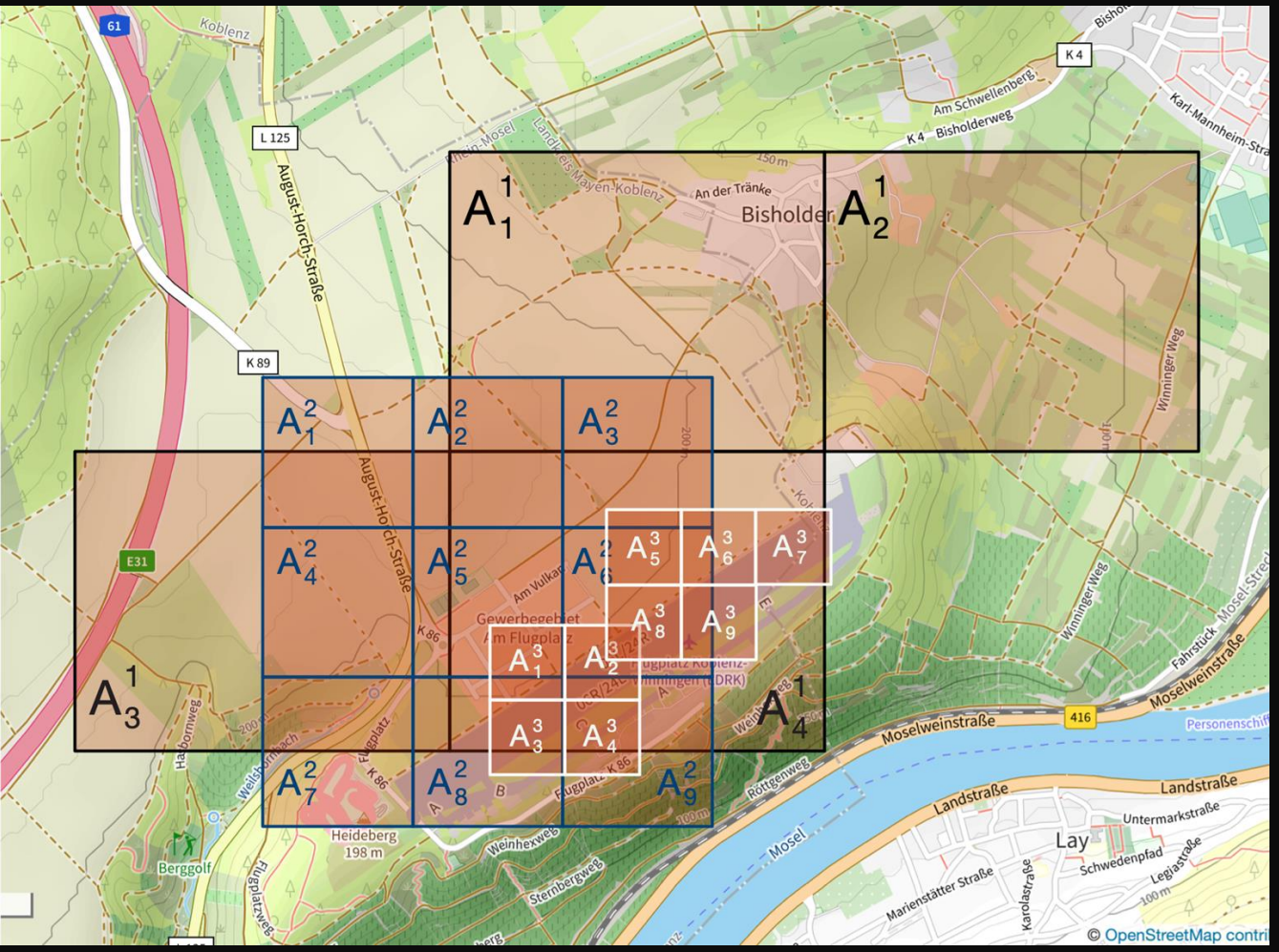
EVERY WEB MAP REQUEST GETS LOGGED WITH TIME & LOCATION INFORMATION

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Client IP address

Date &time

Requested dataset/layer

Area-of-interest (BBOX)

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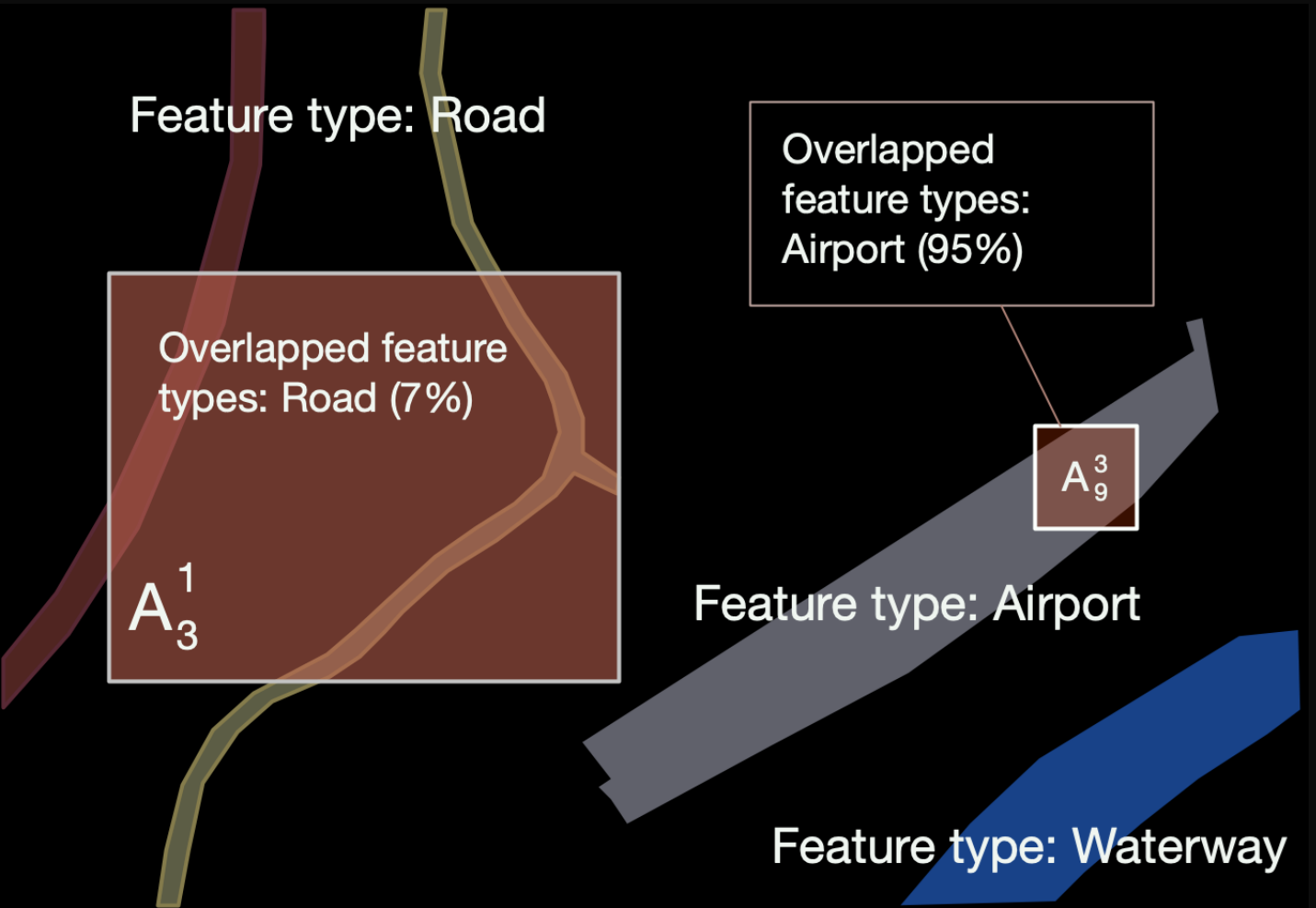
CORRELATING AREAS-OF-INTEREST WITH LOCATIONS OF CRITICAL INFRASTRUCTURE



Intersections of request areas-of-interest and the geometries of the known critical infrastructure objects

Statistics about the matched object types, hit counts and percentages of overlap, and the requested datasets

Combined areas-of-interest for all requests in a browsing session

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FOREIGN & DOMESTIC USERS: REQUEST ORIGIN

User country/city determination by using an IP address geolocation database

Regular domestic usage as a baseline

Challenges:

- Identification & classification of VPN users
- Proxying via intermediate web servers (international data centres etc.)

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OUR RECENT NATIONAL-LEVEL PROJECT

- Over 2 years of logs
- 21 organizations
- 425 APIs
- 60k features in critical infrastructure data set

Tools: Spatineo Monitor, FME & ArcGIS Pro

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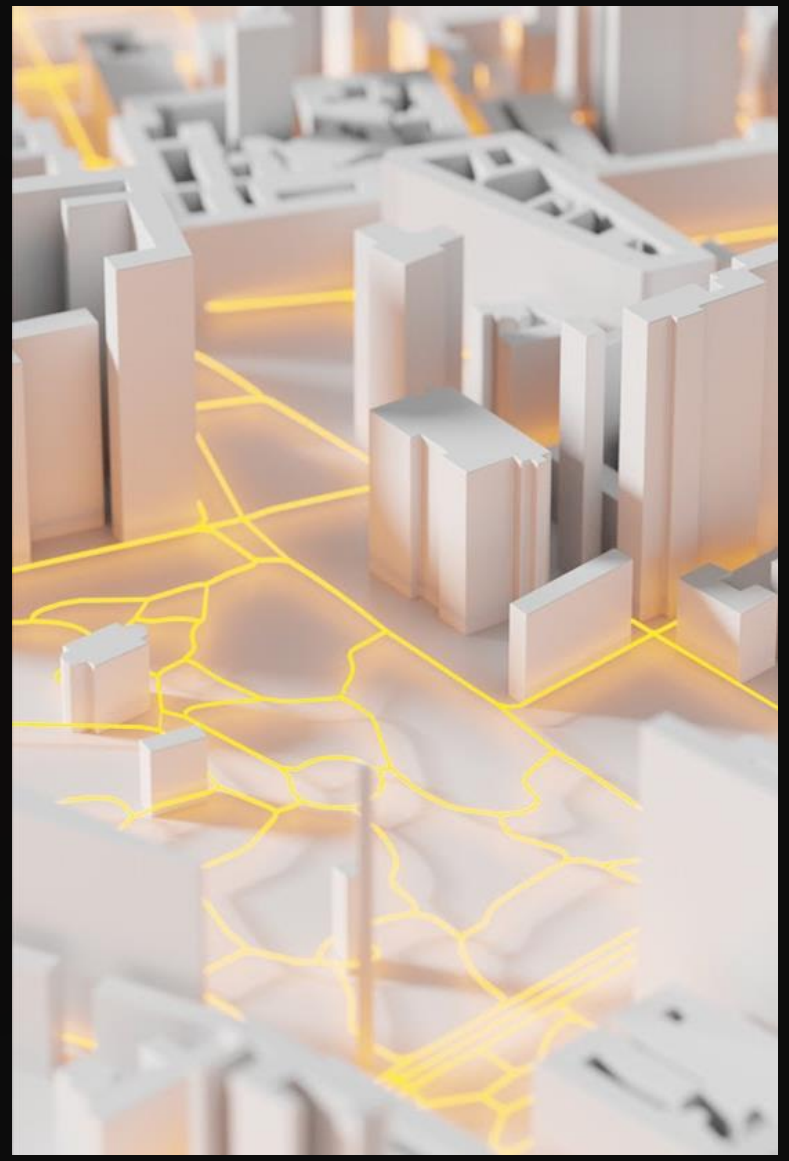
Why analyse geospatial service usage?

- Service development
  - How are my services used (Areas of interests, datasets, origin countries)
  - Performance and availability of the services
  - Standard compliance
- Security
  - What information is acquired around critical infrastructure
  - What data sets are being used together
  - Non domestic usage
  - Identify data harvesting



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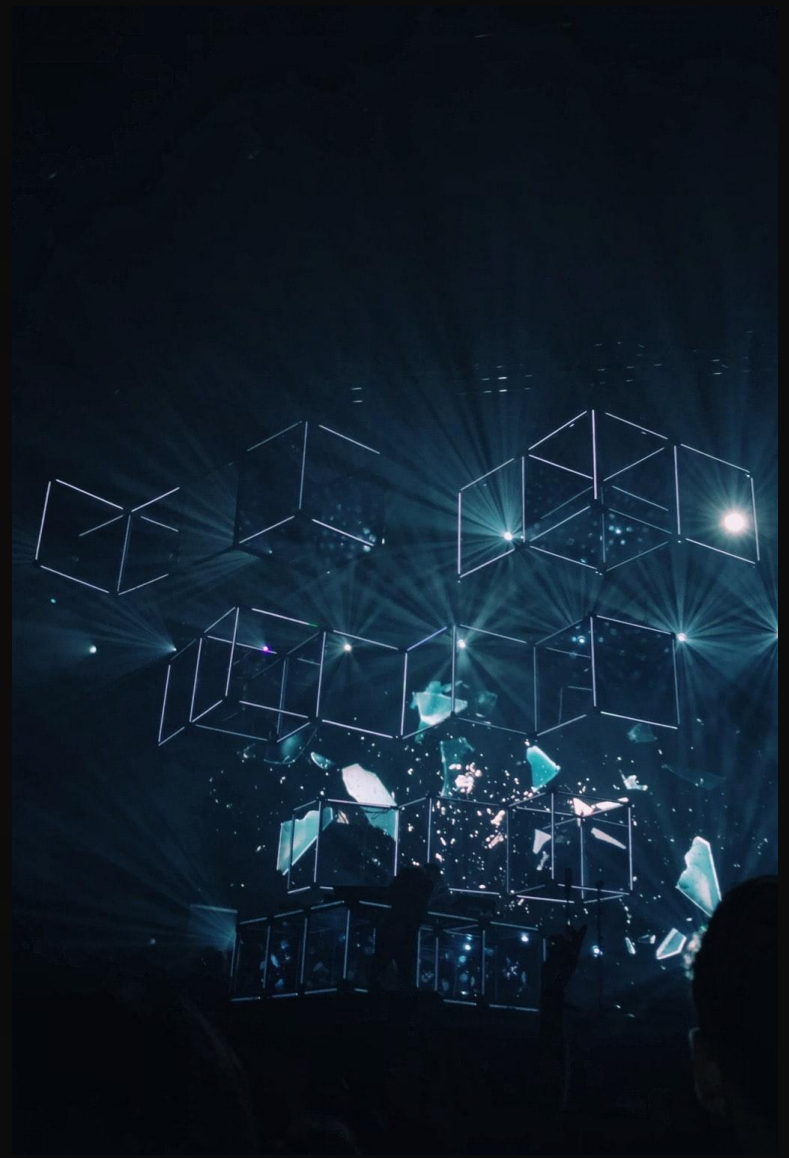
Finnish way of doing security

- Know your data
- Identify the risks
- Know your users
- Continuous risk assessment model



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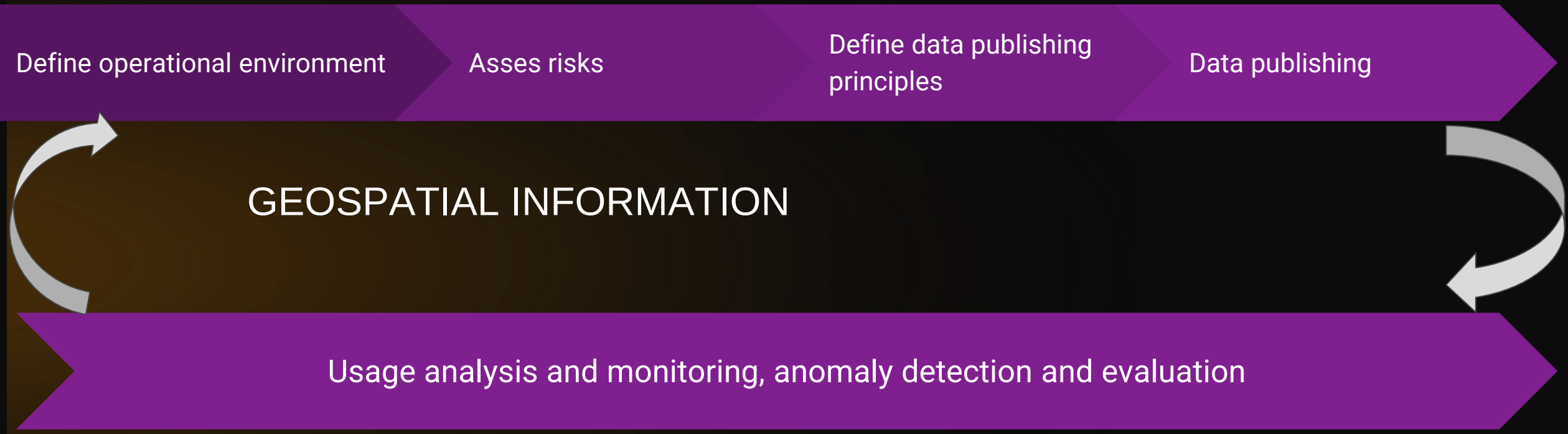

source: Memo of national geospatial information risk assessment group (Finnish government)

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