
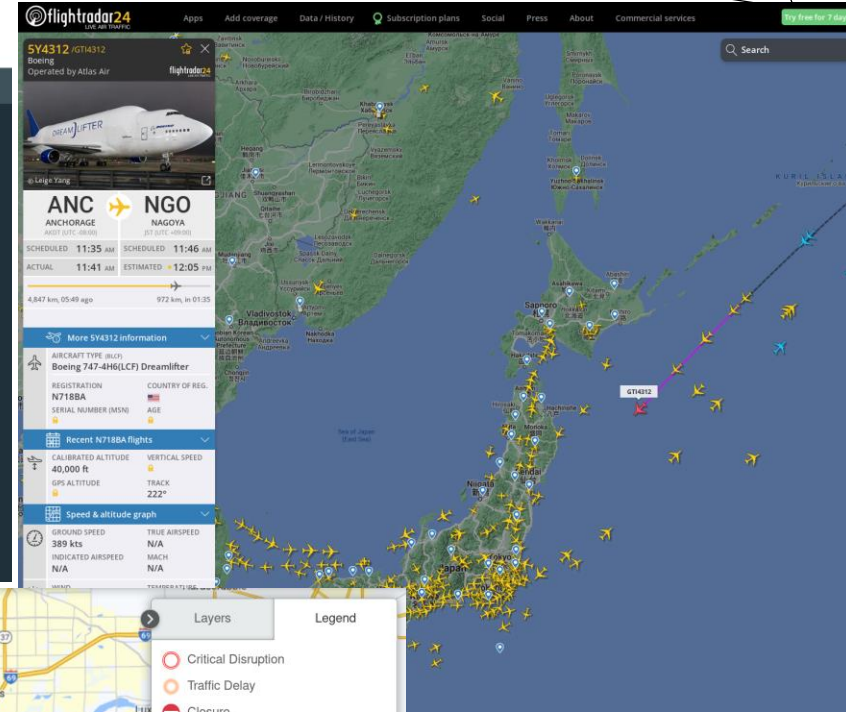
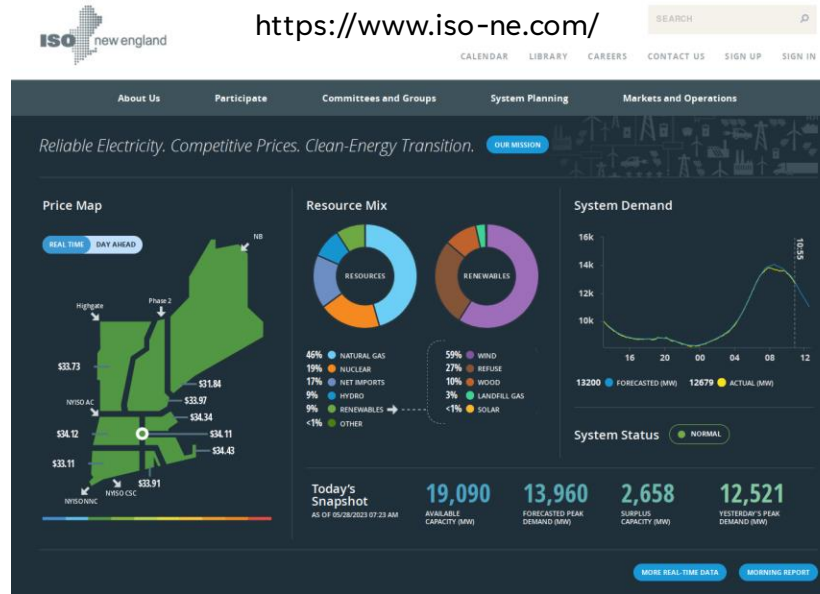
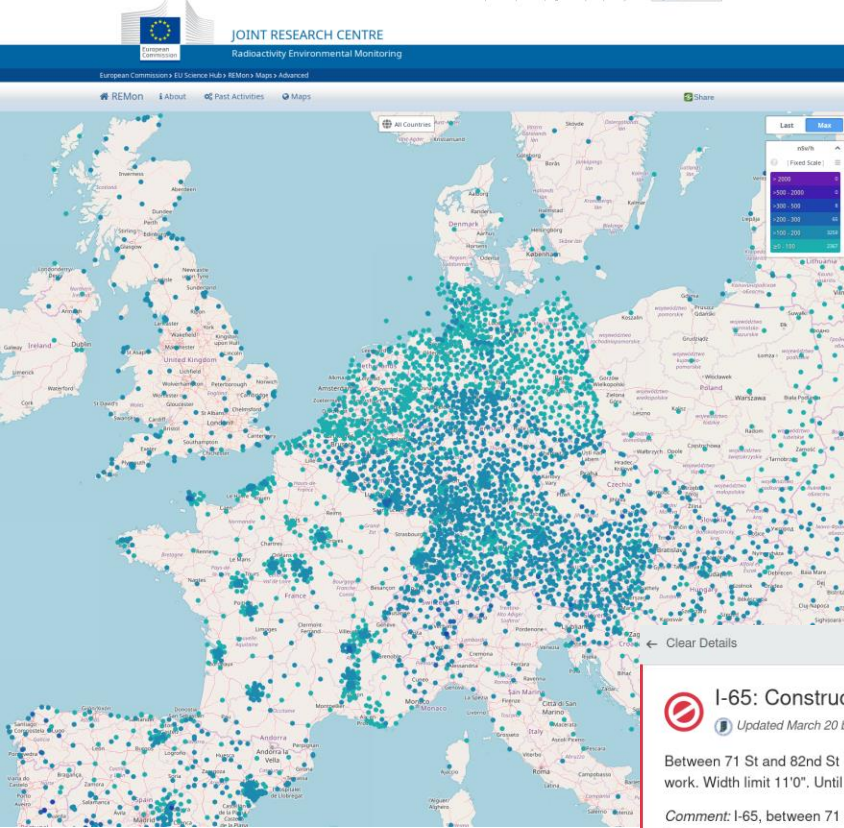


A GLANCE AT INTERNET TOPOLOGY

 Romain Fontugne
IIJ Research Laboratory

MONITORING



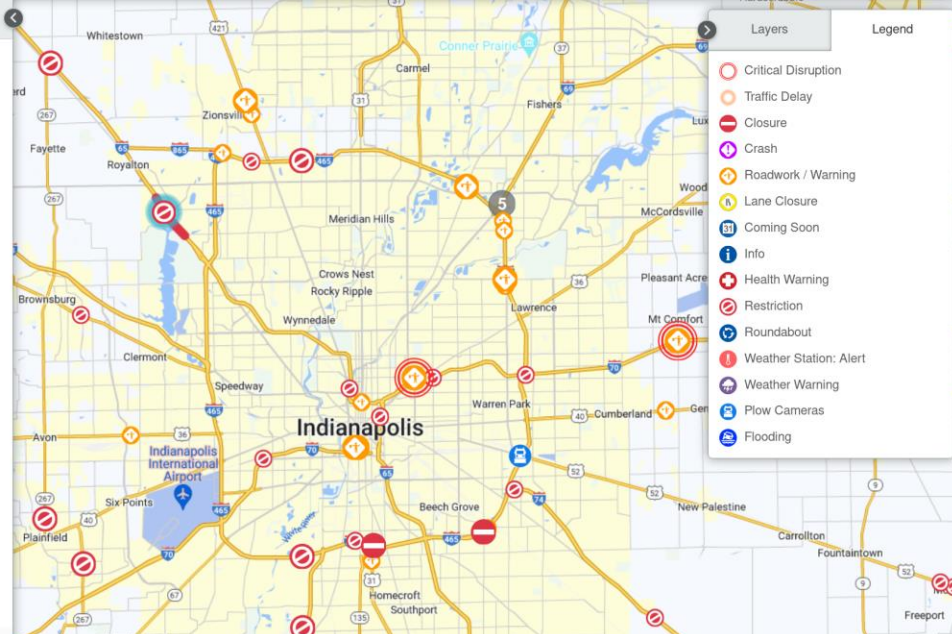
I-65: Construction work.
Updated March 20 by INDOT

Between 71 St and 82nd St (Indianapolis). Look out for construction work. Width limit 11'0". Until October 15, 2023 at about 11:59PM EDT.

Comment: I-65, between 71 St and 82nd St (Indianapolis). Look out for construction work. Starting April 3, 2023 at about 9:00PM EDT until October 15, 2023 at about 11:59PM EDT. Construction work will be ongoing to reconstruct the bridge carrying Traders Lane over I65. Northbound I-65 lanes are 11' wide.

11'0" Width Limit

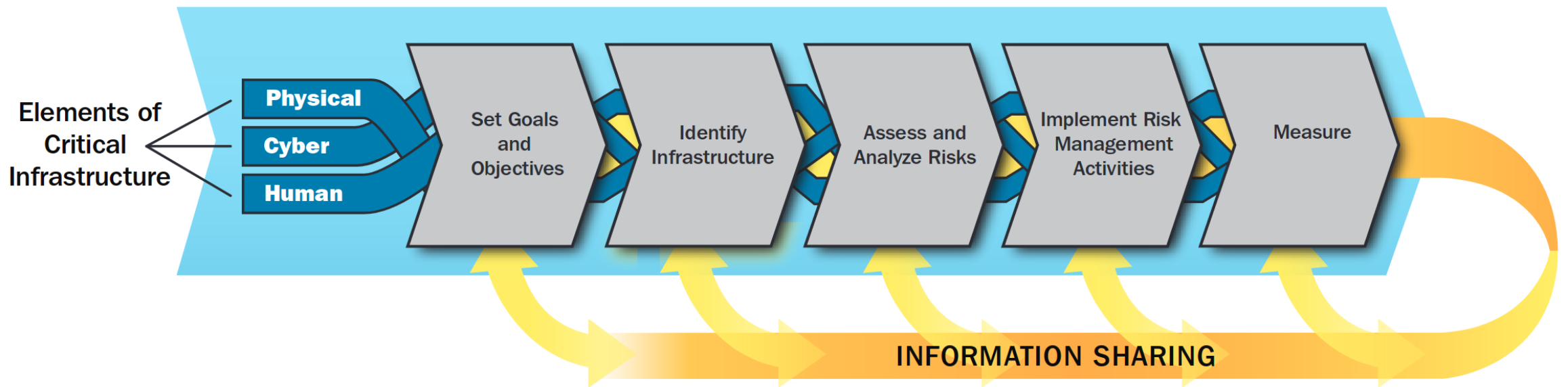
I-65: 1-065-124-6-1...
I-65: 1-065-126-3-1...



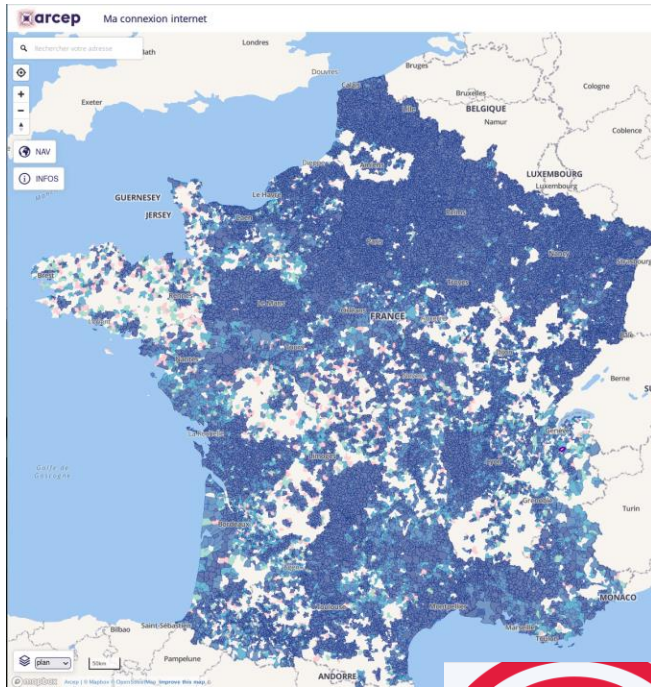
https://511in.org/event/

RISK MANAGEMENT

Evaluate and Plan



INTERNET?



<https://cartefibre.arcep.fr>

総務省
MIC Ministry of Internal Affairs and Communications

安全・信頼性の向上

重大な事故の報告

以下に該当する電気通信事業者が発生させた電気通信事業者は、電気通信事業法等の定めるところにより、事故の報告をすることが義務付けられています。（事故の報告を行わない又は虚偽の報告をした場合については、三十万円以下の罰金を科される場合があります。）

電気通信サービスの提供を停止又は品質を低下させた事故で、影響利用者数及び継続時間が下図の基準を満たすもの等

速やかに状況を報告 + 30日以内に詳細報告

影響する利用者数	継続時間	報告の要件
1000以上	2時間以上	速やかに報告 + 30日以内に詳細報告
100以上	10時間以上	速やかに報告 + 30日以内に詳細報告
30以上	24時間以上	速やかに報告 + 30日以内に詳細報告

報告様式

速やかな報告

電気通信事業者は、重大な事故が発生した場合には、電気通信事業法施行規則第57条に基づき、「速やかに」×発生日時等の事項について総務省へ報告しなければなりません。また、利用者保護の観点から、重大な事故の発生が明らかとなった場合は、速やかに総務省へ報告する必要があります。

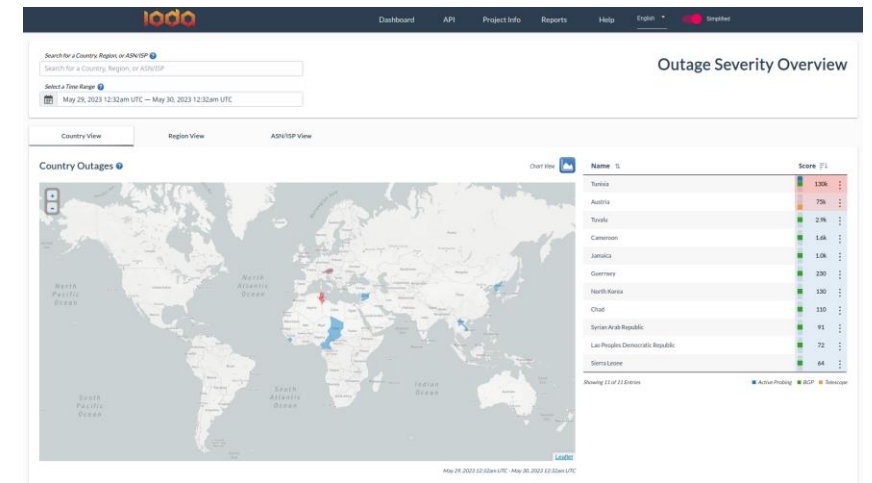
https://www.soumu.go.jp/menu_seisaku/ictseisaku/net_anzen/jiko/judai.html



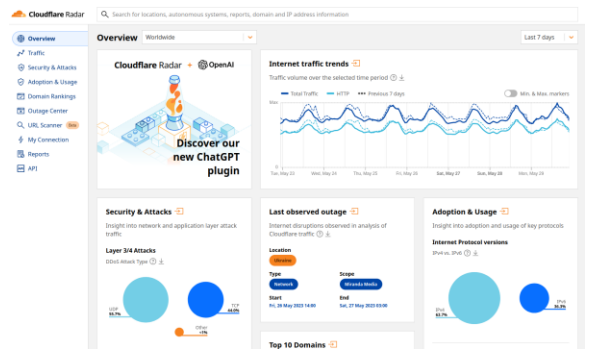
USA, actively participate in FCC policy-making!

The Federal Communications Commission (FCC) is opening the Measuring Broadband America (MBA) program to the international public. International participation demonstrates performance. We are proud to be part of such an important study. Reach out to us if you can help and have better performance analysis at the heart of the FCC policy-making.

<https://www.fcc.gov/general/measuring-broadband-america-open-methodology>



<https://ioda.live>



<https://radar.cloudflare.com/>

- RIPE stats
- NOGs
- Kentik
- NetBlocks
- Downtdetector?
- Twitter?
- ...



CHALLENGES

Internet is global

- Virtual/Cyber-space
- Borders?
- Hard to breakdown into regions
- 75k ASes

Diverse

- ISPs, CDNs, Cloud, enterprises, universities, etc...
- Infra / net. / web
- Obscure parts (Overlay, CGNAT, mobile)
- What to measure?

Unpredictable

- Constantly evolving
- Quick global changes
- Overlay networks
- A lot of dependencies
- Hard to get 'insider' data
- Not well instrumented



INTERNET HEALTH REPORT

AN OBSERVATORY FOR THE INTERNET

Intelligence

Assessing the current topology, understanding role of resources, evaluating risks.

- Network dependency
- Internet Yellow Pages
- RPKI

Reporting

Detect substantial changes, document disruptive events.

- Delay changes
- Routing anomalies
- Outages

Collaboration

Open source & data

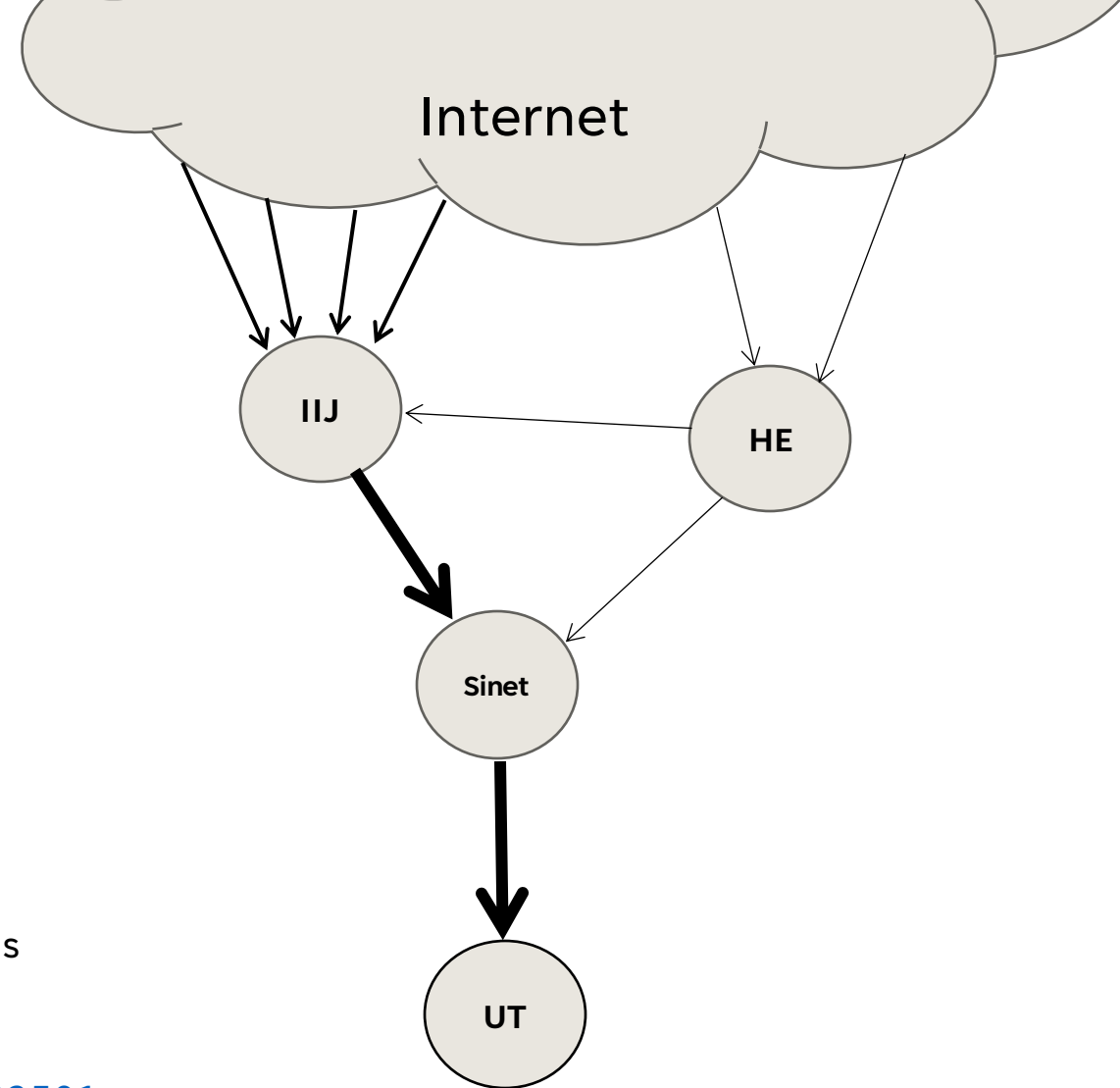
<https://github.com/InternetHealthReport>

<https://ihr.ijlab.net>

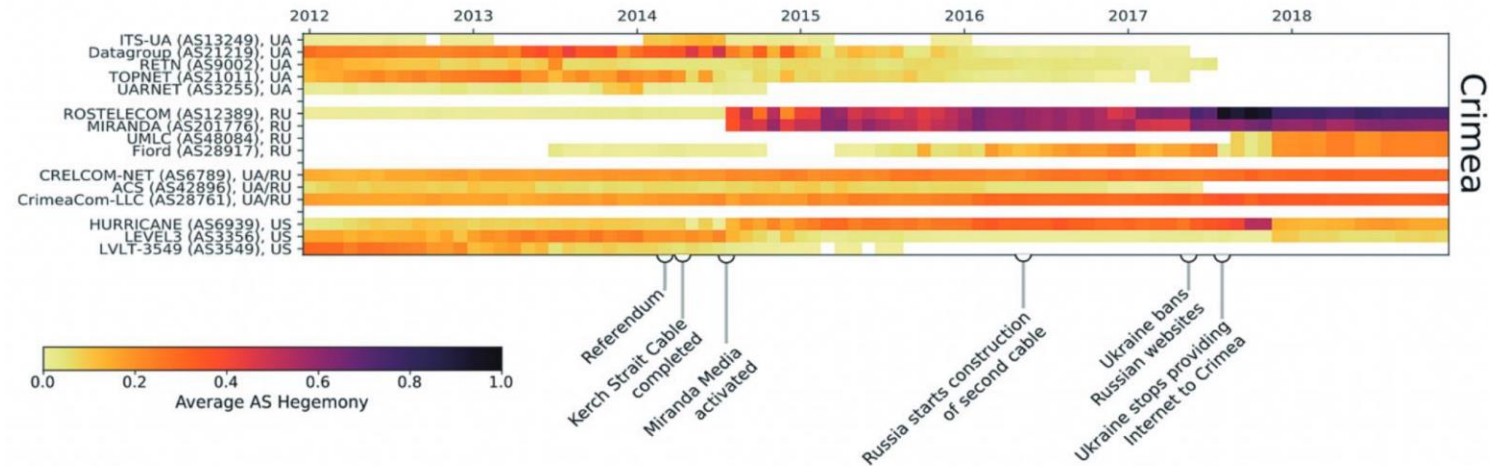
NETWORK DEPENDENCY

Measure AS inter-dependencies

- Using BGP data
- Give a good idea of the 'topological location' of ASes
- Customers of an AS
- Example: <https://ihr.iijlab.net/ihr/en-us/networks/AS2501>



NETWORK DEPENDENCY VARIANTS



Same idea applied differently:

- Regional bottleneck (e.g. Crimea)

Outage last Saturday: <https://twitter.com/netblocks/status/1662213522263011330>

- Countries' network dependency / Resilience (ISOC Pulse)

<https://ihr.iijlab.net/ihr/en-us/countries/JP>

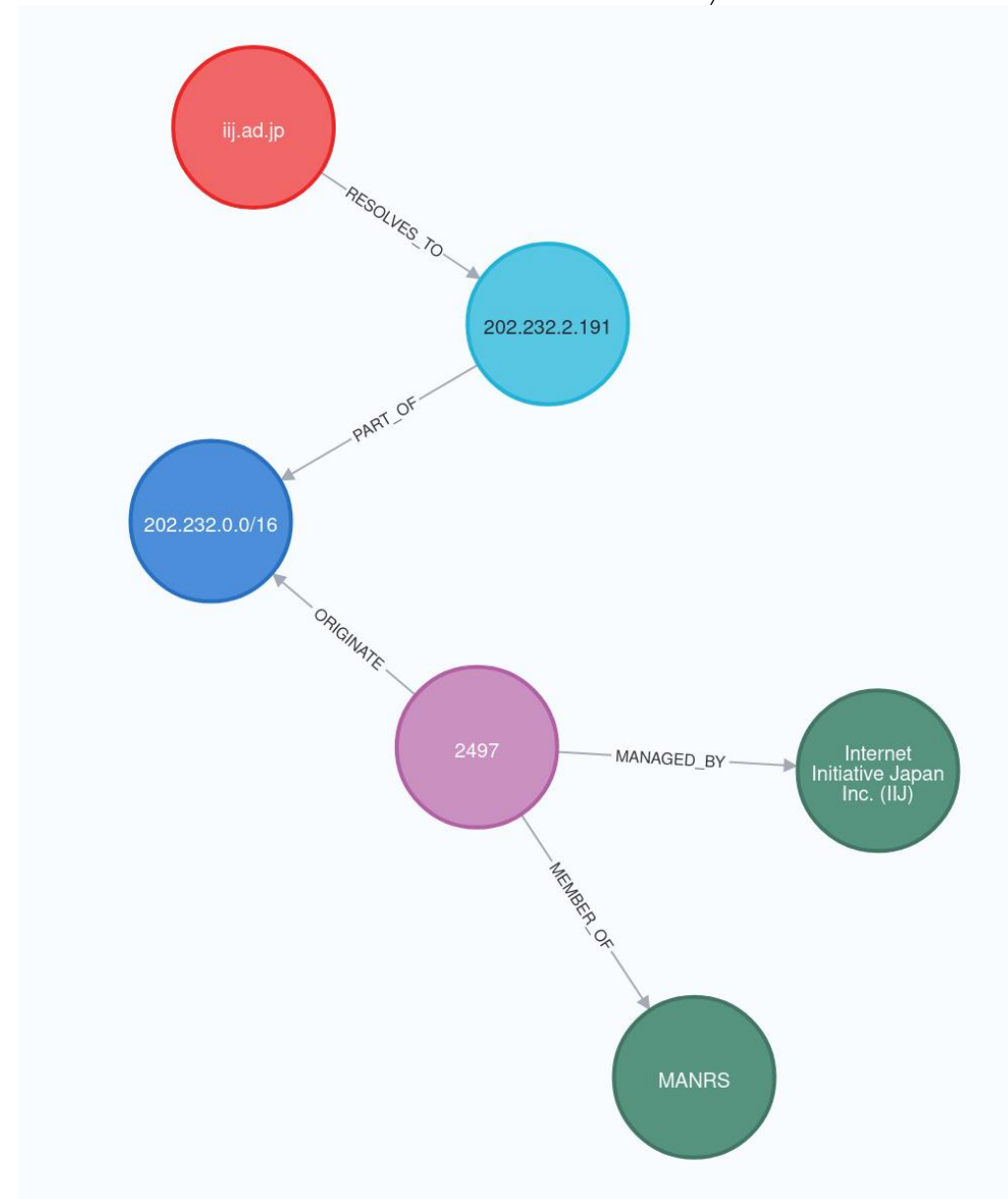
<https://pulse.internetsociety.org/blog/italys-internet-outage-a-perfect-storm>

- 'Customer cone', BGP leak/hijacks, routing anomalies, AS ranking, outages

Rogers outage: https://twitter.com/ihr_alerts/status/1545789981603823616

INTERNET YELLOW PAGES

- Knowledge graph for networking data
- 16 data sources:
APNIC, BGPKIT, Bgp.tools, CAIDA, Citizen Lab, Cloudflare, IHR, InetIntel, MANRS, NRO, OpenINTEL, PCH, PeeringDB, RIPE NCC, Stanford, Tranco
- Add semantics to the data
- About 4M nodes, 20M links
- <http://iyp.iijlab.net>



IYP: DEMO

Popular .jp domain names

And those not in RPKI

Resiliency of top japanese networks (IXP & facilities)

CONCLUSION

- Internet needs better monitoring
- IHR: An observatory for the Internet
 - Understanding current Internet
 - Monitoring important changes
 - Still a lot of work to do on reporting and upper layers
- References:
 - Website: <http://ihr.live> <http://iyp.iiijlab.net>
 - Github: <https://github.com/InternetHealthReport>
 - @ihr_alerts
 - romain@iiij.ad.jp



INTERNET?

Arcep Accueil | J'alerte l'Arcep

Dépôt d'une alerte

Contexte Diagnostic Détails Compléments Validation

Vous êtes ?

- Particulier
- Entreprise
- Collectivité
- Développeur
- Opérateur

Votre alerte concerne ?

- Mobile
- Fixe / Internet**
- Postal
- Equipements terminaux
- Distribution de la presse

* champs obligatoires

File a complaint

File an ACP complaint

File a Privacy complain

Share your broadband access experience

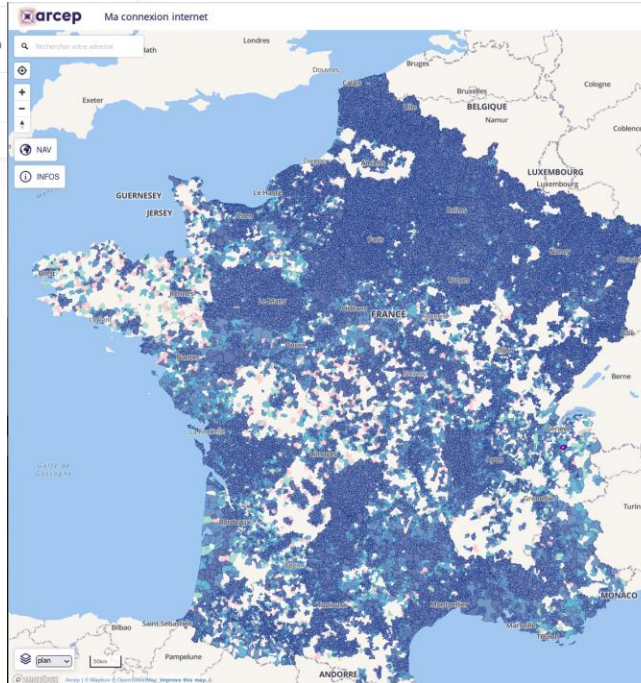
Share your experience

Learn about consumer issues

Download a complaint form

File using our American Sign Language Hotline: ASL Video

<https://jalerte.arcep.fr>



<https://cartefibre.arcep.fr>

<https://consumercomplaints.fcc.gov>

総務省

ご意見・ご提案 ENGLISH(TOP) MIC ICT Policy (English / Français / Español / Русский / 中文 / 阿拉伯文)

総務省の紹介 広報・報道 政策 組織案内 所管法令 予算・決算 申請・手続 政策評価

総務省トップ、政策・情報通信政策、電気通信政策の推進、安全・信頼性の向上、重大な事故の報告

安全・信頼性の向上

重大な事故の報告

以下に該当する電気通信事故が発生させた電気通信事業者は、電気通信事業法等の定めるところにより、事故の報告をすることが義務付けられています。（事故の報告を行わない又は虚偽の報告をした場合については、三十万円以下の罰金を科されることがあります。）

電気通信サービスの提供を停止又は品質を低下させた事故で、影響利用者数及び継続時間が下図の基準を満たすもの等

速やかに状況を報告 + 30日以内に詳細報告

影響を及ぼした利用者数

報告形式

速やかな報告

電気通信事業者は、重大な事故が発生した場合には、電気通信事業法施行規則第4条に基づき、「速やかに」発生した等の事実について速報を報告しなければなりません。また、利用者保護の観点から、重大な事故の内容を公表する旨の速報を総務省へ報告する旨を、総務省の「ICT トラブル」(注)欄に

https://www.soumu.go.jp/menu_seisaku/ictseisaku/net_anzen/jiko/judai.html

- IODA
- Cloudflare Radar
- RIPE stats
- NOGs
- Kentik
- Downtdetector?
- Twitter?
- ...

MONITORING (REPORT)

ENERGY.GOV About the DOE | Organization | News | Contact Us

SCIENCE & TECHNOLOGY ENERGY SOURCES ENERGY EFFICIENCY PRICES & TRENDS NATIONAL SECURITY

OFFICE OF CYBERSECURITY, ENERGY SECURITY, & EMERGENCY RESPONSE

You are here: DOE Home > CESER Home > OE-417 > Annual Summaries

Electric Disturbance Events (OE-417) Annual Summaries

View and download data tables of reported electric emergency incidents and disturbances. Archives of reported events, dating back to 2000, are also available in the tables below. Summaries are available in pdf and excel format. Form OE-417 reported information is also summarized in the Major Electric Disturbances and Unusual Occurrences Appendix B1 and B2 found in EIA's [Electric Power Monthly](#) reports.

Year	PDF	XLS
2023	PDF	XLS
2022	PDF	XLS
2021	PDF	XLS
2020	PDF	XLS
2019	PDF	XLS
2018	PDF	XLS

ISER PRODUCTS & PROCESSES

- Energy Assurance Daily
- Emergency Situation Reports
- Emergency Preparedness
- Emergency Response
- Analysis and Outreach
- Electric Disturbance Events (DOE-417)

OE-417 ONLINE SUBMISSIONS

- OE-417 Online Submissions
- E-Filing System Training (PDF 237 KB) (DOC 540 KB)

OE-417 FORM AND INSTRUCTIONS

- Survey Form (PDF 267 KB) (DOC 51 KB)
- Form Instructions (PDF 348 KB) (DOCX 107 KB)

https://www.oe.netl.doe.gov/OE417_annual_summary.aspx

AVIATION SAFETY NETWORK

AN EXCLUSIVE SERVICE OF FLIGHT SAFETY FOUNDATION

Home | Database | Investigation | Statistics | Contact | About | [f](#) [t](#) [v](#) [in](#)

LATEST SAFETY OCCURRENCES

20-MAY-2023 - Seafly LLC Viking Air DHC-6 Twin Otter 400 accident: 2 dead

A DHC-6 Twin Otter 400, N153QS, crashed into the Pacific Ocean about 54 km west of the Half Moon Bay Airport (HAF), California. The aircraft had departed Santa Rosa-Sonoma County Airport, California (STS) at 15:21 UTC (08:21 local ti... [more](#).

Date	Aircraft	Reg	Operator	Fat	Location	Dmg
20-MAY-2023	Viking Air DHC-6 Twin Otter 400	N153QS	Seafly LLC	2	Half Moon Bay Airport, CA (HAF)	w/o
19-MAY-2023	Shorts SC.7 Skyvan 3A-100	AF-519	Uganda Peoples Defence Force	0	near Kalongo Airstrip	w/o
18-MAY-2023	Honda HA-420 HondaJet	N255HJ	Upfront Services LLC	0	Summerville Airport, SC	dst
15-MAY-2023	Learjet 35A	D-CGFQ	GFD	2	Hohn Air Base	w/o

[Full database >>](#) [more...](#)

ASN WIKIBASE - accidents and incidents you can add or edit!

acc. date	type	reg.	operator	fat.	location	dmg
28-MAY-2023	Eiri-Avion PIK-20D	D-0536	Private	1	Wetzlar, Hessen	w/o
28-MAY-2023	Bell 412	HA-5187 ?	TNI-AD (Indonesian Army)	0	Ciwidey, Bandung Area	w/o
28-MAY-2023	Airbus A350-941	F-HTYO	Air France	0	around Tochigi prefecture	min

<https://aviation-safety.net/>

Michigan Department of Transportation

Travel | Projects & Studies | Programs | News & Outreach | Business | Careers | About Us | MI Drive

Report Potholes

Travel > Commuters > Report Potholes

Potholes are created when snow and ice melt as part of Michigan's seasonal freeze-thaw cycles. When moisture seeps into the pavement and freezes, it causes the ground to expand and push the pavement up creating a gap. As temperatures rise, the ground returns to normal level creating a void or gap between the pavement and ground below it. When vehicles drive over the gap, the pavement weakens leading to a pothole.

[Birth of a Pothole](#)
[Pothole Tips](#)
[Damage Claim Procedure & Form](#)

Report potholes on state trunklines (M, L or US routes) by filling out the online form or call 888-296-4546. To report other potholes, contact your county road commission or local municipality.

For everyone's safety, please remember to slow down near pothole patching crews.

Report a Pothole

All form fields are required unless labeled as optional.

Region

- Superior
- North
- Grand
- Bay

<https://www.michigan.gov/mdot/travel/commuters/potholes>

FLIGHT SAFETY FOUNDATION
independent • impartial • international

The Aviation Safety Network is an exclusive service of the [Flight Safety Foundation \(FSF\)](#).



Safety Dashboard

FSF's 2017-2022 Interactive [Accident Dashboard](#)

[Email service](#)

NETWORK DELAYS

Measure AS inter-dependencies

- RIPE Atlas (12k probes)
- IHR monitors latency between Atlas probes and ASes/IXPs/cities/countries found in traceroutes
- Examples:
 - Impact of subsea cable cut: <https://twitter.com/DougMadory/status/1447659550975406094>
 - Impact of COVID lockdowns: <https://ihr.ijlab.net/ihr/en-us/covid19?country=France>
 - War in Ukraine: https://twitter.com/ihr_alerts/status/1501446740498841604



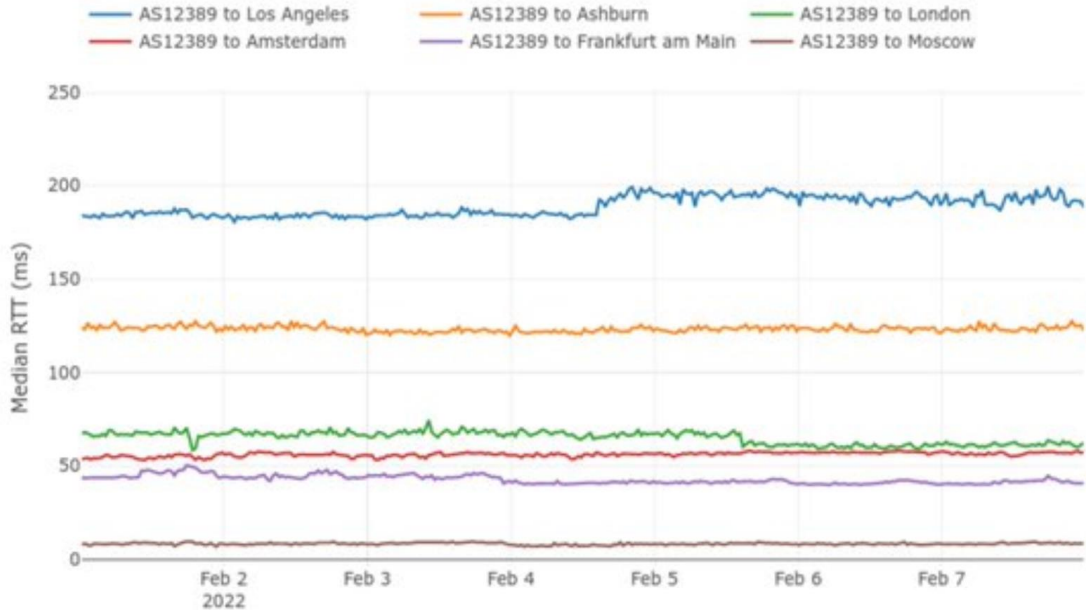
NETWORK CONGESTION



Round Trip Time from Rostelecom (AS12389)

February 2022

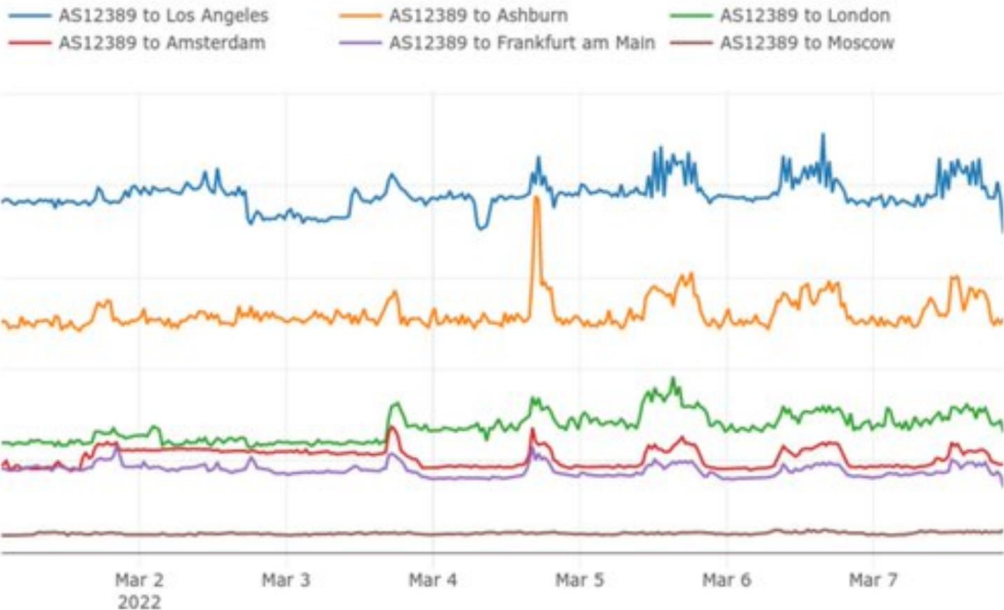
March 2022



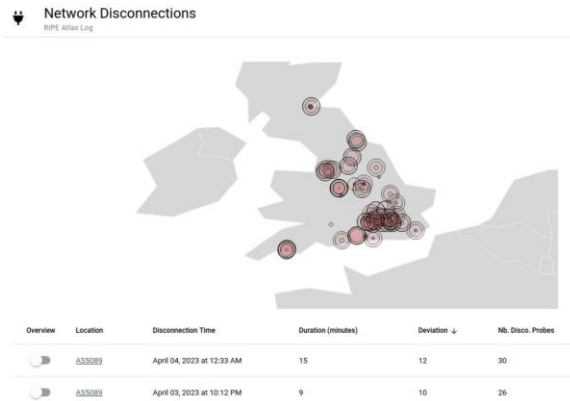
Los Angeles

Ashburn

London
Amsterdam
Frankfurt
Moscow



IHR ANOMALY DETECTORS



OUTAGE DETECTION

- Based on RIPE Atlas
- Detect synchronized Atlas disconnections
- Virgin Media outage:
https://twitter.com/ihr_alerts/status/1643226028381446144



GLOBAL REPORT

- Route, delay changes
- Near real time analysis

