The Severed Island

Could Ireland Survive an Undersea Blackout?

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LINX127, London, November 18-19th, 2026

inex Interconnecting networks and people since 1996

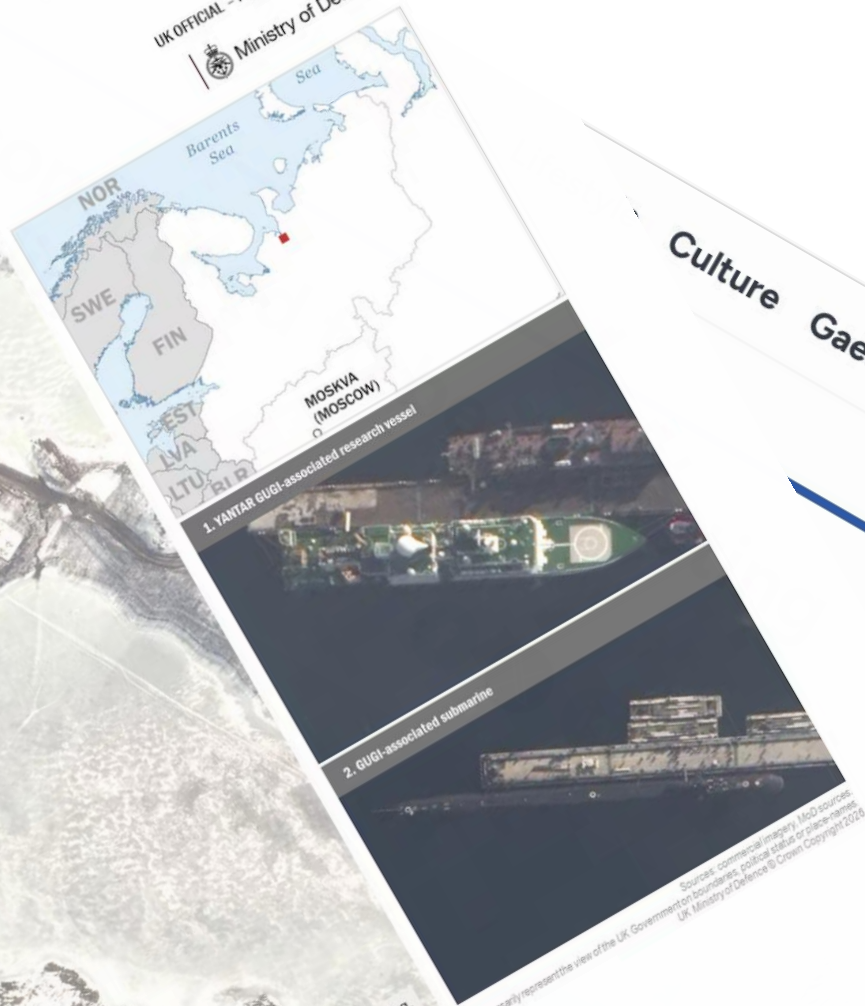
THE IRISH TIMES

Europe

Nato allies say they foiled Russian subsea cable sabotage plot

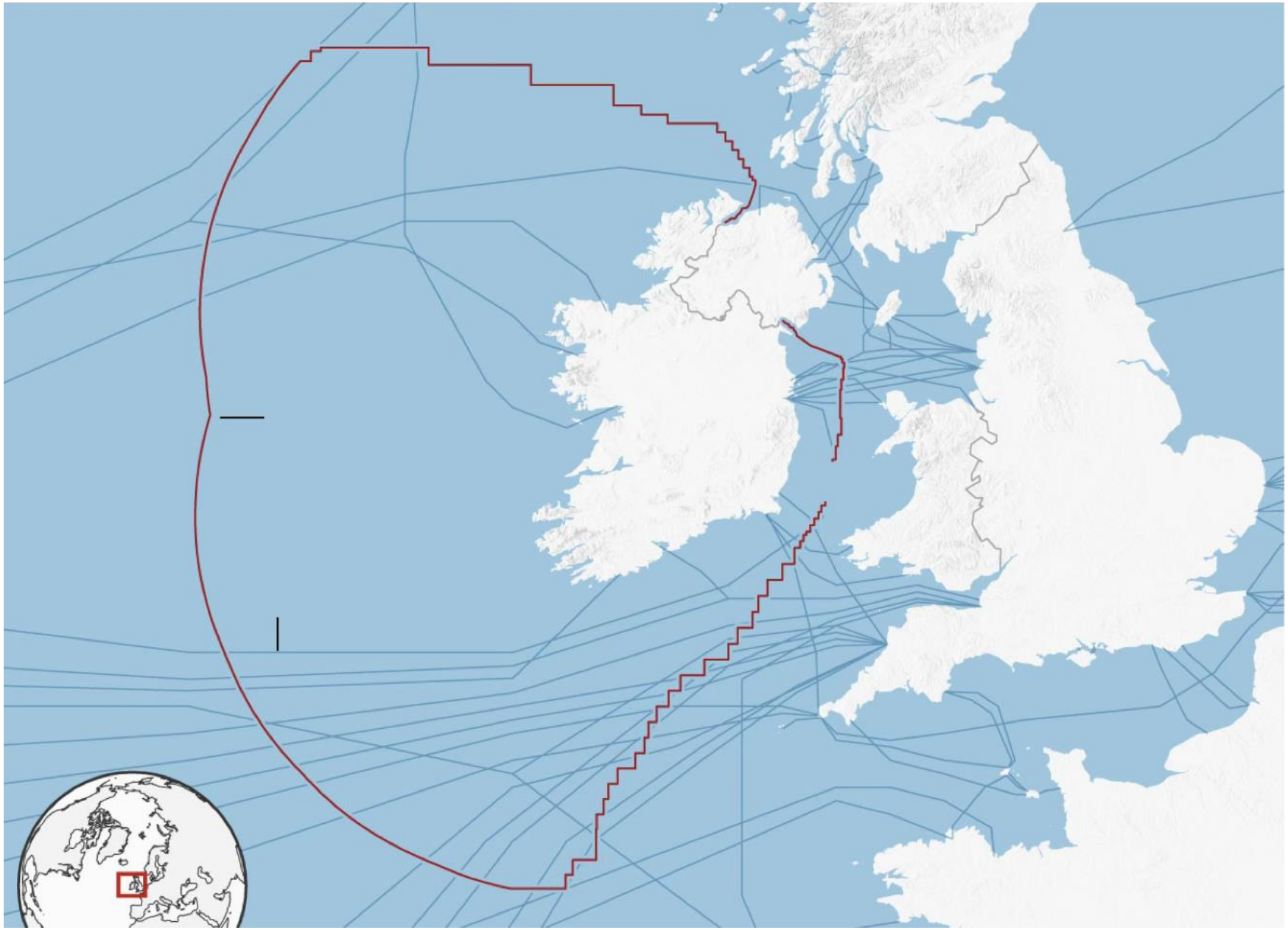
Western officials describe new 'secret weapon' for disabled undersea cables



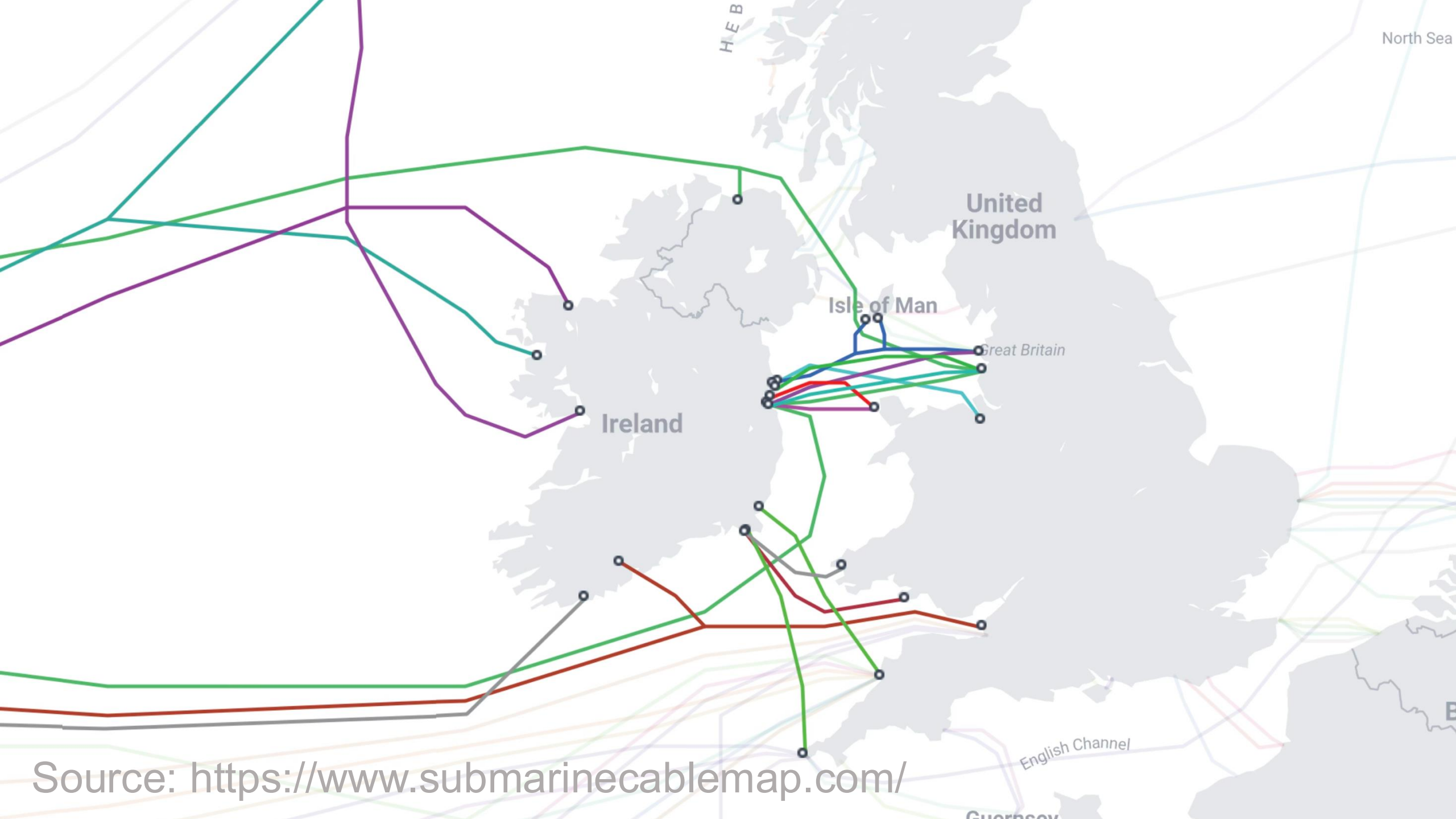


Culture Gaeilge

By Mark Coughlan



Guardian graphic. Source: TeleGeography Submarine Cable Map, marineregions.org
https://www.theguardian.com/world/2026/aug/03/is-irelands-unprotected-ocean-the-weak-link-in-european-defence



Source: https://www.submarinecablemap.com/

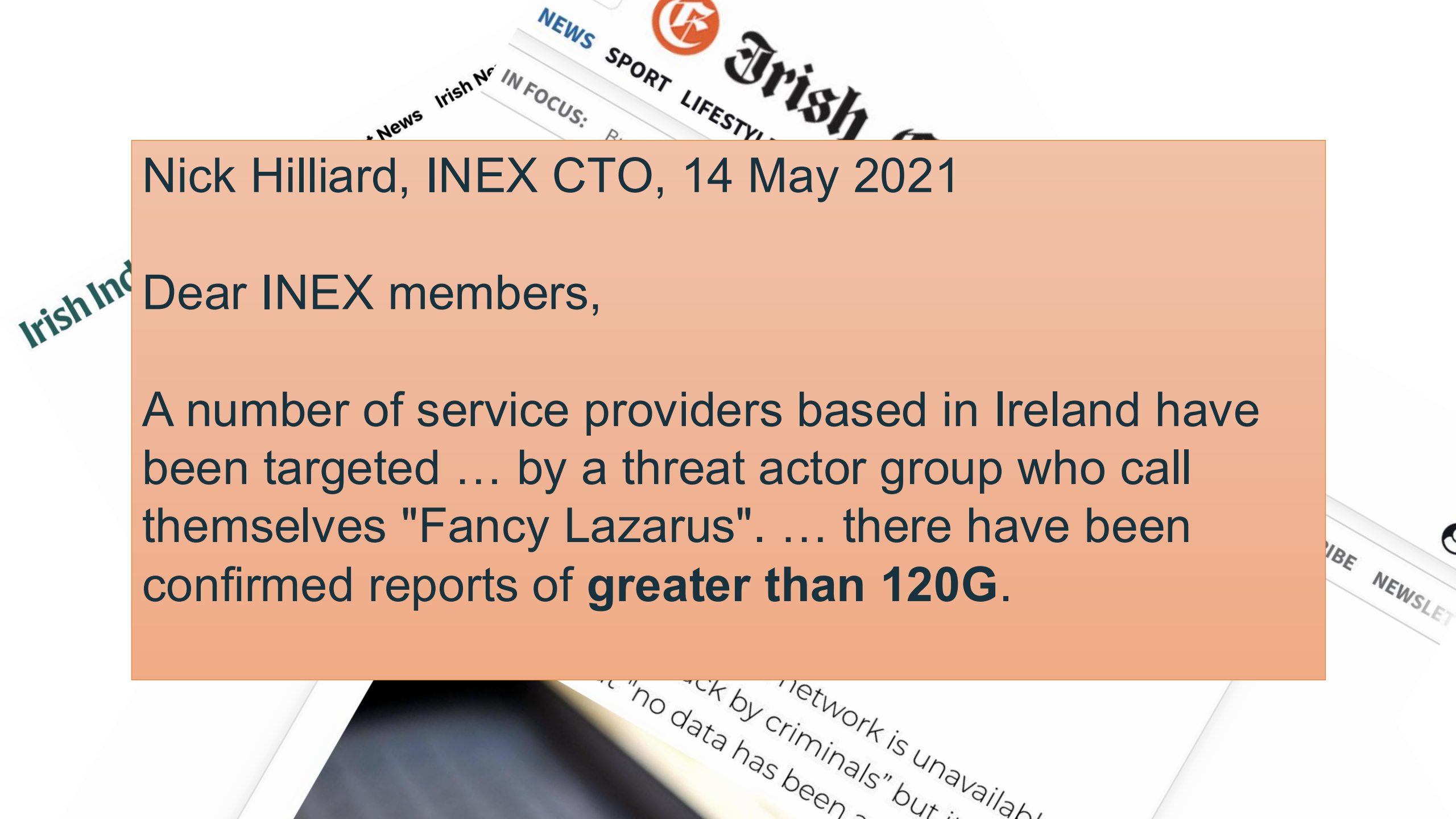
Experiment: ‘Severed Island’

If the subsea cables are cut, what critical infrastructure survives?

Could Ireland Survive an Undersea Blackout?

- Largely a desktop experiment at this stage
  - Worst-case scenario

- Answers more realistic questions quite well:
  - Can Ireland's ISPs provide essential services under a prolonged DDoS attack?
  - Or a partial subsea break leading to congestion?



Nick Hilliard, INEX CTO, 14 May 2021

Dear INEX members,

A number of service providers based in Ireland have been targeted … by a threat actor group who call themselves "Fancy Lazarus". … there have been confirmed reports of **greater than 120G**.

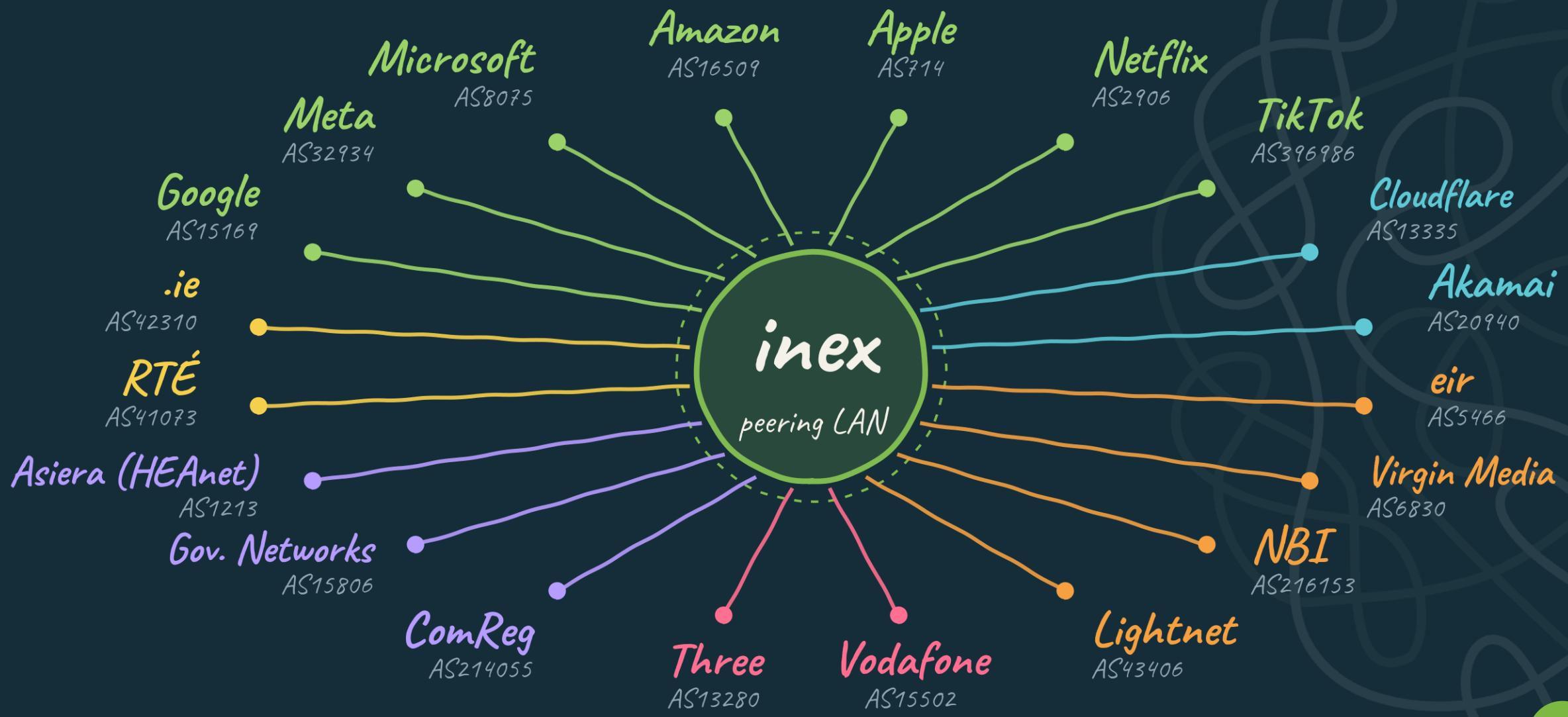
INEX



INEX

- Peering point for the island of Ireland; member-owned; cost-recovery basis; founded in 1996.
- ~120 members (~95% of eyeballs?)
- Traffic peaks of 1.5 Tbps
- Dual infrastructure, 7+ PoPs, own DF
- Opened INEX Cork in 2016
- Home of IXP Manager

One port, ~120 networks



Connected Edge Capacity

Member Ports by Infrastructure

Infrastructure	1 Gbits	10 Gbits	100 Gbits	Total	Connected Capacity
INEX LAN1	23	79	61	163	6.91 Tbits
INEX LAN2	14	55	24	93	2.96 Tbits
INEX Cork	5	7	0	12	75.00 Gbits
Totals	**42**	**141**	**85**	**268**	**9.952 Tbits**

The most interconnected point in Ireland

IXPs in National Resilience Roles

- FENIX - by NIX.CZ (the Czech IXP)
  - Created in response to massive, coordinated DDoS attacks that took down major news media, banks, and mobile operators.
  - Operates as a "trusted island" within the IXP, allowing FENIX members to isolate their networks from the global internet.
- Sweden treats its IXP nodes as military-grade critical assets, housing them in hardened rock shelters/underground bunkers.
- Finland (FICIX) - part of the Telecommunications Pool of the National Emergency Supply Agency, which runs joint contingency exercises for severe international cable severing and hostile border electronic warfare.

Test Platform

What works if we can only exchange traffic over INEX?

Test Platform to Simulate a Severed Island

- Vagrant based modern Linux host, IPv4 only
- Bird to remove the default route and set INEX-only routes
  - Pulled from the route collector
  - Also added routes from sample bilateral sessions with Google and Cloudflare
- Excluded some ASNs: 1273, 6461, 6830, 6939, 8220, 9002
  - Mostly out-of-country routes / don’t peer
- Local PowerDNS recursor
- Firefox used to test sites under these routes only
  - Web developer tools identified third-party dependencies

Anatomy of a web request - www.gov.ie

1) ROOT DNS QUERY



Query root name server - who resolves TLD .ie?

2) TLD DNS QUERY



Query .ie TLD name server - who resolves gov.ie?

3) GOV.IE DNS QUERY



Query gov.ie authoritative DNS servers for IP for www.gov.ie

4) ACCESS WEB SERVER



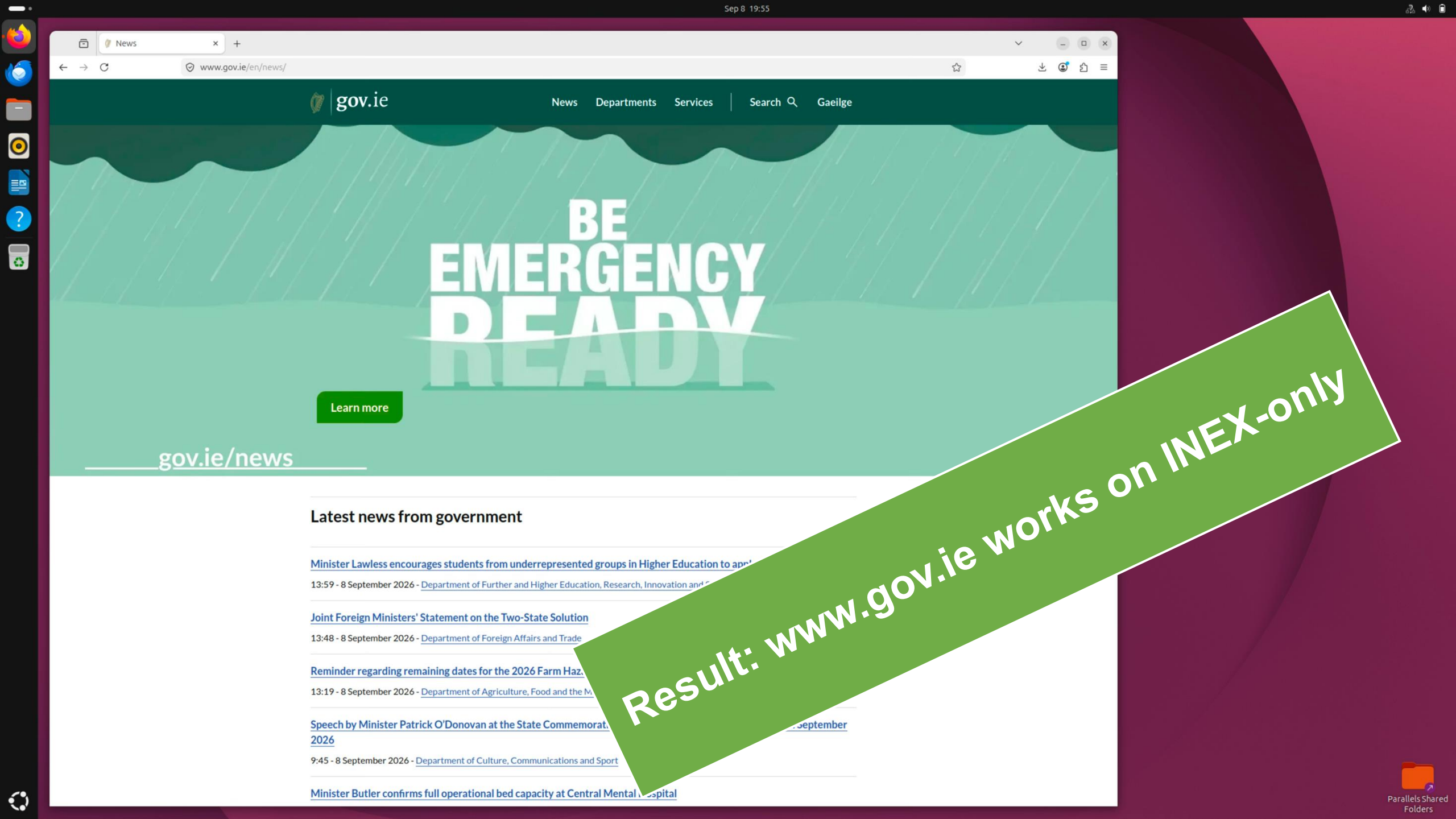
Establish HTTP/S connection and fetch HTML content

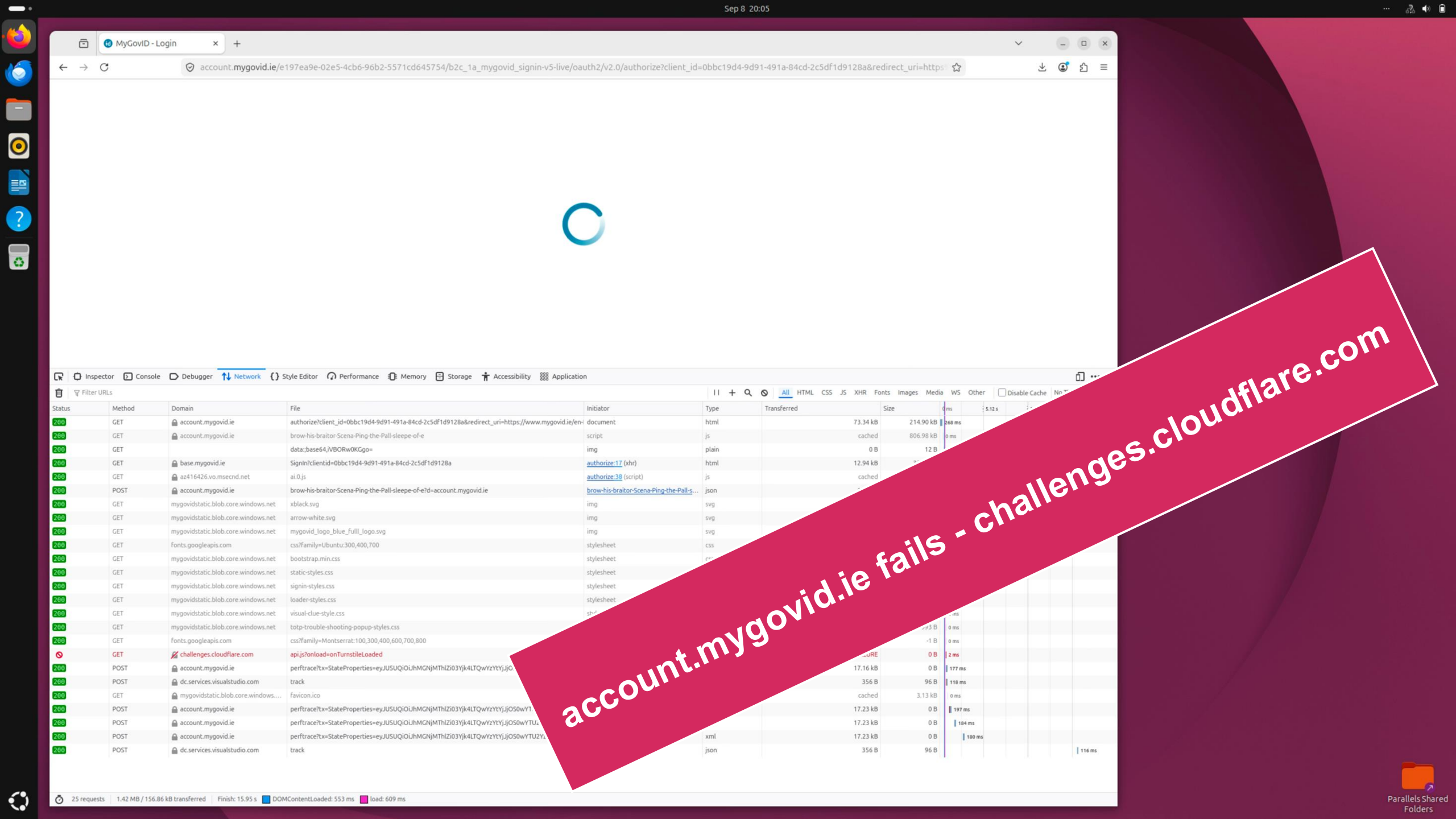
5) GET REQUIRED ASSETS

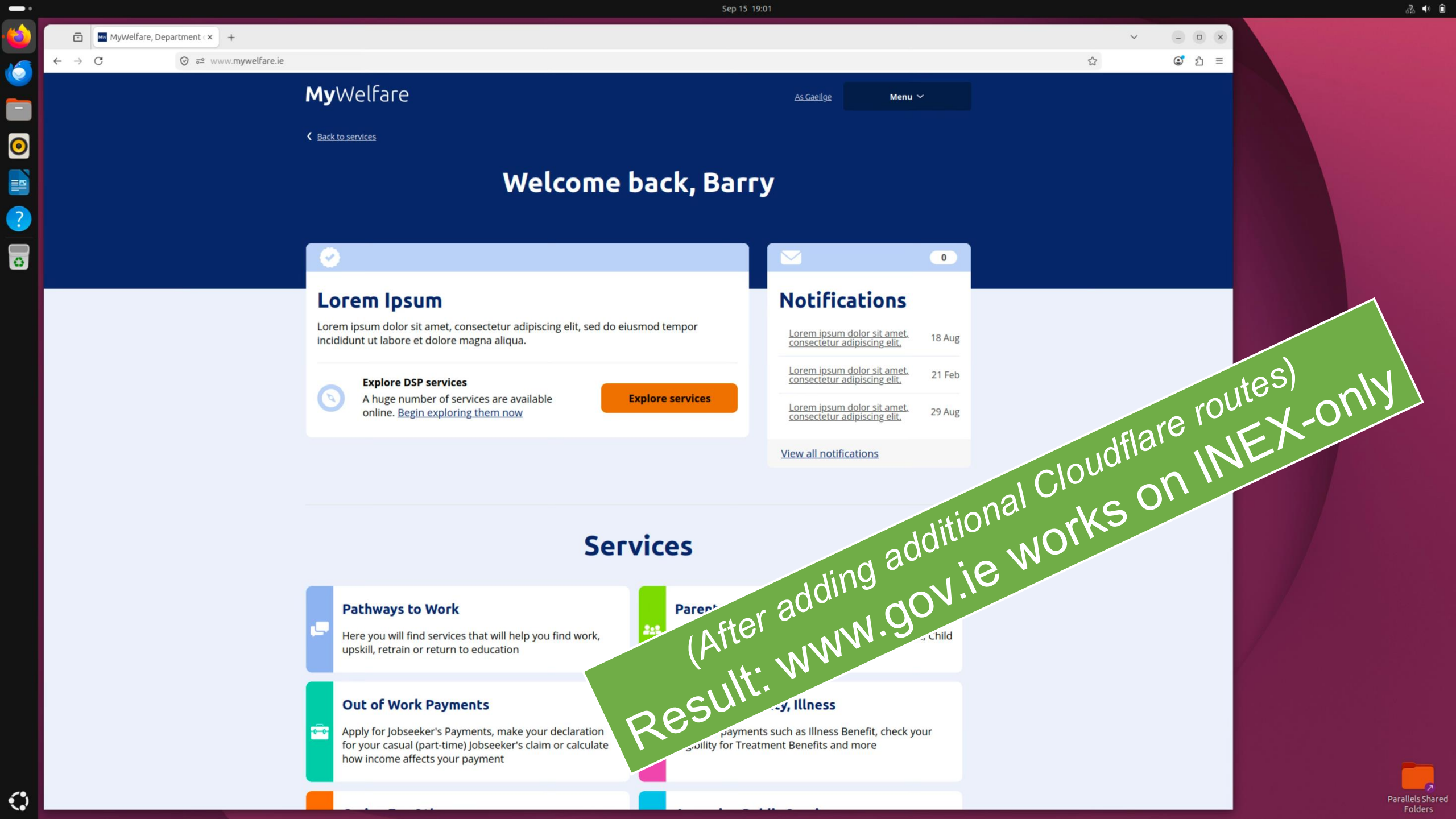


JS, CSS, images.

Other site,CDN required?

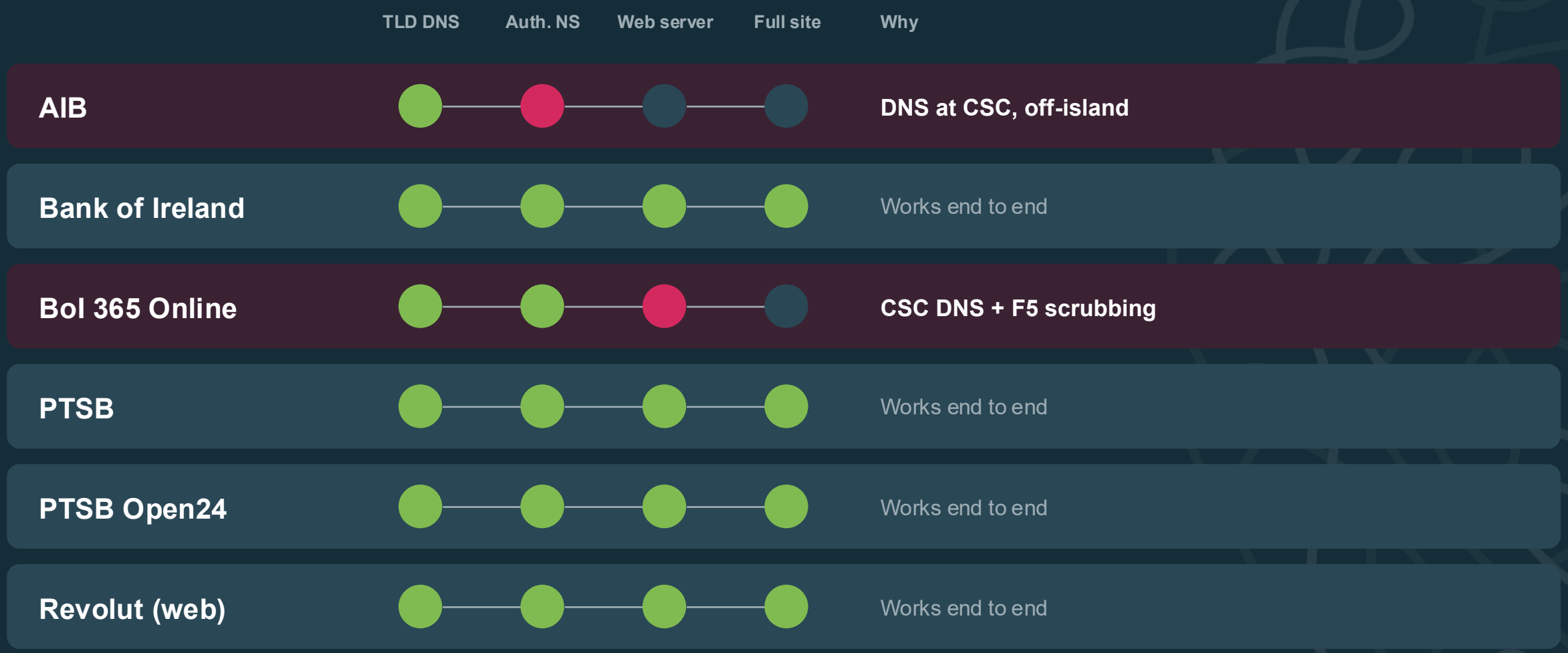

Sep 8 19:55
News
www.gov.ie/en/news/
gov.ie
News
Departments
Services
Search
Gaeilge
BE EMERGENCY READY
Learn more
gov.ie/news
Latest news from government
Minister Lawless encourages students from underrepresented groups in Higher Education to apply
13:59 - 8 September 2026 - Department of Further and Higher Education, Research, Innovation and
Joint Foreign Ministers' Statement on the Two-State Solution
13:48 - 8 September 2026 - Department of Foreign Affairs and Trade
Reminder regarding remaining dates for the 2026 Farm Haz
13:19 - 8 September 2026 - Department of Agriculture, Food and the M
Speech by Minister Patrick O'Donovan at the State Commemorat
September 2026
9:45 - 8 September 2026 - Department of Culture, Communications and Sport
Minister Butler confirms full operational bed capacity at Central Mental
spital
Result: www.gov.ie works on INEX-only
Parallels Shared Folders


Sep 8 20:05
MyGovID - Login
account.mygovid.ie/e197ea9e-02e5-4cb6-96b2-5571cd645754/b2c_1a_mygovid_signin-v5-live/oauth2/v2.0/authorize?client_id=0bbc19d4-9d91-491a-84cd-2c5df1d9128a&redirect_uri=https
Inspector
Console
Debugger
Network
Style Editor
Performance
Memory
Storage
Accessibility
Application
Filter URLs
All
HTML
CSS
JS
XHR
Fonts
Images
Media
WS
Other
Disable Cache
Status
Method
Domain
File
Initiator
Type
Transferred
Size
200 GET account.mygovid.ie authorize?client_id=0bbc19d4-9d91-491a-84cd-2c5df1d9128a&redirect_uri=https://www.mygovid.ie/en- document html 73.34 kB 214.90 kB
200 GET account.mygovid.ie brow-his-braitor-Scena-Ping-the-Pall-sleepe-of-e script js cached 806.98 kB
200 GET data:; base64,iVBORw0KGgo= img plain 0 B 12 B
200 GET base.mygovid.ie SignIn?clientid=0bbc19d4-9d91-491a-84cd-2c5df1d9128a authorize:17 (xhr) html 12.94 kB
200 GET az416426.vo.msecnd.net ai.0.js authorize:38 (script) js cached
200 POST account.mygovid.ie brow-his-braitor-Scena-Ping-the-Pall-sleepe-of-e?d=account.mygovid.ie brow-his-braitor-Scena-Ping-the-Pall-s... json
200 GET mygovidstatic.blob.core.windows.net xblack.svg img svg
200 GET mygovidstatic.blob.core.windows.net arrow-white.svg img svg
200 GET mygovidstatic.blob.core.windows.net mygovid_logo_blue_fulll_logo.svg img svg
200 GET fonts.googleapis.com css?family=Ubuntu:300,400,700 stylesheet css
200 GET mygovidstatic.blob.core.windows.net bootstrap.min.css stylesheet
200 GET mygovidstatic.blob.core.windows.net static-styles.css stylesheet
200 GET mygovidstatic.blob.core.windows.net signin-styles.css stylesheet
200 GET mygovidstatic.blob.core.windows.net loader-styles.css stylesheet
200 GET mygovidstatic.blob.core.windows.net visual-clue-style.css
200 GET mygovidstatic.blob.core.windows.net totp-trouble-shooting-popup-styles.css
200 GET fonts.googleapis.com css?family=Montserrat:100,300,400,600,700,800
GET challenges.cloudflare.com api.js?onload=onTurnstileLoaded 0 B 2 ms
200 POST account.mygovid.ie perftrace?tx=StateProperties=eyJUSUQiOiJhMGNjMThlZi03Yjk4LTQwYzYtYj 17.16 kB 0 B 177 ms
200 POST dc.services.visualstudio.com track 356 B 96 B 118 ms
200 GET favicon.ico cached 3.13 kB
200 POST account.mygovid.ie perftrace?tx=StateProperties=eyJUSUQiOiJhMGNjMThlZi03Yjk4LTQwYzYtYj 17.23 kB 0 B 197 ms
200 POST account.mygovid.ie perftrace?tx=StateProperties=eyJUSUQiOiJhMGNjMThlZi03Yjk4LTQwYzYtYj 17.23 kB 0 B 104 ms
200 POST account.mygovid.ie perftrace?tx=StateProperties=eyJUSUQiOiJhMGNjMThlZi03Yjk4LTQwYzYtYj 17.23 kB 0 B 180 ms
200 POST dc.services.visualstudio.com track json 356 B 96 B 116 ms
25 requests
1.42 MB / 156.86 kB transferred
Finish: 15.95 s
DOMContentLoaded: 553 ms
load: 609 ms
account.mygovid.ie fails - challenges.cloudflare.com
Parallels Shared Folders


Sep 15 19:01
MyWelfare, Department
www.mywelfare.ie
MyWelfare
As Gaeilge
Menu
Back to services
Welcome back, Barry
Lorem Ipsum
Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua.
Explore DSP services
A huge number of services are available online. Begin exploring them now
Explore services
0
Notifications
Lorem ipsum dolor sit amet, consectetur adipiscing elit.
18 Aug
Lorem ipsum dolor sit amet, consectetur adipiscing elit.
21 Feb
Lorem ipsum dolor sit amet, consectetur adipiscing elit.
29 Aug
View all notifications
Services
Pathways to Work
Here you will find services that will help you find work, upskill, retrain or return to education
Out of Work Payments
Apply for Jobseeker's Payments, make your declaration for your casual (part-time) Jobseeker's claim or calculate how income affects your payment
(After adding additional Cloudflare routes)
Result: www.gov.ie works on INEX-only
Parallels Shared Folders

Results

Finance: where the banks broke



It’s always DNS?



Source: RIPE 92, DNS, Transitive Trust and How Many is Many, Ondřej Surý
https://ripe92.ripe.net/programme/meeting-plan/sessions/98/ATVK7Z/

Could Ireland Survive an Undersea Blackout?

- Key constraints for our experiments:
  - Where is the data stored?
  - What third-party and internal dependencies exist?
  - We're really only considering the Republic of Ireland here.

33 critical sites on INEX-only routes

19 fully working · 7 partly · 7 failed

Finance
4/6 fully working

- **AIB** — DNS at CSC, off-island
- **Bank of Ireland**
- **Bol 365 Online** — CSC DNS + F5 scrubbing
- **PTSB**
- **PTSB Open24**
- **Revolut (web)**

Media
3/6 fully working

- **RTÉ**
- **RTÉ Player** — Analytics (npaw.com)
- **Irish Times**
- **Irish Independent**
- **Newstalk** — Stream host (sharp-stream)
- **Netflix**

Utilities
3/4 fully working

- **ESB PowerCheck** — (Google Maps)
- **Energia** — Login needs jQuery CDN
- **Gas Networks**
- **Uisce Éireann**

Transport
1/6 fully working

- **DAA**
- **Aer Lingus** — (rendering issues, but functional)
- **Ryanair** — (rendering issues)
- **Irish Rail** — Journey planner in DE (HAFAS)
- **Bus Éireann** — (rendering issues, but functional)
- **Irish Ferries** — (rendering issues)

Digital
4/7 fully working

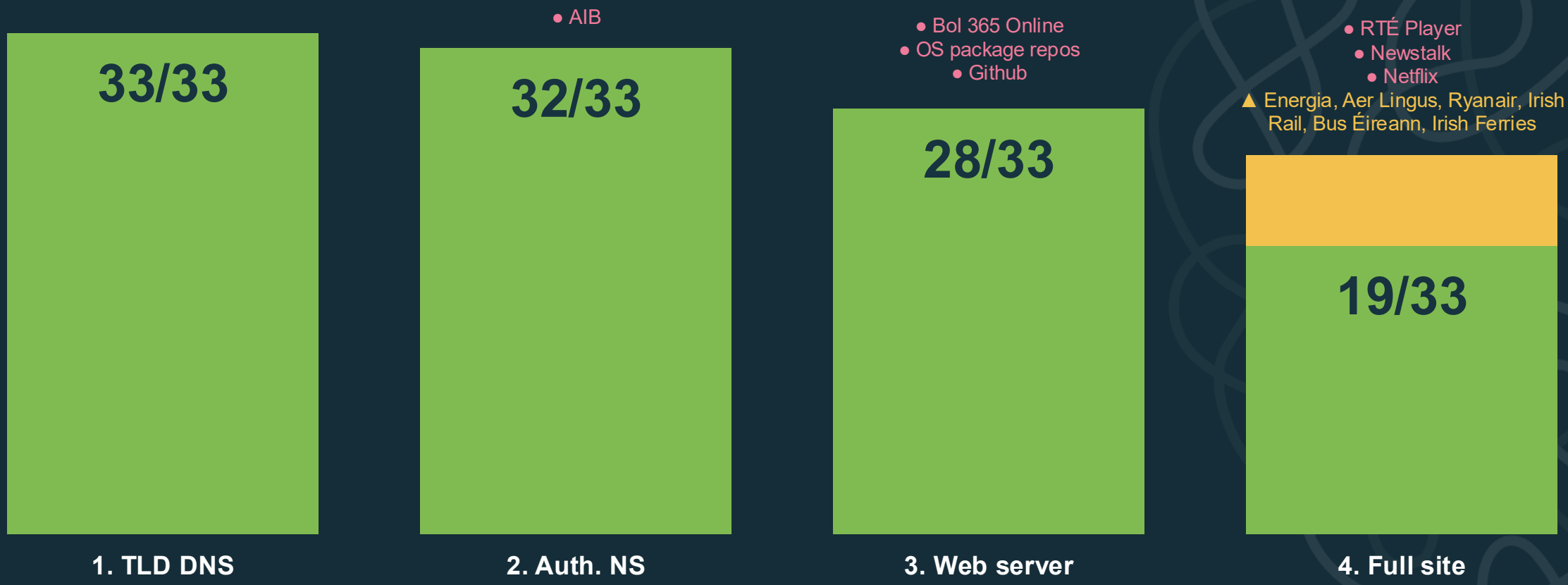
- **Google Search/Maps**
- **Google Workspace**
- **Microsoft 365** — (pre-login rendering)
- **Facebook/Instagram**
- **GitHub**
- **OS package repos**
- **INEX / IXP Manager**

Health
4/4 fully working

- **HSE**
- **Dept. of Health**
- **Laya**
- **VHI**

Works · Partly works · Fails · Not reached

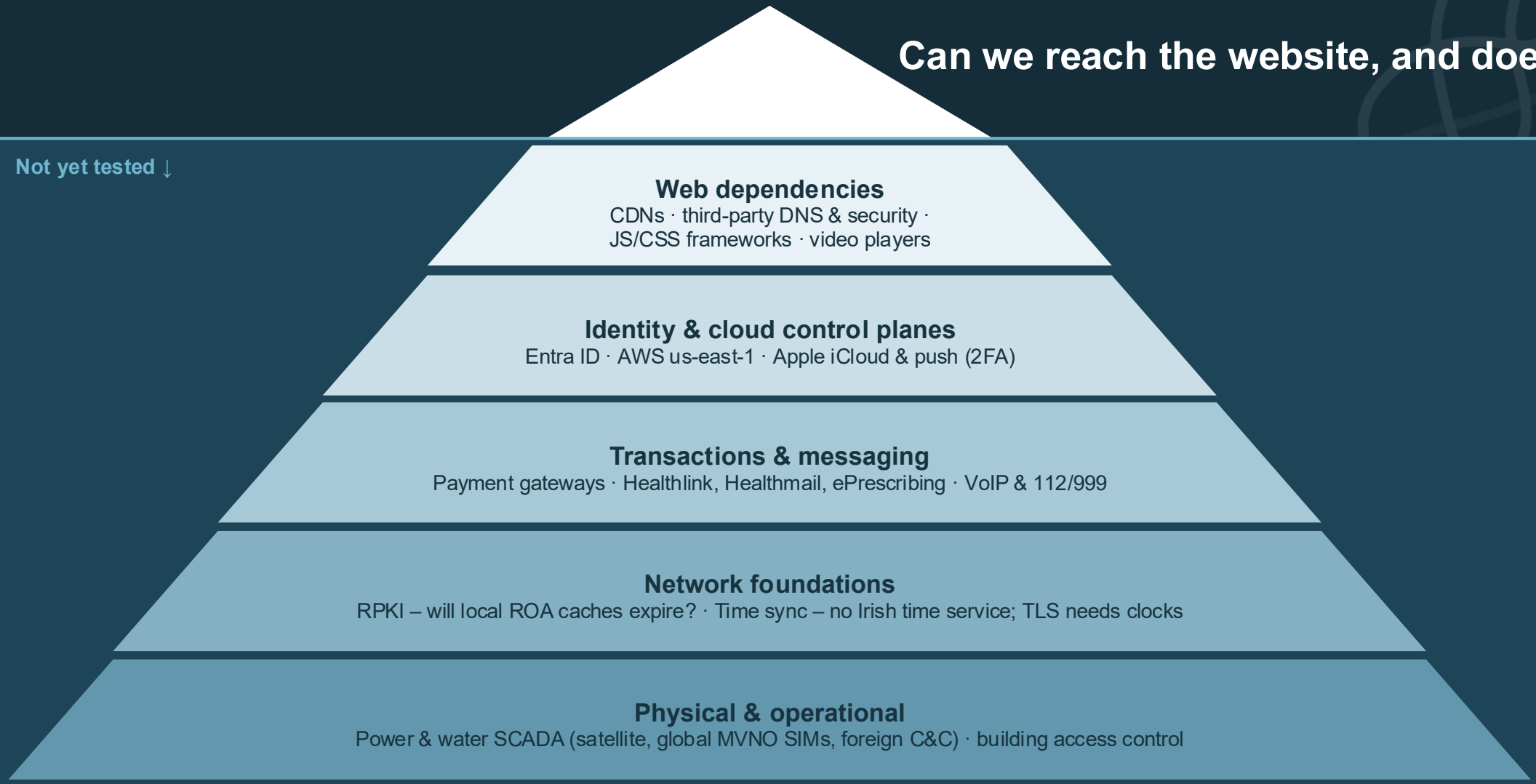
Where it broke: mostly at the last step



● failed at this stage ▲ partly worked green = still fully working

What else should we consider and test?

What we tested was the tip



Deeper =
more fundamental,
slower to notice,
harder to fix,
harder to test

Could Britain Survive?

Europe's cloud

lives in a few Dublin suburbs

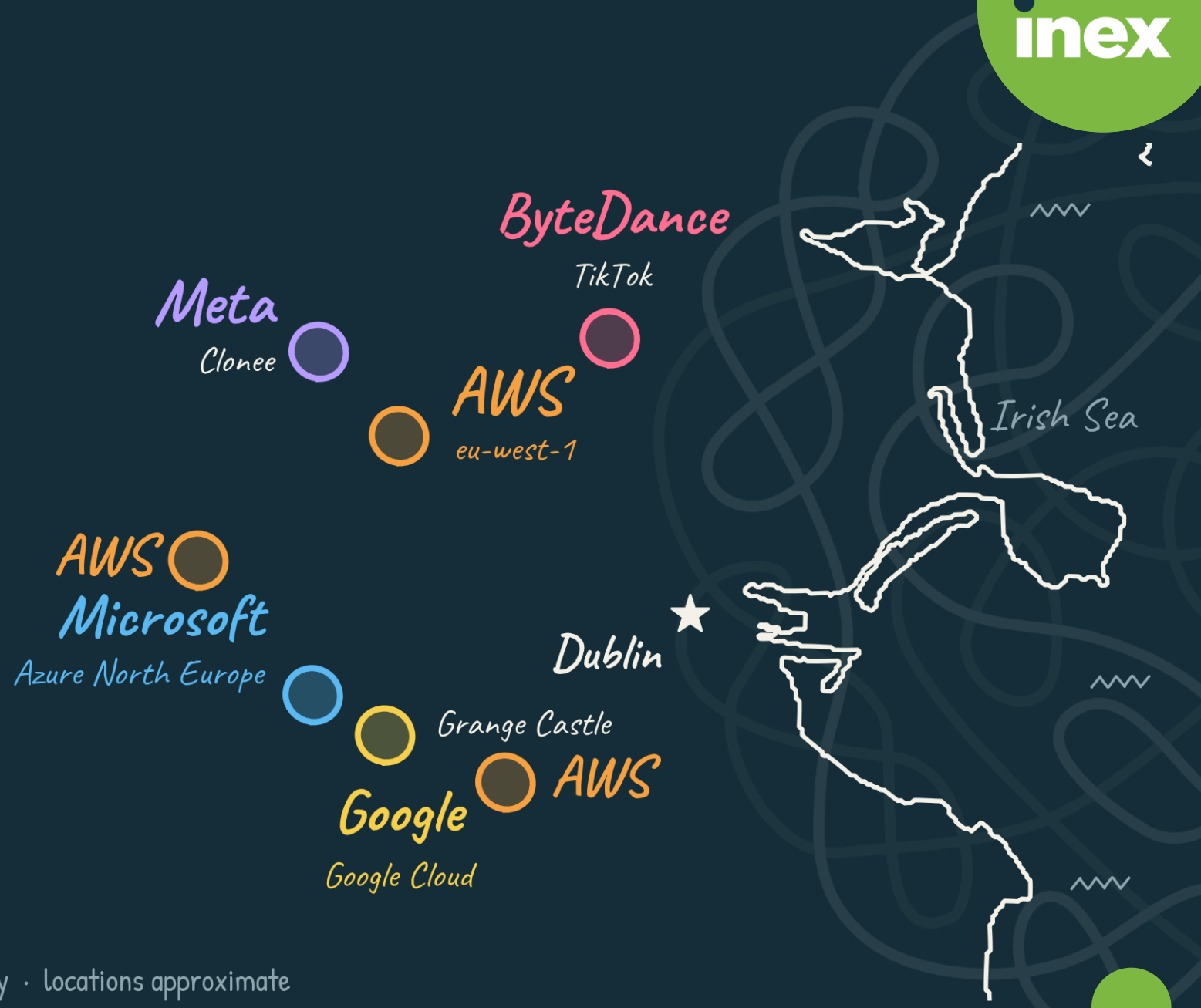
AWS
eu-west-1

Microsoft
Azure North Europe

Google
Google Cloud

Meta
Facebook, Instagram, WhatsApp

ByteDance
TikTok's European user data



about a quarter of FLAP-D capacity · 23% of Irish electricity · locations approximate


inex
Thank You.
barry.odonovan@inex.ie
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Interconnecting networks
and people since 1996