

Adapting & Enhancing Commercial Gaming Technologies

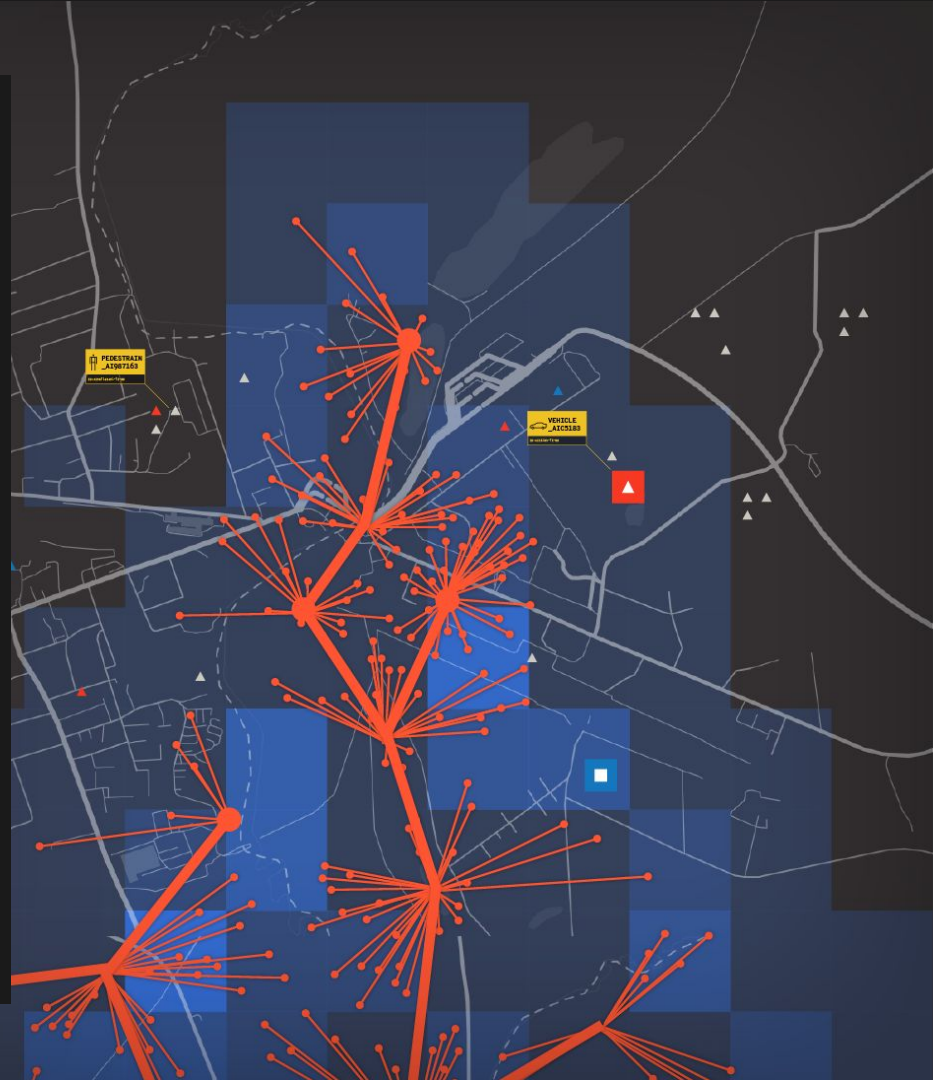
Rob Solly

NATO MSG-192

07 Oct 2021

 **IMPROBABLE**

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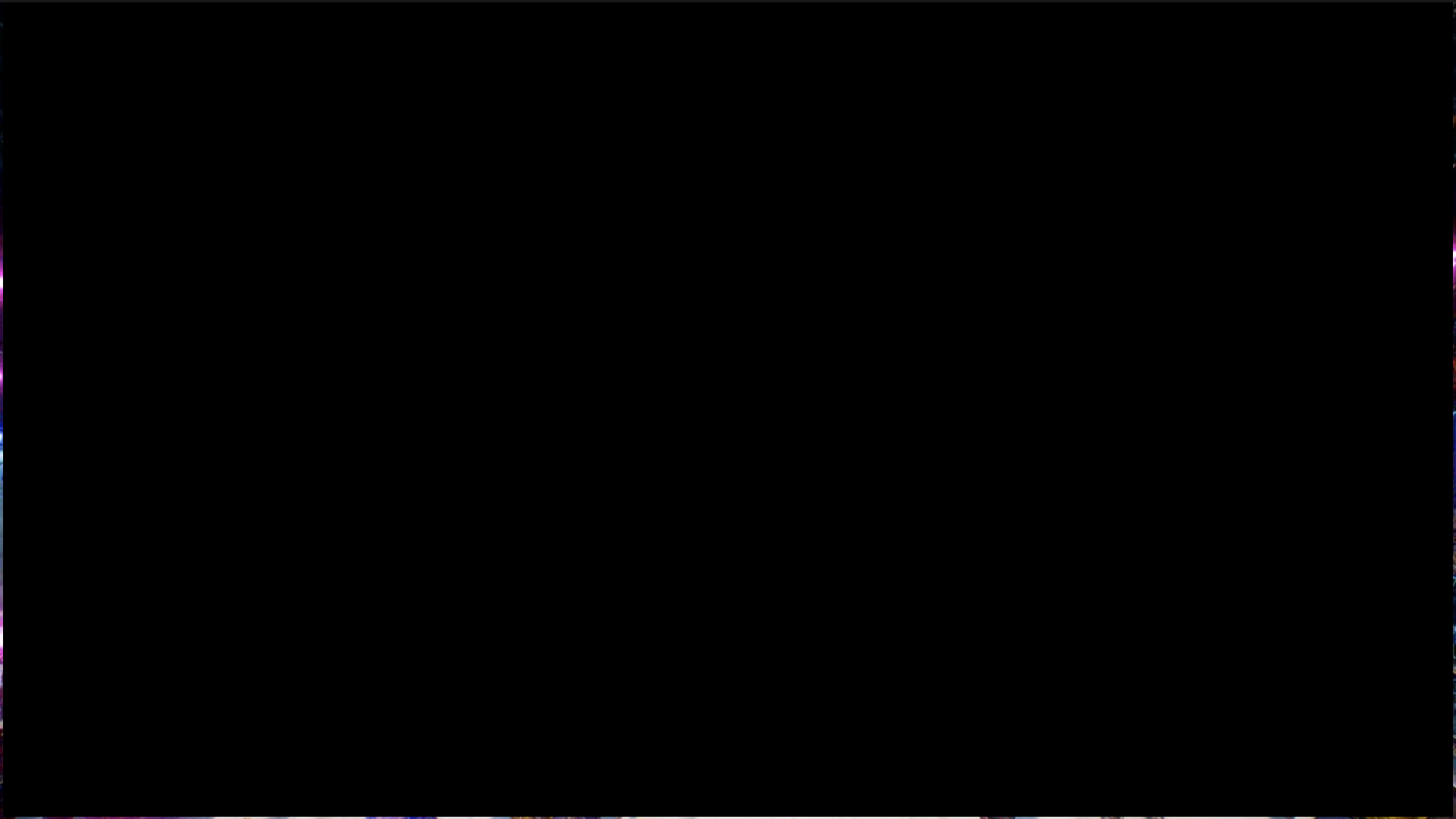


Rob Solly

- **Improbable** – Director of Research Partnerships
- **Dstl** – Defence & Security Analysis
- **UK Ministry of Defence & US DoD**
 - Policy
 - Strategy
 - Force Development
 - Procurement
 - Evidence-Based Decision Making



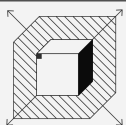








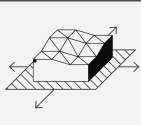
More scale



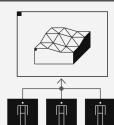
Breadth



Depth



Extent



Player count

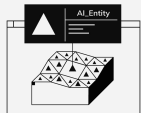
More realism



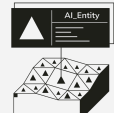
Latency



Density

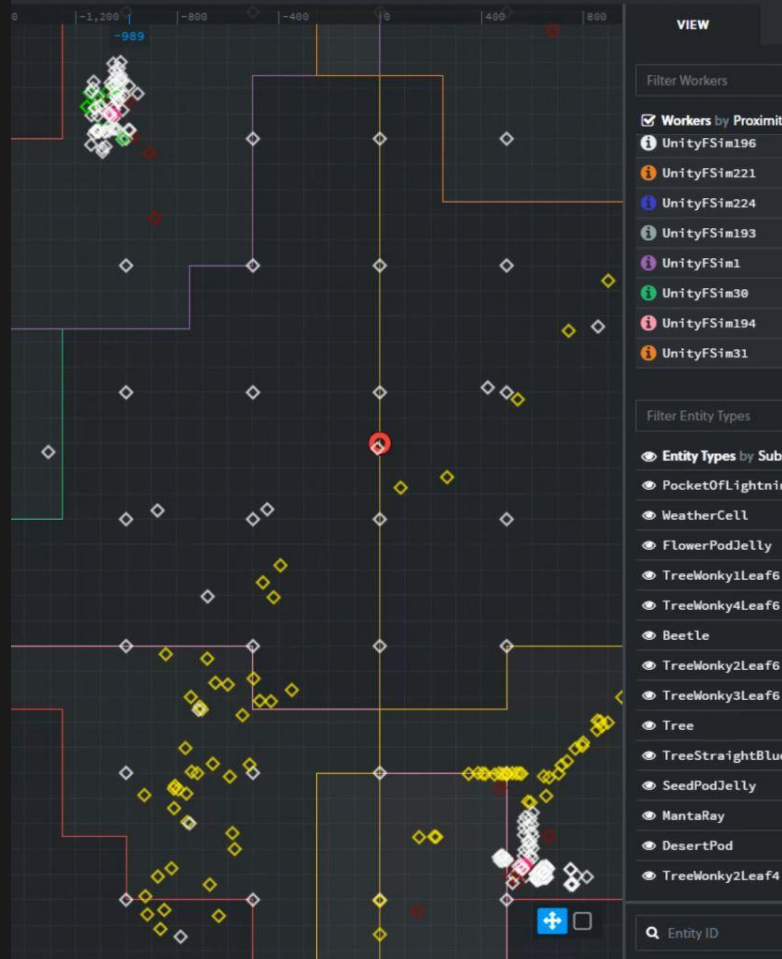


Persistence



Consistency

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Experimental applications for the military



Commercial Game Engines, real world data

10/2/1000

Level 3.4



Greyzone simulation and training

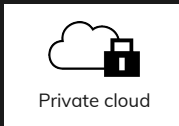


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Flexible cloud hosting

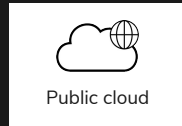
- + Classified deployments on Microsoft Azure Stack Hub
- + Deployed on training exercises and experiments
- + Deployed to MOD Cloud (provided by AWS)



Private cloud



Hybrid cloud



Public cloud

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Microsoft

AI simulated players



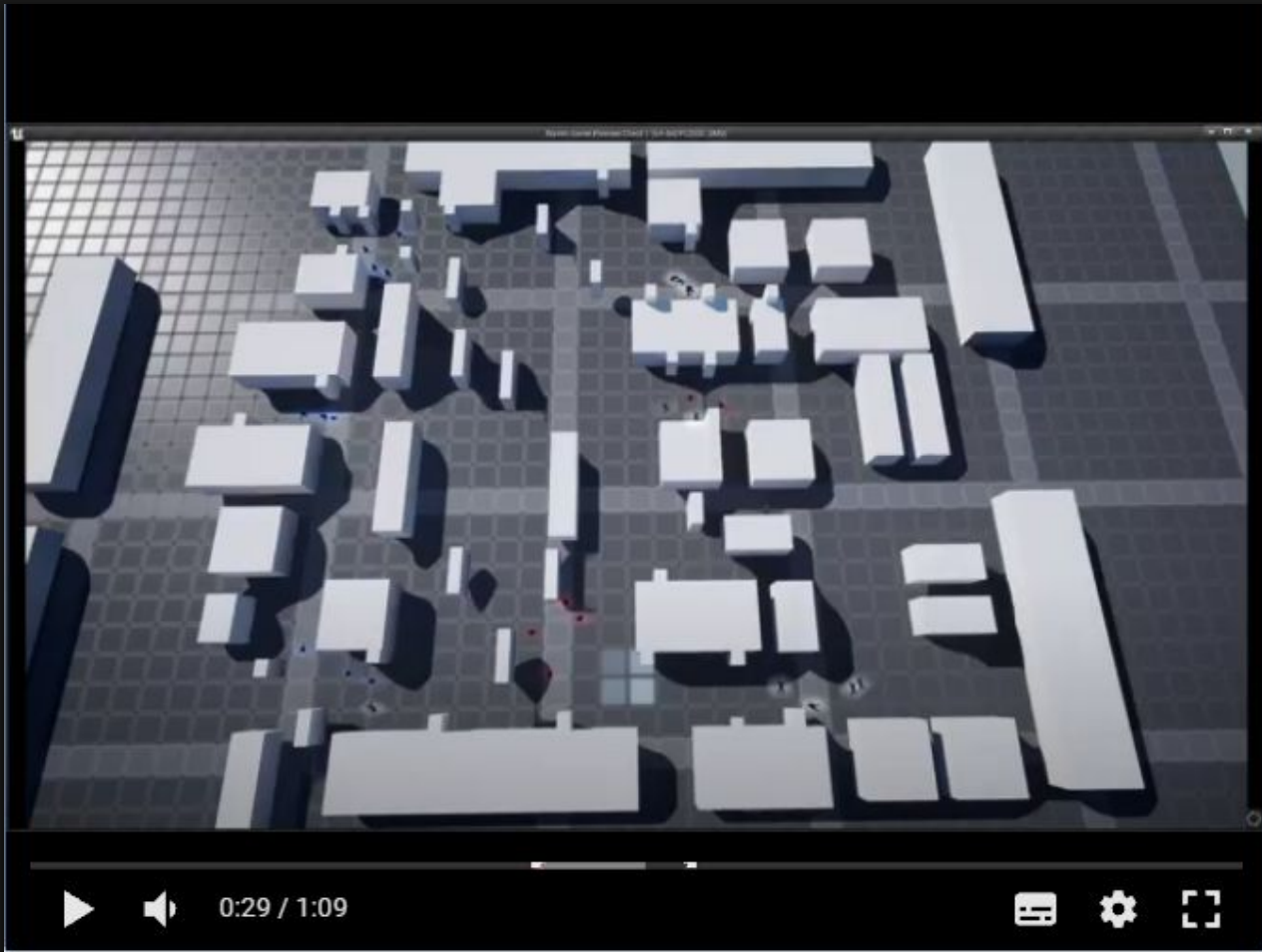
Looting + equipment stress test of 11 sim players

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Find out more at: <https://youtu.be/hR44zYrcIIM>

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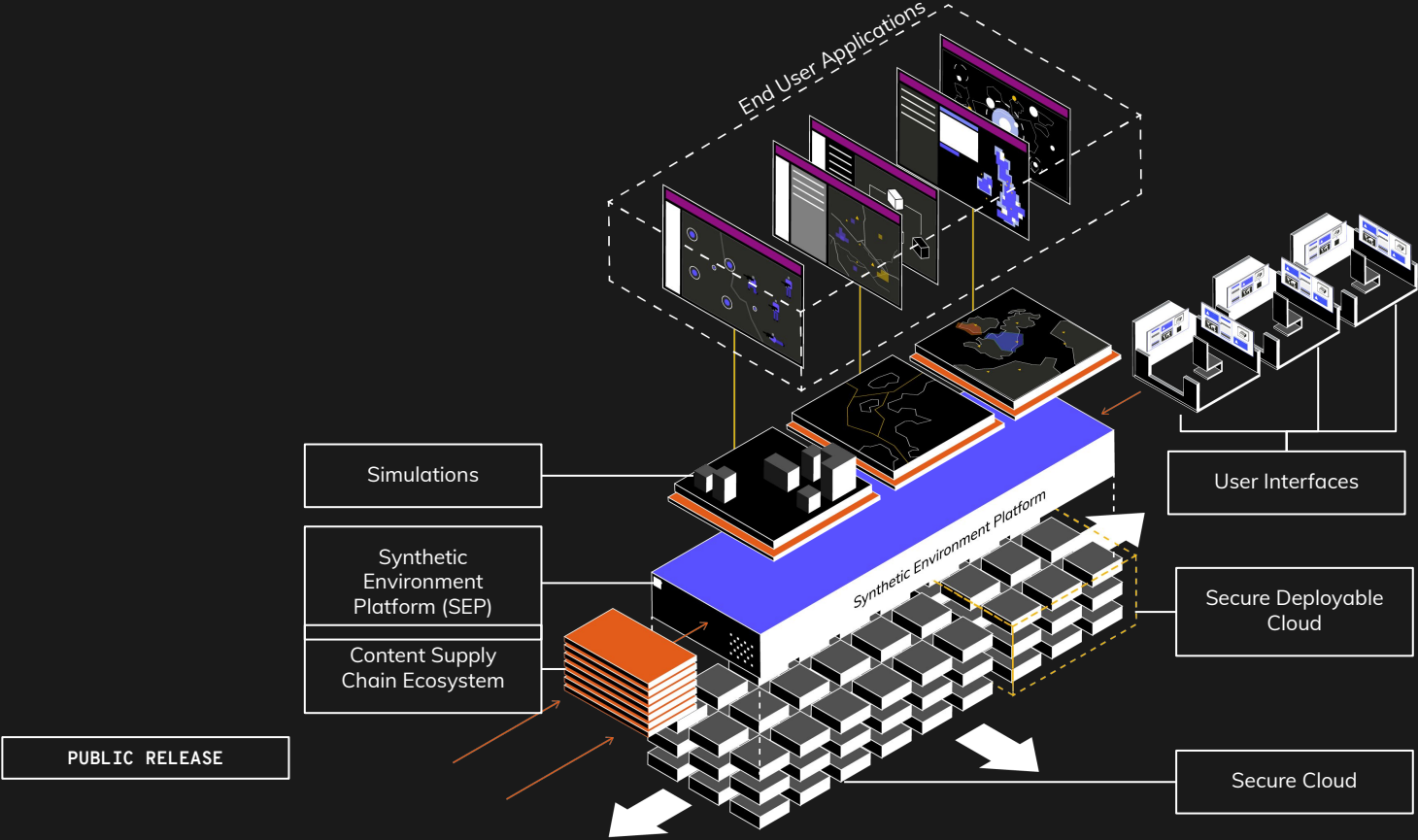
AI simulated squads



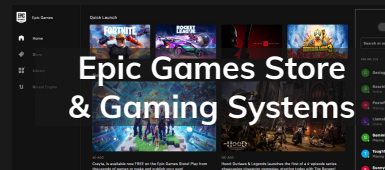
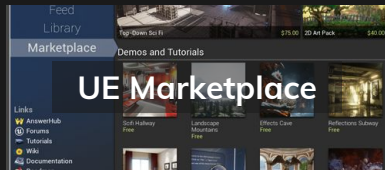
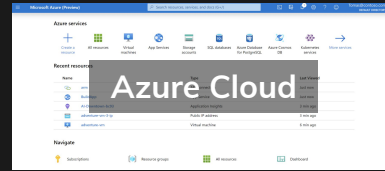
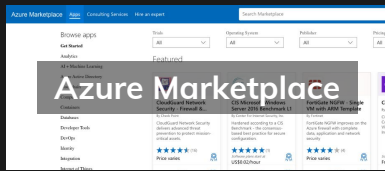
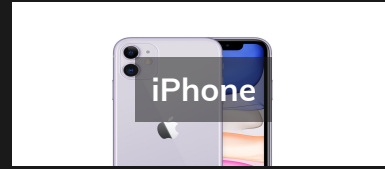
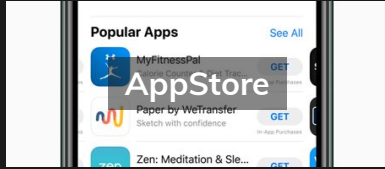
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Bringing it all together



What do we mean by a 'platform'?



Content Ecosystem
and Management

Developer Tools and
Services

Solution Distribution
and Deployment

Platform

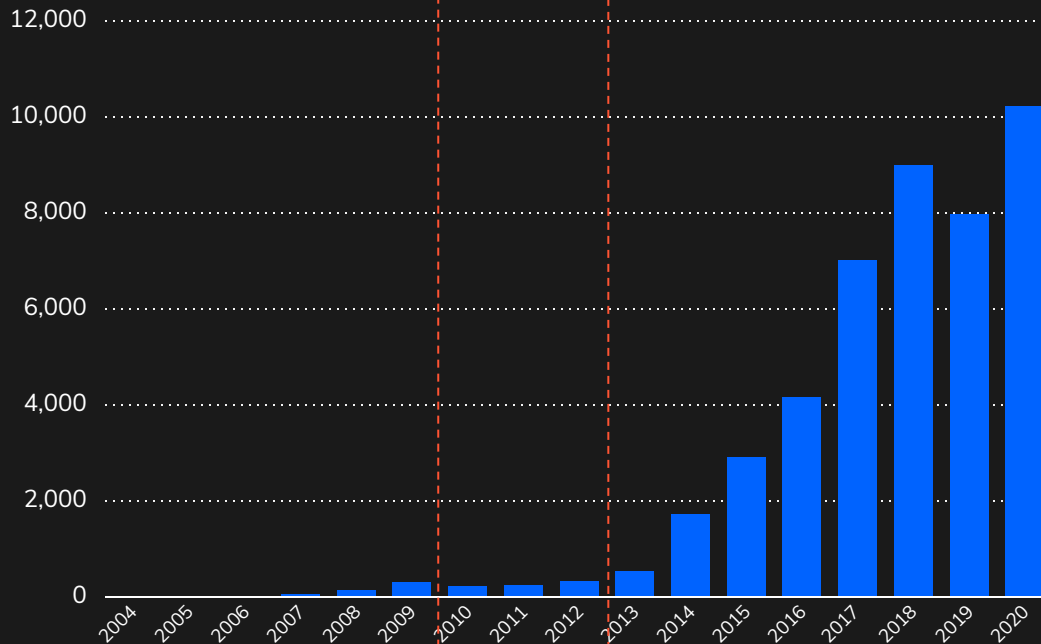
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Platforms drive a 'network effect'

Number of games released on Steam

Games industry shifted from pipeline development to a platform approach of development.



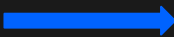
- Opening up the market
 - to new suppliers
 - and new applications
- Accelerating force development
- Integrating the domains

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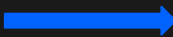
Speeding up development through content re-use

Time to First Iteration:

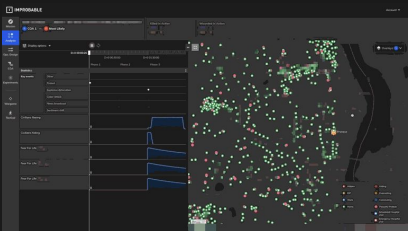
12 Months



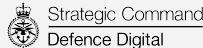
9 Months



2.5 Months



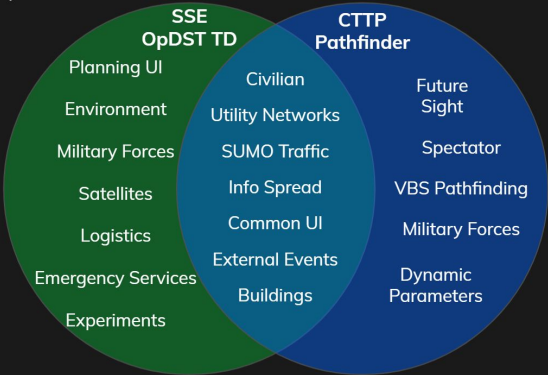
Enhanced operational planning



Collective Training



Network planning



INTERNAL



B-1B Lancer tail number 85-0022 is lifted and placed on ballbed trailers for its journey to Wichita, Kan., on April 24, 2020. The National Institute for Aviation Research at Wichita State University planned to scan every part of the aircraft to create a digital twin for research. (Clay Mayer/U.S. Air Force)

The U.S. war-fighting leadership faces two real and growing threats — one external, one internal. We can't control or fully predict the external threat but, internally, there is much we can do.

Lethality, agility, speed and technology: These words describe our capacity to fight. Yet, much of our latest capacity is held back by reliability issues — the bane of all war fighters.

Nearly two-fifths of the Department of Defense budget — \$290 billion — focuses on operations and maintenance to ensure weapon system readiness. This means less money for new equipment, less equipment availability and less fighting capacity. Those limitations

Source: [unreadable]

Ministry of Defence secrets exposed by people sending files to personal email accounts, documents show

There were a record number of security incidents during the UK defence industry last year, according to new documents revealed.

Alexander Martin Technology reporter @alexmartin
Monday 10 March 2020 16:52 UK



Image Credits: (1) iStockphoto / Getty Images

Faculty at a VC-backed artificial intelligence startup, has won a tender to work with the NHS to make better predictions about its future requirements for patients, based on data drawn from how it handled the COVID-19 pandemic.

In December 2019, Faculty raised a \$10.5 million Series A funding round from U.K.-based VCs Local Globe, GMS Ventures, and Jaan Tallin, one of Skype's founding engineers, giving it a valuation of around \$100 million.

Faculty will work with NHS England and NHS Improvement to build upon the Early Warning System (EWS) it developed for the service during the pandemic. Based on Bayesian hierarchical modeling, Faculty says the EWS can aggregate data (for example, COVID-19 positive case numbers, 111 calls and mobility data) to warn hospitals about potential spikes in cases so they can divert staff, beds and equipment needed. This learning will now be applied across the whole of the service, for issues other than the pure pandemic response, such as improving service delivery and patient care and predicting A&E demand and winter pressures.

Noel Sharkey

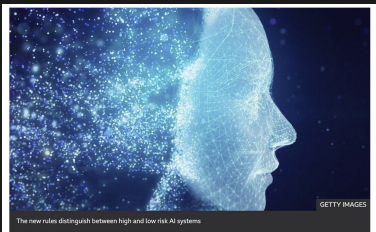
The age of cyber warfare is a threat to us all

From magazine issue 1 May 2021



Text settings | Comments | Share | Facebook | Twitter | LinkedIn | Email

In his recent State of the Nation address, Vladimir Putin said that if challenged by another state, Russia's response would be swift, harsh and 'asymmetrical'. An unusual word, but anyone who has been paying attention to the developments in cyber warfare will know what he means. Despite Russia pulling back more than 100,000 soldiers positioned on the



The new rules distinguish between high and low risk AI systems. GETTY IMAGES

The use of facial recognition for surveillance, or algorithms that manipulate human behaviour, will be banned under proposed EU regulations on artificial intelligence.

Hackers can stop the trains and the lights. But could they start a war?

Total meltdown or death by a thousand hacks — how bad could a cyberwar get? And where is the line between espionage and all-out attack?

By Sherryn Gruch
APRIL 18, 2021

On the morning of June 27, 2017, it seemed as if Ukraine had slipped back in time and into the wrong century — almost nothing worked. Not the ATMs, the trains, the airports, the television stations. Even the radiation monitors at the old Chernobyl nuclear plant were down.

Ukraine, in the midst of a long and undeclared war with Russia, had been hit by mysterious blackouts before but this was eating through computer networks at a terrifying pace, turning screens dark across the country. And it seemed to be spreading further than intended, out through Europe and around the globe, paralysing hospitals and companies from London to Denver, even the Cadbury chocolate factory in Tasmania, and bringing swathes of the world's shipping to a halt. By the time the culprit — a wild

US fuel pipeline hackers 'didn't mean to create problems'

By Mary-Ann Russon
Business reporter, BBC News

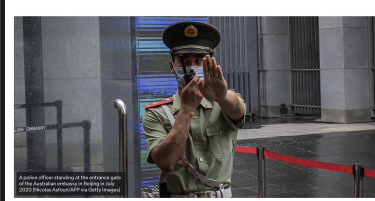
18 hours ago



A cyber-criminal gang that took a major US fuel pipeline offline over the weekend has acknowledged the incident in a public statement.

The Five Eyes stare down China's economic coercion?

Trade figures suggest promises to "have Australia's back" are yet to be matched by economic solidarity.



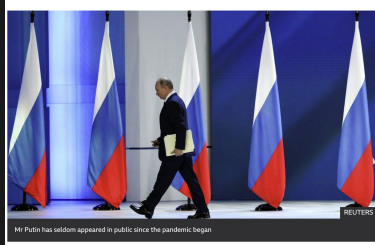
James Laurenceon
Published 12 Apr 2021 12:20pm 2 Comments China Australia Trade Follow @lawrenceon

Next month brings the five-nations one-year anniversary of China stepping up a campaign of trade paramilitary against Australia. Wine, barley, beef, lobster and coal have all been targeted. And there is no end in sight.
Why Australia's government ministers could be forgiven for taking pause in a series of supportive statements from the Biden administration, as well as by senior politicians and officials to other liberal democratic countries. Last month, Trade Minister Dan Tehan said, "I

Putin warns of tough Russian action if West crosses 'red line'

21 April

Ukraine conflict



Mi Putin has seldom appeared in public since the pandemic began

Russian President Vladimir Putin has warned the West not to cross a "red line" with Russia, saying such a move would trigger an "asymmetrical, rapid and harsh" response.

The warning came in his annual state of the nation address, amid heightened tension with the West over Ukraine and jailed Putin critic Alexei Navalny.

Mi Putin said Western powers were constantly trying to "pick on" Russia.

Police have detained nearly 100 Navalny supporters rallying in several cities.

Hundreds staged pro-Navalny protests on Wednesday in eastern cities including Vladivostok, Irkutsk and Krasnoyarsk. The authorities have declared them illegal.



British Army soldier units wearing Virtus body armour, a real-world system designed for increased



NATO has organised the world's largest cyber war game, which will kick off tomorrow

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Why you can trust Sky News

Military cyber security specialists are preparing for the largest cyber war game in the world, which kicks off tomorrow as the fictional NATO member state of Berylia comes under attack.

The real-time NATO exercise will include defenders practising the protection of critical civilian and military infrastructure, including water treatment facilities and energy plants.

And the increasing risk of real international conflict, the exercise will

Beijing's 'Little Blue Men' spread across South China Sea as Britain sends strike group

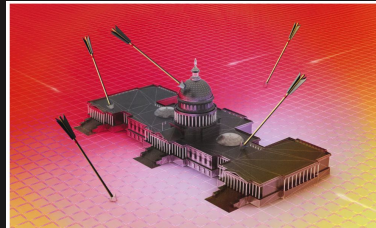
Maritime militia have been secretly embedded into China's fishing fleet to intimidate and squeeze out rival claimants to the waters

By Nicola Smith, USA CORRESPONDENT and Sophia Yu, CHINA CORRESPONDENT
May 2021 - 8:00pm



Chinese vessels, anchored at the Whitsun Reef, surround military base of Hainan in the South China Sea. The boats gathered near a disputed reef in the South China Sea are 'fishing boats' sheltering from poor weather, the China Foreign Ministry said, a day after the Philippines described their presence as an invasion. (BBC)

As she picked up a camera lens on zoom in on two specks on the horizon that were faring across the South China Sea towards her boat, Philippine journalist Chiara Zambrano from in shock...





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