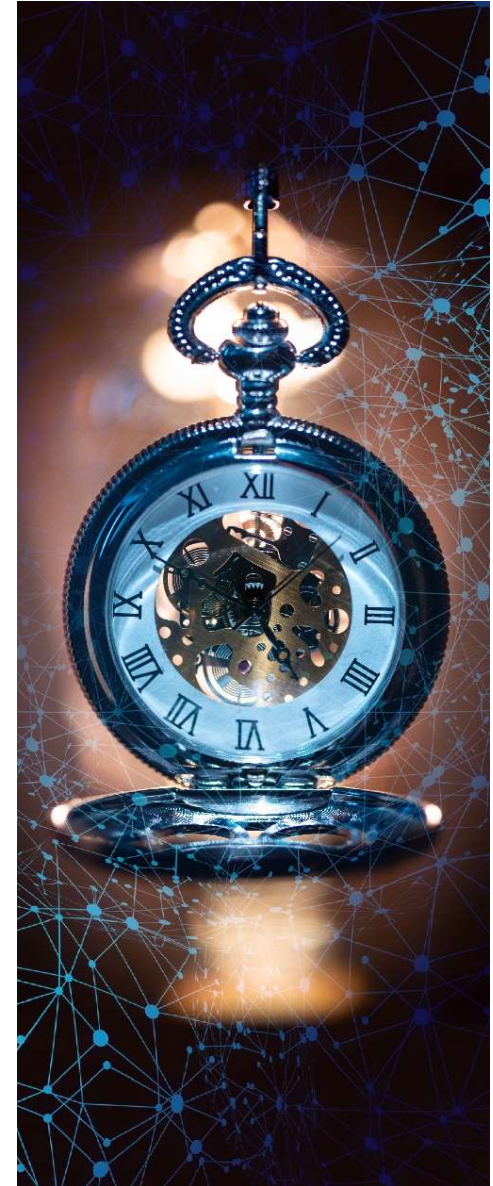


Integrating SME innovations at a more rapid pace for operational effect

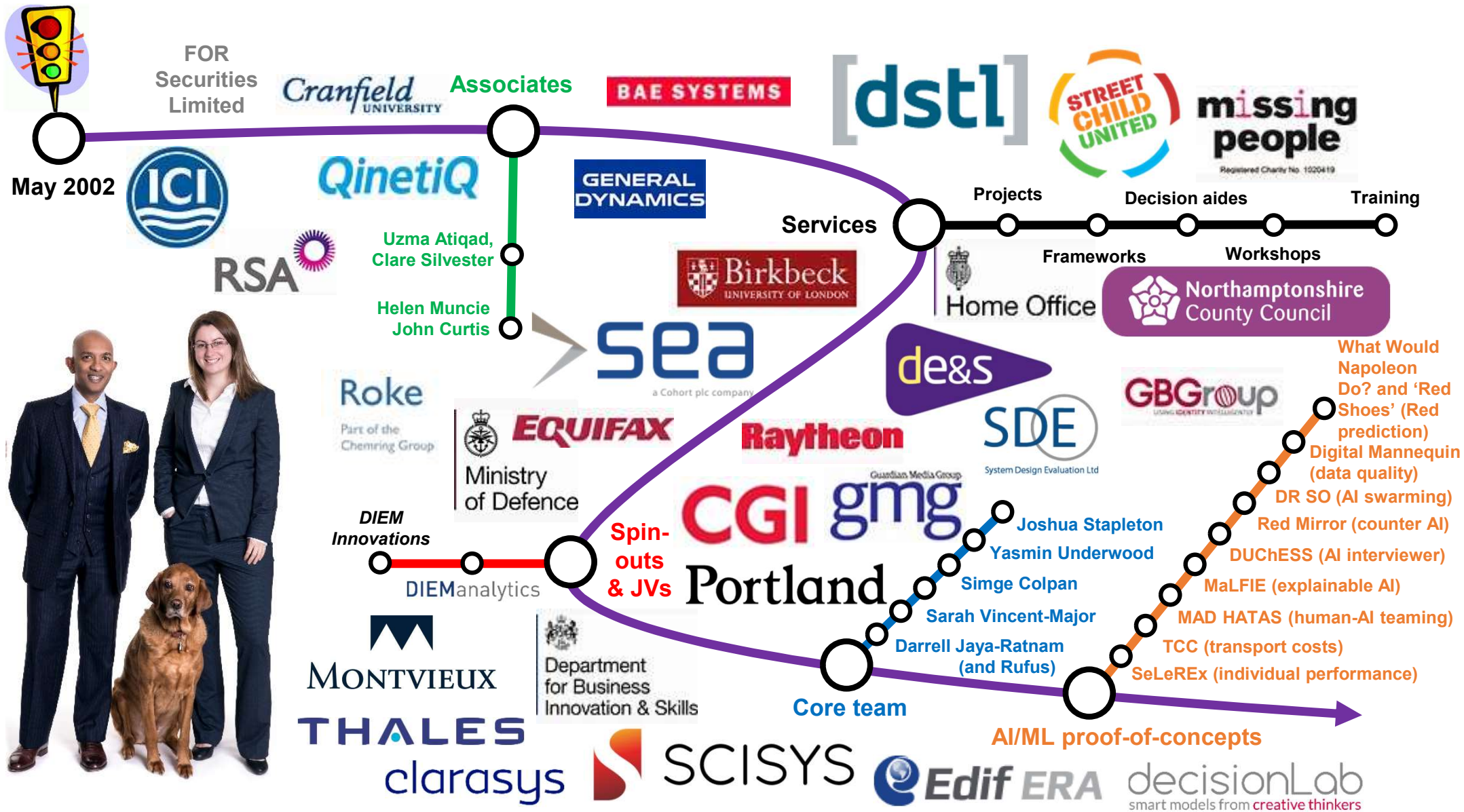
CNE 2023
Farnborough
Tuesday, 23rd May 2023

Overview

- Introduction
- Contribution to defence programmes
- Benefits of working with SMEs
- Assumptions that help and hinder innovation exploitation
- Success stories and lessons learnt



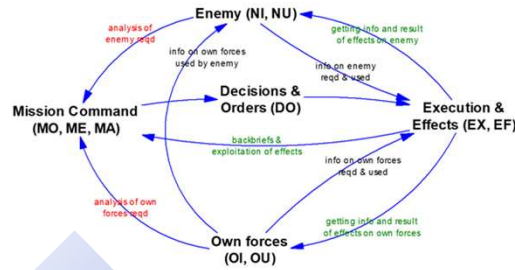
Introduction | The 'DIEM road'



Contribution to defence programmes | Exploiting sparse data, HAT and counter-Red-AI

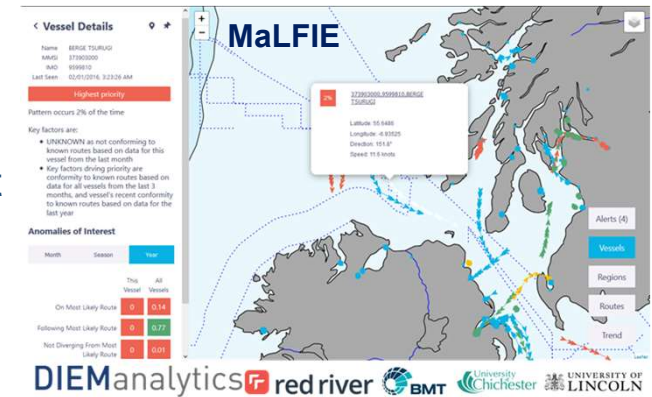
Operational Analysis

- Planning
- Logistics
- Command and Control



Explainable AI

- For a stressed military operator not data scientist



Operational Decision Aides

- Op plans
- RN Ex FS'21 at sea demo



AI lessons learnt interviews



Digital advisors

- Critical Friend
- Digital Mannequin



MAD HATAS

HAT adaptation with multiple AI agents by voice



Counter-Red-commander AI

Predicted Red commander skill & will based on their learning

Red Shoes



SJFHQ Ex JP'22



Benefits of working with SMEs | Potential for impact

“We recognise that Small and Medium-sized Enterprises (SMEs) are at the heart of the vibrant and flexible UK defence industry supporting a wide variety of high quality jobs across the four nations of the United Kingdom.”

*Jeremy Quin MP
Minister for Defence Procurement*

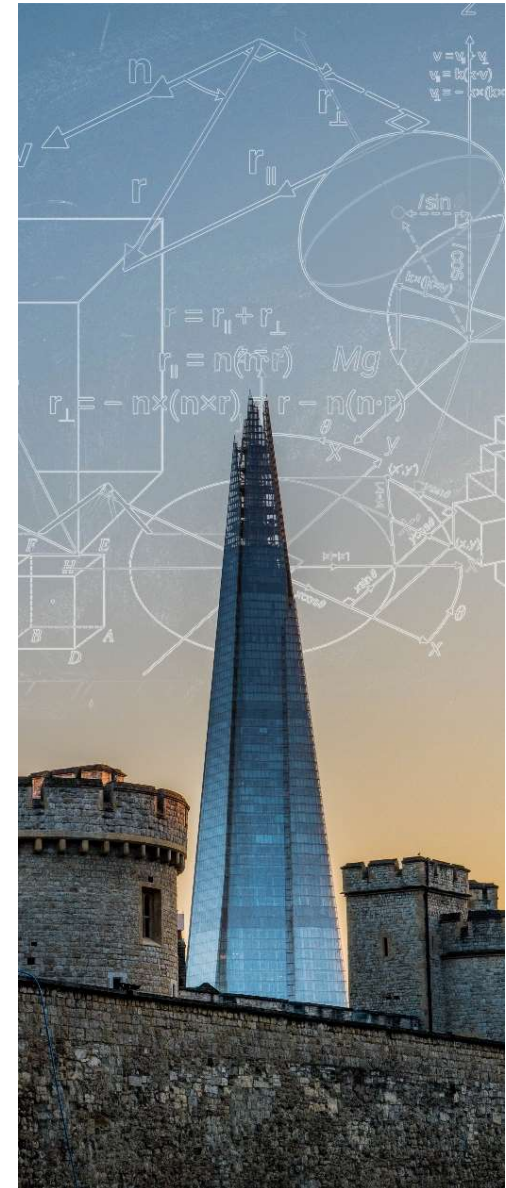
- Total employment in SMEs was 16.4 million (61% of the total), whilst turnover was estimated at £2.1 trillion (51%)
- At the start of 2022 there were 5.5 million small businesses (with 0 to 49 employees), 99.2% of all businesses
- Employment in small businesses was 12.9 million (48% of the total), with a turnover of £1.6 trillion (36%)

Economy of small-size

- Agility
- Innovation/ risk-appetite
- Expertise (and its application)
- Ease of collaboration

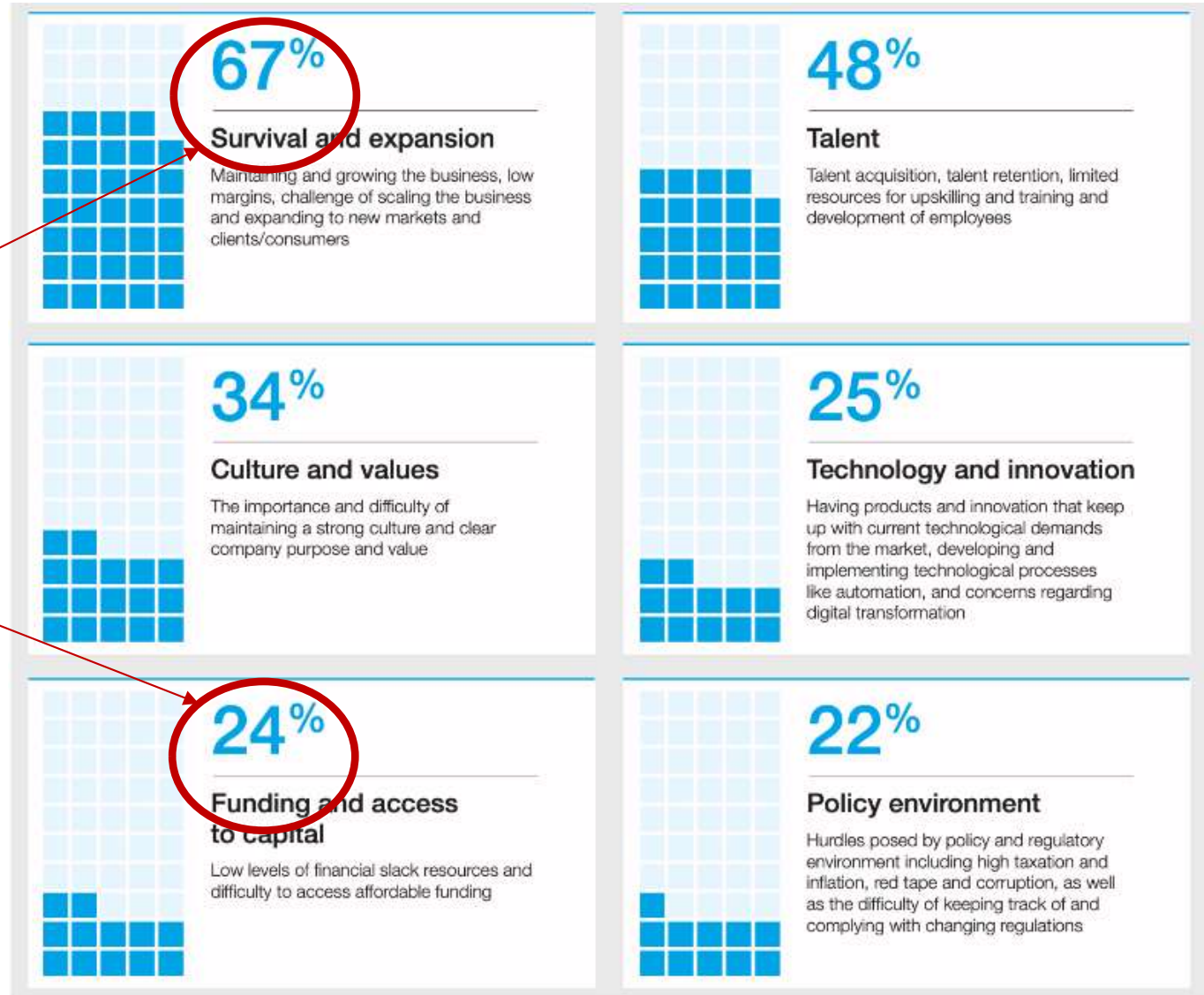
Challenges of AI

- Opportunities and threats are sudden and fleeting
- You have to test with real users in real situations
- The tech is not (that) new but the applications are
- Lots of dependencies



Assumptions that help and hinder innovation exploitation | Challenges faced by SMEs

Expectation versus reality?



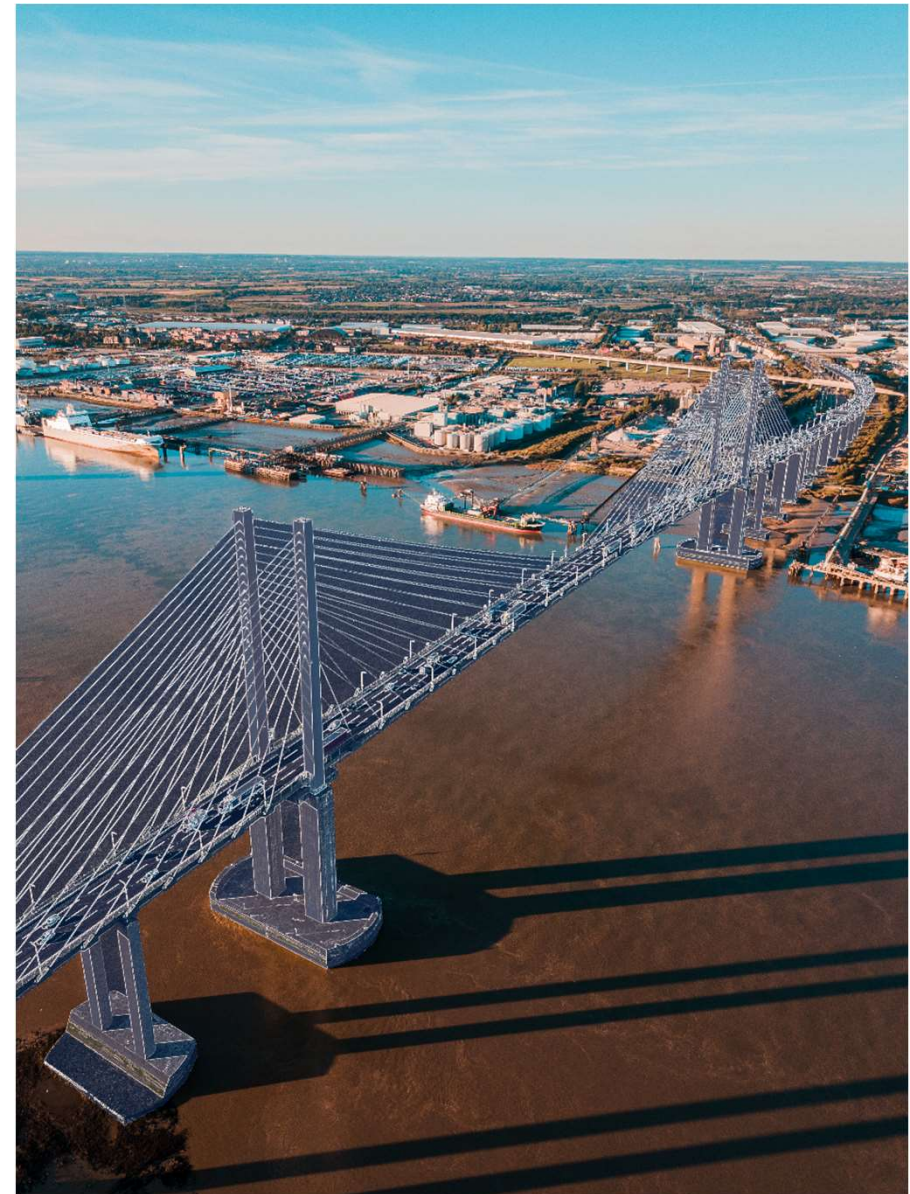
<https://www.weforum.org/agenda/2022/12/future-readiness-here-s-why-smaller-businesses-success-matters/>

Improvements over the years

- Value-add of SMEs genuinely recognised
- Contractual and IP T&Cs improved
- Flexibility on exclusivity
- Availability of funding e.g. DASA, hubs etc

Further improvements needed

- Tick-box habits ('easy' versus 'useful')
- Assuming useful = large-scale

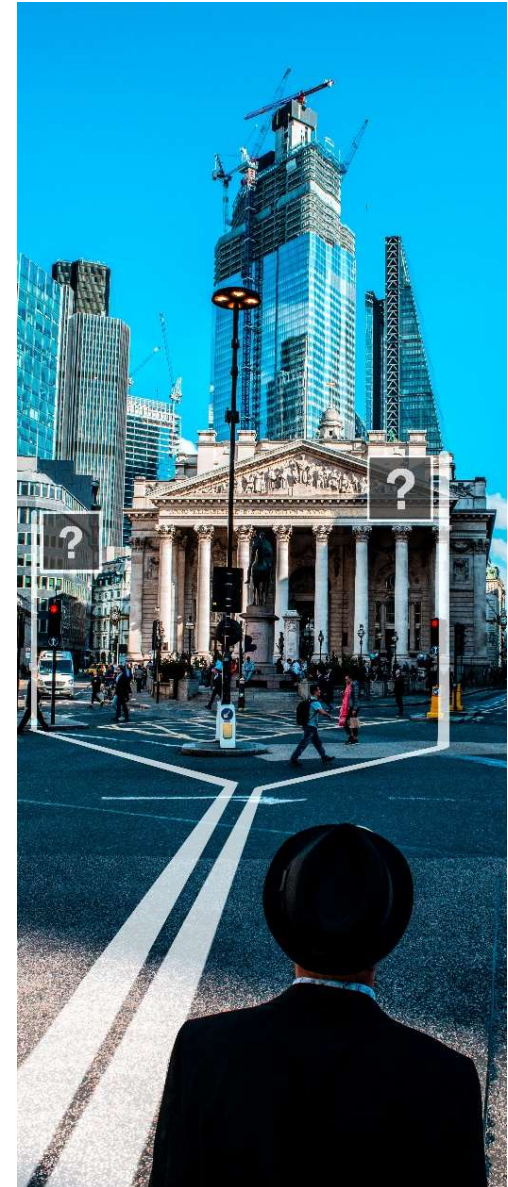


Assumptions (implicit)

- Are selling a product
- Want to grow
- Are desperate for work
- Want to exit quickly
- Can buy into current projects run by primes

Issues and reality

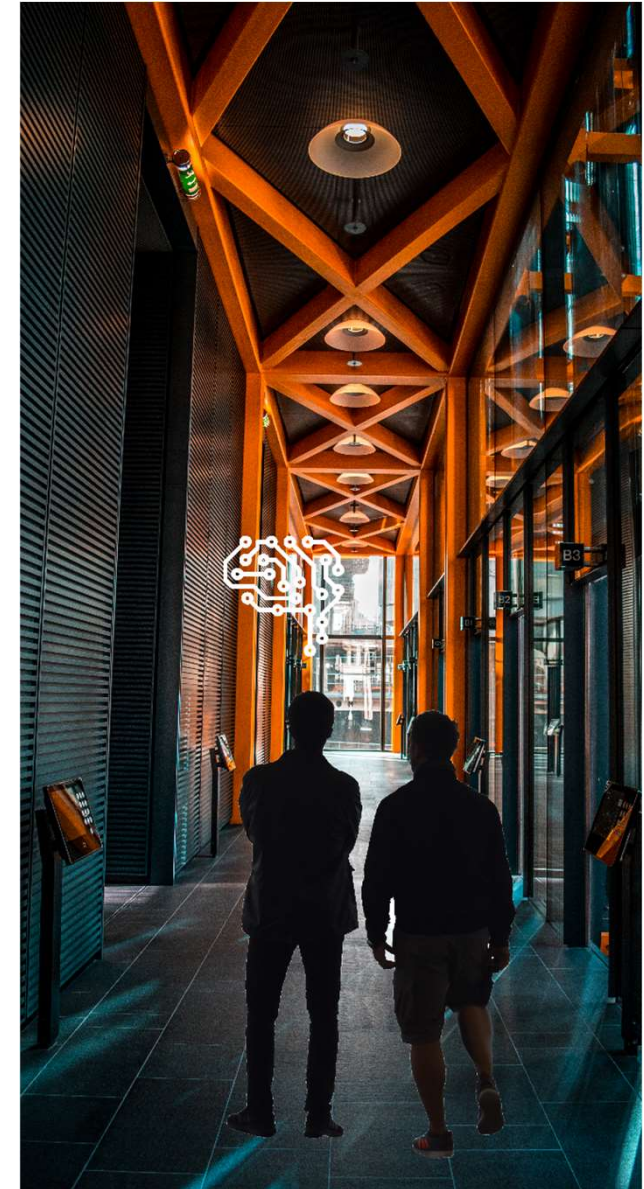
- Often it's IP, innovation capacity or time they offer
- Good small companies are good at being small
- Delivery is the priority, not bidding on everything
- 'Grey hairs' may just want their expertise valued
- The primes have already committed the funds



Success stories and lessons learnt | Definition of success

'Success' is...

- Seeing something go from an idea to being used
 - Returning clients are the best business development
 - Word of mouth can be better than marketing
 - Increases understanding of, and comfort with, AI
- It is not necessarily that
 - Someone has bought it (the company or the tech)
 - It is big and/or used by everyone
 - It makes lots of money



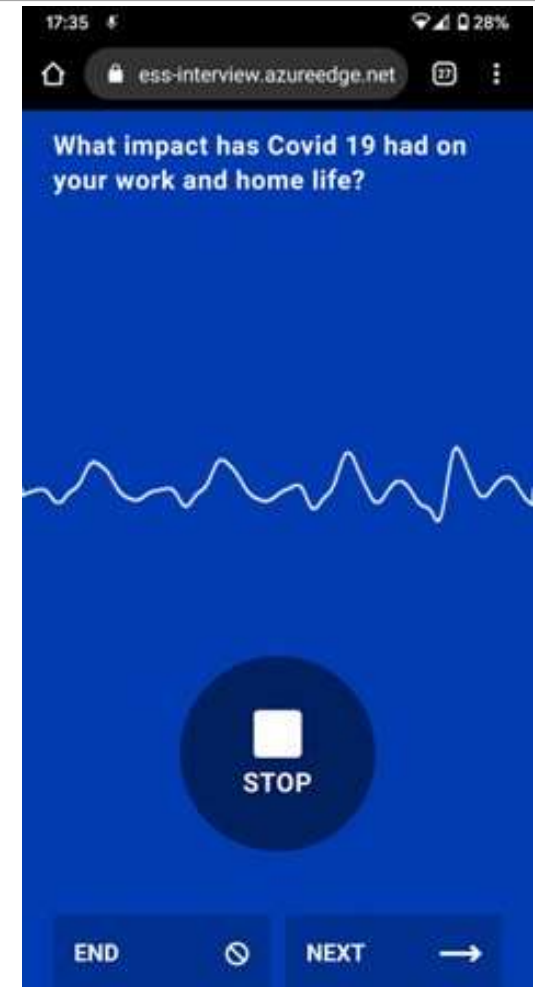
Success stories and lessons learnt | DUCHESS

Lessons learnt interviews

- When sharing views there is often a 'right' vs 'real' response
- Disinhibiting users enriches the data collected and empowers users
- Using AI removes human judgement (whether actual or perceived)
- AI question engine removes questioning bias
- Automating analysis enables interview insights at scale

"I was more honest than I would be with a human. I didn't have to worry about saying the wrong thing to the wrong person"

"I had the ability to sit and think about my answer, without worrying about wasting the interviewer's time"



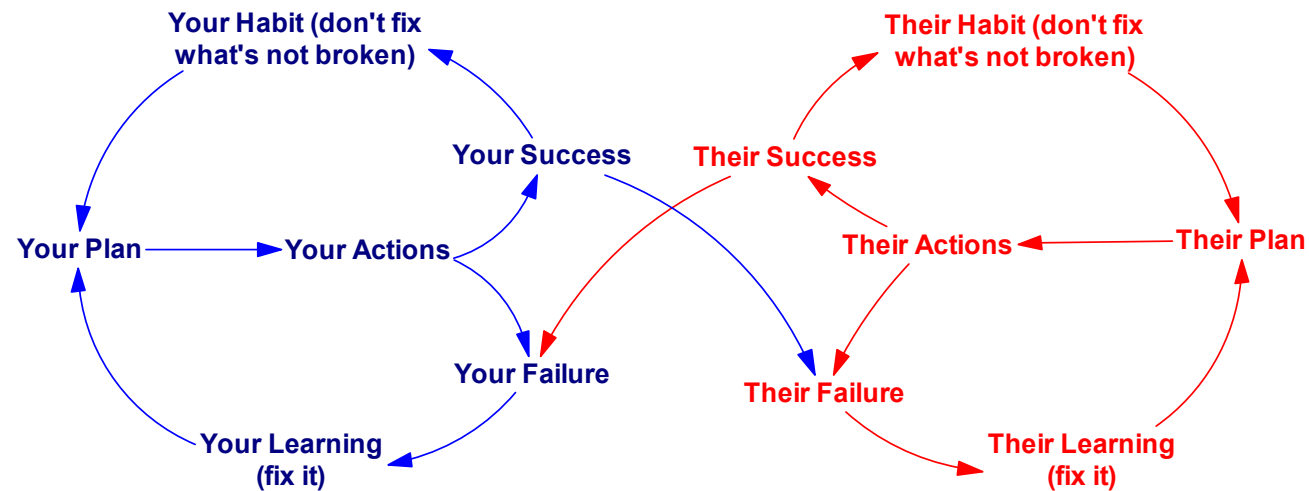
Rapid development and exploitation

- DASA funded with 2 x Royal Navy and 1 x DE&S use-cases
- Exploited in Defence – NATO JALLC, Canadian Aerospace Warfare Centre, Agile Launch 21
- Implemented on a Royal Navy LAN
- Commercial cloud based offering

Success stories and lessons learnt | Red's Shoes

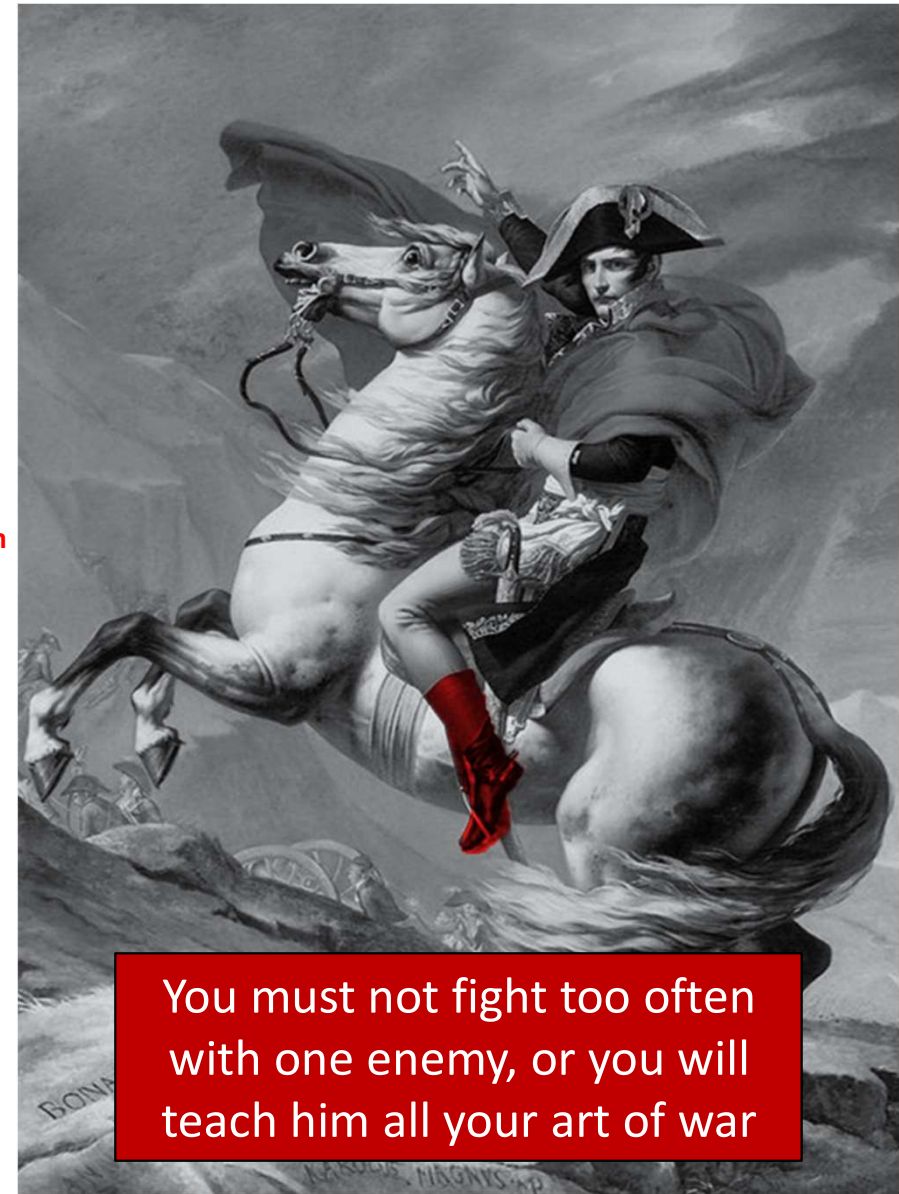
Learning cycles

- People do what they know
- How they do depends on what they learn
- Learning depends on how they did previously



Rapid development and exploitation

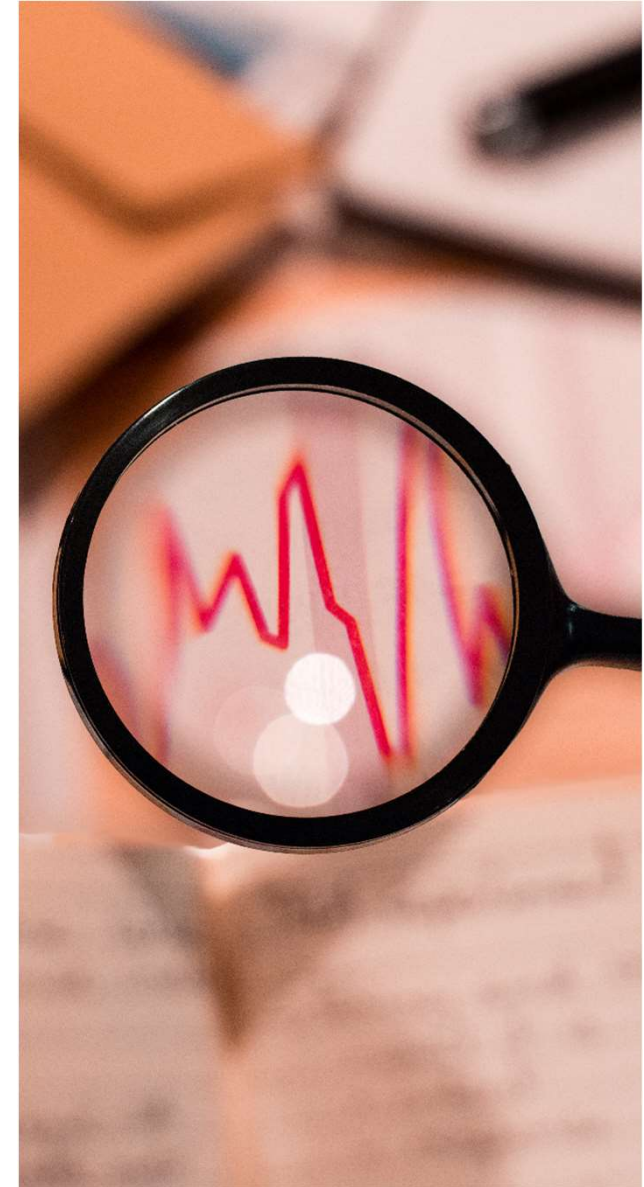
- Dstl Innovative Methods Models and Tools project
- Applied to historic and current 'Red' commanders
- Piloted at Ex Joint Protector'22
- In discussion with potential platform partners



You must not fight too often with one enemy, or you will teach him all your art of war

Success stories and lessons learnt | **Lessons learnt**

- Include potential users as stakeholders from the start
- Embrace urgency
- Size may be important but it is not necessary (or helpful) for ensuring rapid exploitation
- Once the pie is divided up you need to add to it to exploit emerging innovations
- Cash is not always King for SMEs
- The system can work...and quickly



Success stories and lessons learnt | Summary of rapid exploitation success

- DUCHESS
 - Used by RN, NATO, Canadian military
 - Developed into commercial offering
- MaLFIE
 - Implemented on National Maritime Information Centre (NMIC) systems
- SYCOIEA
 - Tested in Ex Formidable Shield'21 at sea demo on HMS Dragon and HMS Lancaster
 - Reported in Janes International Defence Review
- Red's Shoes
 - Piloted by SJFHQ at Ex Joint Protector'22



Thank you for your attention

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