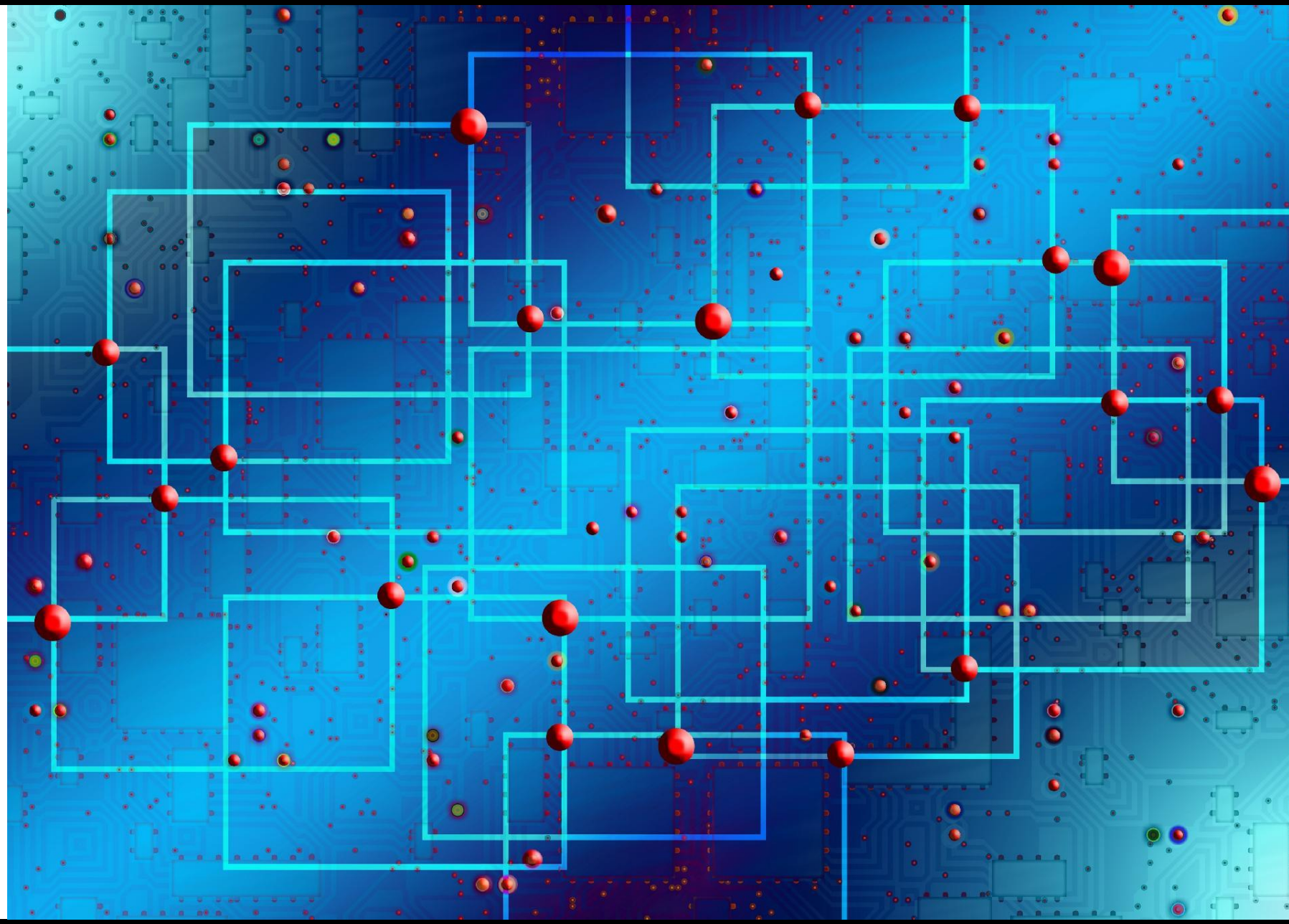
An Enterprise Approach to Data

Andy Fawkes



Pixabay

Overview

- Why is Data of Interest?
- UK Military Air Training Data Generators/Users
- An Enterprise Approach to Data

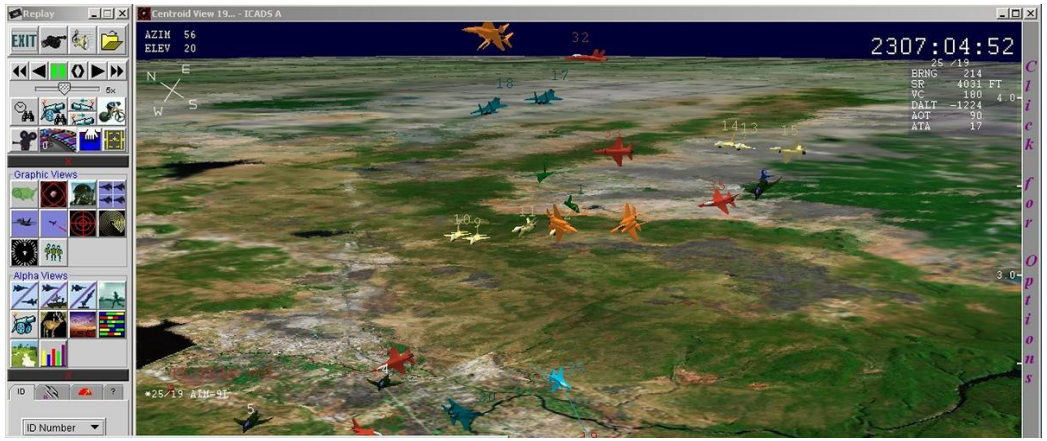
Why is Data of Interest?

UK Thursday War

Weekly war-fighting and damage control exercises

Land/Air Integration

MBDA/MLM RAIDS
(Rangeless Airborne Instrumented Debriefing System)



Cubic Individual Combat Aircrew Display System
(ICADS®)

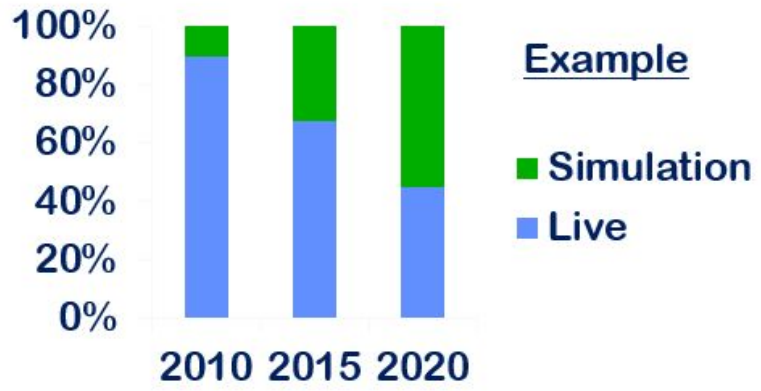
Forward Air Controller

Cubic Area Weapons Effects
Simulator (AWES)

Quantitative Evidence?

2010 – UK MoD SDSR Simulation Targets

- Step Change in Exploitation of Simulation for More Cost Effective Training
- 25% Transfer Current Live Training to Simulation by 2015
- Further 25% Current Live Training to Simulation by 2020



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Where to Invest?

More e-Learning
for all?

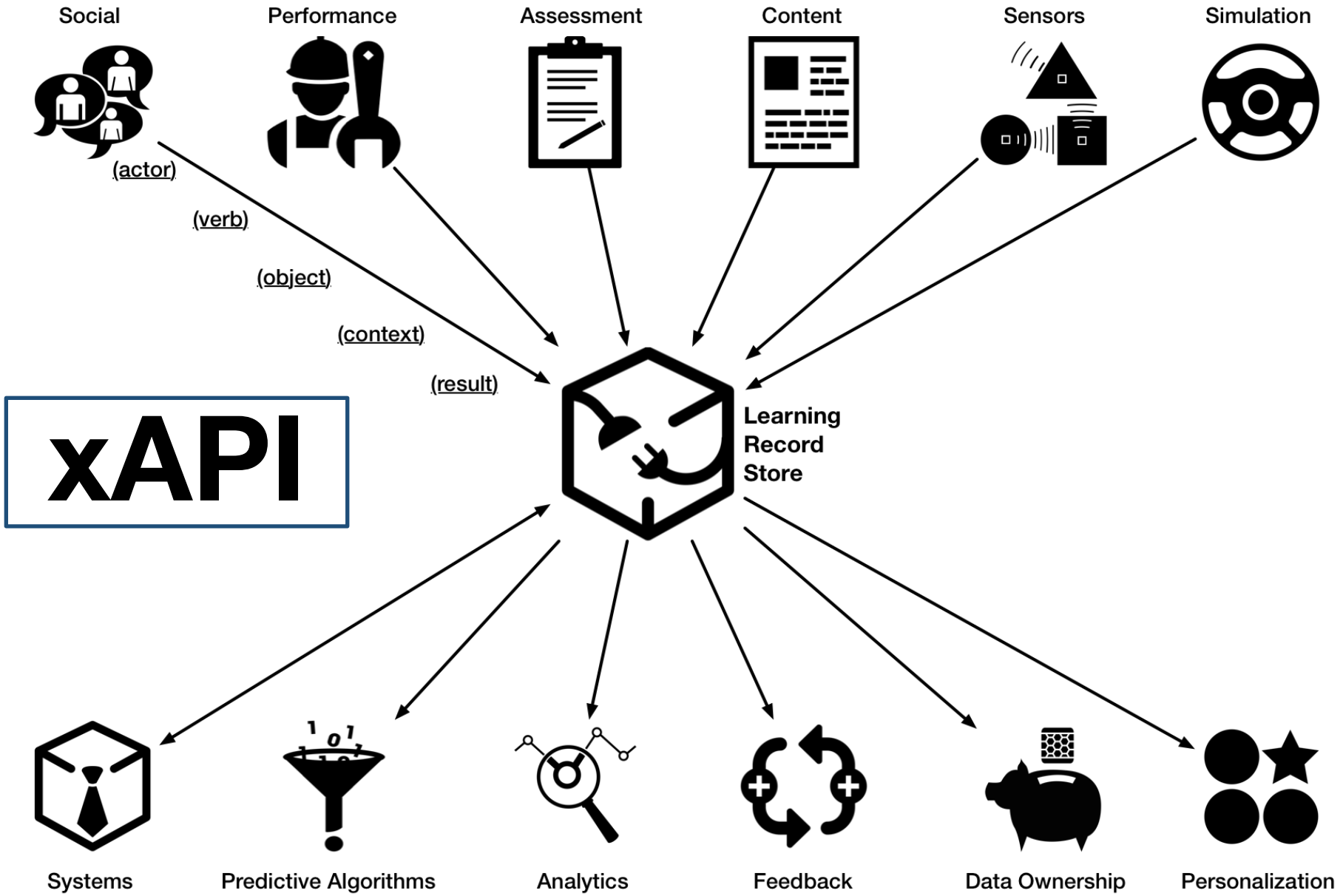
A more expensive
Simulator for a few?

Value for Money? - US GAO Aug 2016 Report

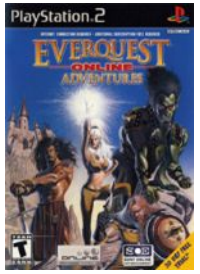
- Seven (US Army) virtual training devices are used on average for 21% of their total availability
- Four of the low-use systems cost more than $70 million to procure and $15 million to operate in FY2015

	Utilisation
Engagement Skills Trainer II (EST II)	38%
Call for Fire Trainer II	37.8%
Games for Training VBS coming	30.8%
Dismounted Soldier Training System (DSTS)	15.4%
Stryker Mobile Gun System Advanced Gunnery Training System (MGS AGTS)	8.6%
Intelligence and EW Tactical Proficiency Trainer (IEWTPT)	8.4%
Common Driver Trainer (CDT) Mine Resistant Ambush Protected (MRAP) vehicle device	1.3%

- Gaps in Governance:
  - Front-end analysis
  - Effectiveness analysis
  - Linkage with training strategies


Social
Performance
Assessment
Content
Sensors
Simulation
(actor)
(verb)
(object)
(context)
(result)
xAPI
Learning
Record
Store
Systems
Predictive Algorithms
Analytics
Feedback
Data Ownership
Personalization

Dstl Funded Research - What can we Learn from Massively Multiplayer Online Games? (MMOGs) in a Defence Context?



Bohemia Interactive SIMULATIONS

MINISTRY PROJECTS LTD

STAFFORDSHIRE UNIVERSITY

- MMOGs offer a new way of thinking about persistency of training and simulation data and user community support.
- A defence MMOG approach would bring benefits to trainees, trainers, analysts and the enterprise, driving cost effectiveness and improving flexibility. Key MMOG features:
  - Persistency of Player/Simulation Data
  - Community Support

A Cloud Approach?

7th SMi Annual Joint Forces Simulation & Training Conference
London 3-4 February 2016

The Cloud and your Training & Simulation Infrastructure

Andy Fawkes

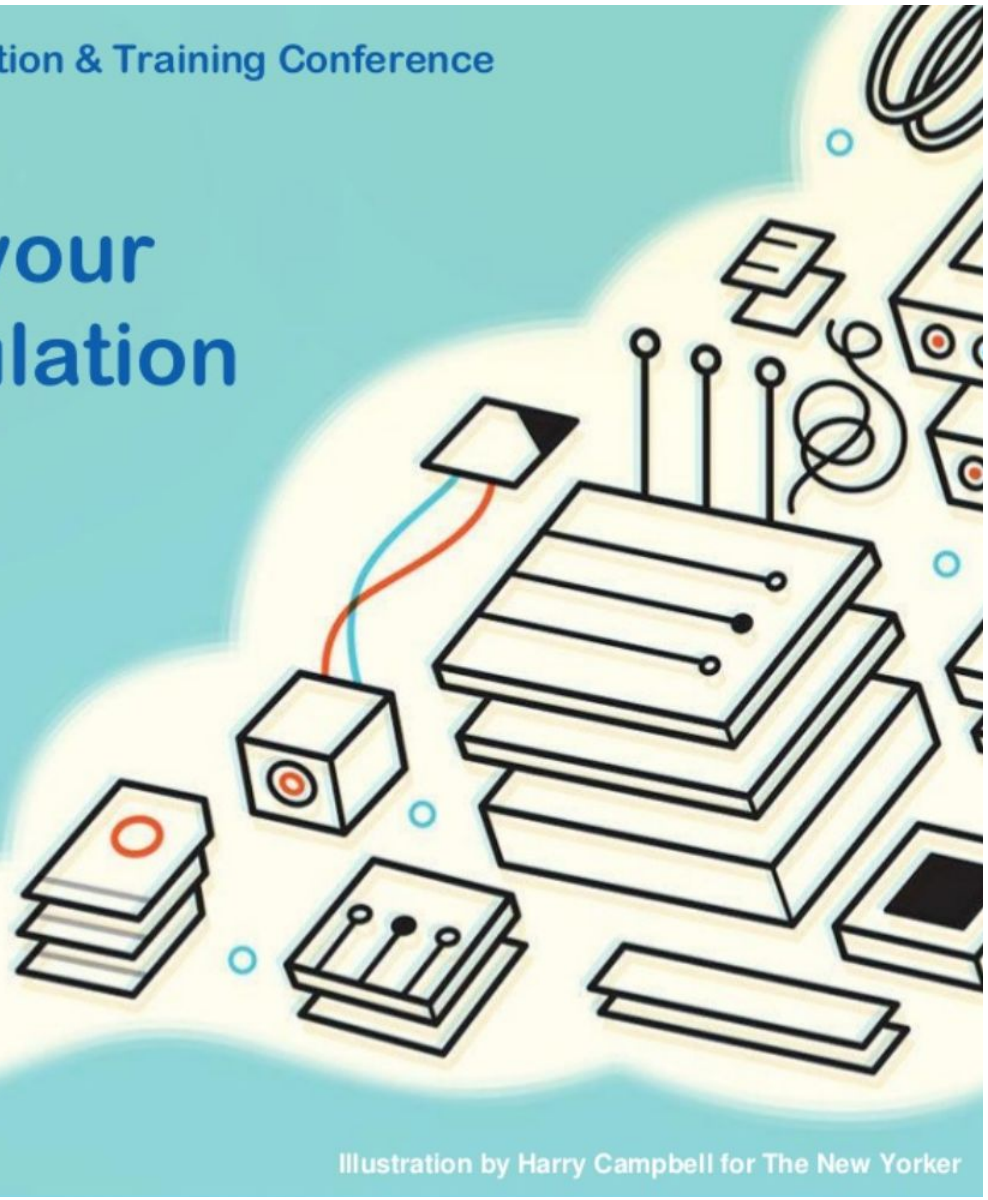
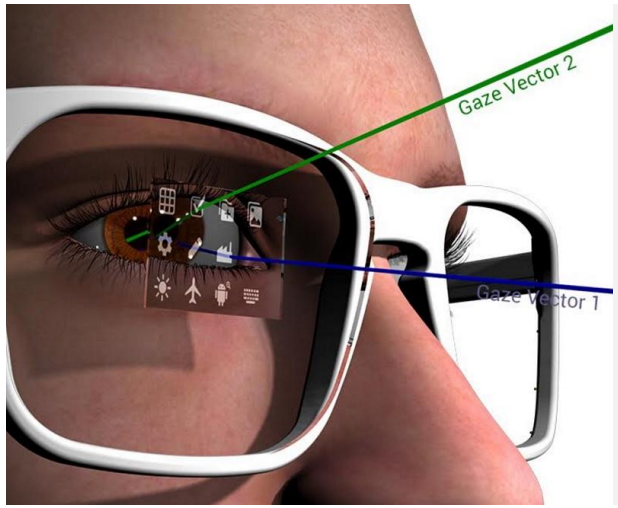
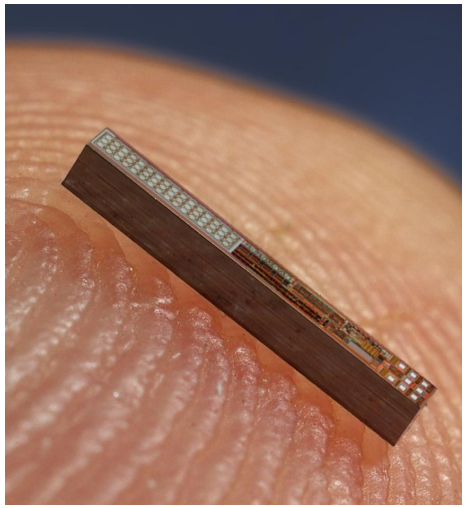


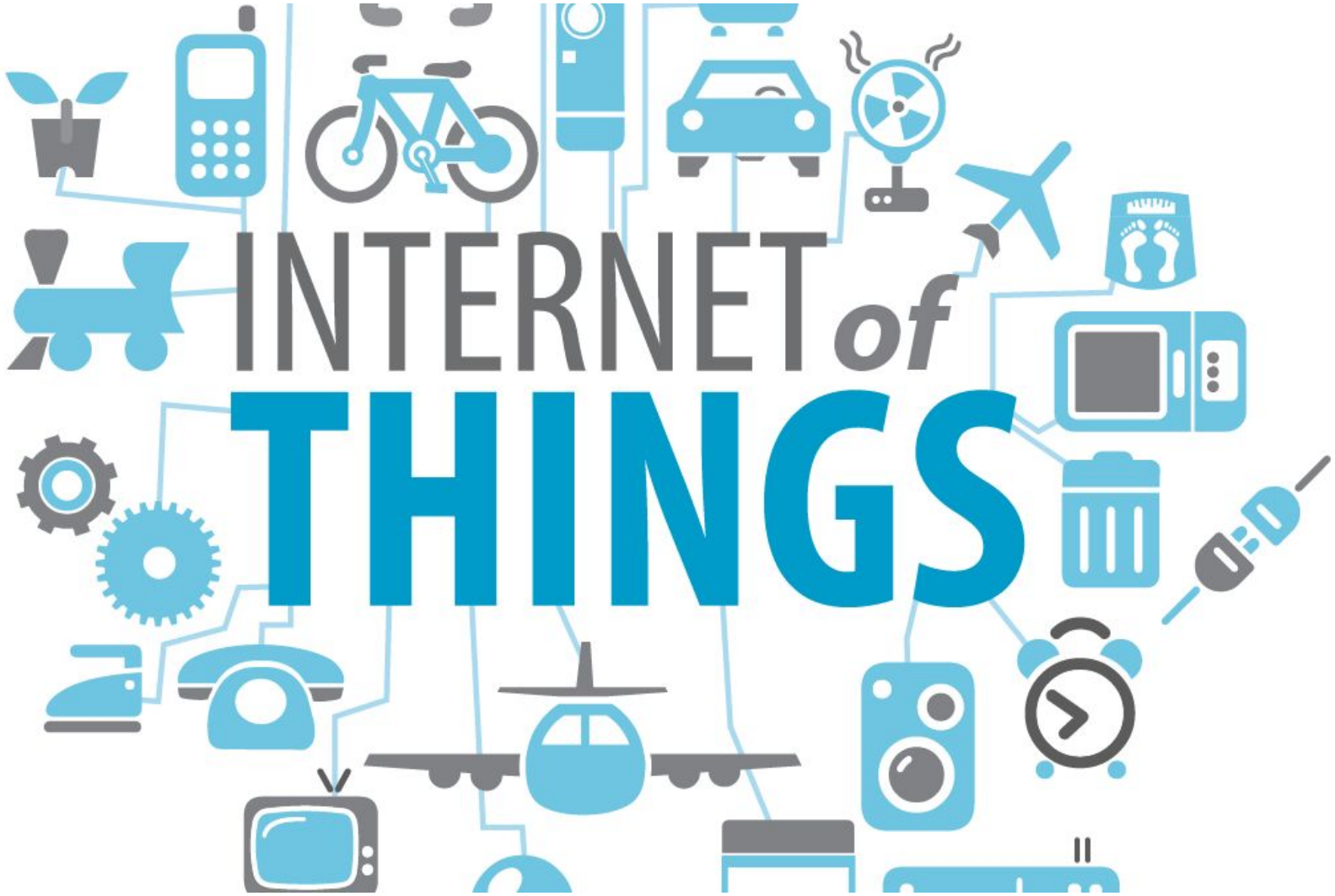
Illustration by Harry Campbell for The New Yorker

Quantified Human

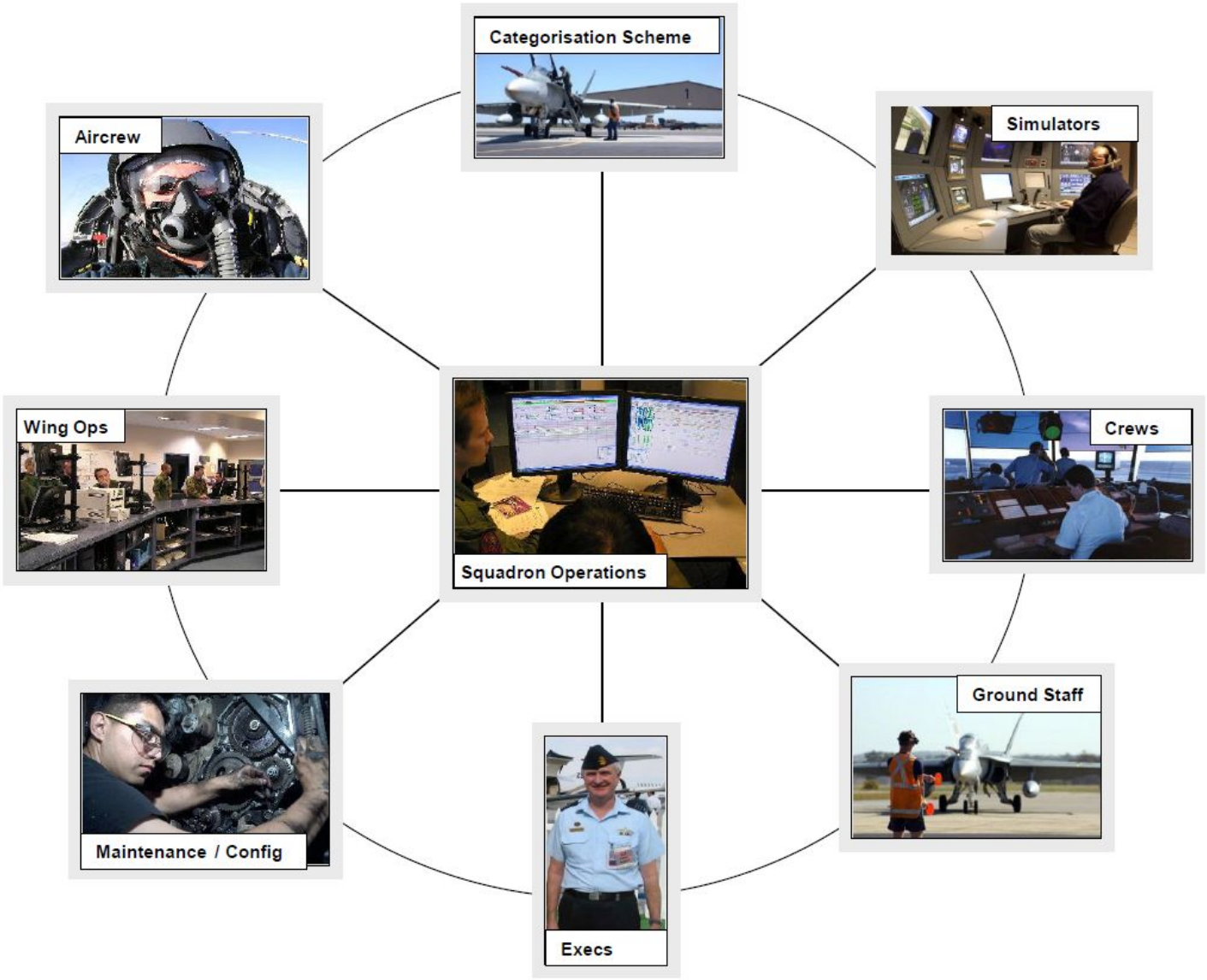




Sensors Everywhere



Training & Operations Management Software (FlightPro)



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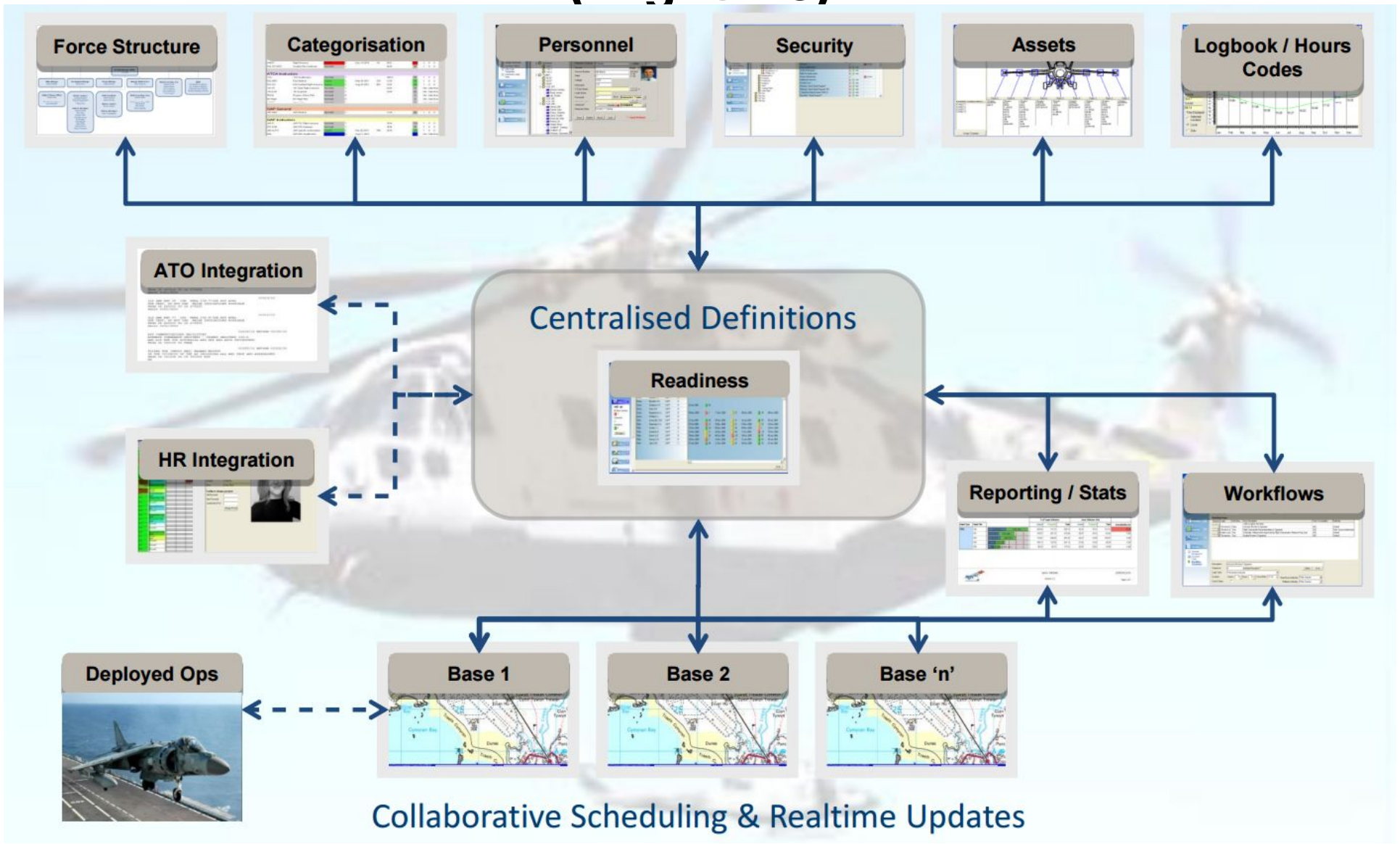
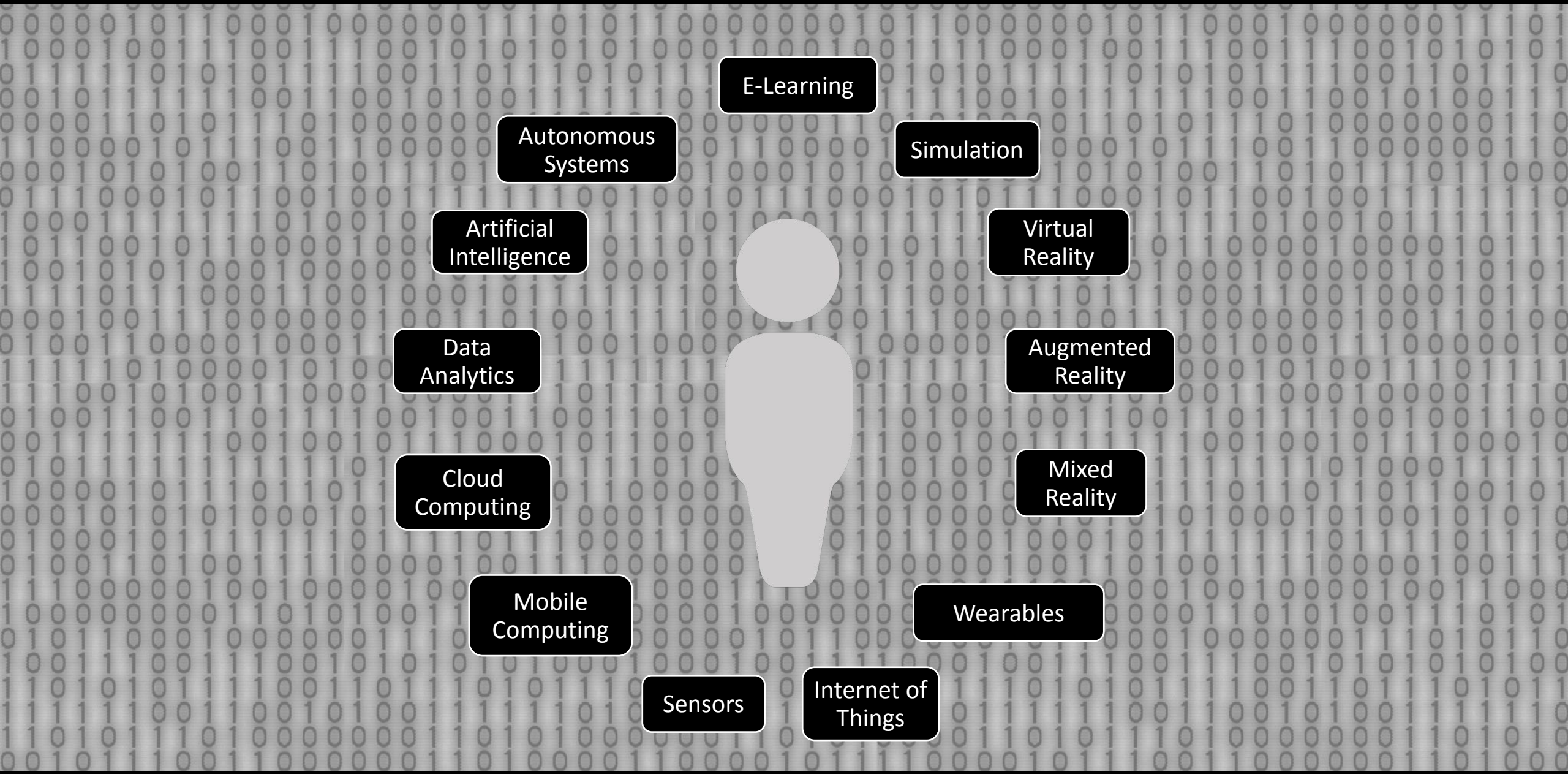


Whole World Data

A Data Rich Future



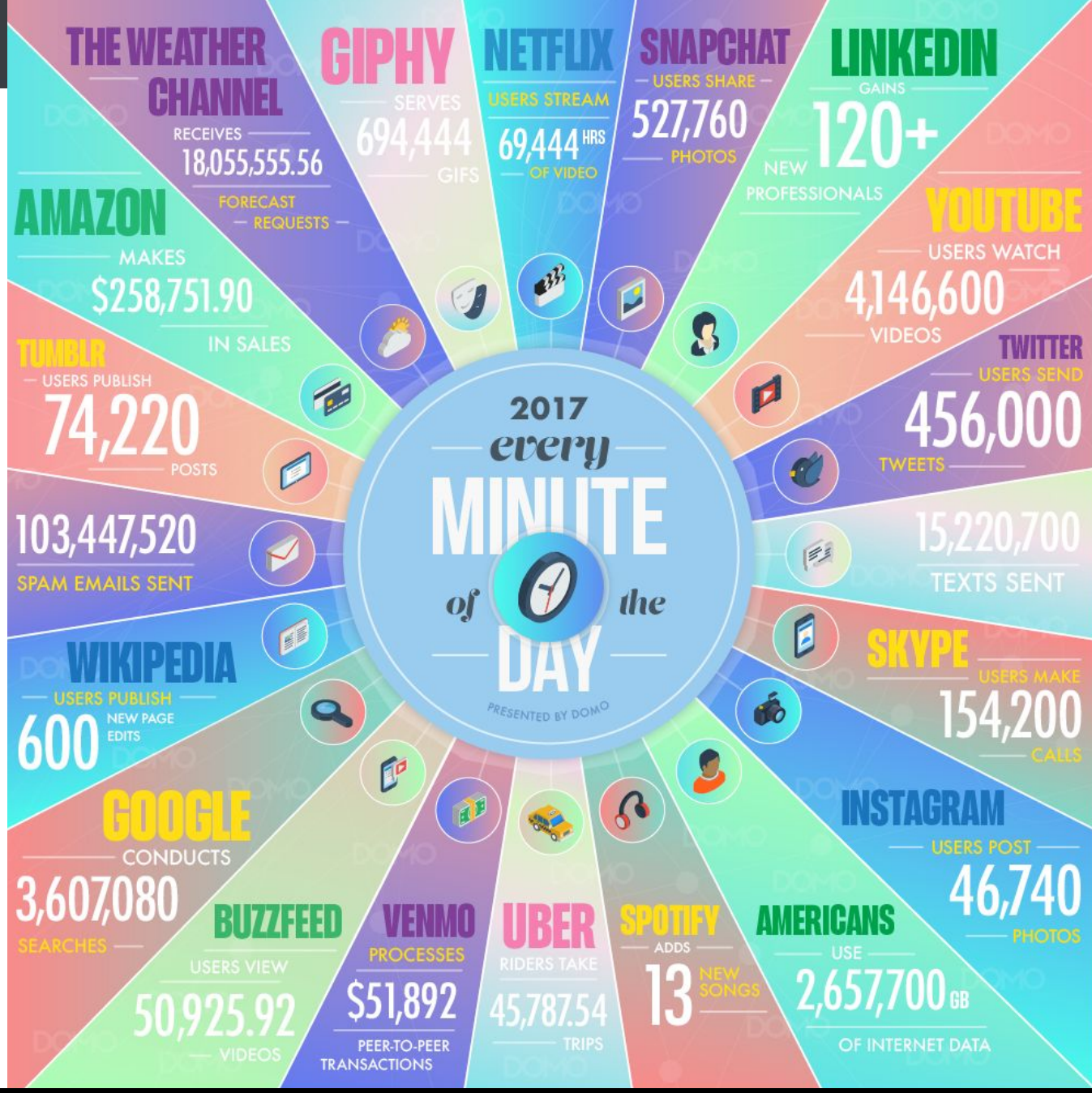
The Economist | Topics | Print edition | More

Regulating the internet giants

The world's most valuable resource is no longer oil, but data

The data economy demands a new approach to antitrust rules

Print edition | Leaders ›
May 6th 2017



90% of data was created in the last two years (DOMO)

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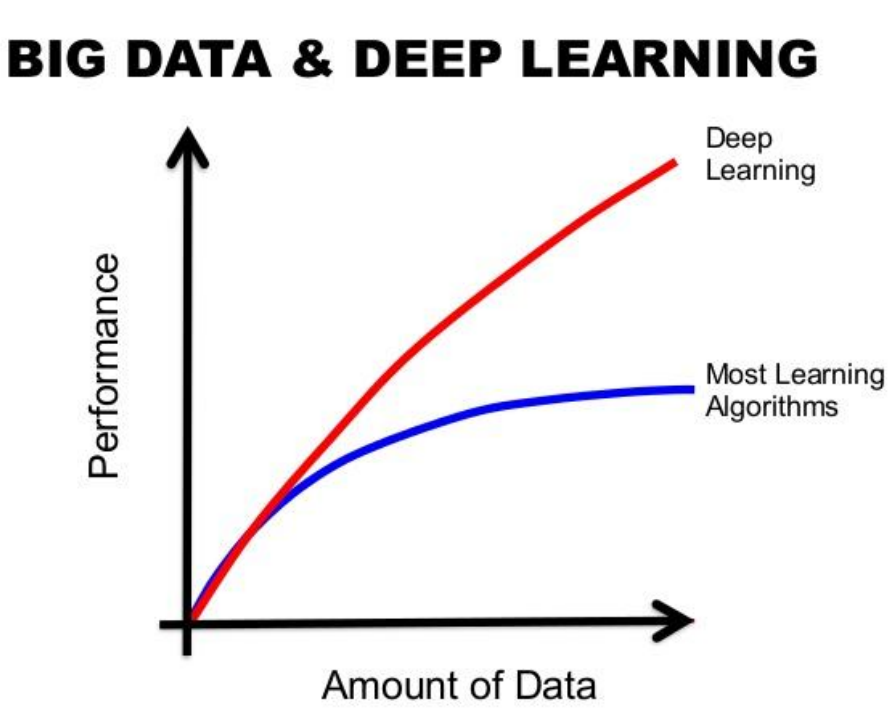
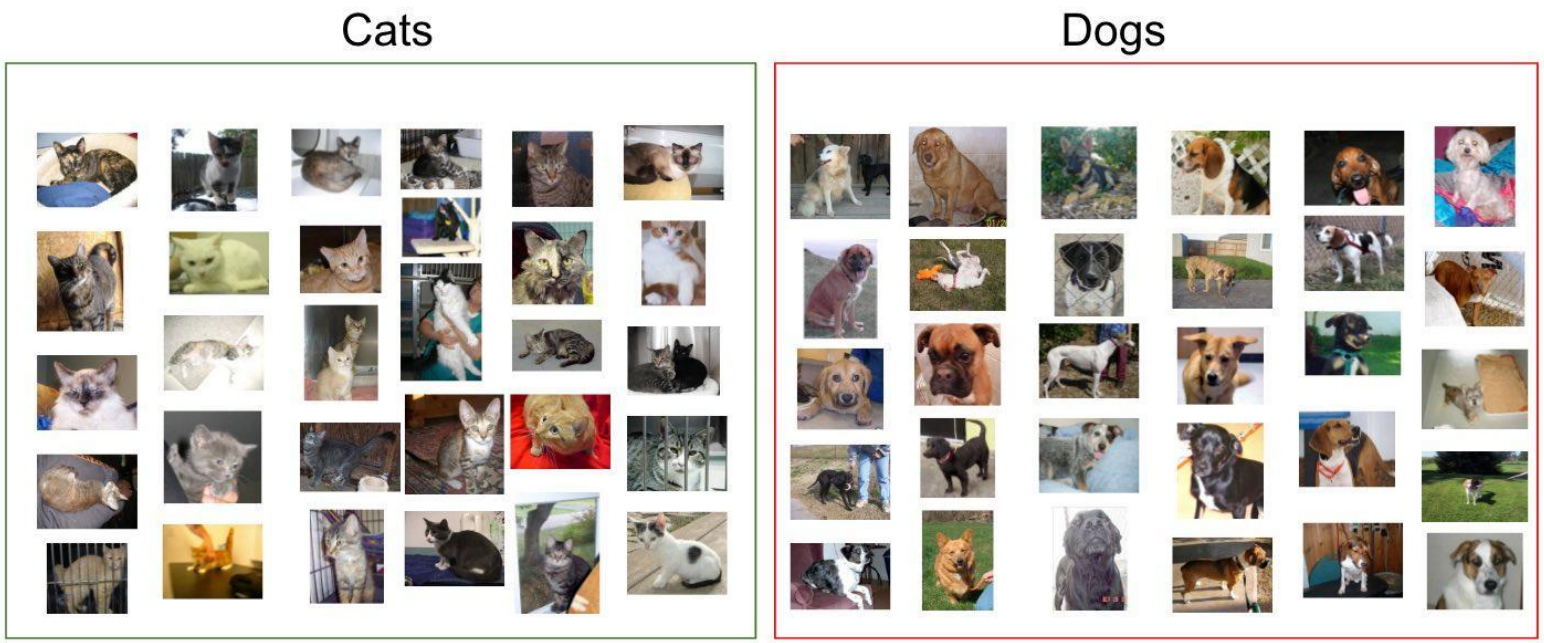
AI and Data





Sample of cats & dogs images from Kaggle Dataset

UK Military Air Training Data Generators/Users

(Information in Public Domain)

How do they all fit together?

Pixabay

Apache

ASDOT

F-35

MSHTF

LTPA

A400M

TyTan

DOTC(A)

STARS

DCS&S

C-130

DSALT2

WIST

iASTC

C17

MAA

P-8

AUV

MFTS

TFST

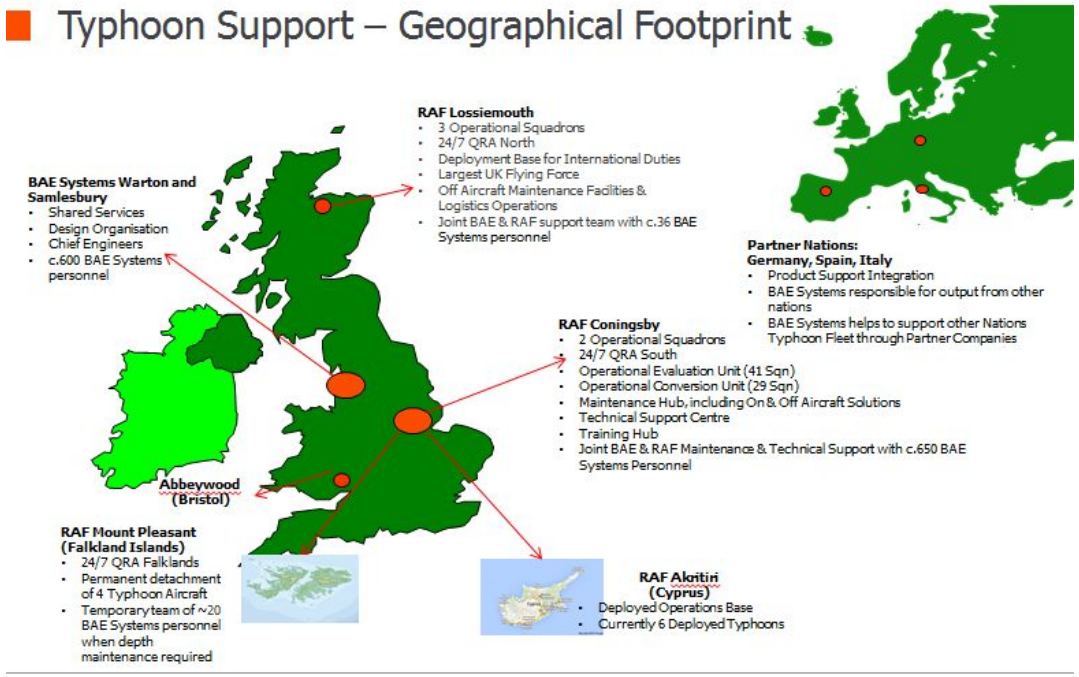
E-3

UK MFTS

- UK Military Flying Training System
- Takes UK armed forces aircrew from initial training through, elementary, basic and advanced flying training phases preparing them for their arrival at their designated operational aircraft units (Fast, Large, Rotary)
- Ascent (Lockheed Martin/Babcock) 25-year PFI contract from 2008 (ca. £6bn)

TyTAN

- Typhoon Total Availability eNterprise
- Typhoon Training Facility
- 10 year contract with BAE from July 2016 includes Typhoon Training



TFST

- Typhoon Future Synthetic Training
- Development, installation and support of a synthetic training capability for RAF Typhoon aircrew
- Includes Individual, Team and Collective training for aircrew from the Operational Squadrons and the Operational Conversion Unit (OCU)
- Located at the Typhoon Main Operating Bases (MOBs) with Collective training being provided through DOTC(Air)
- PQQ 2016, contract 7 Years, £370m (ex VAT)

DSALT 2

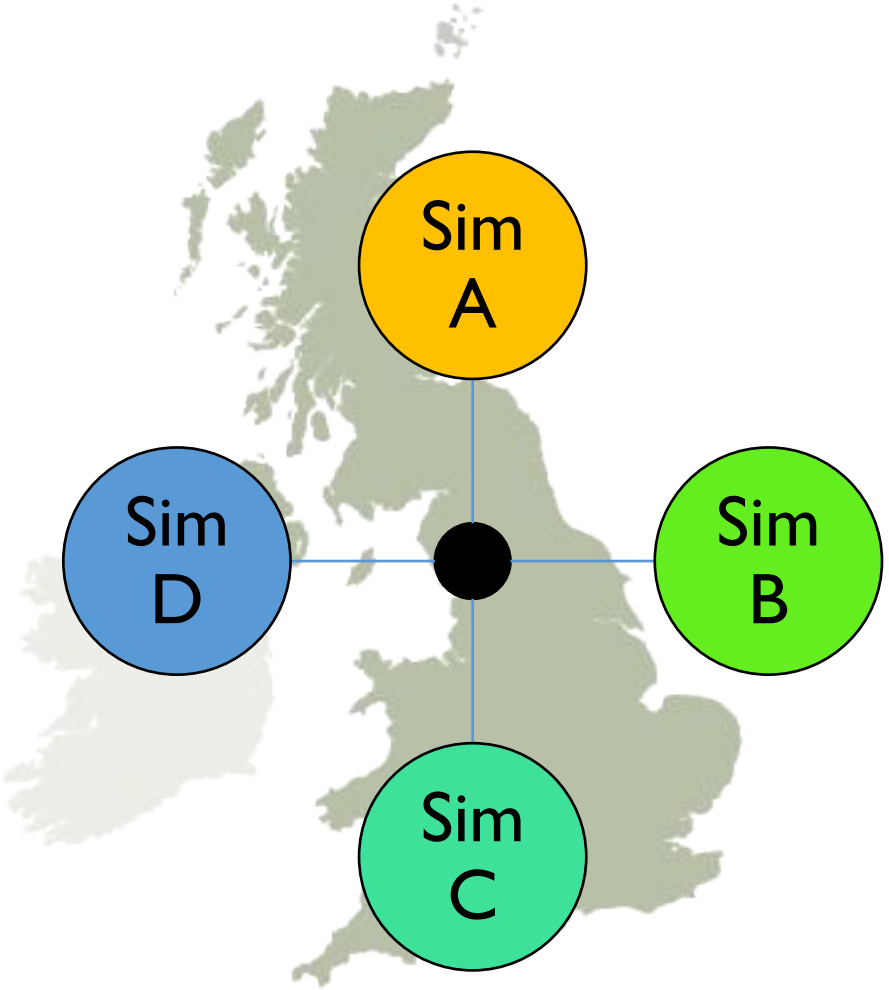
- Distributed Synthetic Air Land Training 2
- RAF Waddington - a number of simulators, including domes and tents to accommodate a variety of military aircraft and teams
- £33m contract with QinetiQ 2014-19

iASTC

- Interim Air Synthetic Training Capability
- Extension of DSALT2 contract
- Integrates existing BAE Systems simulators at the Typhoon squadrons' Main Operating Bases (MOBs) at RAF Coningsby and Lossiemouth into the DSALT system, allowing pilots to participate in exercises without having to travel to RAF Waddington
- £10m contract with QinetiQ 2017-on

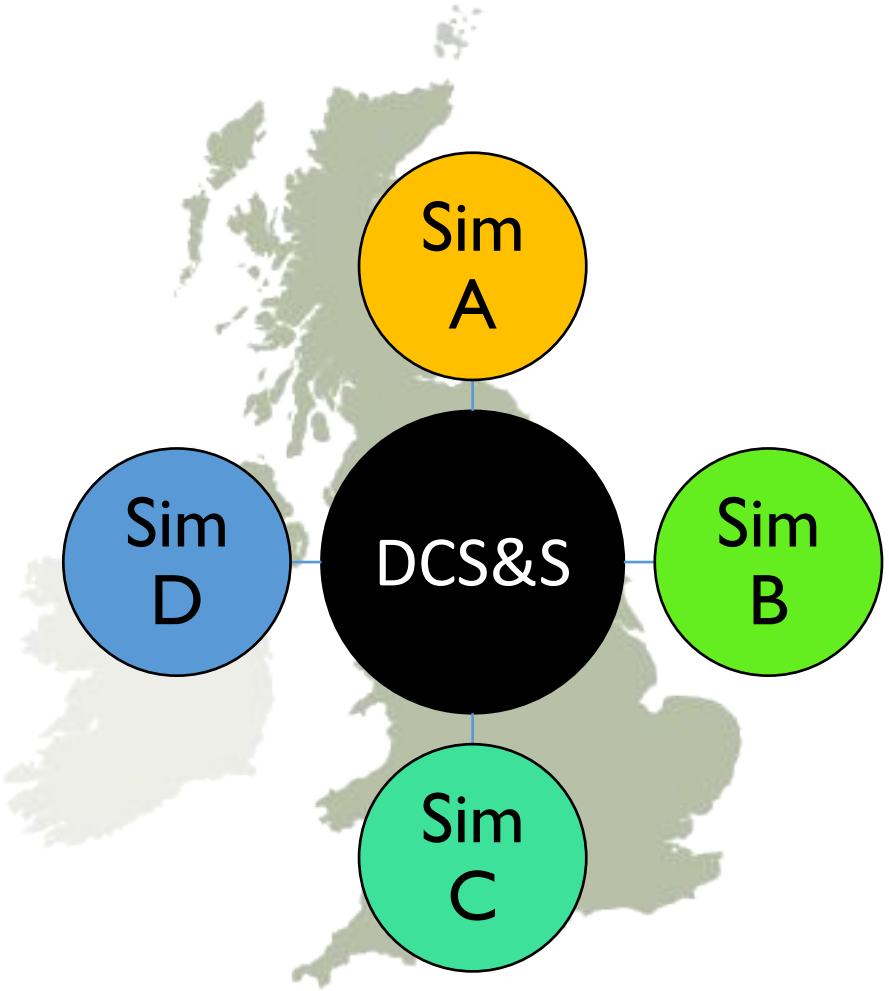
DOTC(A)

- Defence Operational Training Capability Air
- Air element of a future UK pan-defence LVC simulation training capability
- Aims to establish a series of networked simulation mission training facilities supporting:
  - Team training
  - Collective, Joint and Combined training
  - Mission training
  - Complement/replace live training



DCS&S

- DOTC(A) Core System and Services
- Link to TFST and DMON (Secret Network)
- Common networked simulation environment – UK & Coalition
- Connectivity and interoperability over diverse and geographically distributed simulators
- Supporting services – eg. training scenario design
- A “Whiteforce” to orchestrate and develop events
- Does not include simulators themselves
- £75m - £120m over 8 years from 2020



MSHTF

- Medium-Support Helicopter Aircrew Training Facility
- Located at RAF Benson, includes initial conversion to type, continuation, pre-deployment and mission rehearsal
- Computer-based training and computer aided instruction
- Six full-mission simulators (stand-alone or networked)
  - 3 x Chinook
  - 2 x Merlin
  - 1 x Puma
- Tactical Control Centre
- PFI with CAE from 1999

AHTS

- Attack Helicopter Training Service
- Aircrew, Groundcrew and Maintenance Training
  - 700 personnel per year (50 Pilots)
- Aviation Training International Limited (ATIL) 50:50 joint venture Boeing/ AgustaWestland
- 20 Year PFI

WIST

- Wildcat Integrated Support & Training
- Supports 62 AW159 Wildcats (Army and RN) for 5 years from 2017
- Includes Wildcat Training Centre at RNAS Yeovilton

ASDOT

- Air Support to Defence Operational Training
- Live training component of UK air support across RAF, RN, Army and JFC, eg. EW, CAS, ACM, AAW
- Phase one will be introduced from 2020 for 15 years (est £750m)

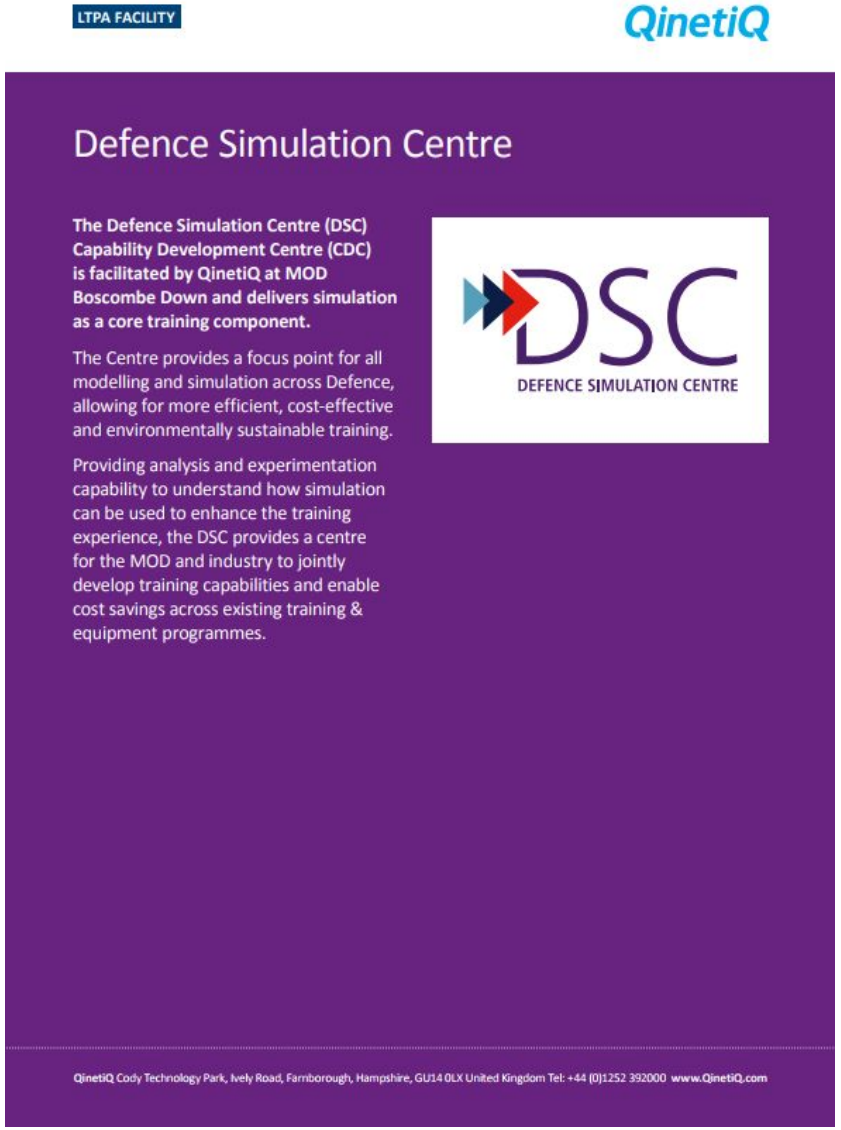
Mission Support

LTPA

- Long Term Partnering Agreement
- Air Test and Evaluation and Training Support services, including MoD Aberporth, Hebrides, and Boscombe Down
- 25-year contract (from 2003) with QinetiQ

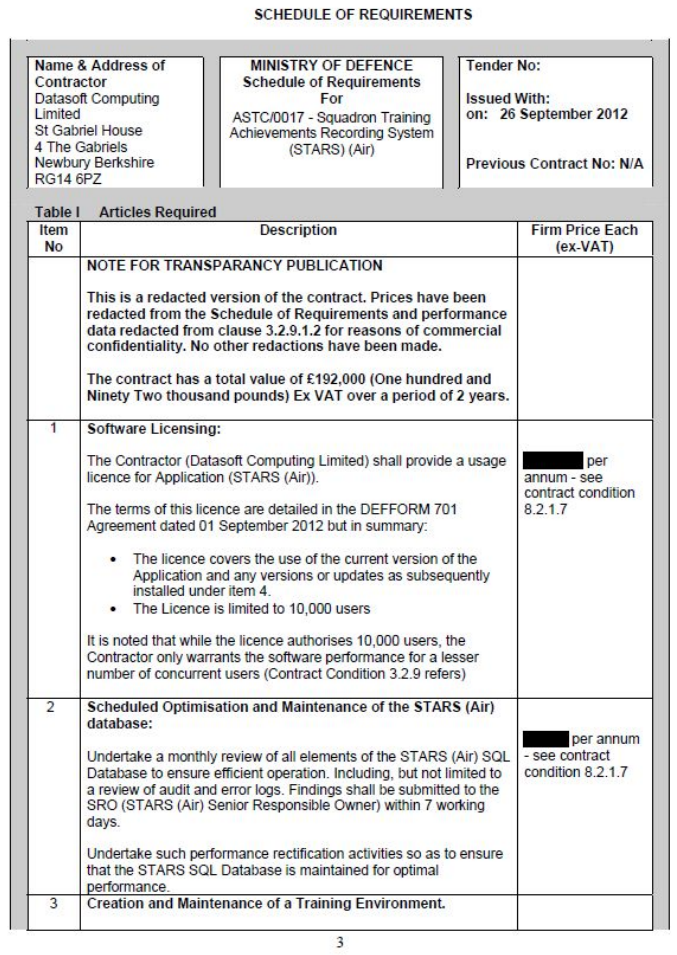
DSC

- Defence Simulation Centre
  - The provision of a range of technical advice and support services for the use of simulation
  - A repository of 3D visual models, terrain data and simulation software
  - A physical environment with supporting security accreditation, network infrastructure and equipment for users to conduct simulation based activities
  - Test services to conduct compliance assessments
- JFC Funded under the LTPA until 2018, MoD Boscombe Down moving to Defence Acadmy.



STARS

- Squadron Training Achievements Recording System
- Database for collating aircrew currency and competencies
- Enables the creation and dissemination of the Flying Programme and tracking of personnel training competencies
- Datasoft Computing - £1.2m-1.5 m, 3 years from 2016



SCHEDULE OF REQUIREMENTS

Name & Address of Contractor	MINISTRY OF DEFENCE Schedule of Requirements For	Tender No:
Datasoft Computing Limited St Gabriel House 4 The Gabriels Newbury Berkshire RG14 6PZ	ASTC/0017 - Squadron Training Achievements Recording System (STARS) (Air)	Issued With: on: 26 September 2012 Previous Contract No: N/A

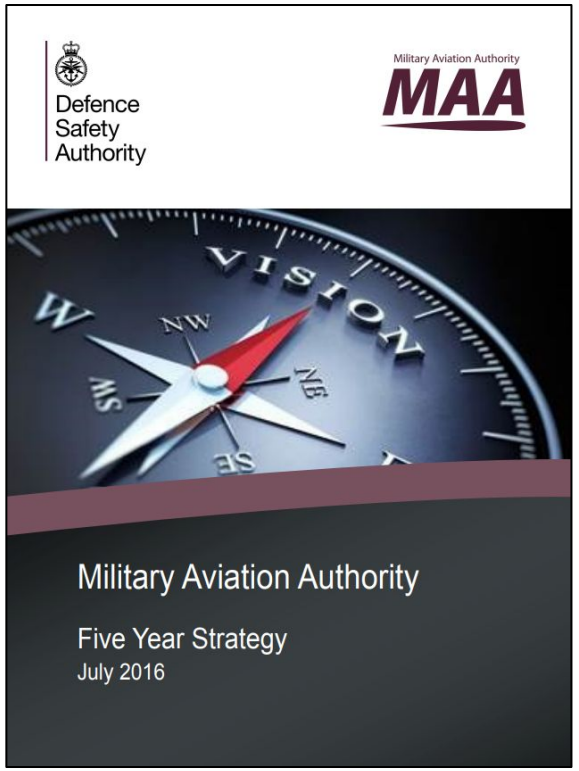
Table I Articles Required

Item No	Description	Firm Price Each (ex-VAT)
	NOTE FOR TRANSPARANCY PUBLICATION **This is a redacted version of the contract. Prices have been redacted from the Schedule of Requirements and performance data redacted from clause 3.2.9.1.2 for reasons of commercial confidentiality. No other redactions have been made.** **The contract has a total value of £192,000 (One hundred and Ninety Two thousand pounds) Ex VAT over a period of 2 years.**	
1	**Software Licensing:** The Contractor (Datasoft Computing Limited) shall provide a usage licence for Application (STARS (Air)). The terms of this licence are detailed in the DEFFORM 701 Agreement dated 01 September 2012 but in summary: • The licence covers the use of the current version of the Application and any versions or updates as subsequently installed under item 4. • The Licence is limited to 10,000 users It is noted that while the licence authorises 10,000 users, the Contractor only warrants the software performance for a lesser number of concurrent users (Contract Condition 3.2.9 refers)	[redacted] per annum - see contract condition 8.2.1.7
2	**Scheduled Optimisation and Maintenance of the STARS (Air) database:** Undertake a monthly review of all elements of the STARS (Air) SQL Database to ensure efficient operation. Including, but not limited to a review of audit and error logs. Findings shall be submitted to the SRO (STARS (Air) Senior Responsible Owner) within 7 working days. Undertake such performance rectification activities so as to ensure that the STARS SQL Database is maintained for optimal performance.	[redacted] per annum - see contract condition 8.2.1.7
3	**Creation and Maintenance of a Training Environment.**	

3

MAA

- Military Aviation Authority
- Independent organisation reporting to the Defence SofS
- Responsible for the regulation, surveillance, inspection and assurance of the defence air operating and technical domains.
- Ensures the safe design and use of military air systems



Others…?

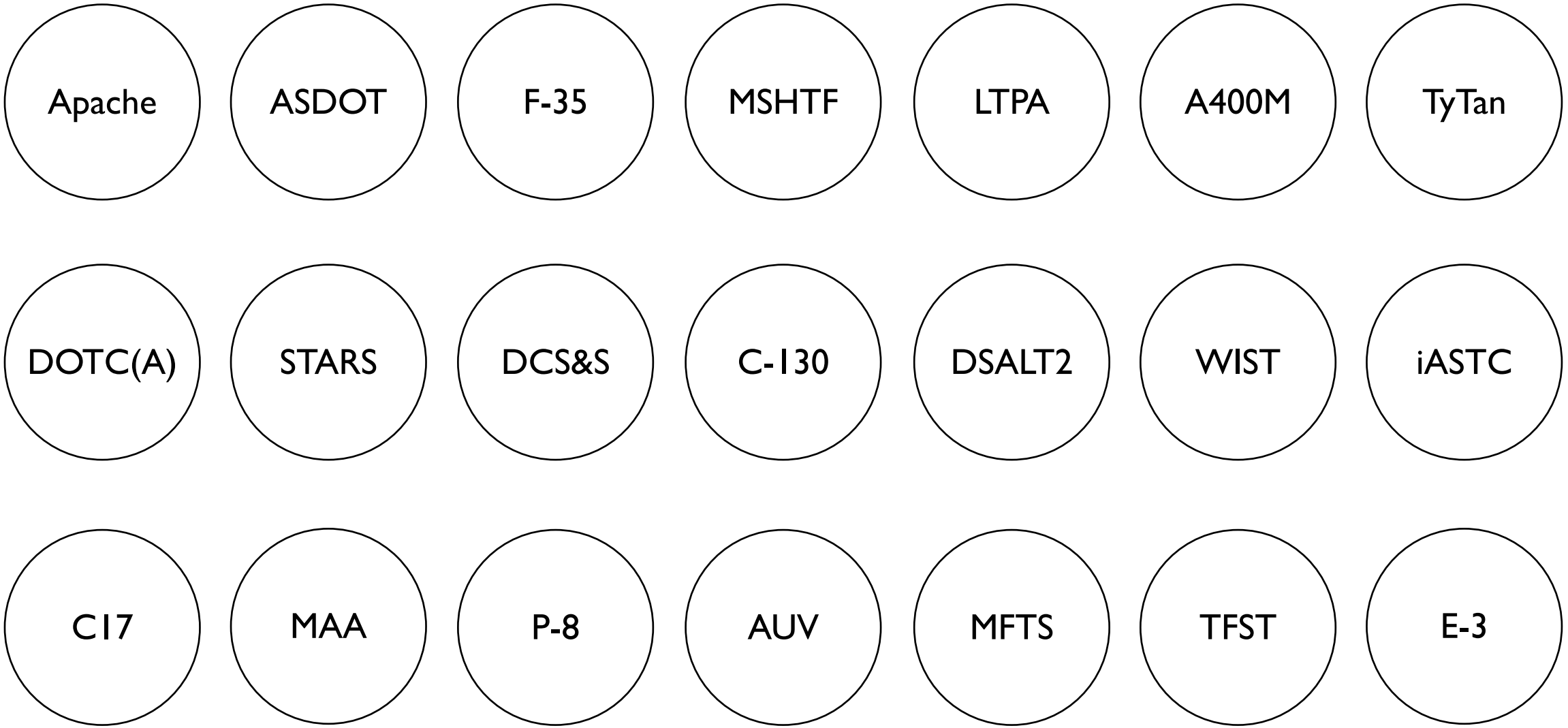
- F-35 – Lightning II
- UAV
- C-17
- A400M
- C-130 Hercules
- Sentinel
- Boeing P-8 MPA
- Boeing E-3 Sentry
- Joint Fires Synthetic Trainer
- JFACTSU/JALO
- Defence Virtual Simulation/VBS3
- Defence Learning Management Capability (DLMC)

An Enterprise Approach to Data

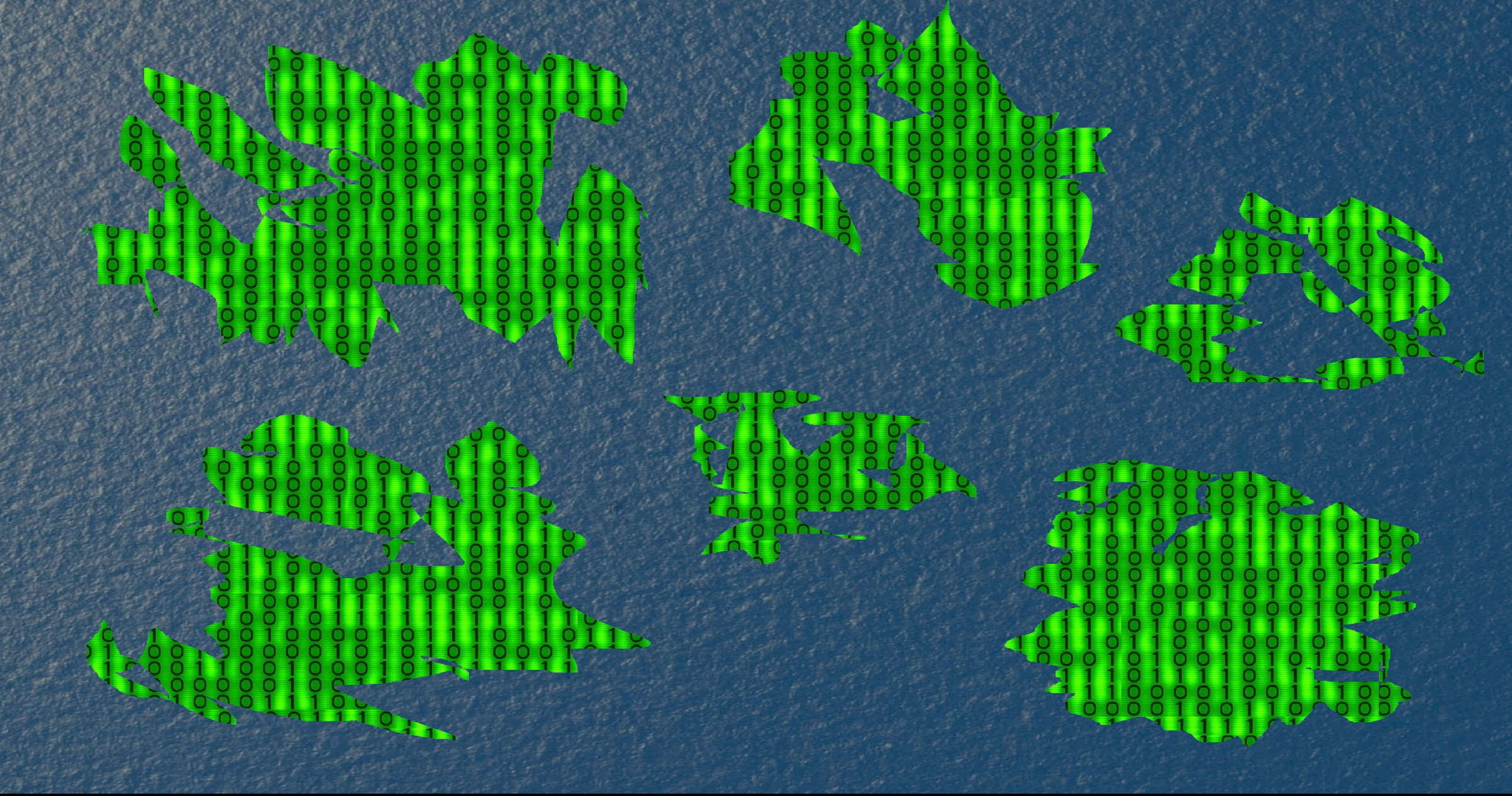
How does it all fit together?

Pixabay

Organisational/Project Boundaries



Stovepipes of Data



Pixabay

Islands of Data

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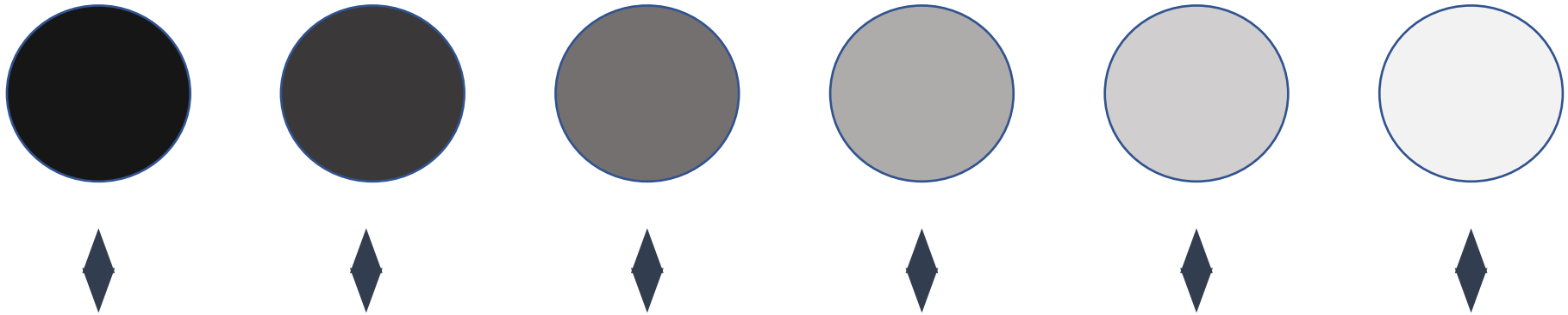
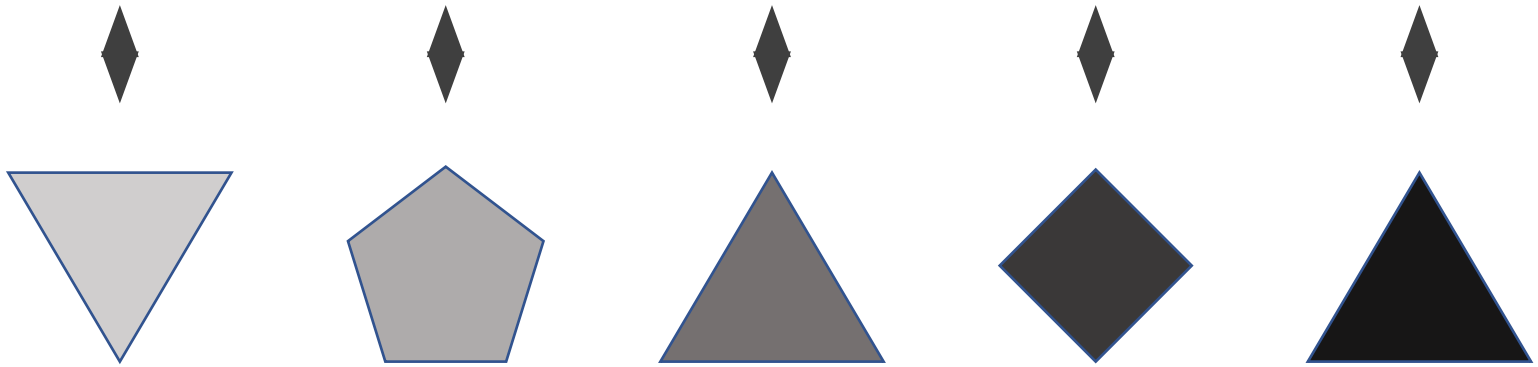
MoD Customers



Pooled Data

Service Providers



Challenges

- Data ≠ Knowledge
- People Business
- Cyber

Some Benefits of a Data-Driven Approach

Trainee

- Trainees have a training and education environment that measures and records their performance and provides official goals to be attained
- Through career, training content and other trainees are easy to discover and share knowledge with

Trainer

- Trainers have access to a training and education environment that is available 24/7 and is maintained and updated centrally
- Training scenarios are easy to access, develop and share
- Training and exercise events are easy to schedule and set up, locally and across the defence enterprise

Training Analyst

- Training and human factor analysts can collect centrally held training data and can conduct analysis on:
  - human performance and training systems effectiveness, and
  - methodologies/pedagogies

Enterprise

- Software and data are maintained and upgraded centrally reducing costs and responding better to changing operational needs

A Flight Deck for Training?

Questions?