



A Perspective on Defence Training and Technology Trends



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Outline

- Defence Training and Education Overview
- Simulation in Support of Defence Training
- Beyond Simulation – Technologies in Support of Training and Education
- The Procurement Challenge
- Training and Education Technologies – Challenges and Opportunities?

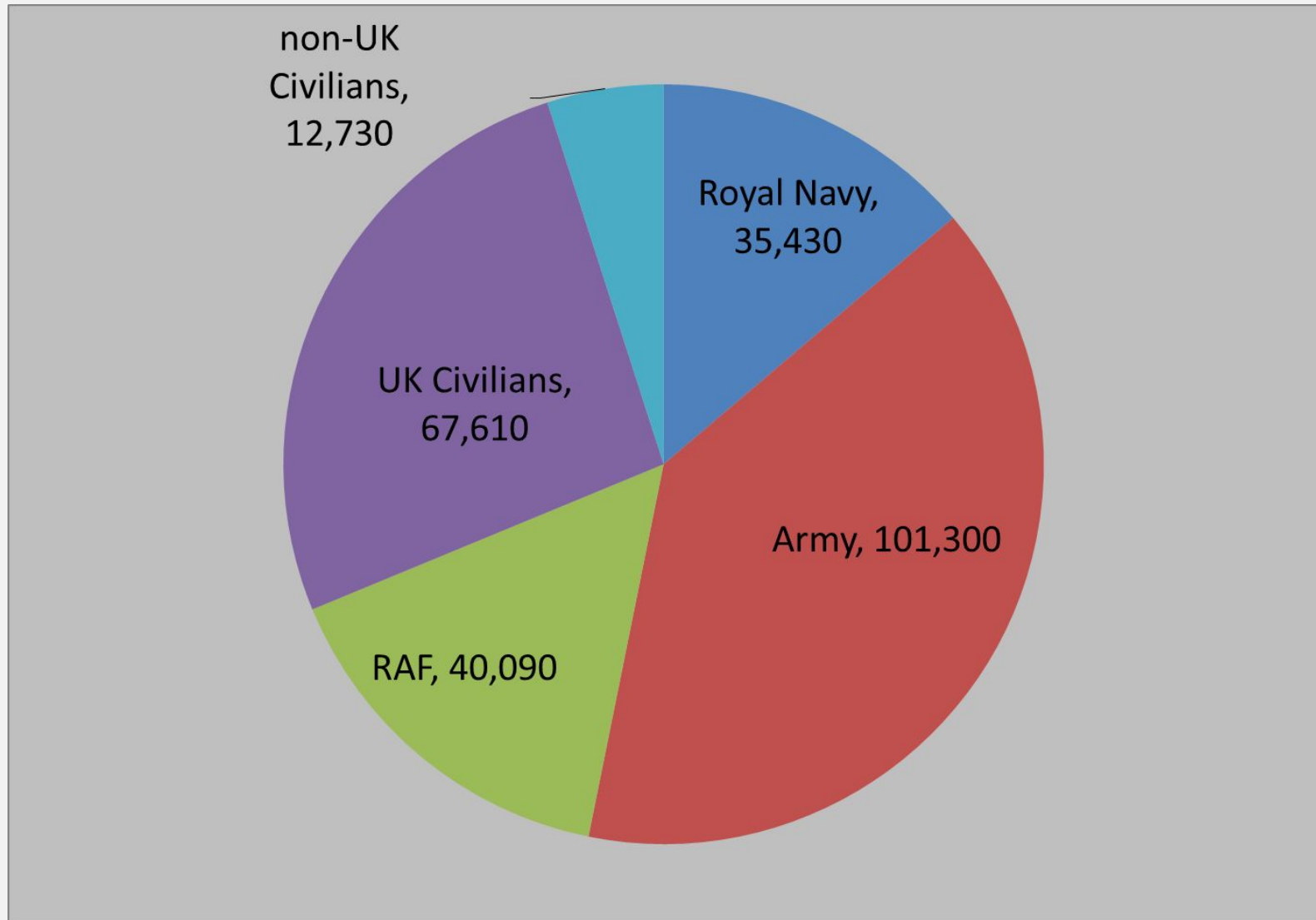
Defence Training and Education

- Scale
- Depth
- Breadth
- Flexibility

Cost of Training and Education in Defence

- Manpower
 - Platforms and Equipment
 - Fuel and Maintenance
 - Training Estate and Establishments
 - Training Systems and Simulators
-
- Approximately 20% of Defence Budget (£7-8bn)

Total MoD/Military Personnel 2011 (257,160)



UK Armed Services (2011)

- 186,360 UK Regular Forces personnel
 - 167,650 at 1 August 2012
 - 24th in world by size
- 90% Male and 10% Female
- 7% Black and Minority Ethnic
- 52% age 29 years old and younger
- 82% age 39 years old and younger
- 17% officers and 83% other ranks

Basic Training



Skills Training



Team Training



Operations



Operations



Support



Command and Control



Contingency



Varied Environments



Ceremonial



Reserves



- Total Numbers Approx. 25,000 (Ref. Future Reserves 2020 July 2011)

The Defence "Back Office"



Constant Change



Levels of Training

- Individual
- Team
- Collective
 - “Collective training involves 2 or more ‘teams’, where each team fulfils different ‘roles’...”
- Joint
 - Activities, operations and organisations in which elements of at least two services participate”
- Combined
 - 2 or more Nations



“Depth” - Trident Submarine Commander

- 15,900 tonne submarine, 150m long and 13m in beam
- 135 Complement
- Rolls-Royce PWR2 nuclear reactor and 2 diesel alternators
- 25 knots and range unlimited, except by food supplies etc
- Towed array and Hull Mounted sonars and 2 periscopes
- 4 torpedo tubes for Spearfish torpedoes
- 16 × ballistic missile tubes for 16 x Lockheed Trident D5 SLBMs carrying up to 192 warheads



How do the Armed Forces Achieve this Level of Training and Education Capability?

- The Military understands that training and education is fundamental to their endeavour
- People are assessed by how well they do in Training
- Career progression depends on training and education
- Much of military life is spent training and exercising
- Lessons Learnt are fed back

Simulation in Support of Defence Training and Education

Why Simulate?



Improve
Training



Safety



Reduce
Costs



Reduce
Environmental
Impact

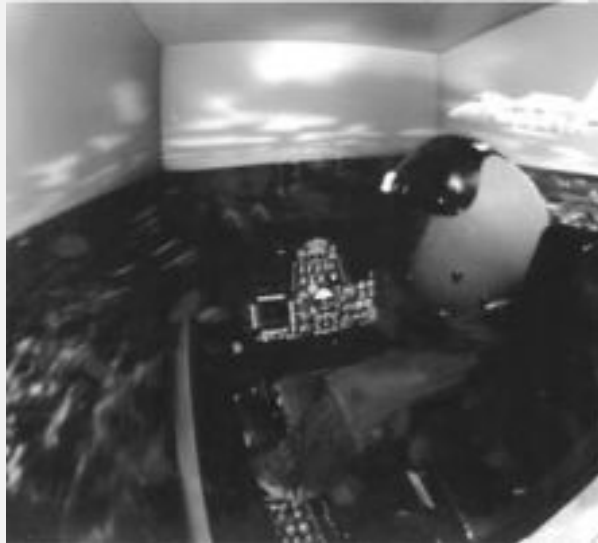
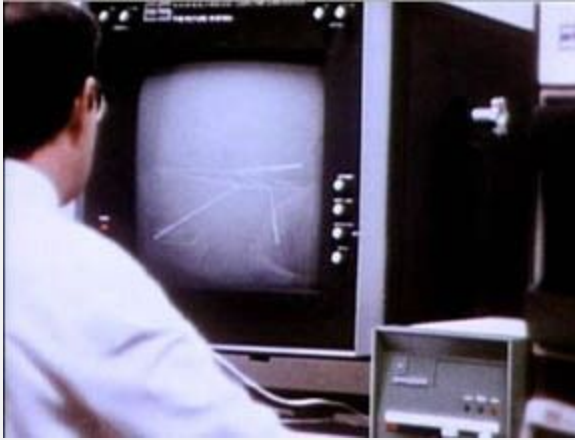
Simulation - Nothing New in the World?



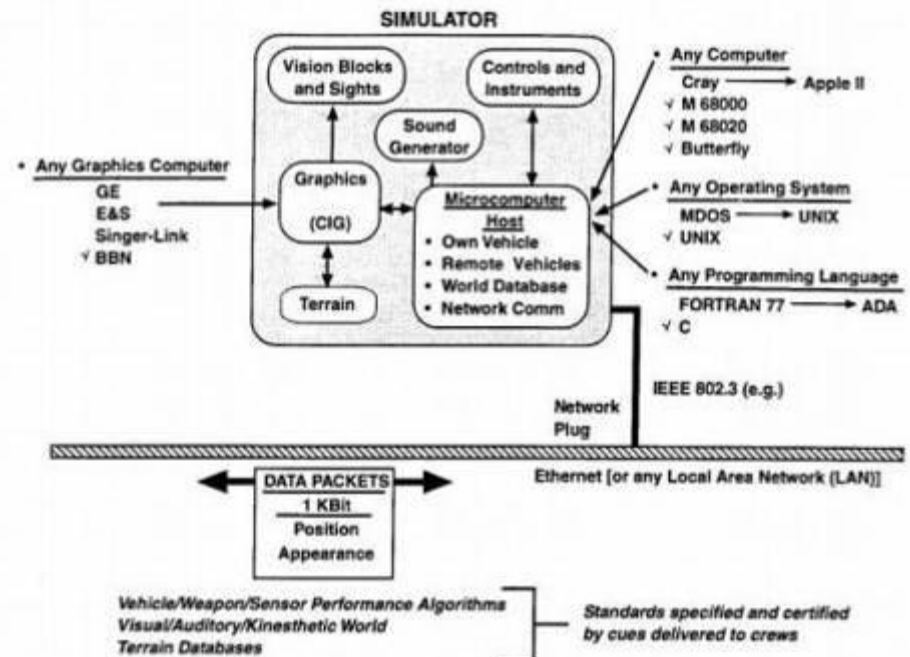
Simulation - Nothing New in the World?



Simulation – 1960s-80s



Networked Simulation – SIMNET – 1980s/90s



NO540-13

Figure 12. The Basic Network Architecture

The Influence of Games (2000s)



Modern Simulation Software

Buy Once – Use Many Times

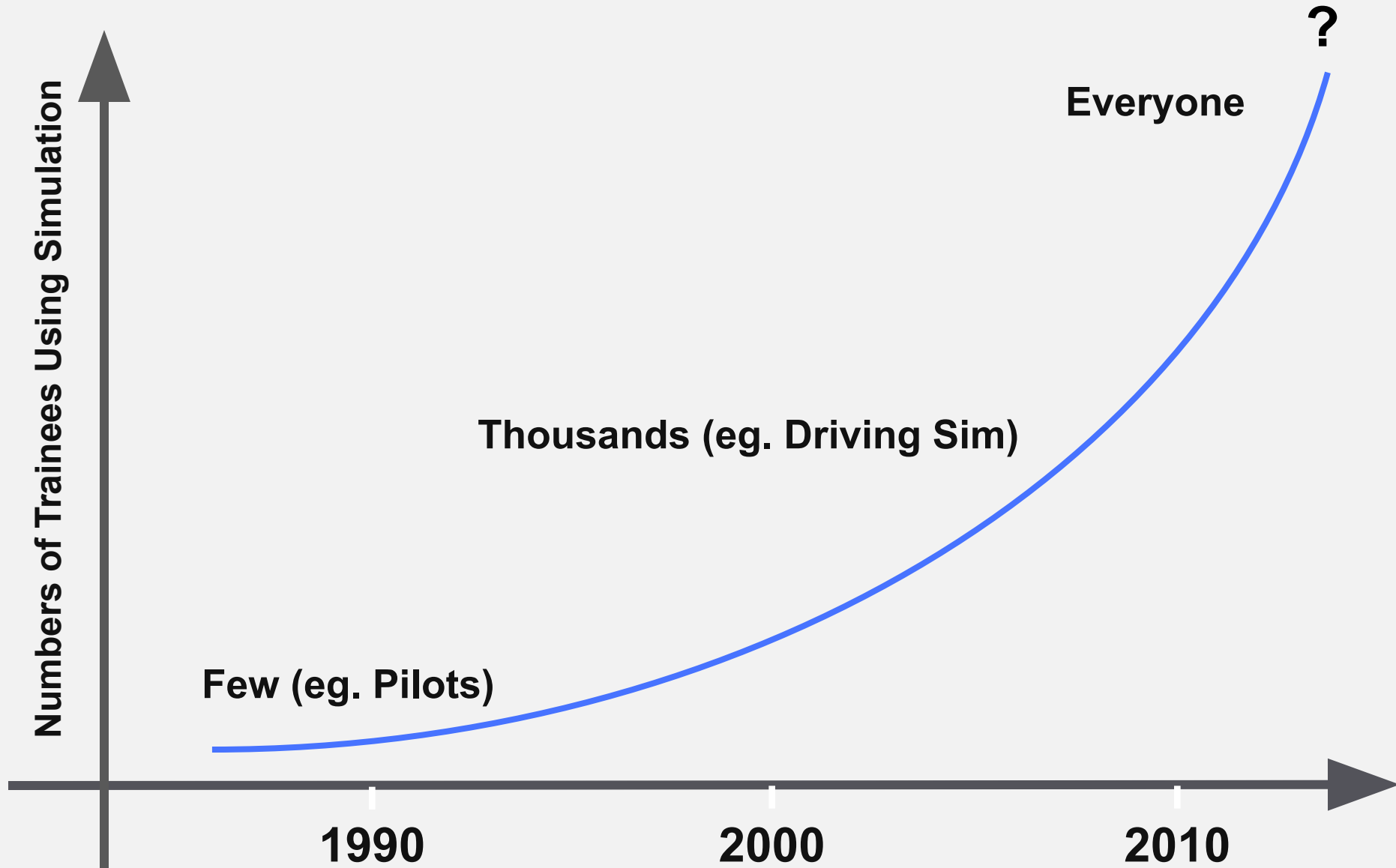
- Land Convoy Collective Training
- IED Training & Situational Awareness
- Aviation Tactics Training
- Gunnery and Crew Training
- Close Weapon Gunnery Training
- Anti-Piracy & Boarding Operations Training
- Fixed Wing Aviation Mission Training
- Maritime Submarine Training Capability
- Cultural Awareness & Language Training
- Engineer Training
- Army Recruiting
- E-Learning



Physical Simulation



Numbers of Trainees Using Simulation & 3D Worlds



Blended Live/Synthetic Training

- A Canadian Study looked at the influence simulation had on their Armour School's Troop Warrant Officer's 6 week course.
- Only one day of simulation took the pass rate to 30%.
- The new blended live/simulation mix reduced the cost to train (and qualify) each trainee by about a half.

	Serial 0602 (No VBS [®])	Serial 0701 (1 day VBS [®])	Serial 0702 (2.5 weeks VBS [®])
% pass on 1 st trace	0	30%	67%
% pass by ½ of traces	61%	72%	100%
% pass by end of course	72%	83%	100%



Figure 5: VBS 2[®] Workstations in the Armour School Battle Lab (Hill 2008)

*I/ITSEC Conference 2008 Paper
Games – Just How Serious Are They?
Dr. Paul A. Roman Mr. Doug Brown*

Beyond Simulation – Technologies in Support of Training and Education

Recent History

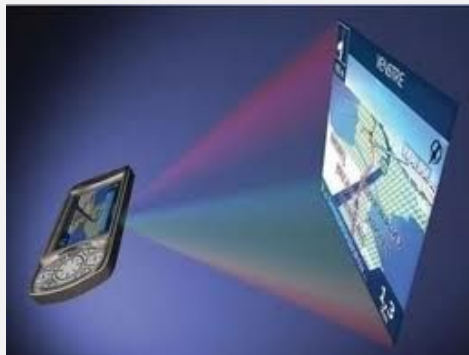


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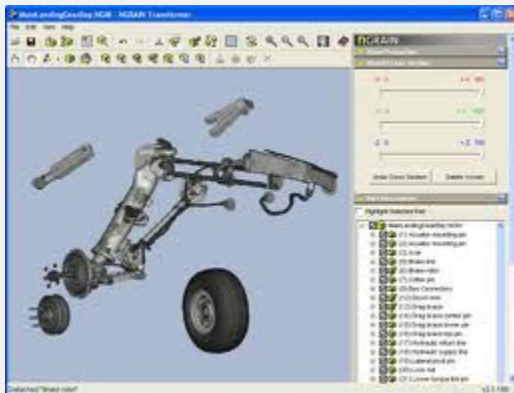
Recent History



Distributing Training and Education



Distributing Training and Education



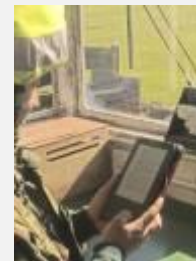
Augmented Reality



Interfaces

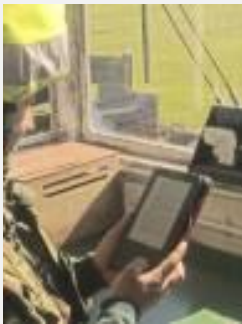


Handhelds



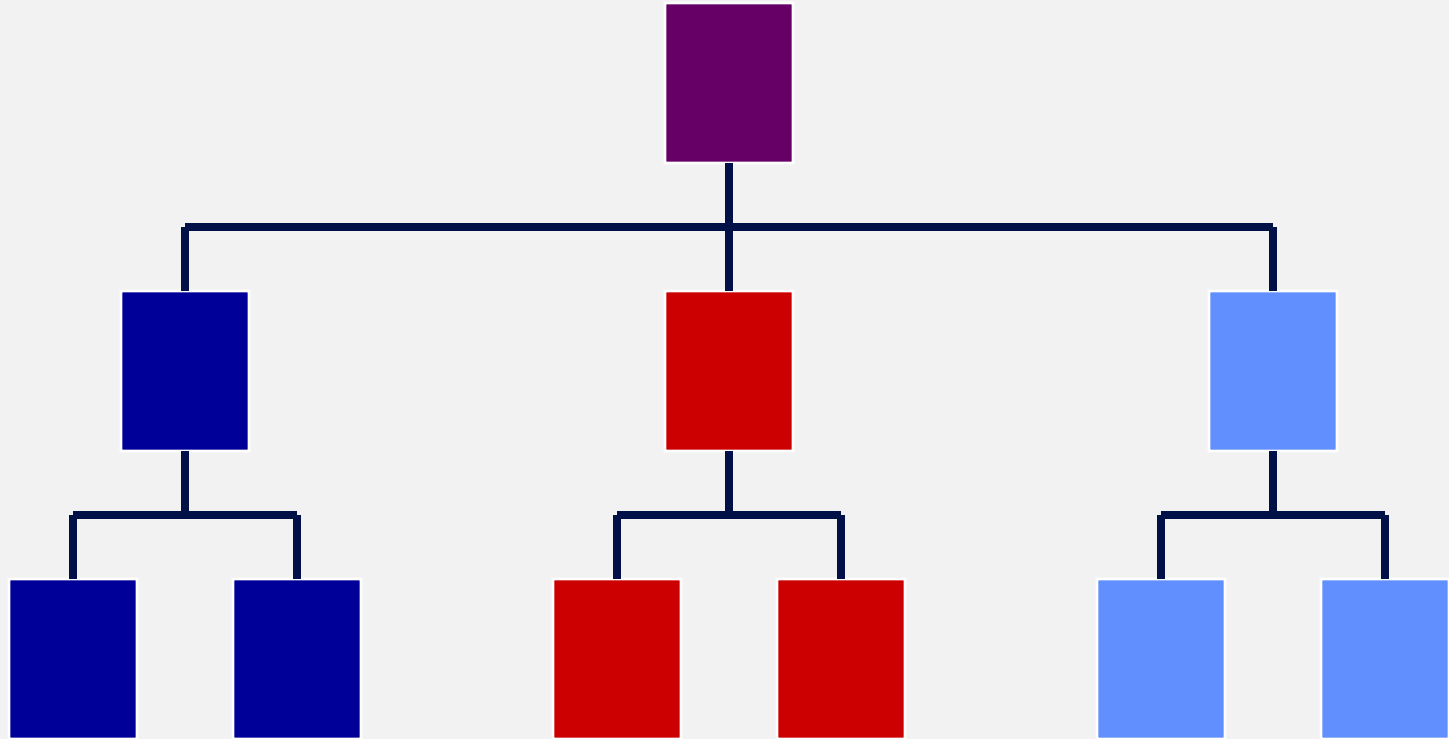
Procurement Challenges

Training Technology - Diversity in Choice, Scale and Cost



The Requirements/Procurement Challenge

- Maintaining Interoperability and Efficiency



Two World Views of Training Technology

- “Consumer Driven”

- Exploited by User
- Flexible
- Agile
- Inexpensive
- Supported?



- “Heavy Metal”

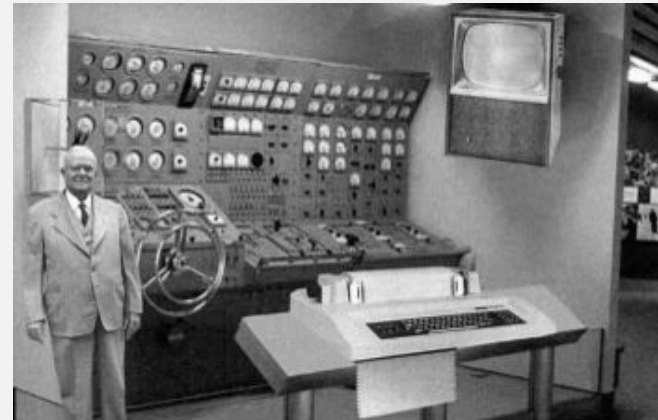
- Bespoke
- Inflexible
- Costly
- Supported



Getting it Wrong



Photograph: Alamy



Changing Requirements and Technology

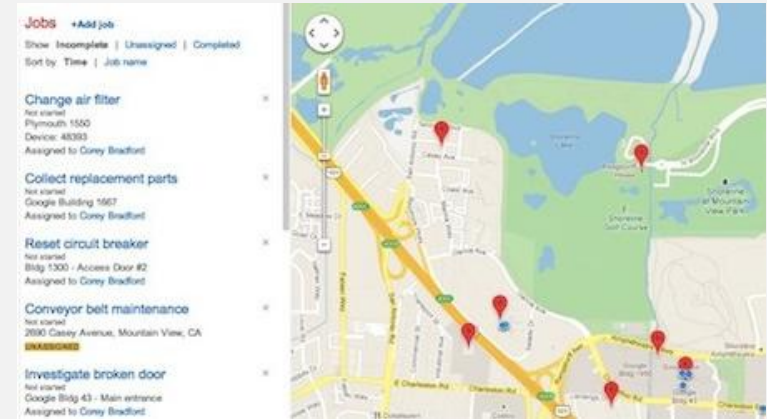
- Training needs are always flexible over time
 - *Are traditional top-down “Training Needs Analysis” approaches now applicable?*
- Technological Choice is Visible and Expanding
 - *Challenges traditional procurement*
- IT and Training Convergence
 - *One and the Same?*

Training and Education Technologies – Challenges and Opportunities

Military & Civilian Technology Convergence?



Military & Civilian Technology Convergence?



- Command and control (C2) can be defined as an exercise of authority and direction by a commander over assigned and attached forces in the accomplishment of a mission (US Joint Pub 0-2)
- Google Maps Coordinate
 - Real-Time Visibility
 - Job Management
 - Data Capture
 - Custom Point of Interest
 - Job and Location History

A lot can happen in a lifetime



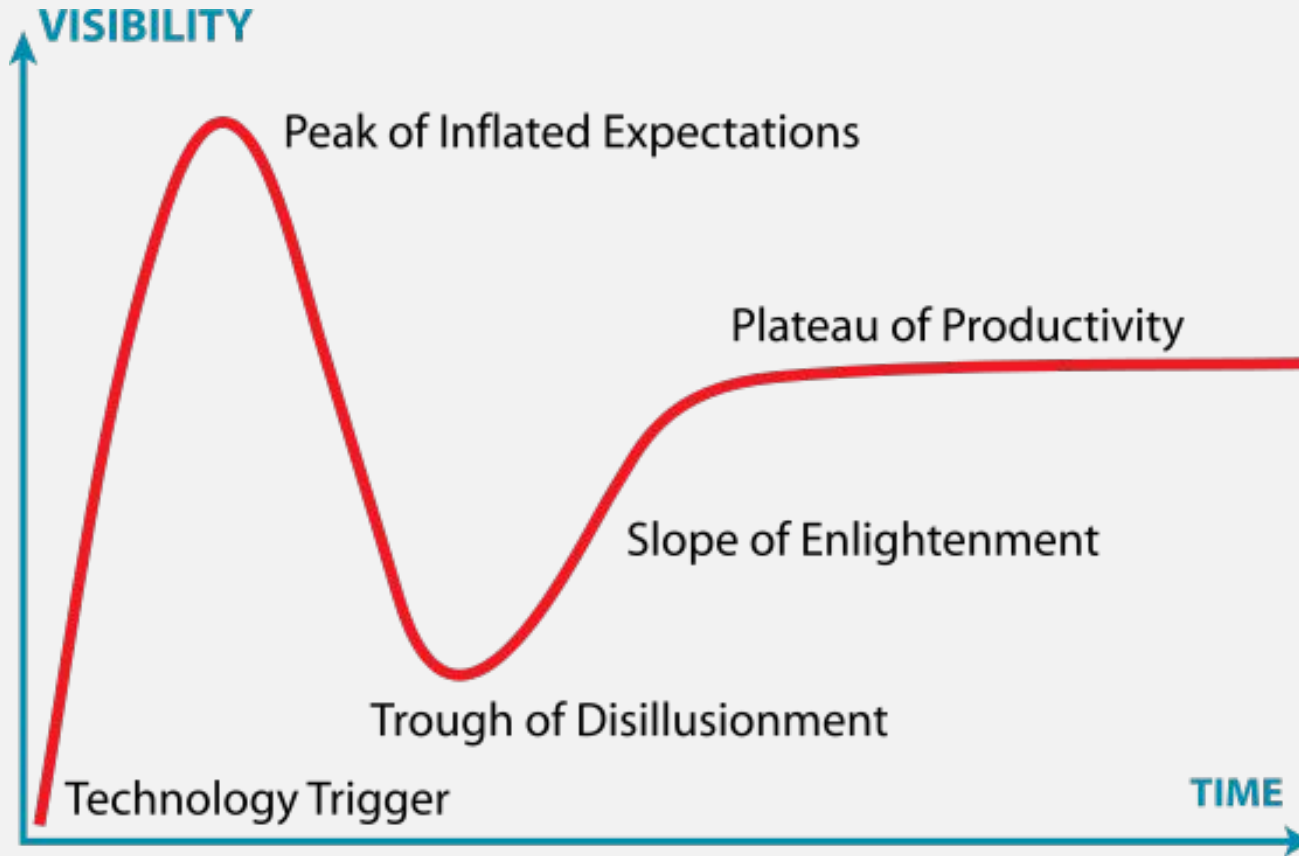
Your age

0	5	10	15	20	25	30	35	40	45	50	55	60
2012	2007	2002	1997	1992	1987	1982	1977	1972	1967	1962	1957	1952

When Technology catches up with the Idea



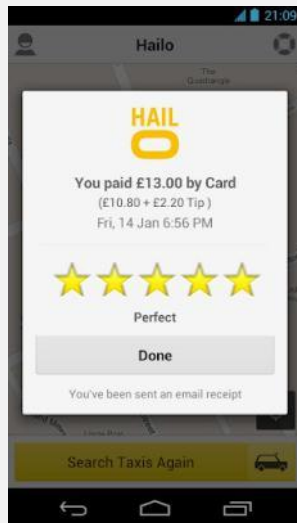
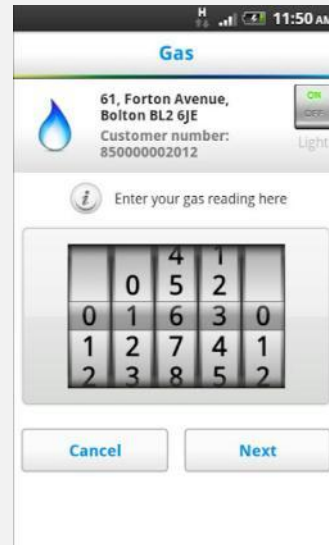
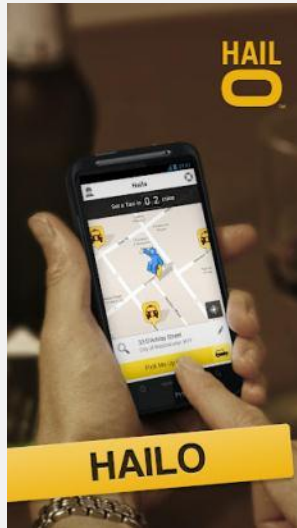
Gartner's Technology Cycle



Gartner's Technology Cycle?



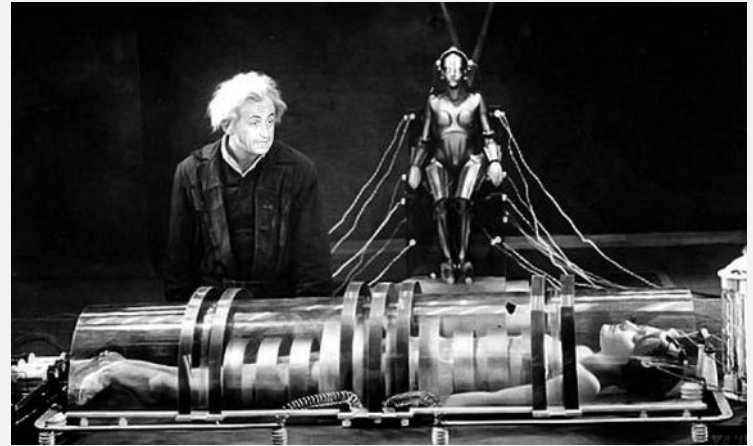
Business Disruption?



Train Less.. Train at All?



Diluting the Human Experience?



Lessons?

- Technology is transforming our ability to access data, information and knowledge
 - but technologies come and go
- Managers and HR professionals, and all staff, must constantly evaluate how technology might both improve and disrupt their organisations
 - but how many truly new ideas are there?
- Is training and education fundamental to your organisation
 - as it is in Defence?

Questions



Technology and trends with the potential to change how we gain knowledge and skills