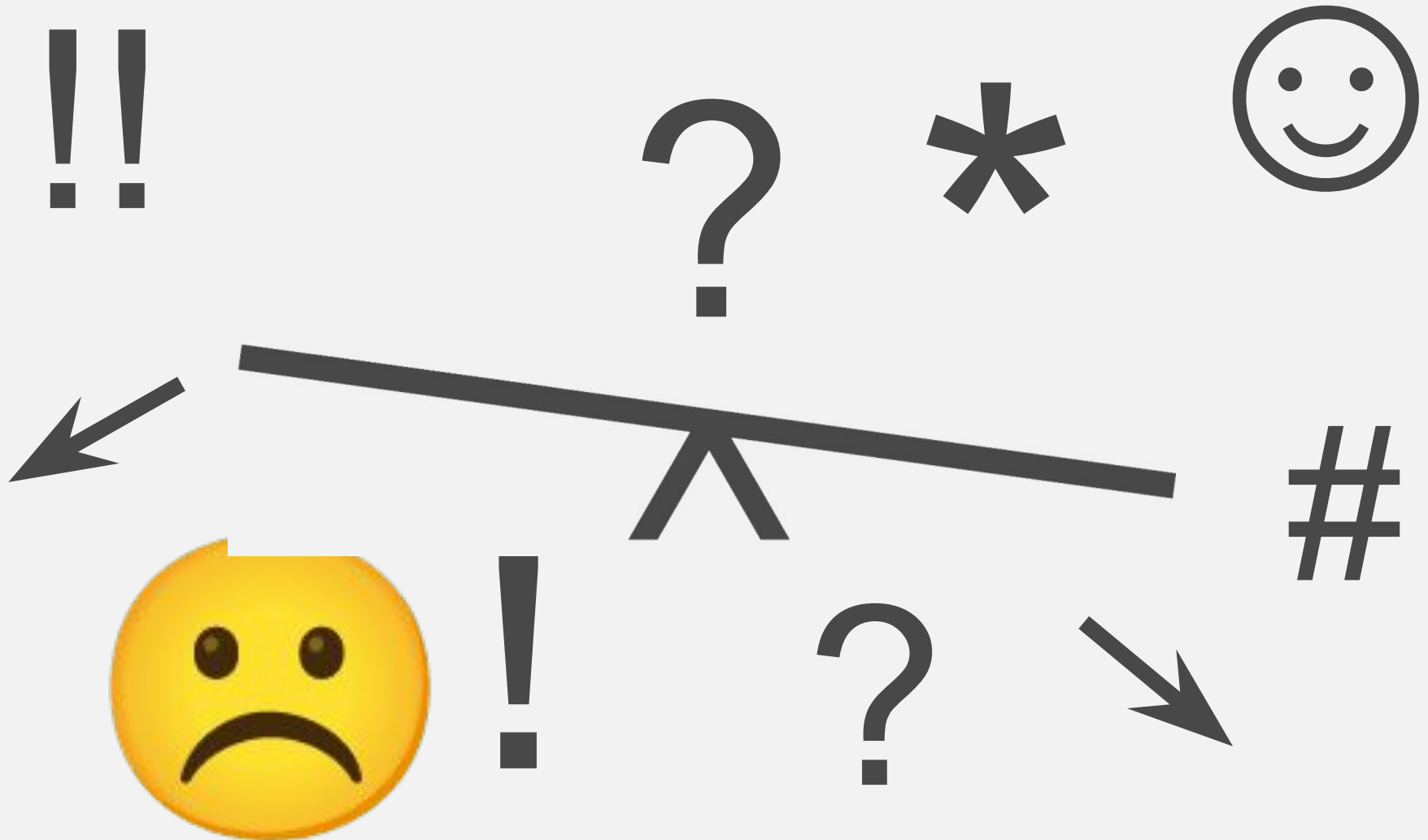


THE LIVE/SYNTHETIC BALANCE: OPERATIONAL AND POLICY PERSPECTIVES

Andy Fawkes & Rory Cunningham



Live-Synthetic Balance



Overview

Policy Perspective

- Why Simulation
- Trends
- Beyond Simulation
- How to Respond
- Future of Training?

Operational Perspective

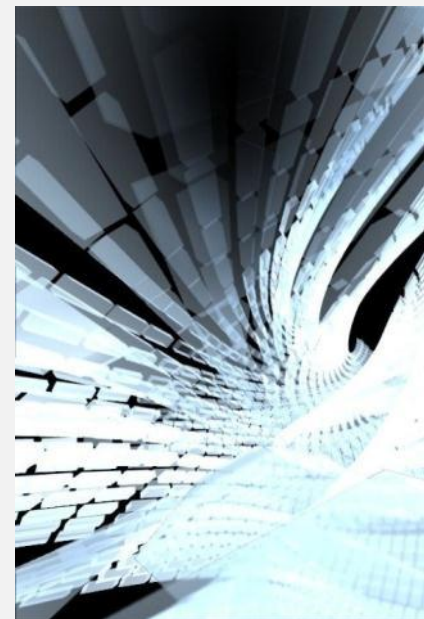
- Cost vs Capability
- COTS Technology
- What's being done
- EDA
- Simulation For The Frontline
- HERRICK
- ELLAMY
- Tomorrow's Conflict

Summary

The Live/Synthetic Balance: Operational and Policy Perspectives



Policy Perspective



Andy Fawkes

UK Military Training and Education

- Scale - 257,160 Military/Civilian (2011)
- Depth – eg. Fighter Pilot, Reactor Operator
- Breadth – Apache Pilot through to Cook
- Flexibility – Changing Operations

Why Use Simulation?



Improve
Training



Safety



Reduce
Costs

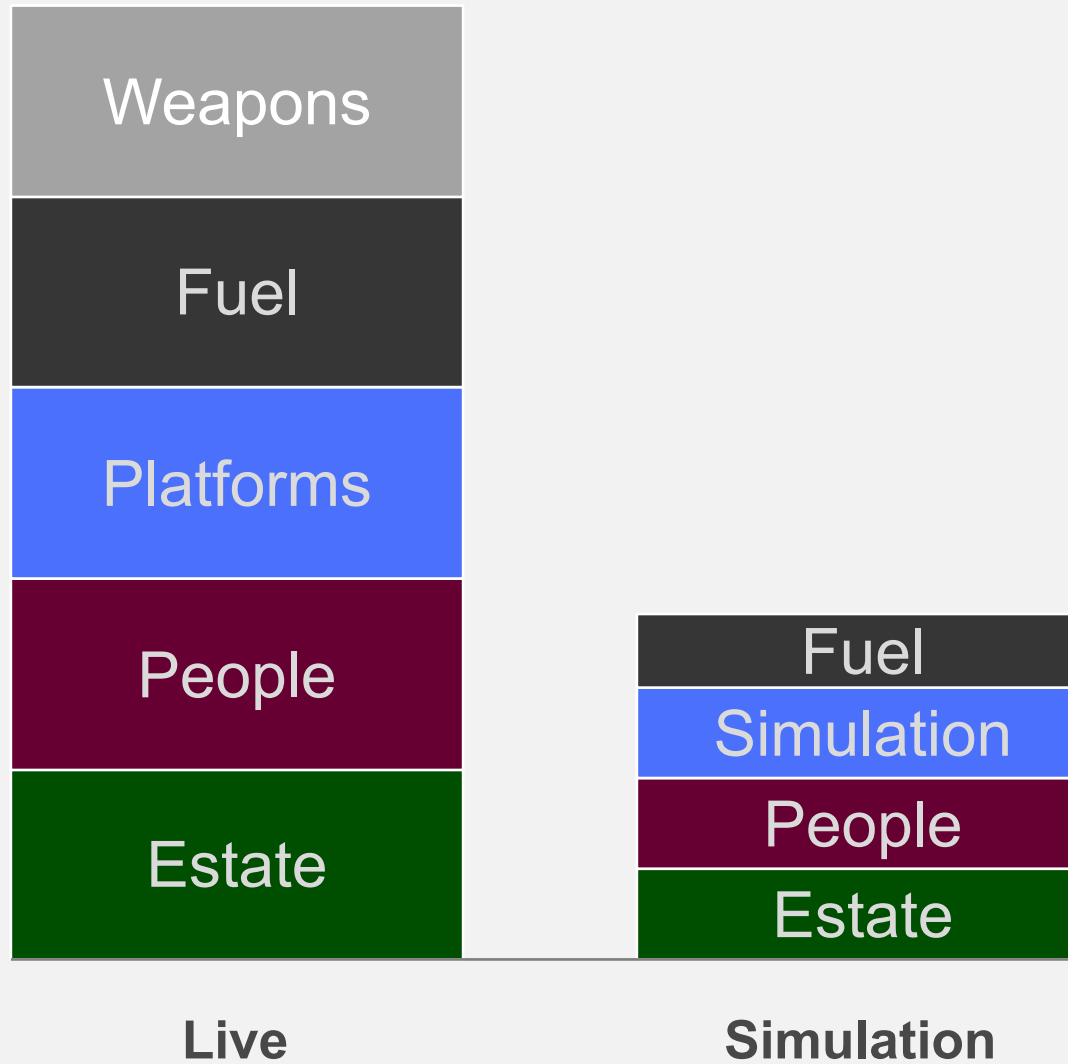


Reduce
Environmental
Impact



Reduce Time
to Train

Cost of Training



How much?

?

- “Cost Simulation 20% of Live Training”

\$

£

- “Save £100m’s”

- “Cost Simulation 5% of Live Training”

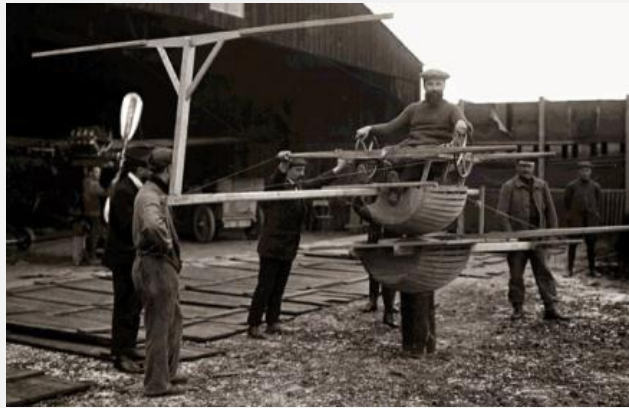
€

- “Training 20% of Defence Budget”

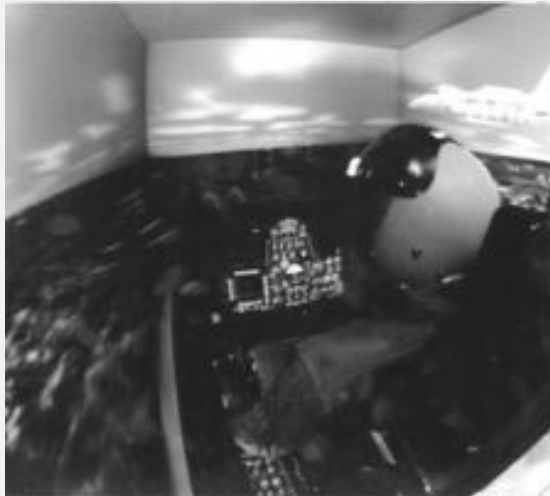
The Mysteries of Simulation

SOAP CGF VV&A LVC SEDRIS DIS
MSHTF TENA Agent-based
DTEC RTI Federate Architectures ASP HLA
SISO DLP AI SCORM CBML CORBA
MCTS SEBA CATT AR DTED Serious Gaming
VR Monte Carlo Distributed M&S AVCATT
NMSG Human-in-the-loop FOM DoDAF
synthetic environment DSALT Latency ITEC
BOM I/ITSEC
Constructive Accreditation Emulation

Nothing New? Predominantly Mechanical Era



Predominantly Bespoke Electronic Era

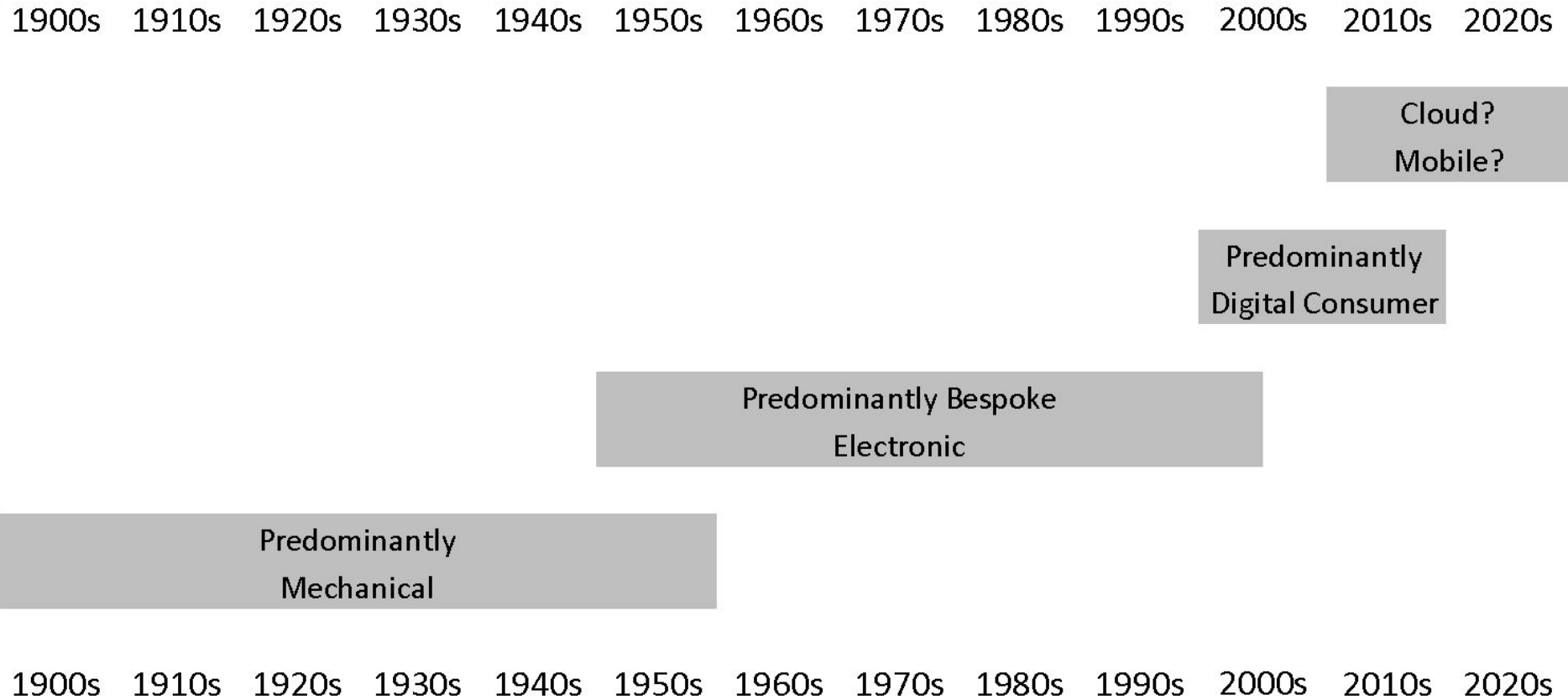


Predominantly Consumer-Driven Digital Era

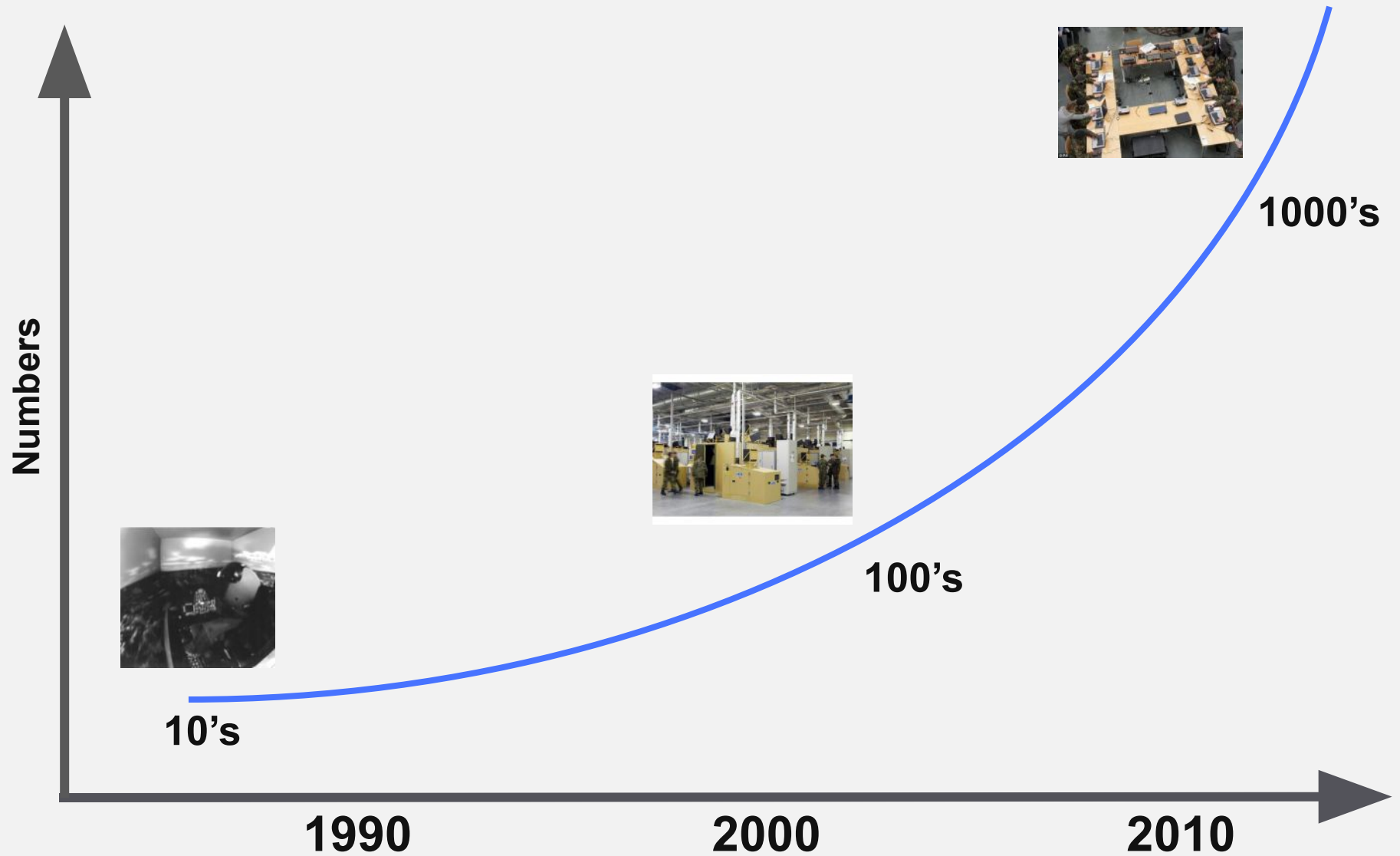


The Defence Equipment Plan 2012

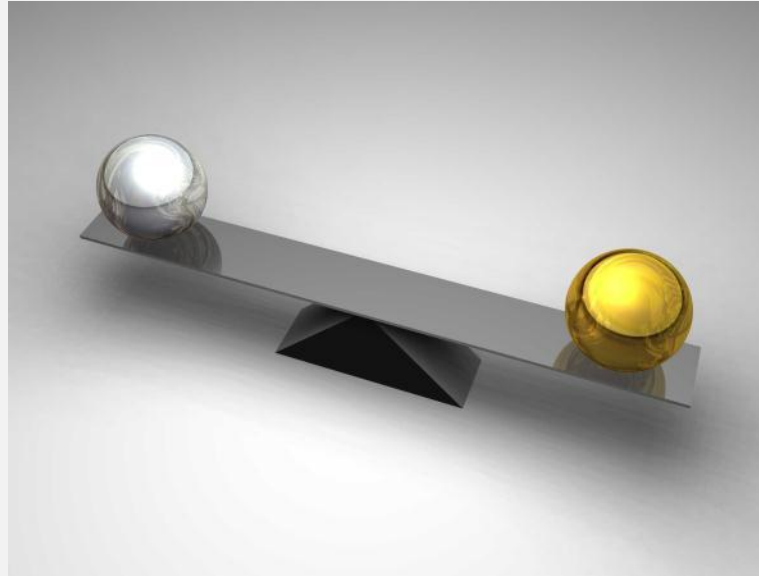
Trends



Access to Simulation

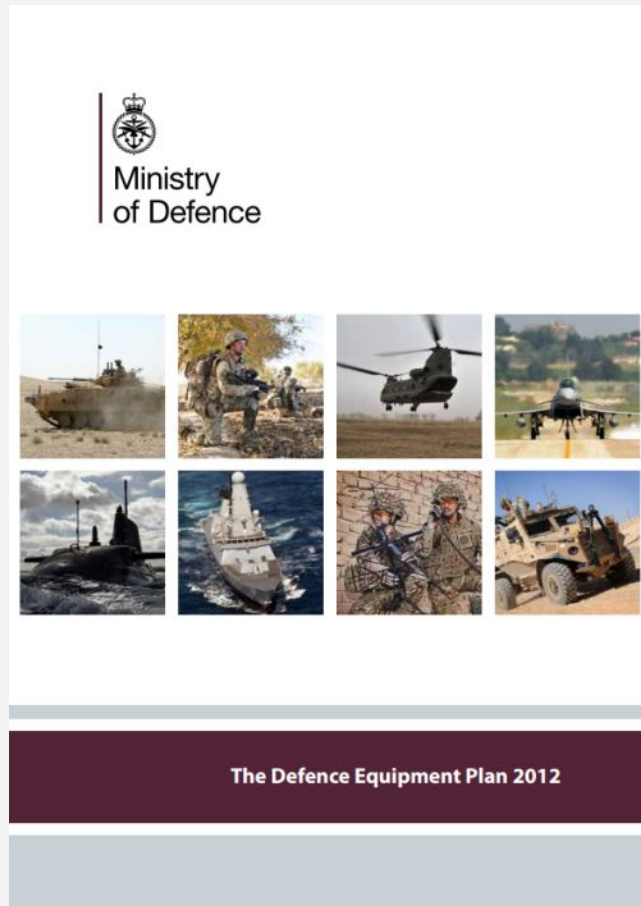


The Live Synthetic Balance



- Language – What does the word “Synthetic” Convey?
- Culture - “Live will never be replaced”
- Assessing Training Cost Effectiveness is Difficult
- Technology is Changing and so do Operations
- How often do we change the Way we Manage?

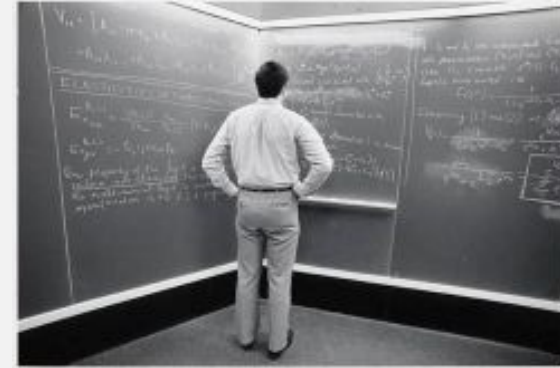
UK MoD - The Defence Equipment Plan 2012



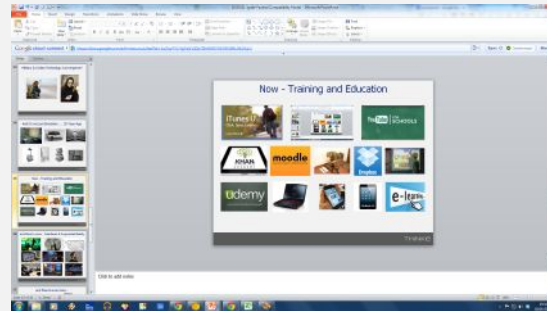
“A priority for future investment when funds allow will be to expand our investment in simulated pilot training”

31 January 2013

And it's not just Simulation..... 20 Years Ago



Now - Training and Education



Knowledge in Your Hands



Recruit Expectations



Digital and Online Classrooms

South Korea 2015



Florida 2015

Stanford University

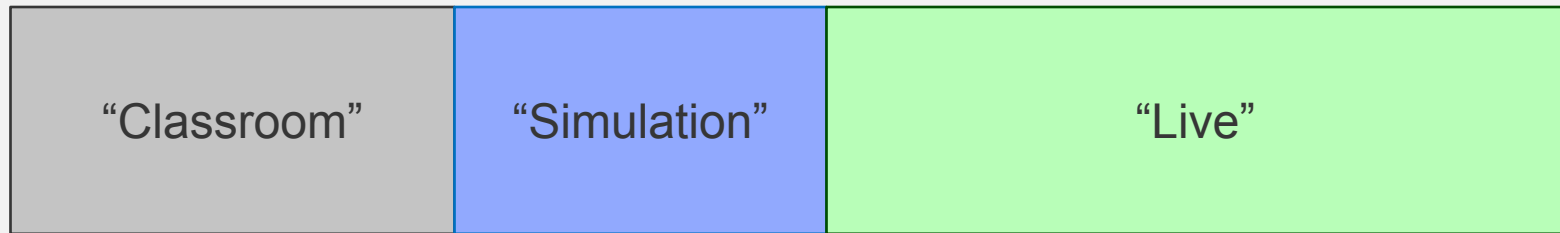


2012 - 23,000 Graduates

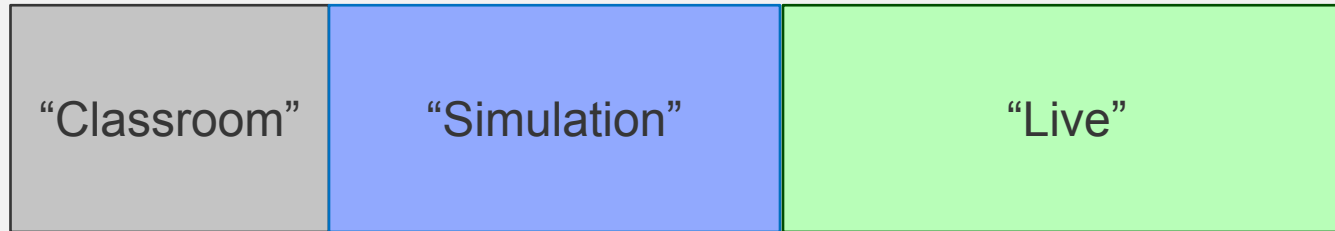
Time Spent in Training and Education?

- Influence of Technology?

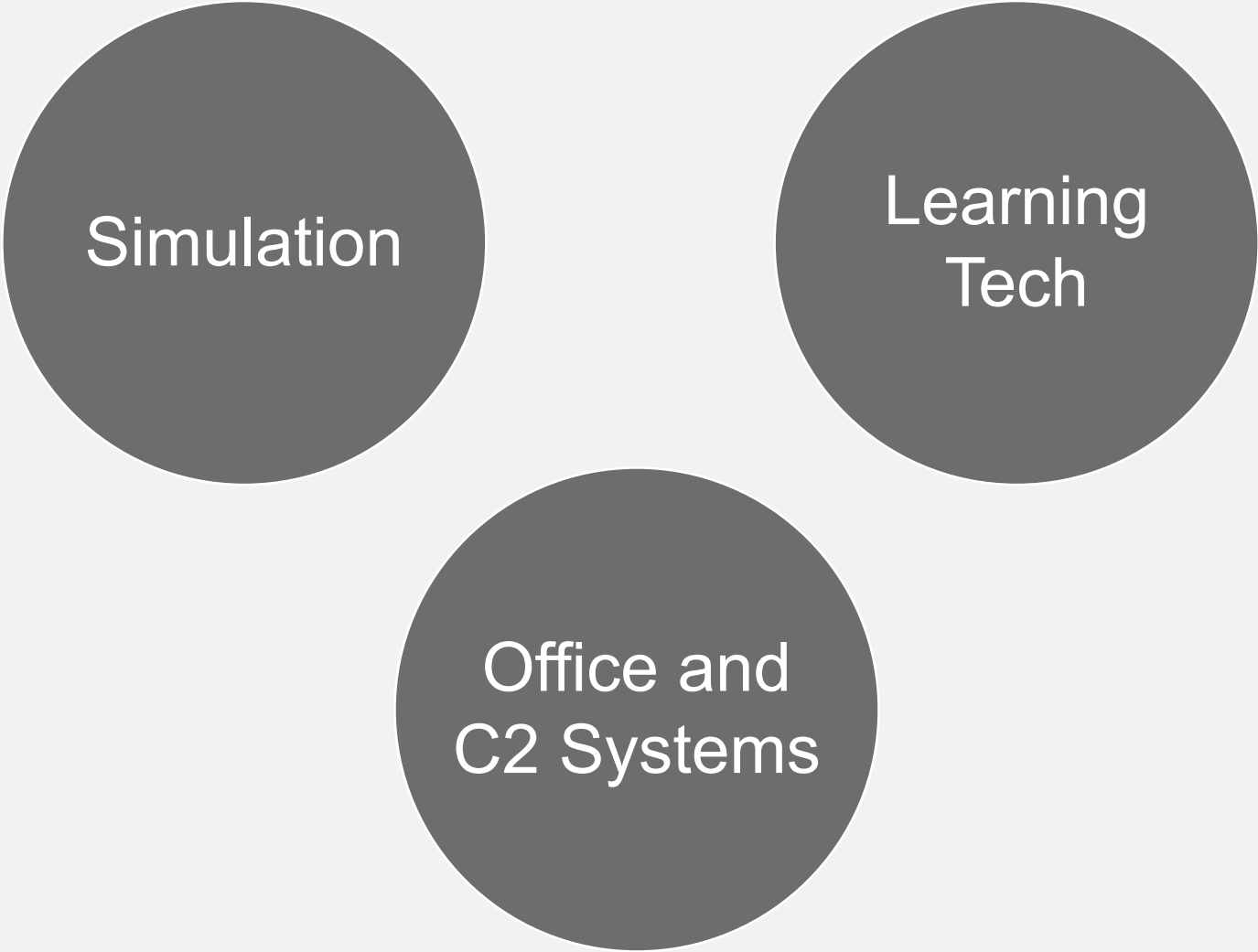
Now



Future?



Barriers

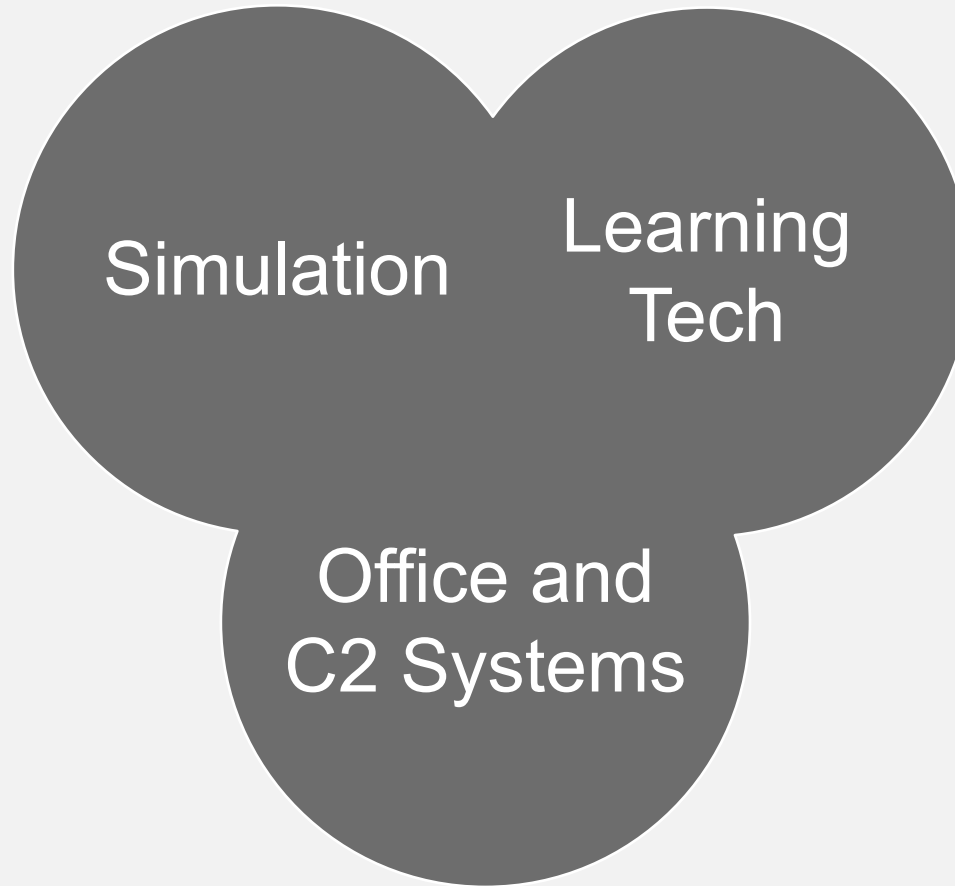


Simulation

Learning
Tech

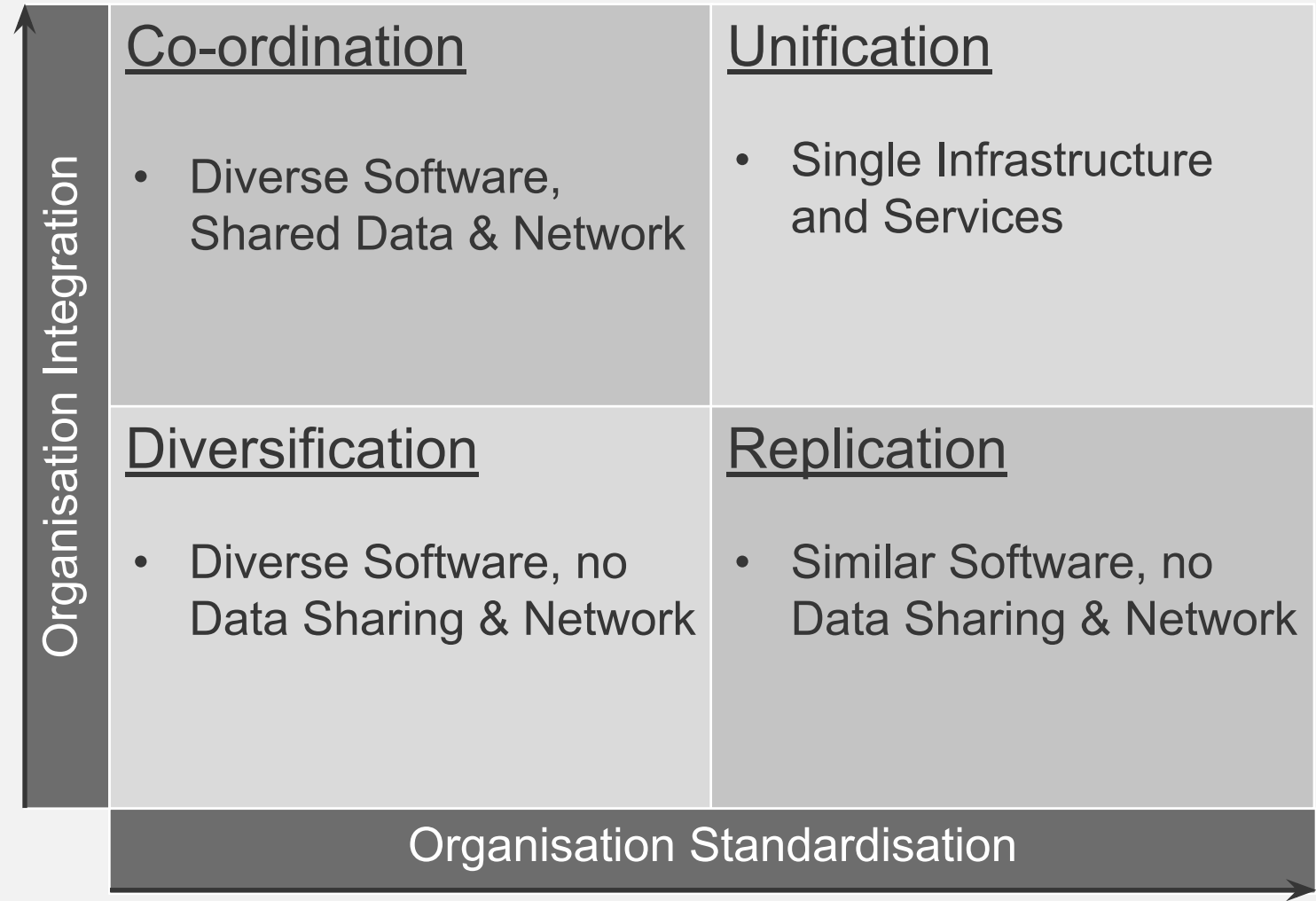
Office and
C2 Systems

Convergence?



Training and Education Operating Model?

Improved Interoperability and Collective Training



Decreasing Procurement Costs? Less Innovation?

How should Organisations Respond? – UK MoD

 Ministry of Defence

The defence training and education capability programme

The defence training and education capability (DTEC) programme takes an enterprise approach to training and simulation.

- The Defence Training and Education Capability (DTEC) programme takes an enterprise approach to training and simulation
- An Enterprise approach to training and education technologies (including simulation)
 - Catalogue of software and services
- Defence Systems Approach to Training
 - Understand the training requirement
 - Evaluate

Who/What is the Technology Benefitting?

- The Organisation
 - eg. improved cost effectiveness
- The Trainee
 - eg. 24/7 access to knowledge
- The Trainer
 - eg. audio/visual aids
- All of the Above

The Future of Knowledge and Skills?



Larry Page - 2004

"Search will be included in people's brains.... Eventually, you'll have the implant, where if you think about a fact, it will just tell you the answer."



Sergey Brin – 2012

"You'll ride in robot cars within 5 years"



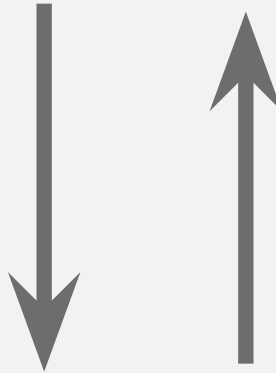
Train Less.. Train at All?



Live and Simulation

Less Simulation

Organisational Inertia
Culture and Language
Long Procurement
Stovepipes
Risk
Evaluating Training



More Simulation

Resources
Improving Technology
Operations
Environment
Time and Flexibility
Safety



Issues are moving beyond Simulation

SMI Joint Forces Simulation and Training Conference – 4/5 February 2013

The Live/Synthetic Balance: Operational and Policy Perspectives



Operational Perspective

Rory Cunningham

Joint Forces Simulation and Training

Does simulation have to be expensive?

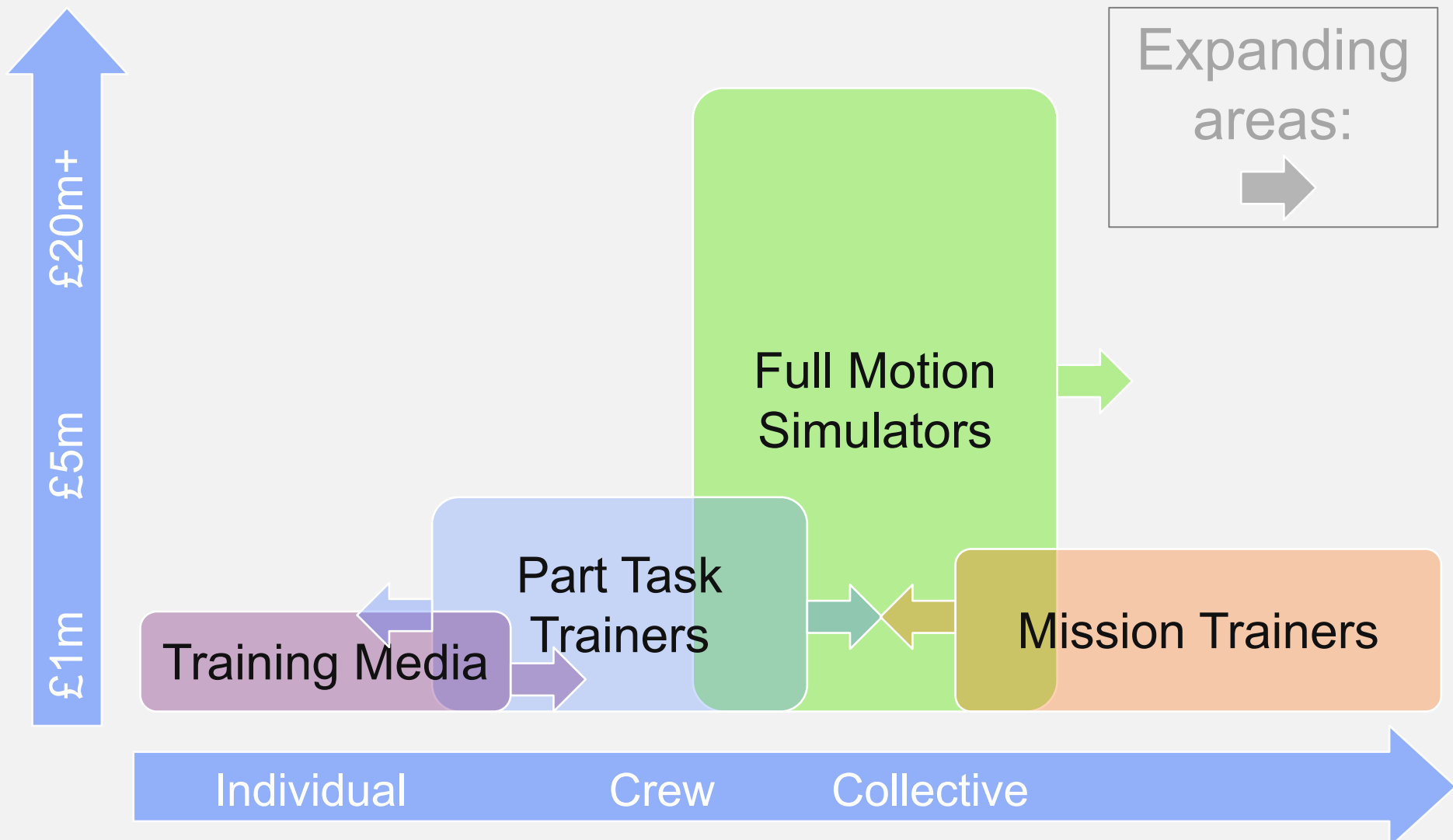
Why can't the simulators connect with others?

What can be done for less money?

Why do I always need to re-train to use a different simulation package?

Why should we travel to the simulator?

Simulation Cost/Capability Spectrum



Commercial Off The Shelf Technology

- Evidence of COTS synthetic training today:
 - EDA, Niteworks, NATO
 - Joint, Multinational, distributed synthetic training
- Does it work?
 - Cost effective
 - Immersive
 - Flexible
 - 100% serviceability
- Previous concerns with COTS:
 - Ability to model complex systems
 - Classification
 - Hardware



Joint Forces Simulation and Training

- EDA's ISHTC -

- European Interim Support Helicopter Tactics Course
- 3wk course – 10 per year
- RAF Linton-On-Ouse



Joint Forces Simulation and Training

- Niteworks Training Transformation CCD -

- Capability Concept Demonstrator
- Defence Simulation Centre
- A test bed for future Tactics Trainers; including targeted-fidelity, LVC blending, and distributed training



NITEWORKS

Simulation For The Frontline

How far forward should simulation be deployed?

Simulation For The Frontline

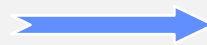
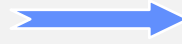
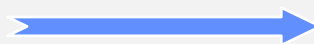
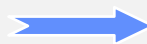
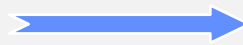


Live Vs Simulated

- Op HERRICK -

Live

- The Gold standard
- Expensive
- Maximum Risk
- Availability of assets
- Final Output



Simulated

- Increasingly competent
- Increasingly Cost Effective
- Minimal Risk
- Distributed
- Development/ Rehearsal

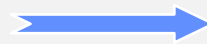
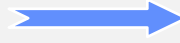
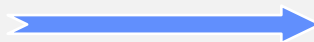
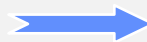
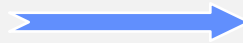


Simulation For The Frontline

- Op HERRICK -

Nature of Conflict

- Joint/Combined
- Established procedures
- Minimal Risk
- Corporate knowledge
- Transitional nature



Role of Simulation

- Competency/Familiarity
- Refinement/development
- Rehearsals
- Roulement (RiPs)
- Training & Mentoring



Simulation For The Frontline

- Op ELLAMY -

Nature of Conflict

- Joint/Combined
- Minimal preparation
 - No corporate knowledge
- Area of Operations
 - Vast/Unfamiliar
 - Non-permissive
- Politically Sensitive

Role of Simulation

- Competency/Familiarity
- In-theatre training
- Development of plans
- Familiarisations (database)
- Force-on-Force preparation
- Minimising risk (rehearsals)



Tomorrow's Conflict

Nature of Conflict

- Joint/Combined
- Preparation
 - Short notice
 - Distributed planning/training
- Duration
 - Shorter than HERRICK(!)
- 'More-from-less'
- Area of Operations
 - Unfamiliar
 - (non/semi)permissive?
- Political complexities

Role of Simulation

- Competency/Familiarity
- Deployed, in theatre training
- Course of Action analysis
- No planned Msn Specific Training
- Max efficiency thru rehearsal
- Familiarisation (database)
- Force-on-Force preparation
- Minimising risk (rehearsals)

Summary

Live-Simulation Balance - Summary

- Policy
 - Simulation and wider technologies can help to meet the significant challenges of today and tomorrow
 - Are organisations equipped to exploit technological trends as effectively as they did in the past?
 - Understanding the value of training and education is critical to making better decisions
- Operational
 - Trust and understanding in simulation is improving
 - Emphasis on continuous demonstration followed by agile procurement to training services
 - EDA is currently delivering: Cost effective, Joint, Multinational, Distributed, Synthetic Training using COTS

Questions

