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Digital Training of Land Forces in 2019

Leveraging Commercial Capabilities for a Changing Technical Landscape

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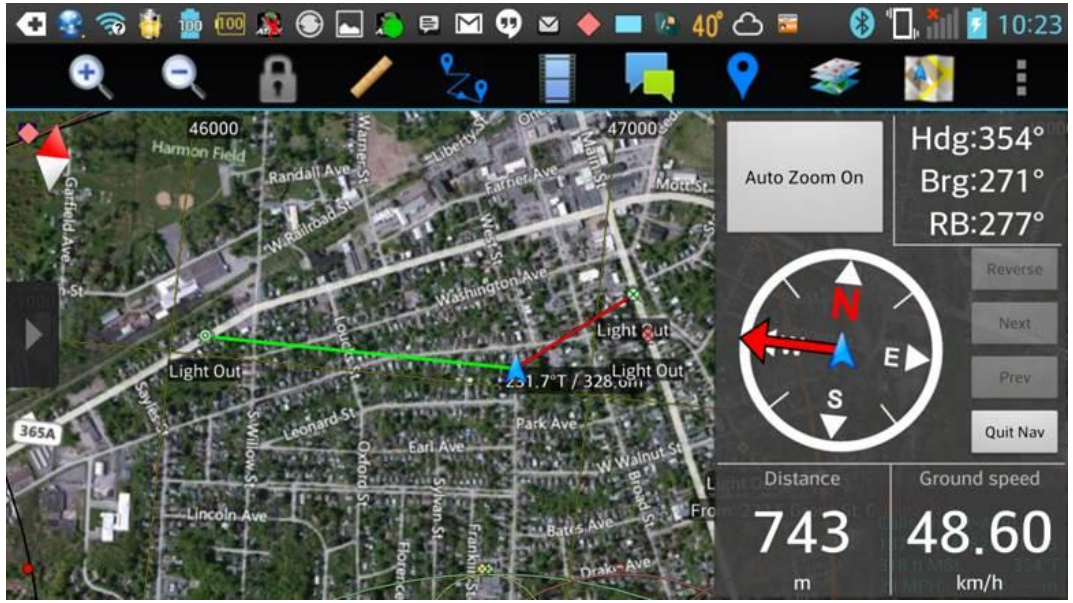
Overview

- How technology is changing, and how the US DoD has tried to keep up
- The short life-spans of technology today
- The acquisition model associated with technology
- Institutionalizing technological change within the Force
  - Generational comfort
- US Army's Synthetic Training Environment (STE)
- Working with the Commercial Sector




Lifespan of consumer electronics is getting shorter, study finds

Investigation of built-in obsolescence for German environment agency finds percentage of products sold to replace defective ones has increased remarkably, reports ENDS Europe

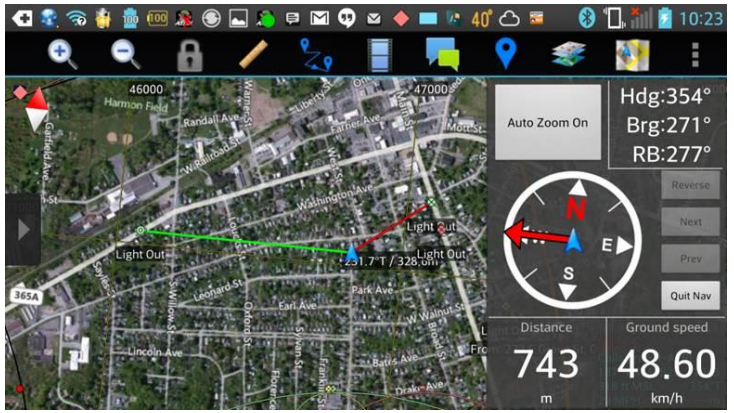
Technology Development: 1995 – Present

- Modern technology platforms
  - <1995: Software primarily built by small teams
  - 1995 – 2015: Too expensive/risky, so big companies sprung up offering technology. Teams and budgets grew exponentially (>100 people; $10sM+)
  - >2015: shift back to smaller teams
    - Resulting from cheaper access to development tools
- US DoD's use of technology for training:
  - Traditional
    - Constructive simulations: OneSAF, JSAF
    - Virtual training: VBS, CCTT
    - Mission Command systems
    - Instrumented systems
  - Non-Traditional: First-person shooters
    - America's Army
    - Call of Duty

Use of Modeling & Simulation to Train Land Forces

Investment

- 50% • Traditional kinetic: Offense, Defense
- 5% • Non-kinetic: stability, peacekeeping, disaster relief
- 10% • Collective training tasks
- 5% • Combined arms training tasks
  - Multi-domain battle
  - Full-spectrum operations
- 20% • Analysis, Experimentation, Testing
- 10% • Situational Awareness, mission planning, rehearsal



US Army Synthetic Training Environment (STE)

- What is it?
  - STE is a collective, multi-echelon training and mission rehearsal capability
  - It brings together the virtual, constructive and gaming training environments into a single environment
  - The capability will train all Warfighting Functions and the human dimension across Joint and Unified Action Partners in the context of Unified Land Operations.
- Specifics:
  - Training and mission rehearsal capability
  - Interfaces with operational networks, Mission Command, and live training instrumentation
  - Leverages commercial off-the-shelf (COTS) and government off-the-shelf (GOTS) hardware.

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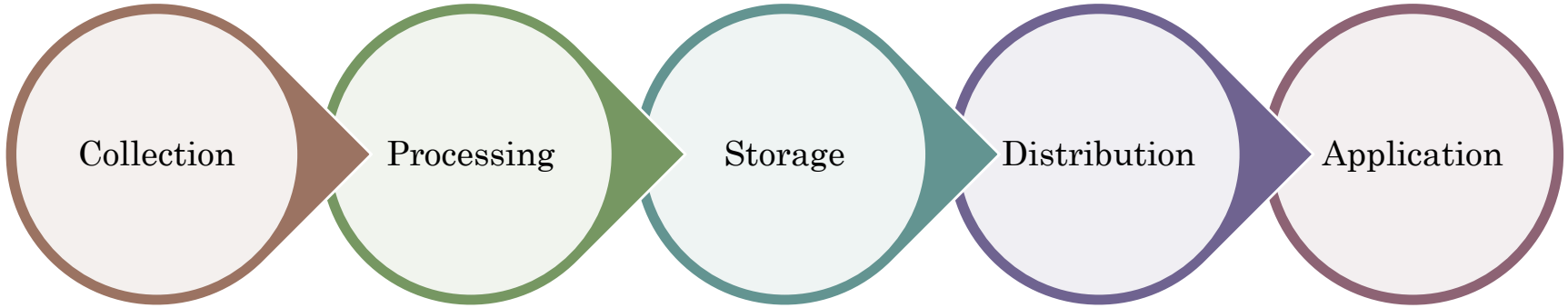
Example: One World Terrain

- An organic, small-unit capability (data, tools, services) for producing and sharing up-to-date 3D geospatial information for current and next-generation simulation and training systems



- GOTS
- Open Source
- COTS
- Organic Collection
  - sUAS / Drone Collect

- Sophisticated Algorithms to Automate Classification & Segmentation
- Generation of Usable M&S Assets

- Online / Cloud Storage
  - Databases
  - Physical Storage
- High Availability
- Mechanisms to Update and Version

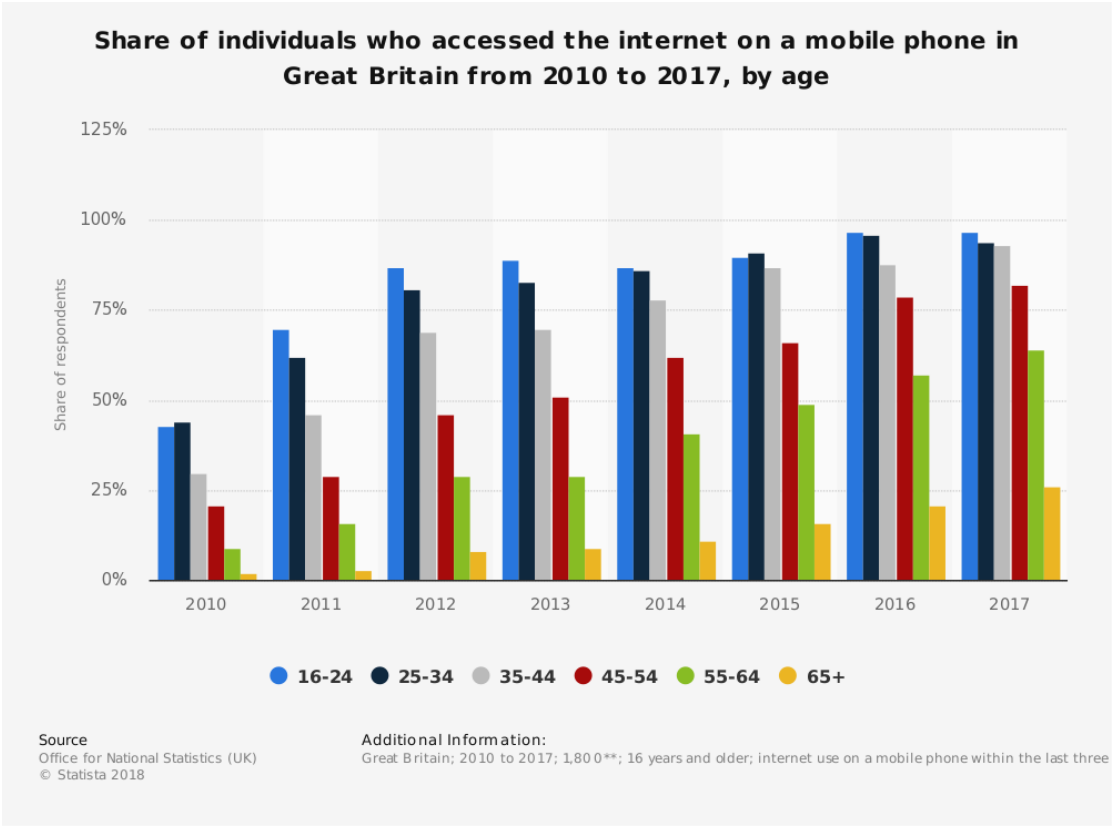
- Making Global Data Available to Point of Need
- Network Infrastructure
- Access Control and Security

- Shared Foundation
  - Loading and rendering terrain in M&S Systems
- Innovative use of AR and VR

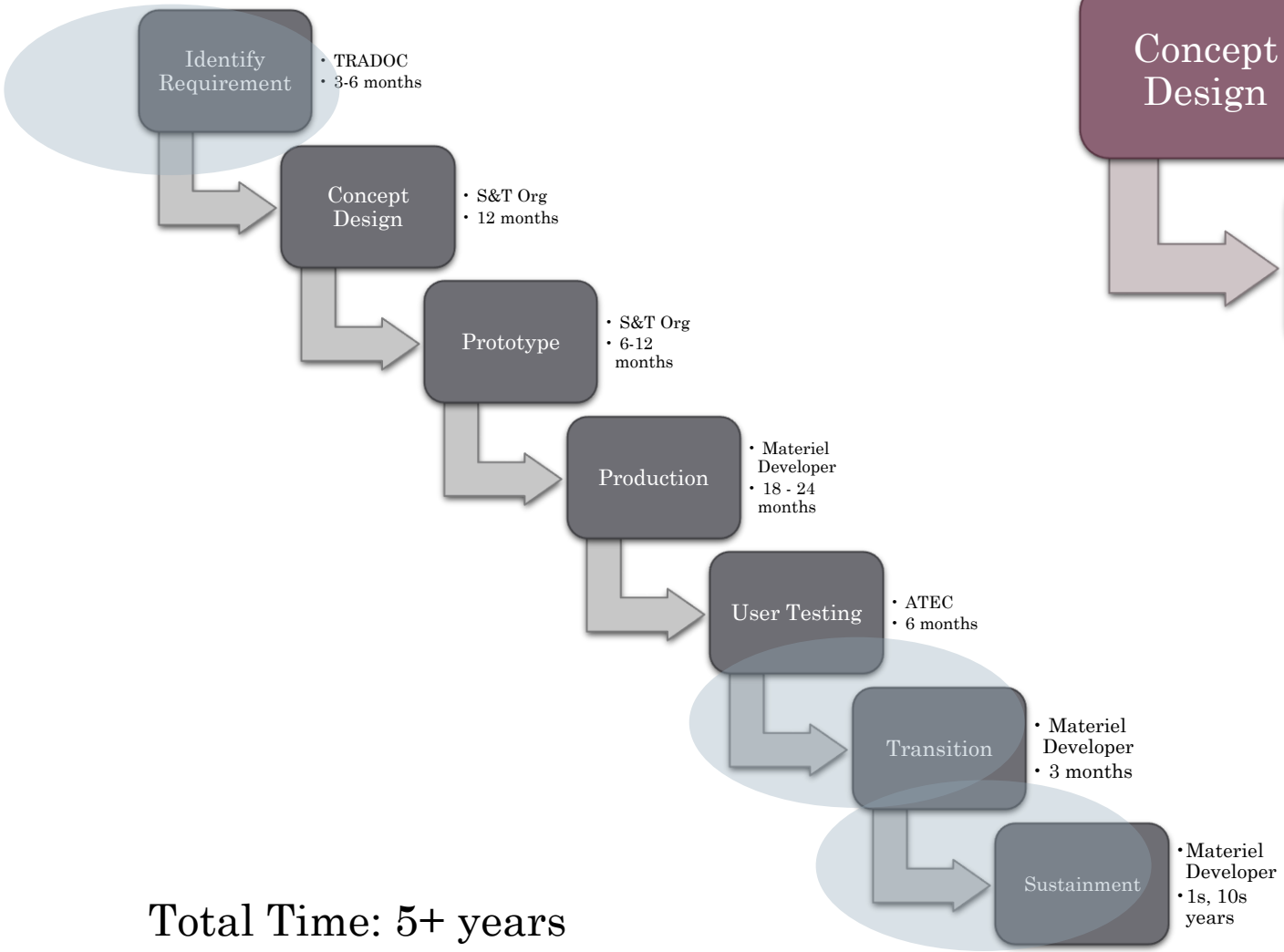
Example: USMC Tactical Decision Kit (TDK)

Simulation & Training Technologies Today

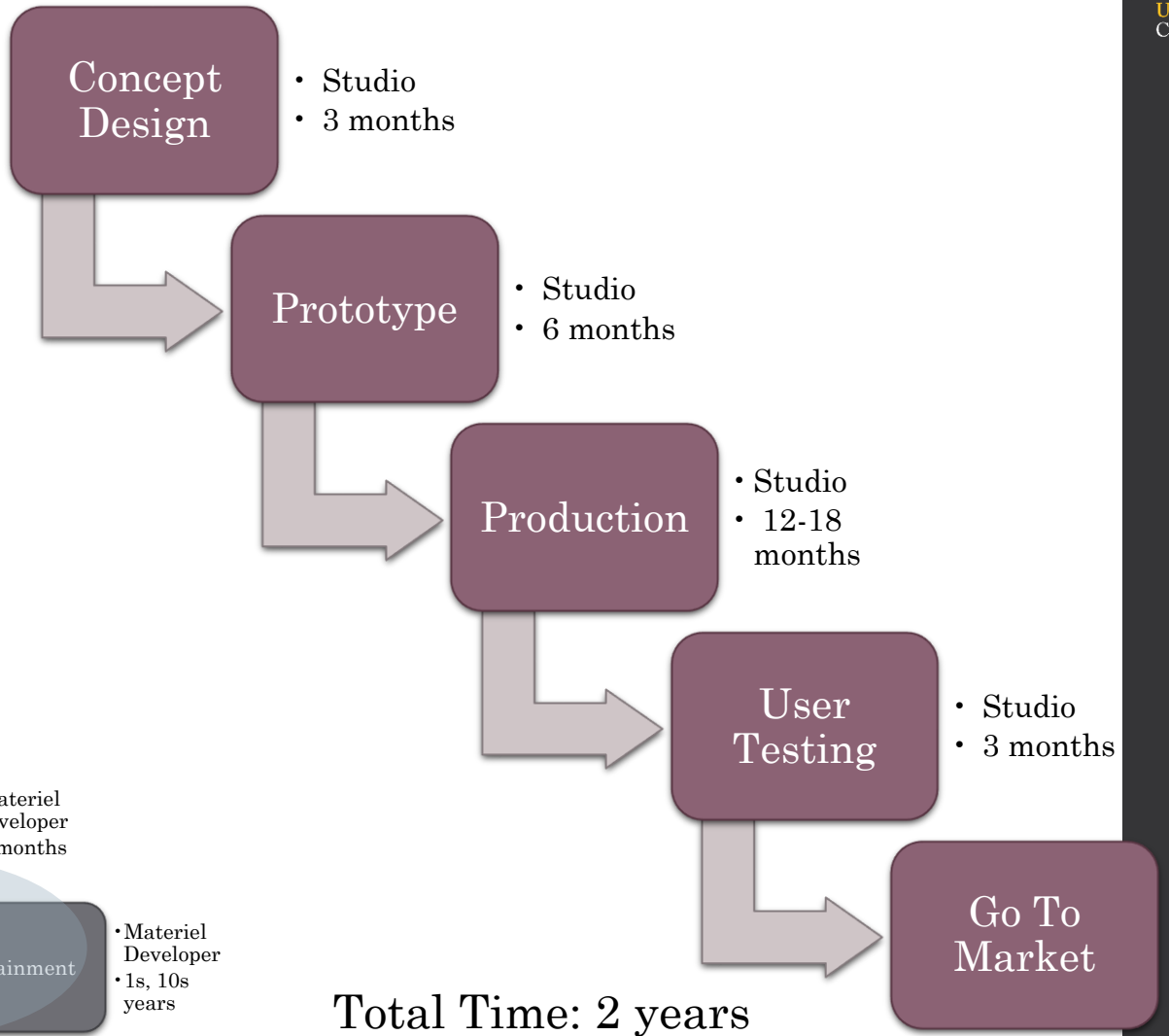
- Penetration of technology by generation
- Fewer and fewer custom-developed solutions
- Reliance on cloud and other commercial infrastructure



DoD vs Commercial Technology Dev



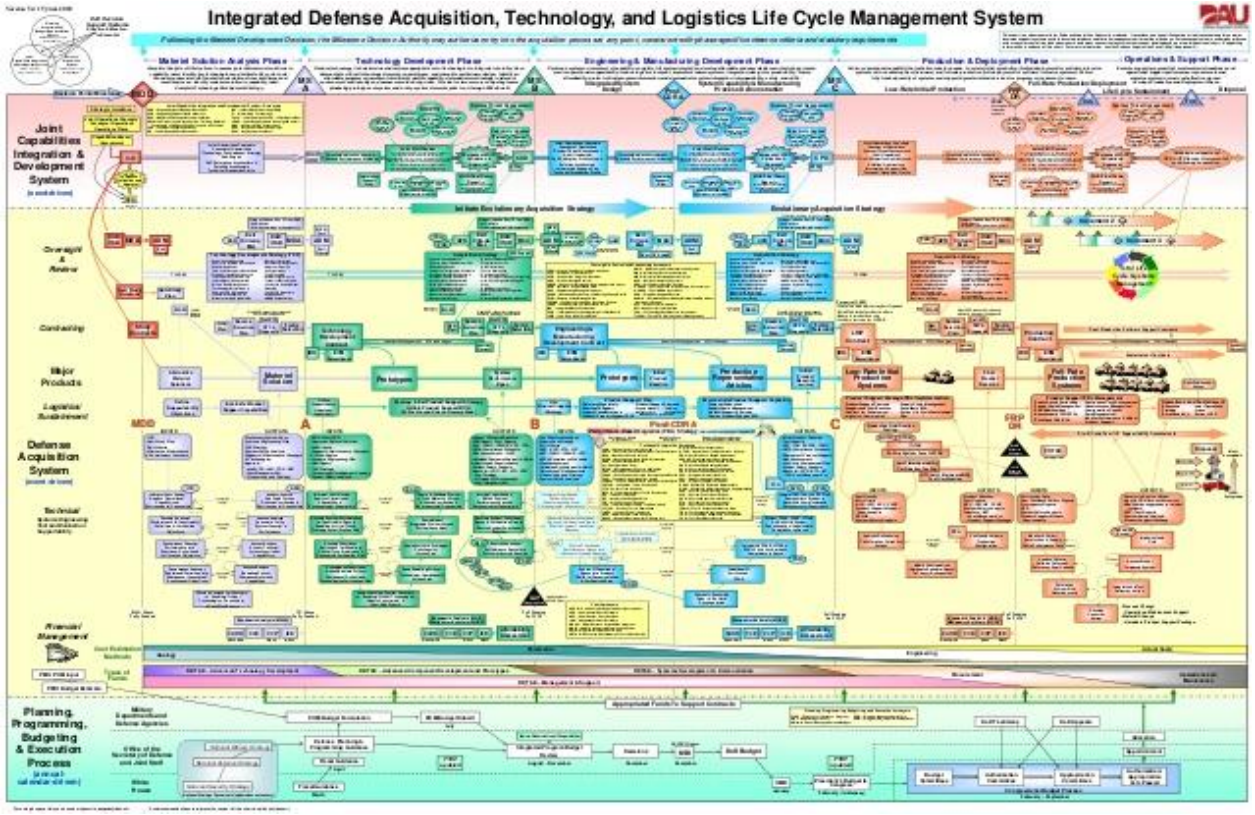
Total Time: 5+ years
# of Orgs: 4



Total Time: 2 years
# of Orgs: 1

Technology Procurement Challenges

- Use of other contract vehicles – Other Transaction Authorities (OTA)
- Modifying the lifecycle for off-the-shelf technologies
- Relaxing restriction for use of off-the-shelf technologies
- Use of Personal Devices and computing facilities

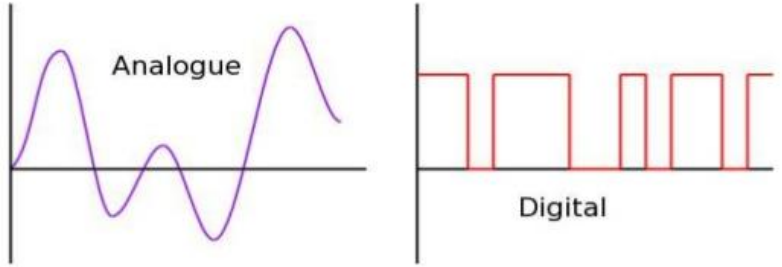


Challenges of Working with Commercial Entities

- Profit-driven
- Origin of technology stacks
- Despite rigid acquisition process, DoD M&S often suffers from scope creep
- IP issues: DoD wants full source-code and ownership
- Security/networking limitations
  - Access over military networks
  - Outdated hardware

How Do We Measure Effectiveness of Digital Training Solutions?

- Quantitative
  - Task completion/success %
  - Baselining against other training
- Analog vs Digital
  - E.g. cognitive vs tactical
- Cost of developing & employing technology vs traditional training mediums
- Qualitative
  - Surveys, feedback



Institutionalizing the Use of Technology

- Promoting avenues for both technological and creative advancement
  - Reduce barriers to implementation
  - Foster creativity
  - Accepting failure
- Streamlined acquisition models
  - Use of non-traditional contractors
- Use of perishable technologies
- Accepting or changing origins of technology solutions
- Know our 'customer' – ie the Soldier

Questions