

# IMPROVING C4ISR BETWEEN UK AND US FUTURE LAND FORCES (PAPER I-048)

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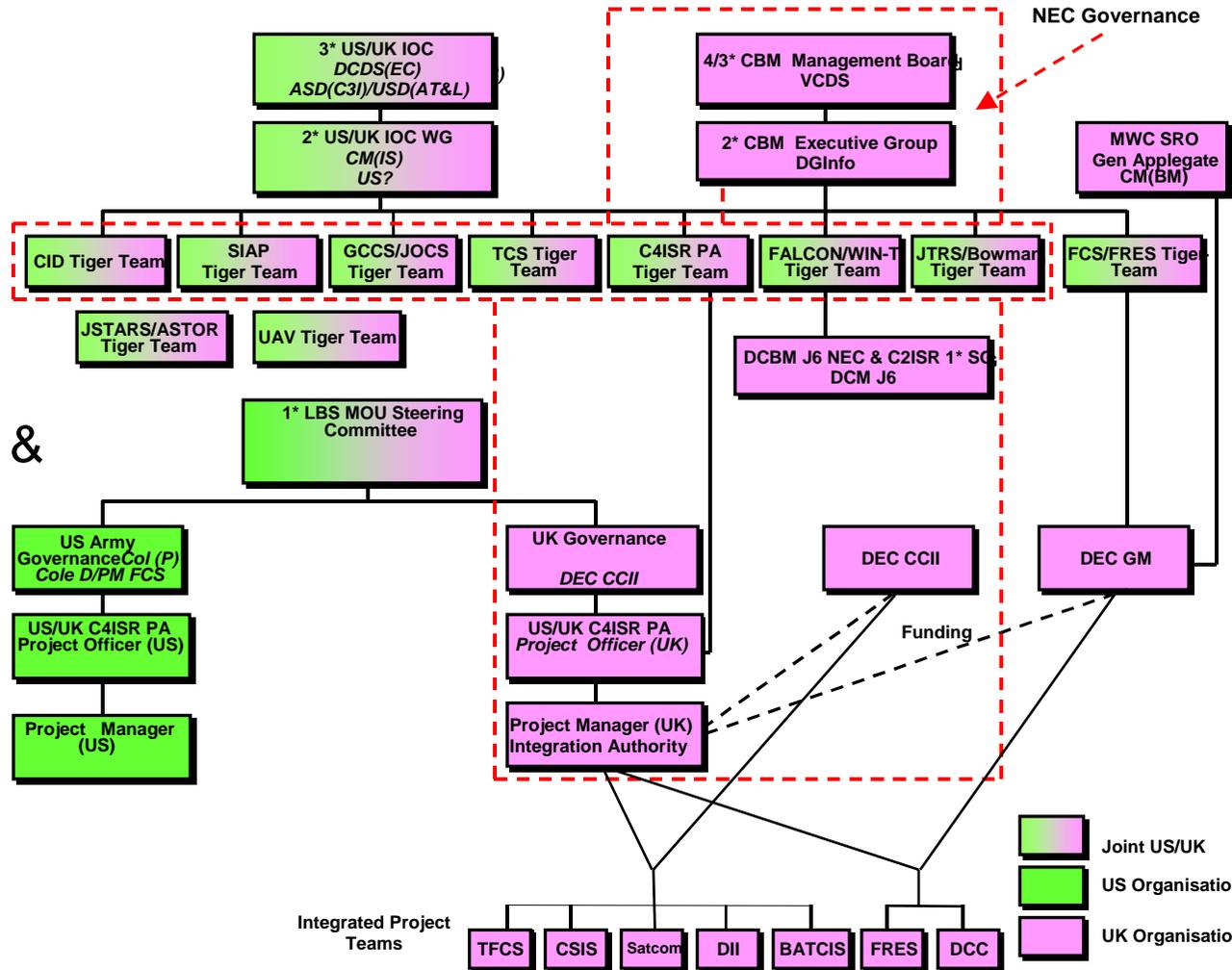
# Background - Land Battlespace Systems MOU & C4ISR Project Arrangement

- **Land Battlespace Systems MOU Signed December 2004 by DEC (GM)**
- **C4ISR Project Arrangement (PA) signed September 2005 by DEC (CC&II)**
- **C4ISR PA Objectives:**
  - To enhance C4ISR interoperability between US Joint Forces (Army, USMC, USAF, Navy) and UK Joint Forces operating at brigade level and below in the land environment consistent with the combined NCW/NEC vision of 2014 and beyond
  - To facilitate early delivery of C4ISR interoperability capability improvements to current US Army and UK Joint Forces during the period 2008 to 2014
- **C4ISR PA Approach:**
  - Phase 1 (2005-2007) to define the combined vision for C4ISR interoperability in 2014 and develop an implementation plan to realise it
  - Phase 2 (2008-2014) to execute the plan and confirm delivery of the specified US/UK C4ISR interoperability capability improvements

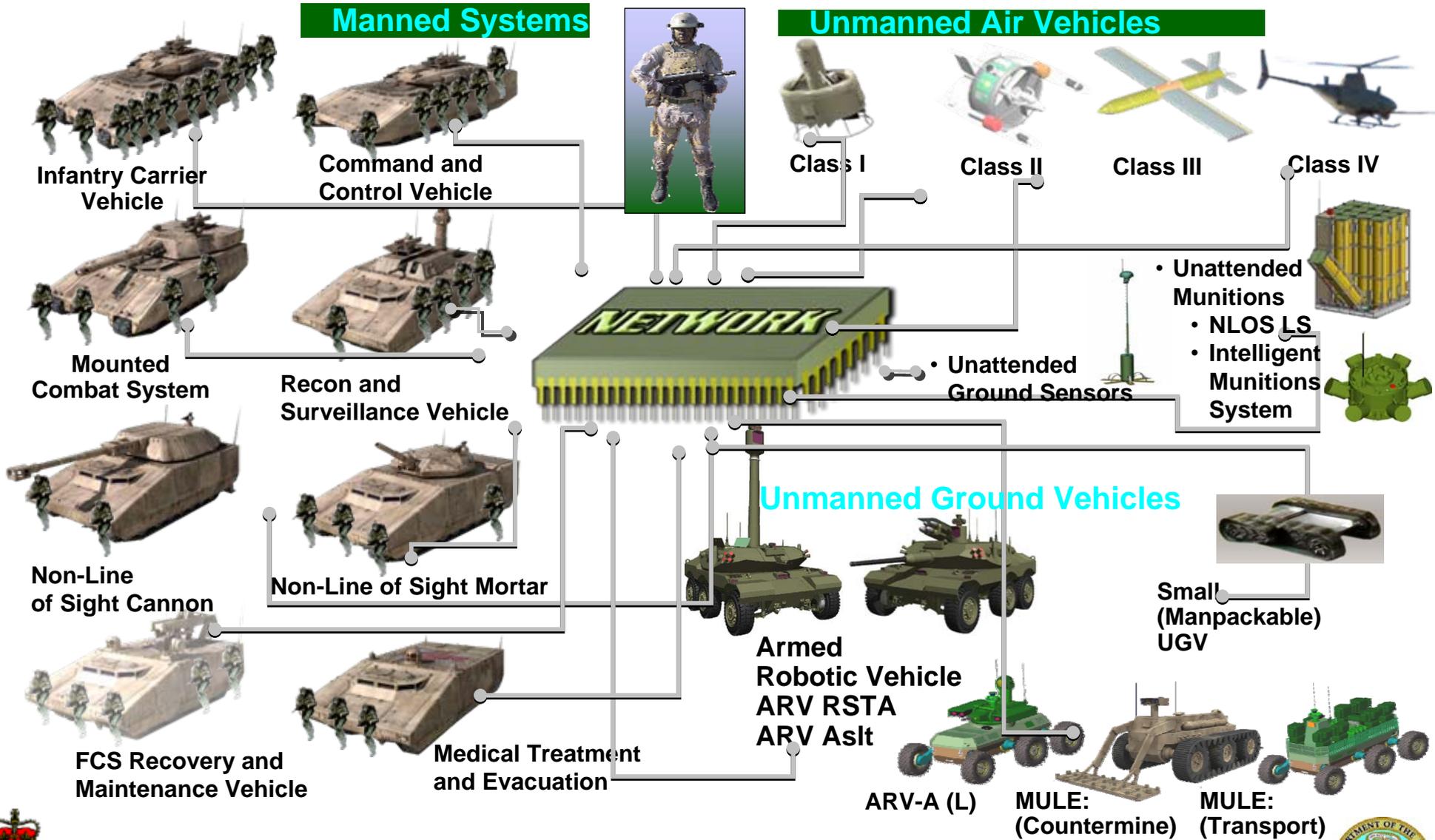


# UK Organizational Structure

- Overall governance & reporting structure
- Multiple DECs
- Integration across multiple IPTs
- Integration Authority SoS co-ordination across DECs & IPTs



# Future Combat Systems (FCS) System of Systems



# Customers' Enduring Needs



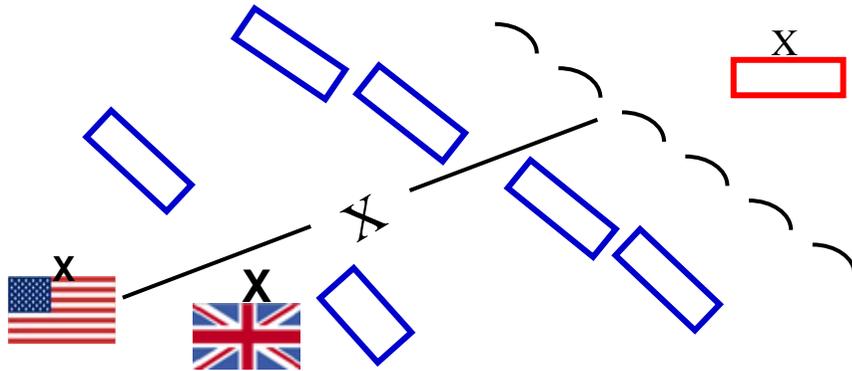
- Joint, Interagency and Multi-National Capabilities
- Increased Strategic Responsiveness
- Dominant across Full Spectrum Operations
- Battle Command on the Move
- Ubiquitous, Distributed Network with Joint Fires
- Integrated Survivability
- 3-7 Days Self-sustainment
- Network Enabled, Embedded Training

***Soldiers as the Centerpiece of the Formation***

**C4ISR PA**



# UK-US Future Force C4ISR Concept Drivers



## Current Environment

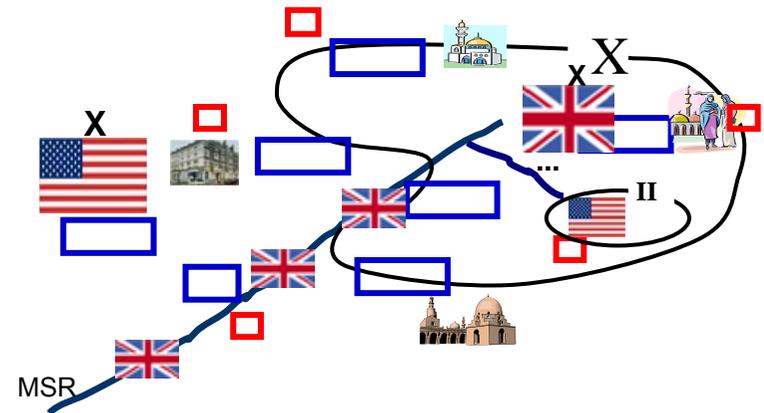
- Generally Open Terrain
  - Linear Array of Forces
  - Nation State Actors/forces
  - ISR= Movement to contact
  - Long Theatre Build up a necessary evil
  - Local Actions have local consequences
- Maneuver and Firepower dominate

## C4ISR

- C2=Hierarchical Voice and Digital
- Most ISR assets at Strategic and national level

## Interoperability

- Relegated to higher echelons
- Mostly Voice and MS Office = air gap to national C2 systems
- Ad Hoc and requires augmentation
- Formal tactical solutions are Rigid and cumbersome=not used
- Limitations force Mission and Geographical Deconfliction TTPs



## Future Environment

- Urban and Complex Terrain
  - Non-Linear battle field
  - Asymmetric and adaptive actors/forces
  - Sense= Engage
  - Strategic deployability and off the ramp operations a necessity
  - Local actions have strategic consequences
- Information, Speed, and Precision Dominate

## C4ISR

- Horizontally and vertically integrated networks
- Increase in tactical ISR assets= See First

## Interoperability

**C4ISR PA Vision  
= Integrated Force**



# Experimentation as part of SoS Systems Engineering Approach

- Supports all stages:
  - Pre-concept and concept definition activities
  - Investigation of interoperability options and migration strategies
  - Assessment activities with the investigation and evaluation of candidate interoperability mechanisms
  - Demonstration and implementation with the incorporation of evolving systems and interoperability solutions
- Means of accelerating and de-risking the acquisition cycle
  - Formally recognised in the US for some time as part of the US overall acquisition cycle
- UK, experimentation is starting to be used to help inform requirements, solution options and approvals at major acquisition gates



# SEELEX#5 Scope & Findings

## Scope:

- Tactical level information exchanges - brigade and below interoperability
- Investigation of a range of interoperability mechanisms at different echelon levels
- Investigation of key net-centric/net-enabled infrastructure enablers
- Near real time exchange of blue and red situational awareness information across architectures corresponding to current and future force structures
- High fidelity models providing real time simulations

## Findings:

- Proved the value of lower level interoperability:
  - Enhanced SA
  - Better decision support
  - Improved co-ordination and synchronisation
  - Improved tempo and tactical agility
- Will help de-risk further interoperability options and solution development
- Helps define new interoperability requirements



# Challenges

- Governance
  - The PA is novel and contentious and does not fit well within existing frameworks for the governance of platform requirements.
  - Reality is that both UK and US equipment programmes are subject to regular review and change.
  - Security (information assurance) is a challenge.
- Culture
  - Teams need significant time to get to know each other.
  - Ways of working for a relationship between a major programme of record (FCS) and a more ad-hoc and much smaller group.
  - Involvement of British Embassy Washington very helpful.
  - US need to understand their how their own acquisition cycle influences work with international partners – even Brits.



# Conclusions

- This is a real-life example of engineering NEC and NCW: need to accommodate the differences in these similar but not identical concepts.
- A number of UK programmes need to interface with one very large US one – FCS.
- Phase 1 completes at end 2007 - now an agreed UK/US land concept, which again has been generated through a hybrid process that tries to satisfy both the UK and US concepts and doctrine communities.
- Draft capability implementation roadmap has been produced.
- The first of an ongoing series of bilateral experiments to test the assumptions upon which this is based has been completed.
- Dependence on overall coherence and political will on both sides of the Atlantic. The prize is a significant improvement in front line capability.



# Back-up Slides



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C4ISR PA

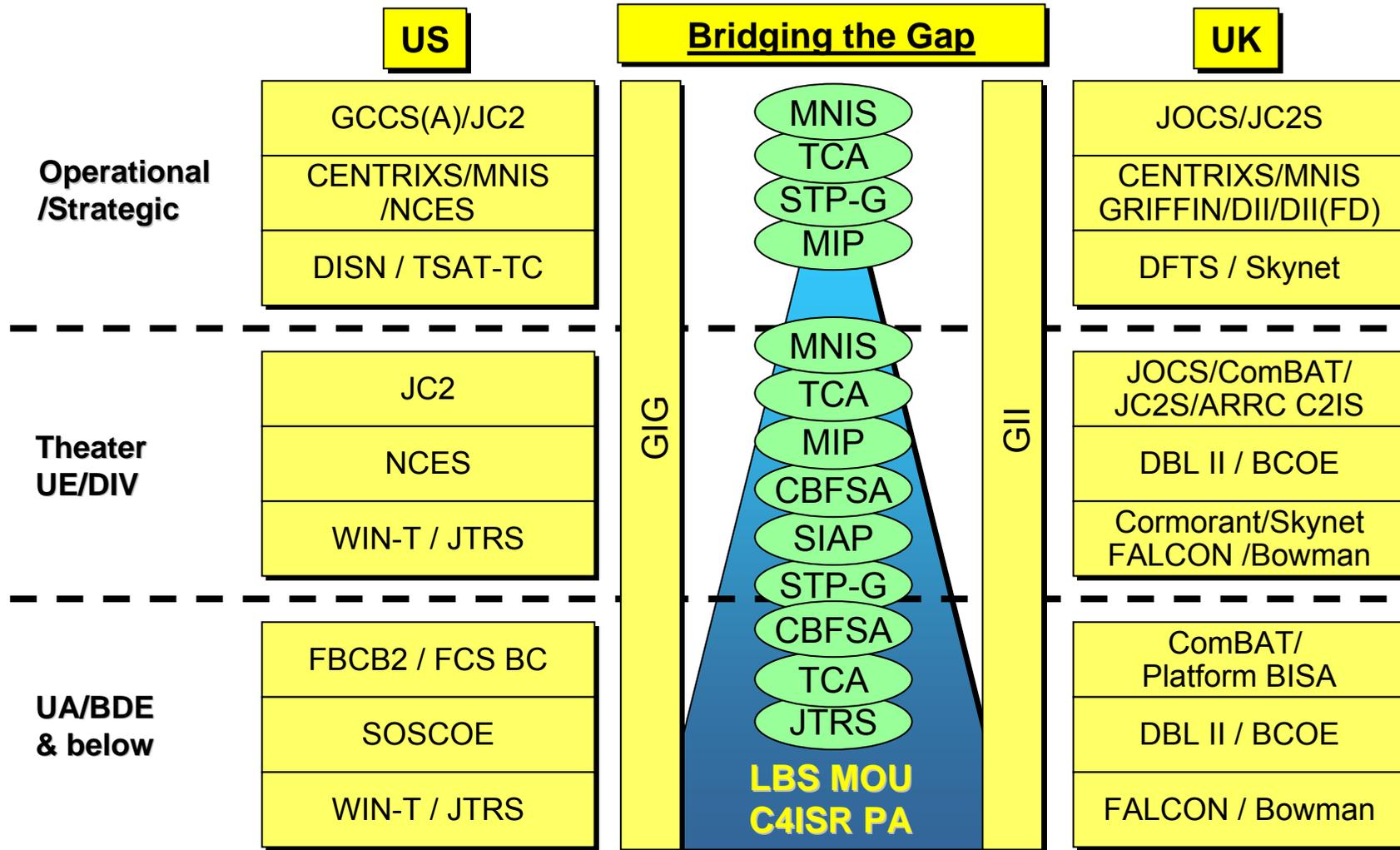


# Background – The Land Battlespace Systems MOU

- Land Battlespace Systems MOU Signed in December 2004 by DEC (GM)
- Aim to address specific issues that include:
  - Enhancement of interoperability
  - Risk mitigation based on sharing technology road maps & tools
  - Tactics, techniques, methods and procedures for LBS employment
  - Open and common architectures for LBS & LBS components
  - Identification of system modifications
- MOU established a framework for implementing a cooperative programme of work relating to LBS:
  - To improve understanding of US and UK national programmes
  - To leverage each nation's industrial and technical expertise
  - To define and implement a joint programme of applied research, concept development and technology demonstration



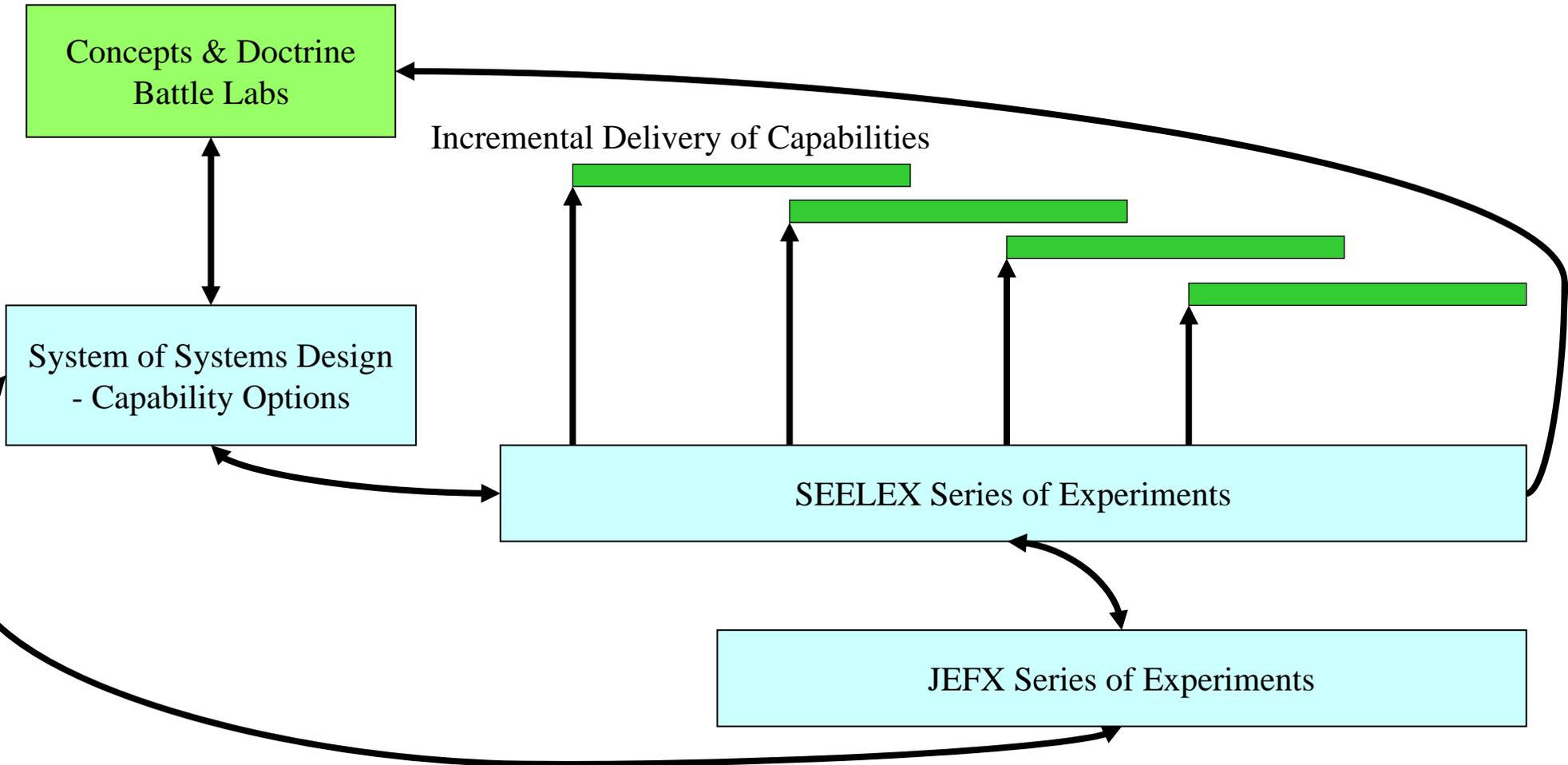
# US/UK LBS C4ISR PA is one of a number of initiatives seeking to promote US/UK interoperability



C4ISR PA



# C4ISR Experimentation Approach



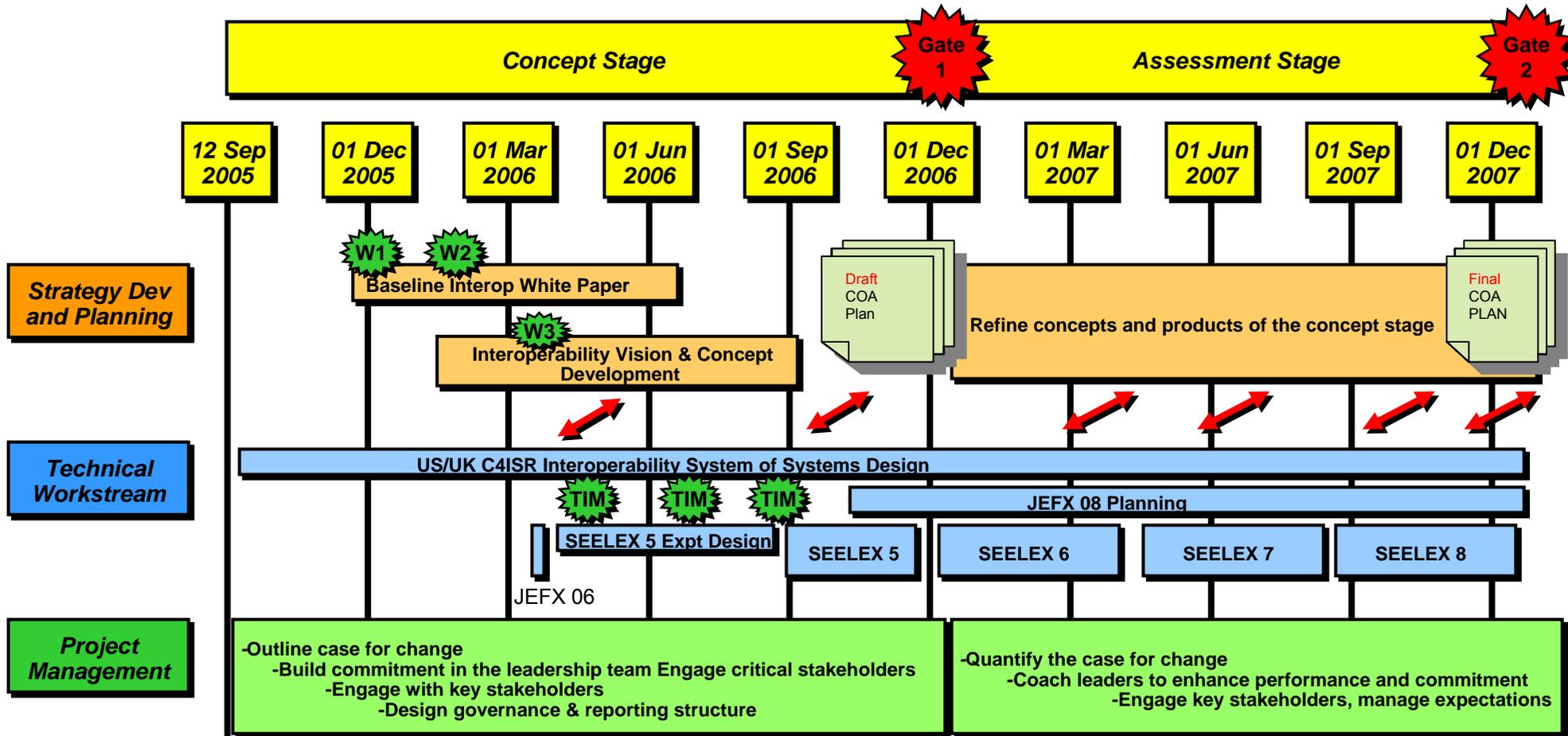
# Joint Expeditionary Forces eXperiment 2006 (JEFX'06)

- Mix of Live and Virtual with real forces & systems (actual & surrogate systems) & simulated forces & systems
- Continuous Air Planning and Execution (CAPE) and Non Traditional ISR Information Services (NTISR-IS) approaches with Land forces as an integral part of Non-traditional ISR & targeting successfully investigated
- Effectiveness of initial FCS solution components & C4ISR architectures for the Spin Out 1 increment assessed



# C4ISR PA Phase 1

## Two Years-Three major work streams



# C4ISR PA timescales in relation to the FCS Program Schedule

