



**Defence Academy
of the United Kingdom**

**Cranfield
UNIVERSITY**

Innovative UK Approaches to Acquisition Management

**David Moore
Stuart Young
Pete Ito**

Centre for Defence Acquisition
Cranfield University

College of Management and Technology

Assessing “Lessons Learned”

- In a time of tight defence budgets, it is beneficial to compare notes on national acquisition approaches and experiences.
 - *While new theories are welcome, it is less speculative to study concrete “lessons learned” from other defence forces.*
- The UK has undertaken innovative programmes in recent years, some of which warrant attention and consideration by other defence forces.
- An overview of these UK approaches indicates the benefits of more research on international efforts to identify best practices in acquisition management.

CONTENT

Four UK Issues and Programmes

- The benefits of capability management.
 - *UK decision to acquire C-17 transports.*
- Identifying key national defence capabilities.
 - *UK Defence Industrial Strategy.*
- Strengths and Weaknesses of Multinational Acquisition Projects.
 - *European defence cooperation.*
- U.S.- led multinational military cooperation.
 - *UK involvement in Joint Strike Fighter.*

CONTEXT

Financial and Operational Imperatives

Size of UK armed forces

UK Industry ?

Political influence

PFI / PPP

Increased Scrutiny - NAO

“Commercialisation“ of the Public Sector

Nature of ‘Core Activities’ in defence environment

Benign & Hostile

CONDO & CLS

Specifying & Contracting

Public Sector environment

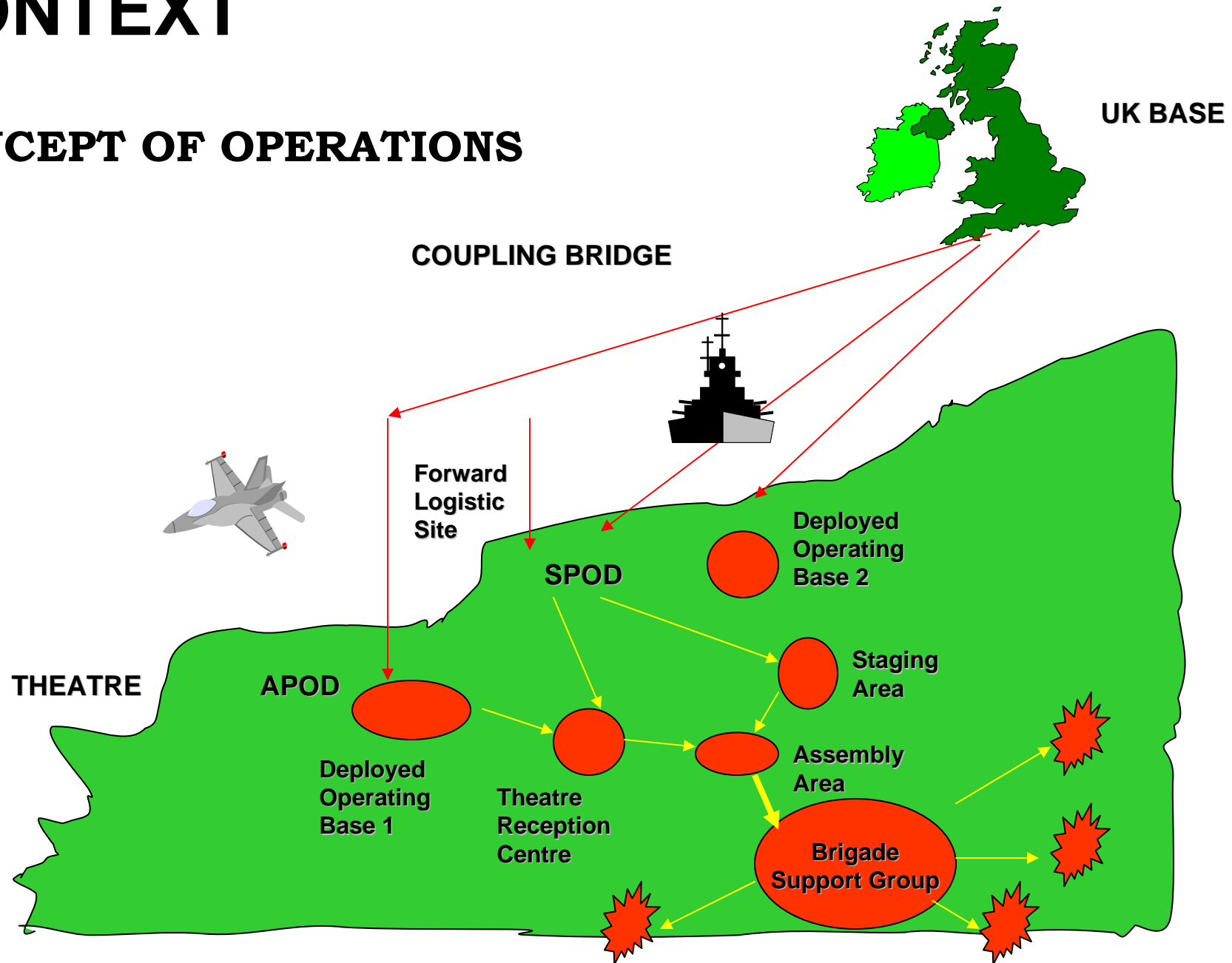
Building effective relationships

Defence Industrial Strategy / Enabling Acquisition
Change

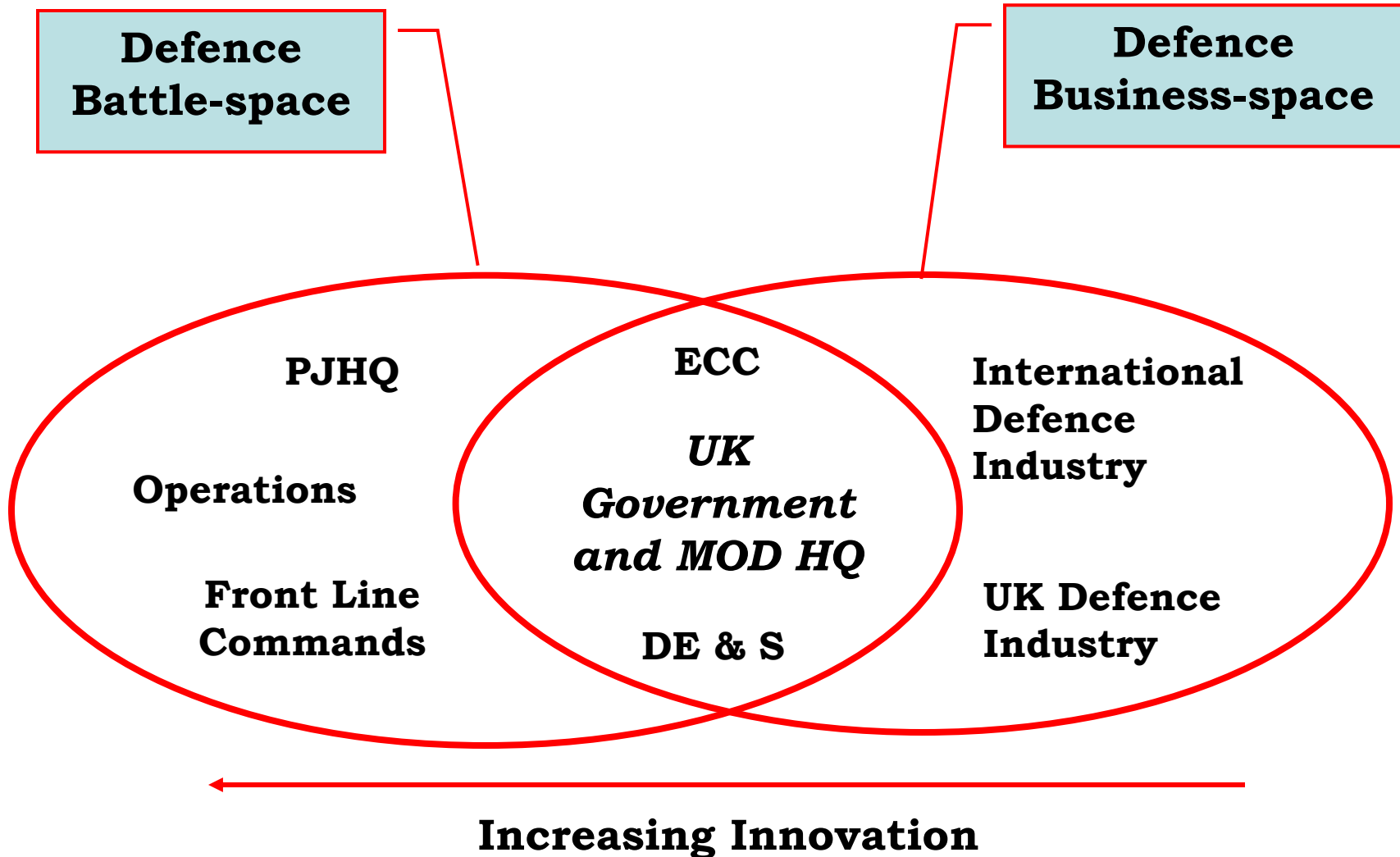
More operational commitments

CONTEXT

CONCEPT OF OPERATIONS



CONTEXT



CHALLENGE

PRESSURES FOR PERFORMANCE



COST EFFICIENCY

PERFORMANCE

**OPERATIONAL
COMMITMENTS**

**OPERATIONAL
EFFECTIVENESS**



**UK
ARMED
FORCES**



Defence Academy
of the United Kingdom

Cranfield
UNIVERSITY

UK C-17 Programme and Through Life Capability Management

Stuart Young
Deputy Director – Centre for
Defence Acquisition

+44 (0) 1793 785051

syoung.cu@da.mod.uk

www.plandeliversustain.com

College of Management and Technology

A tale of three aircraft.....



© Crown Copyright

© Deltaweb



Background - I

- 1994 – UK announced it would replace its 50-strong C130K fleet which had been in service since 1967
- 2-Stages
 - Purchase 25 C130Js – entered service 1998-2001
 - Participate in the European Airbus A400M programme to replace the other 25 aircraft
- 1997 – Approval to participate in the A400M programme
 - Timescales uncertain
- 2000- Decision to lease four C-17s as an interim measure whilst awaiting A400M
 - 7-year, £769M lease

Background - 2

- 2004-2009 Ongoing delays to A400M programme.
 - Still awaiting first flight due, primarily, to problems with FADEC (engine control system)
 - Flight test programme still to be announced – first flight probably in 2010
 - Programme cancellation still an option
- 2004 – UK decided to purchase leased C-17s plus a fifth aircraft
- 2007 – Purchase of sixth aircraft announced
- 2031 – Planned C-17 Out of Service Date

Costs

Lease of C17s for 7 years	£769M
Purchase of four leased aircraft (£55M each)	£220M
Purchase of two new aircraft (£130M each)	£260M
Total	£1,249M

Notes:

- Depreciation on leased aircraft due to heavy usage by RAF – 26,816 hours over 5-years against planned usage of 21,600 over 7-years
- France now investigating stop-gap acquisition of three C-17s due to A400M delays
- UK investigating further expansion of its C17 fleet and/or additional C130Js

C-17 Acquisition – Key Points

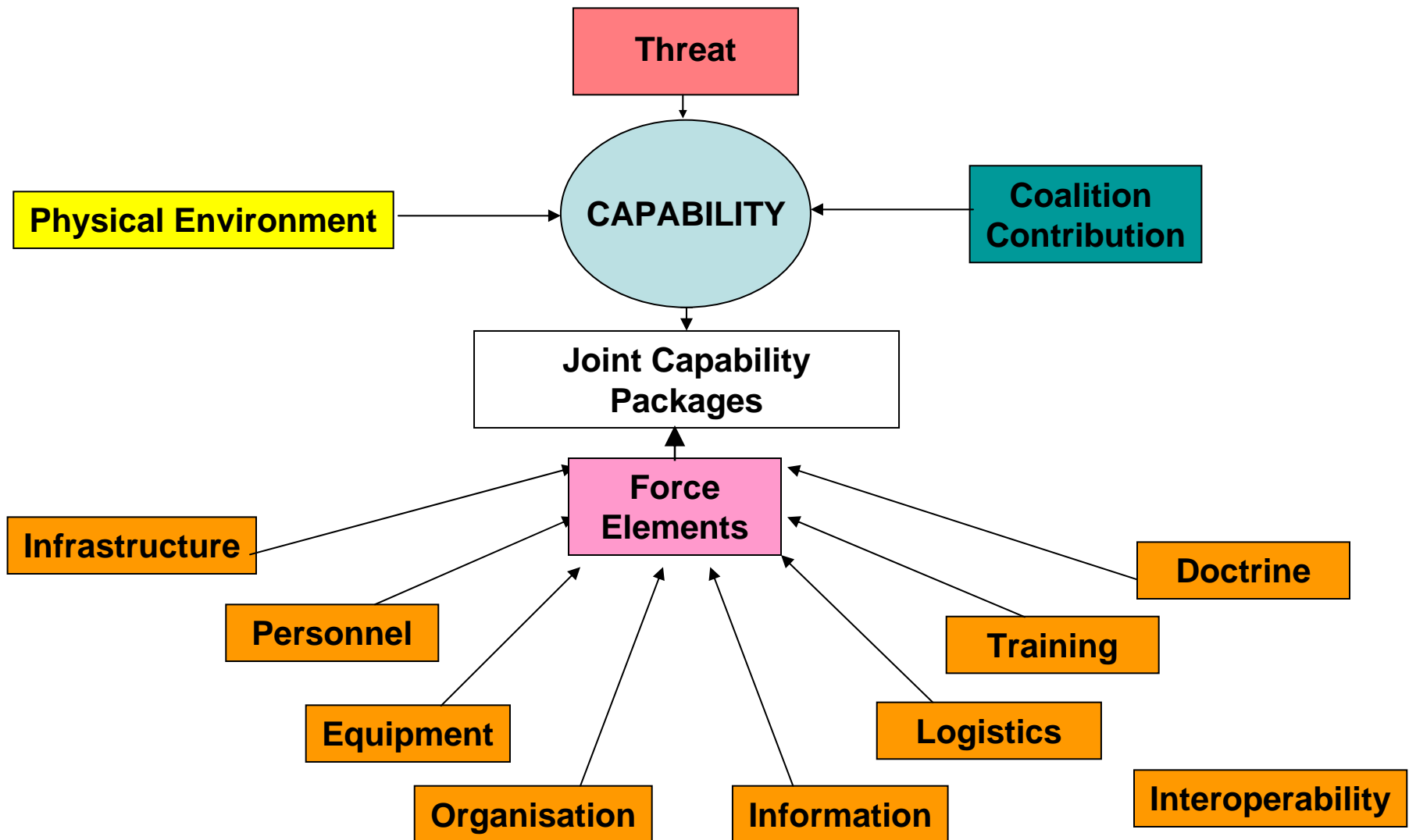
- Leasing not necessarily the cheapest acquisition option, but..
- Provides financial planning stability and smoothes out the budget over the lease period
- Mitigates the additional risks imposed by difficulties in the A400M programme
- Provides a try before you buy option
 - C-17 proved well suited to UK requirement
 - Subsequent purchase is very low risk
- Leasing best suited to proven technologies and predictable operating profile, e.g. also used for Royal Navy Offshore Patrol Vessel
- Depreciation charges and cost of capital not reflected in resource based accounts – good for the balance sheet (although accounting rules for UK MoD are now changing, reducing the financial attractiveness of leasing)

Strategic Mobility – Through Life Capability Management

- Single Capability Manager has responsibility for all Strategic Mobility capability through life:
 - Includes C130J/K, C-17 and A400M
 - Programme manages across all the Defence Lines of Development
 - Chairs the Capability Management Group who have responsibility for delivering across the Defence Lines of Development so that the user can generate force elements for integration to provide Joint Capability Packages
 - Capability Manager is best placed to judge the trade-offs required to provide effective capability to the front line

Capability

The enduring ability to generate a desired operational outcome or effect, and is relative to the threat, physical environment and the contributions of coalition partners



Defence Equipment and Support

- Responsible both for equipment procurement and through life support
 - Combines roles of old Defence Procurement Agency (DPA) and Defence Logistics Organisation (DLO)
 - Responsible for Equipment and Logistics Defence Lines of Development
 - Provides and manages the interface with industry – commercially aware
 - Provides the Programme Support Function to the Capability Manager
 - Separate Project Teams for C130(Hercules), C-17 and A400M (note A400M is managed by OCCAR (Organisation for Joint Armament Cooperation))

Decision making

- Capability Manager takes decisions (subject to normal approvals) with full awareness of:
 - C-17 costs
 - A400M delays and technical issues
 - C130 maintenance and life issues
 - Training and Personnel issues
 - Air Base rationalisation programmes
 - End user/Capability requirements
 - Etc. etc.
- Decisions are made in the best interests of defence
- But this requires culture change, which is still happening
 - Integrated view of acquiring capability which breaks down the traditional single-service stove pipes and vested interests



Defence Academy
of the United Kingdom

Cranfield
UNIVERSITY

PLAN

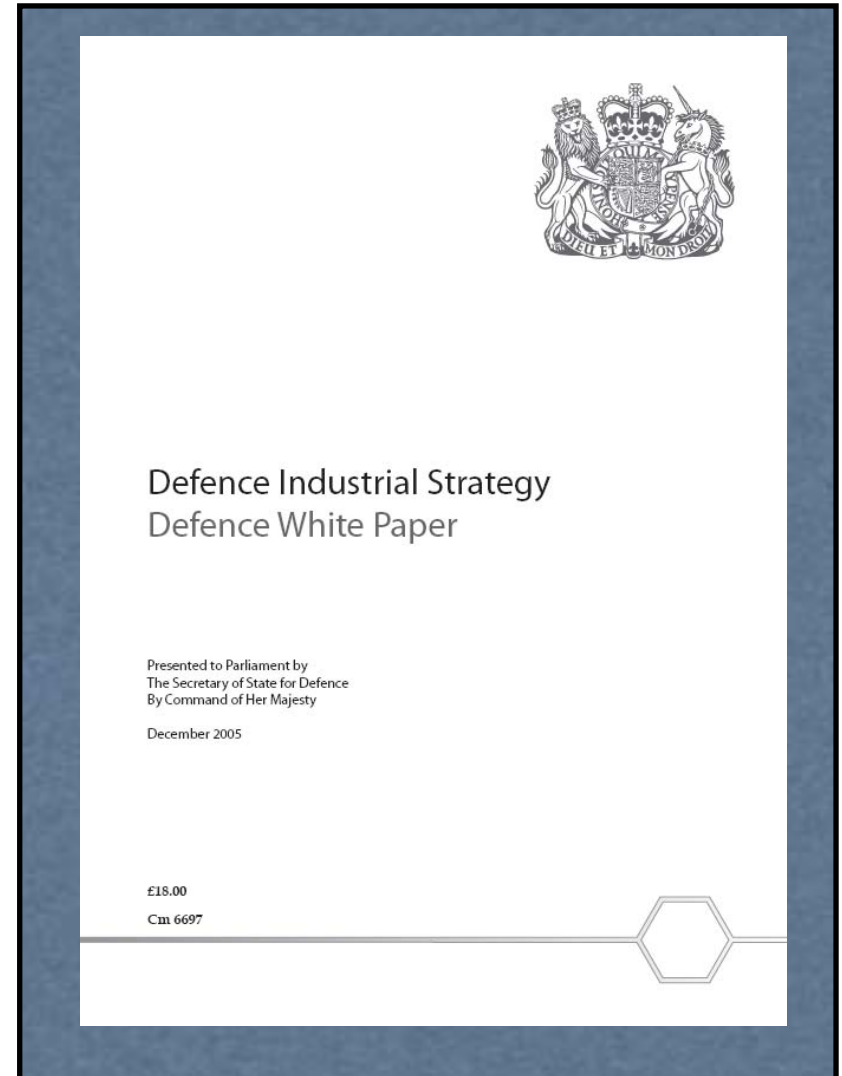
SUSTAIN

Defence Industrial Strategy

DELIVER

College of Management and Technology

- DIS – Published in 2005 under the clear leadership and direction of Lord Drayson (Minister (Defence Equipment and Support))



Intention

- The strategy carefully considers:
 - Which industrial capabilities we need to retain in the UK to ensure that we can continue to operate our equipment in the way we choose to maintain appropriate sovereignty and thereby protect our national security. The Strategy sets these out, and explains clearly for the first time which industrial capabilities we require to be sustained onshore, noting that – as now – there are many that we can continue to seek to satisfy through open international competition.

(Foreword – DIS, 2005)

Key Points

- Outlines in a more transparent manner how defence decisions are made
- Assists UK industry in its future planning by seeking to be more open on future UK defence acquisition plans
- Emphasises need for change in relationship between MoD and Industry
- Highlights need for change in behaviours

Structure

- Section A – The Strategic Overview
 - Assesses the factors that impact on UK national defence requirements
- Section B – Review by Industrial Sector and Cross-cutting Capabilities
 - Determines areas where cooperation with non-UK firms carries an acceptable risk and benefit
 - Recognises those areas where the UK cannot maintain a domestic industrial capability at an acceptable cost
 - Highlights those areas where a UK domestic capability needs to be maintained, and how the MoD will partner with industry to achieve this
- Section C – Implementing the Defence Industrial Strategy
 - Behaviours – Defence Values for Acquisition
 - National Audit Office ‘Gold Standard’ for project and programme management
 - Through Life and Integrated approach
 - Innovation, Flexibility and Agility
 - Professional Delivery Skills

Key Statements - Maritime

- “The future for UK shipbuilders lies in high value design, systems and sub-systems assembly and integration; plus specialist and novel hull construction capability, particularly where there is a high outfit to steel ratio, as exhibited in complex warships.”
- “Industry restructuring and consolidation is likely to be a key feature of any improvement programme, and fundamental to creating a viable and sustainable business to meet anticipated steady-state demand.”

Key Statements - Land

- “There are compelling advantages to retaining a UK industrial AFV capability at a level which enables the UK to preserve the expertise it requires to maintain and upgrade the capability of current and future equipment, both in peacetime and for operational requirements.”
- “There is no absolute requirement to manufacture all of the constituent parts of an AFV in the UK. An onshore capability to repair and overhaul AFVs is however required.”
- “The ability of industry to respond quickly at times of high operational tempo is of particular priority. This includes the design and delivery of UORs (Urgent Operational Requirements) in a timely manner.”

Key Statements – Fixed Wing



- “Current plans do not envisage the UK needing to build a future generation of manned fast jet aircraft beyond these types (Typhoon and JSF - F35 Lightning).”
- “The retention of an aerospace engineering and design capability is critical for through-life capability management, in order to provide for maintenance, major upgrade and integration of new weapon systems, avionics and defensive aids”

Implications

- There is no ‘buy British’ backdrop to the DIS
- There is a UK willingness to enter into multinational arrangement when the need is clear
- DIS led to the Defence Acquisition Change Programme
 - Introduced Through Life Capability Management
 - Merged the Defence Procurement Agency and defence Logistics Agency to form Defence Equipment and Support; reinforces the through life approach to acquiring equipment capability
- Instituted a change in culture across defence acquisition – decisions are taken on a capability basis outside of the traditional single-service stovepipes

Progress

- Industry rationalisation: Good in some areas (Ship building and Ship Maintenance), slower in other areas (Land Systems).
- Partnering and Alliancing: Some successful initiatives, e.g. Team Complex Weapons including MBDA(UK), Thales UK, Roxel and Qinetiq, with the MoD
- Private Finance Initiatives – Future Support Tanker Aircraft, Military Flying Training System
- But overall progress slower than industry would have wished
- Still insufficient transparency about MoD plans.
- Concern about affordability of DIS as it stands
- Updated DIS, due to be published in Dec 2007 still awaited. Seen by Industry as lack of MoD commitment.
- Resignation of Lord Drayson in 2008 – DIS now without a champion.
- TLMCM progressing well but danger of over complex structures and processes.
- Through life thinking slowly becoming embedded.
- Joint approach starting to happen but Single Service stove-pipes still exist

Summary

- Defence Industrial Strategy – Innovative and Extensive
- Implementation slow, but probably better than might have been expected.
- Industry remains concerned about the MoD's lack of commitment.
- Need to see whether future difficult decisions (FRES, A400M, Typhoon etc.) will be taken on political or DIS and TLCM grounds



Defence Academy
of the United Kingdom

Cranfield
UNIVERSITY

PLAN

SUSTAIN

DELIVER

European Defence Cooperation

College of Management and Technology

UK Support -- When Europe Delivers

- UK support for European Defence Cooperation is a good example of creative approaches to defence acquisition.
- More generally, the UK supports participation in worthwhile multinational projects.
- Endorsed in the Defence Industrial Strategy.
- Backed up with acquisition decisions.
- Driving factor: acquiring capabilities.

UK Practice

- Will proceed with European defence cooperative projects if they make sense.
- UK is the most active participant in European military procurement.
 - Over 30% of UK total equipment procurement was conducted in a project with another EU state.
 - In 2006, EDA reported 6.66 billion Euros spent by European states on multinational projects.
 - UK largest practitioner with 2.58 billion Euros.
 - 6.07 billion Euros specifically spent on European projects.
 - UK largest practitioner with 2.26 billion Euros.
- Major projects: working with France on the new aircraft carriers.

Problems With Euro-Projects

- However, the UK clearly recognizes the shortcomings of European defence efforts.
- The UK will not support Euro-projects when they do not produce capabilities.
 - Type 45 destroyer program arose because two European attempts were not satisfactory: NFR-90 and Horizon CNGF.
 - A400M transport purchase cut from 45 to 25.
 - Cancellation is not out of the question.

Problems with Euro-Process

- There is no shortage of statements to promote European cooperation.
 - European Defence Agency has an electronic Bulletin Board.
 - EDA generated Intergovernmental Regime in Defence Procurement within Article 296 of EC Treaty.
 - Associated Code of Conduct to promote transparency and equal treatment of suppliers
- Problem: National governments and industry are under no obligation to use the Bulletin Board or, more generally, follow mandates in documents.
- Example: Commitments from European countries about a European Air Transport Fleet.
 - No new concrete steps to make that happen.

Preference -- The U.S.

- General UK sentiment: buy the last generation of U.S. equipment rather than the next generation of European capabilities.
 - Probably prefer to have bought destroyers with Aegis rather than developing the Type 45.
- Key factors are strongly in favour of defence cooperation with the U.S. rather than Europe.
- U.S. military spending is particularly important.
 - U.S. spends twice as much on defence as Europe combined.
 - U.S. outspends Europe six to one in defence R&D
 - U.S. targets 35% of defence spending on investment compared to 20% in Europe.
- Security policy, history, etc. contribute to UK preference to work with the U.S.

Problem -- The U.S.

- The U.S. occasionally takes decisions which generate questions in Europe about following the U.S. lead in military acquisition.
- The 2008 decision to re-bid the aerial tanker contract under Congressional pressure was the most recent example.
 - European perception: The Air Force process was “flawed” only because the decision was in favour of the Northrup-Grumman/EADS KC-30 tanker proposal.

KC-30 -- EADS Efforts

- EADS recognized it would need a U.S. partner to be competitive for the contract.
- It worked to arrange the partnership with Northrup-Grumman.
- They emphasized that the KC-30 would be an American tanker.
- They maximised U.S. content by having the Airbus A330 airframe built in the U.S.
- In short, EADS incurred great costs to be a credible bidder for the aerial tanker contract.
- Depending on how the issue is finally resolved, European firms will be more reluctant to incur such costs if they do not believe they have a reasonable chance of winning U.S. contracts.

European Reactions

- The re-bidding of the contract casts doubt on the U.S. willingness to engage in an “objective” competition.
- It validates the views of those who argue that even if European firms partner with U.S. defence firms, they will not be able to enter the U.S. market.
- Politically, it strengthens those who argue that the U.S. will also act to defend its own companies and preserve domestic military capabilities, so there is no reason for Europe to bow to U.S. criticism.

Key Problem -- Competition

- The KC-30 decision damages the goal of promoting competition in the defence sector.
- Can the U.S. generate sufficient competition only from American firms?
 - It was Congress which initially criticized the fact that there was no competitor to Boeing on the tanker program.
- Does the U.S. anticipate European firms providing the competition in the future?
 - If so, European firms need to believe that if they incur substantial costs, they have a reasonable chance of obtaining contracts.

Summary

- The UK is clearly in a different situation than the U.S., but one which is similar to all other friends and Allies.
- The UK readiness to support European defence cooperation has been valuable.
- The key is whether European programs can efficiently provide capabilities.
- The benefits of European defence cooperation, and the general contribution European firms can bring to acquisition programs in the U.S. and elsewhere, are worthy of further analysis.



Defence Academy
of the United Kingdom

Cranfield
UNIVERSITY

PLAN

SUSTAIN

DELIVER

Joint Strike Fighter

College of Management and Technology

Major UK Commitment

- Prime example of UK commitment to following innovative approaches to defence acquisition.
- UK was the only “Level I” partner in the JSF design and development phase.
- It contributed \$2 billion to that phase.
- In March 2009, it committed to purchase of three F-35B operational test aircraft.

UK Participation -- History

- In the mid-1990's, the UK was looking for new Future Carrier Borne Aircraft for CVF programme.
- U.S. was working on next-generation strike aircraft.
- U.S. and UK combined efforts.
- Focus for UK was on Short Takeoff and Vertical Landing (STOVL) capabilities.
- In 2001, UK preference for JSF confirmed in MOU with the U.S.
- UK selected the STOVL variant in 2002.
- STOVL design completed in 2005.
- UK will purchase 138 fighters.

Key Policy Decision

- The UK made a critical decision in committing itself to the JSF.
- UK is already working with modelling and simulation for use of JSF on the new carriers.
- If there are problems with the JSF, and the STOVL version in particular, the UK faces a major problem.

Other Key Factors For The UK

- UK wants to emphasize interoperability with the U.S.
- There is substantial industrial participation.
 - BAE Systems is the largest non-U.S. participant in the JSF.
 - Estimate of some £14 billion in business.
- As a partner nation, the UK can receive revenue from additional JSF sales.
 - CRS notes DOD estimate of \$5-\$40 of revenue for every \$1 invested in JSF.

Problem -- Technology Transfer

- The source code issue would have been a problem under any circumstance.
- House of Commons Defence Committee noted that the UK could not accept a situation where it could not operate the JSF independently of the U.S.
 - In 2006, the Committee called on the UK to develop a “Plan B” for alternative aircraft if the source code issue was not resolved satisfactorily.
- The Defence Industrial Strategy cites the overarching policy reasons that the UK needs to have access to such data, and notes the particular difficulties with the U.S.

House of Commons Defence Committee (2005)

“It is vital that the UK gets all the information and access to technology it requires from the U.S. to have ‘Sovereign Capability’ – the ability to maintain the Joint Strike Fighter aircraft and undertake future upgrades independently. The UK must receive adequate assurances that it will get all the information and access to technology it requires before the programme is too far advanced. If these assurances are not given, it is questionable whether the UK should continue its involvement in the programme.”

Defence Industrial Strategy (2005)

“To meet our own sovereign needs, it is important that we continue to have the autonomous capability to operate, support and where necessary adapt the equipment that we procure. Appropriate technology transfer is therefore of crucial importance. This is so for any cooperative project, but in practice difficulties have arisen particularly with the U.S., whose technology disclosure policy we have found less adapted to the needs of cooperative procurement than those of our partners in Europe.”

A Never-Ending Problem

- The issue never seemed to be resolved, which added to UK frustration.
- Bilateral defence technology agreement outlined in 2002.
- Source code issue arose in 2004 at Ministerial level.
- UK thought it was resolved at President-PM level in May 2006.
- Not finally resolved until end of 2006.

No Reason For The Problem

- 99.8% of licenses for UK-U.S. transactions are approved.
 - 8,500 items and \$14 billion in value.
- UK-U.S. defence industrial interconnection has increased substantially.
 - UK firms have acquired 50 U.S. aerospace and defence firms since 2001.
 - 75% of all foreign investment in the U.S. defence sector.
- No instances of real problems with the UK where U.S. interests in JSF were damaged.
 - The reports do not criticize UK firms, but DOD procedures.

Legacy Problem

- Now that this is resolved, JSF is a low-profile project.
 - Defence Committee simply notes it is progressing well and will simply monitor developments.
- The problem is that the contentious history on this key tech transfer issue cannot be erased.
 - This is how the U.S. dealt with its closest ally on a multinational project of singular importance.
 - This was noted by other nations considering participation in U.S.-led projects.

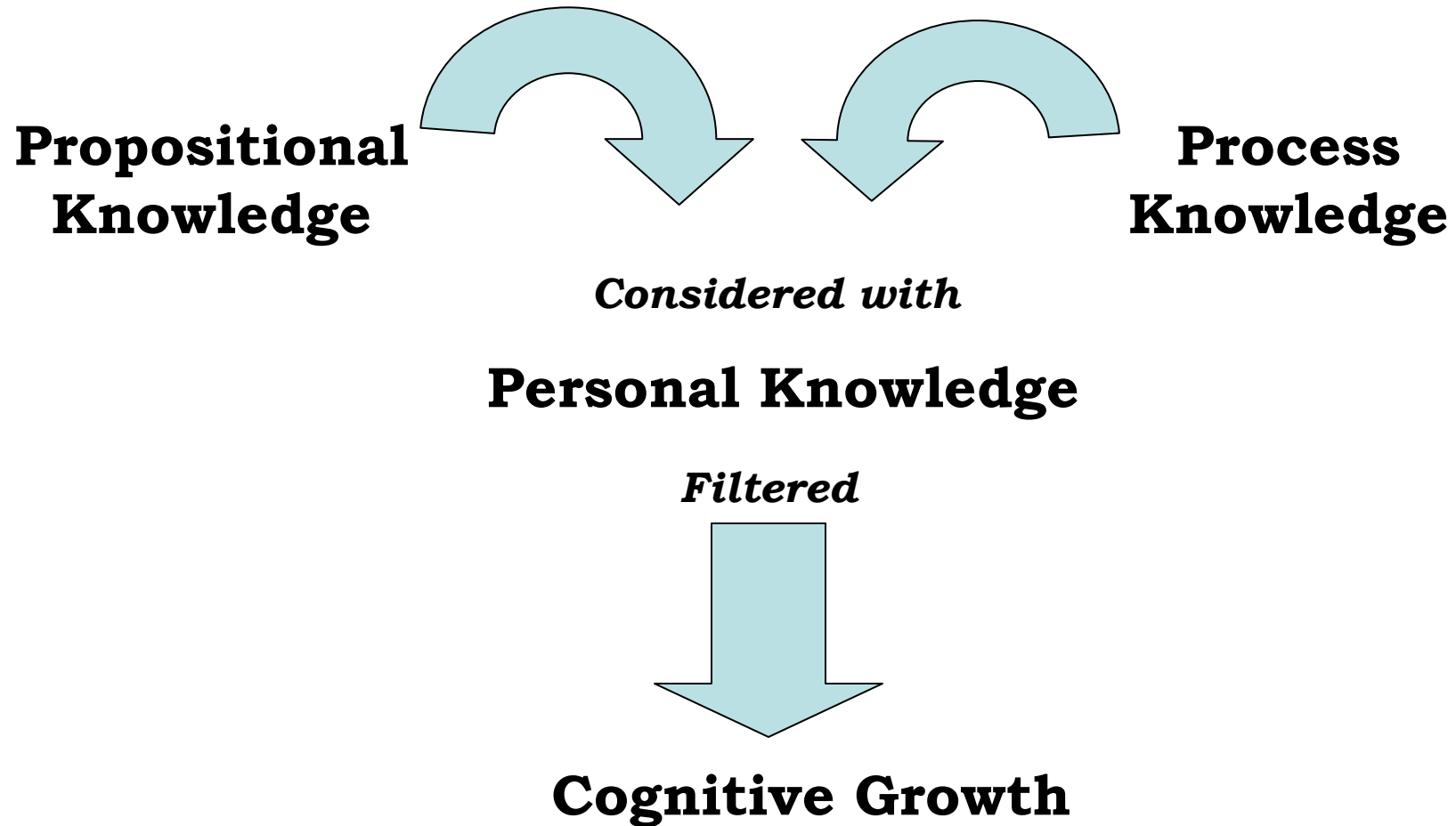
Questions for U.S. Consideration

- With increasing development costs, does the U.S. need to make a greater effort to find partners who can help carry those costs?
 - Can the U.S. take greater consideration of the views of other possible partner nations?
 - Can the tech transfer regime be modified to address the need to work with partners while continuing to protect sensitive information?
- Decisions on partners may have an impact on production and overseas sales.
 - Can U.S. firms survive solely on DOD contracts?

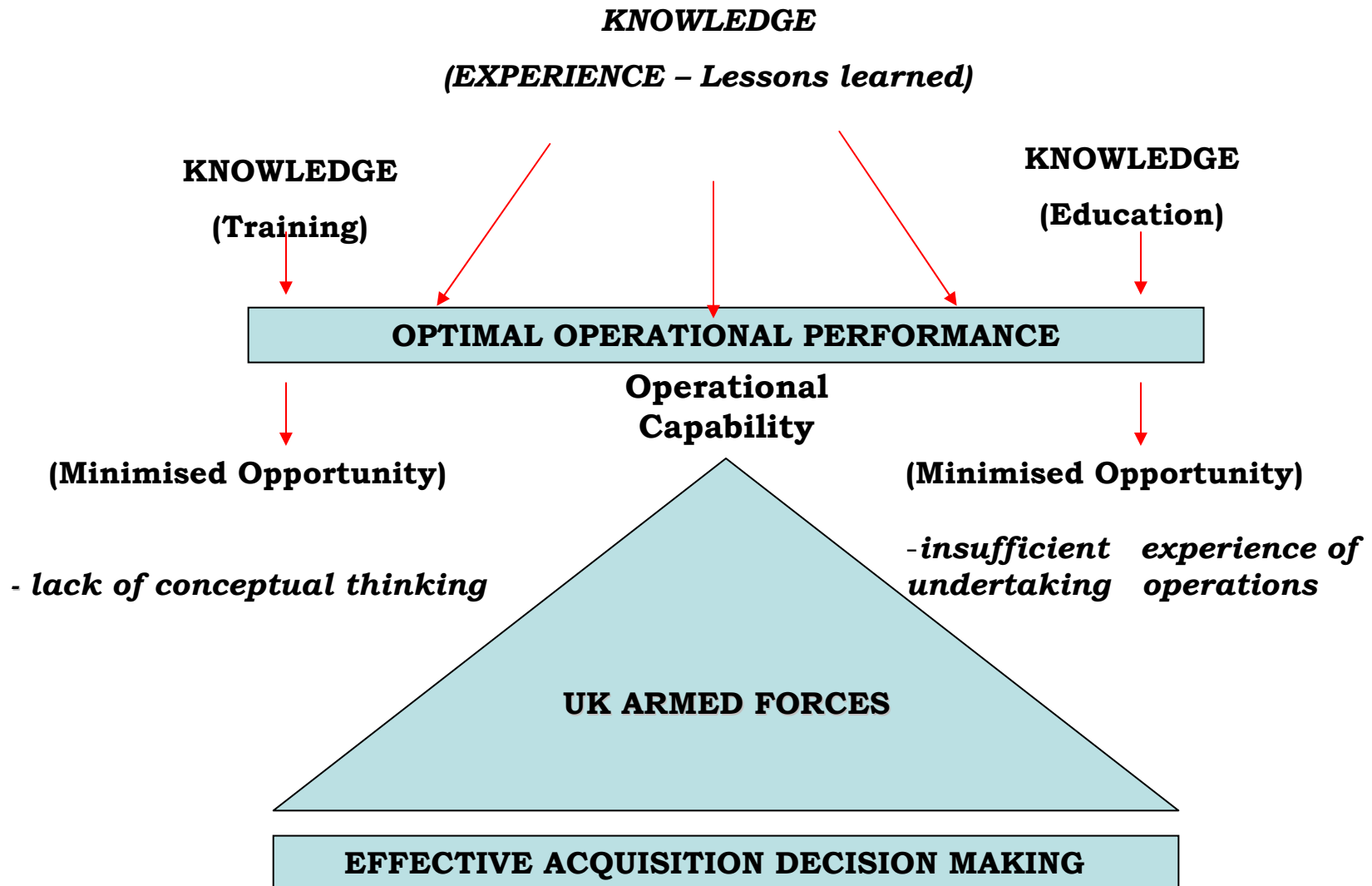
Summary

- The UK clearly is inclined to participate in U.S.-led military acquisition programs.
- The JSF is merely the most high-profile example of this UK policy.
- However, the JSF also provided the most high-profile examples of the difficulties in participating in a U.S.-led project.
- The overriding issues that warrant more extensive research are
 - The extent to which multinational projects may be needed in order to spread costs.
 - The degree to which a multinational approach may be needed in order to ensure production runs and sales.
 - The extent to which technology transfer processes can be modified so they do not hinder multinational projects.

*Informing practice to enable innovation for effective decision making
in defence acquisition*



The Knowledge Equilibrium - Essential for decision making in Acquisition Management



Conclusion

- Common UK acquisition themes
 - *Remain open to consideration of innovative approaches.*
 - *Analyse best practices of other defence forces.*
 - *Put the policy into practice.*
- Particularly at this time, it is valuable to research and analyse “lessons learned” from national defence acquisition experiences.