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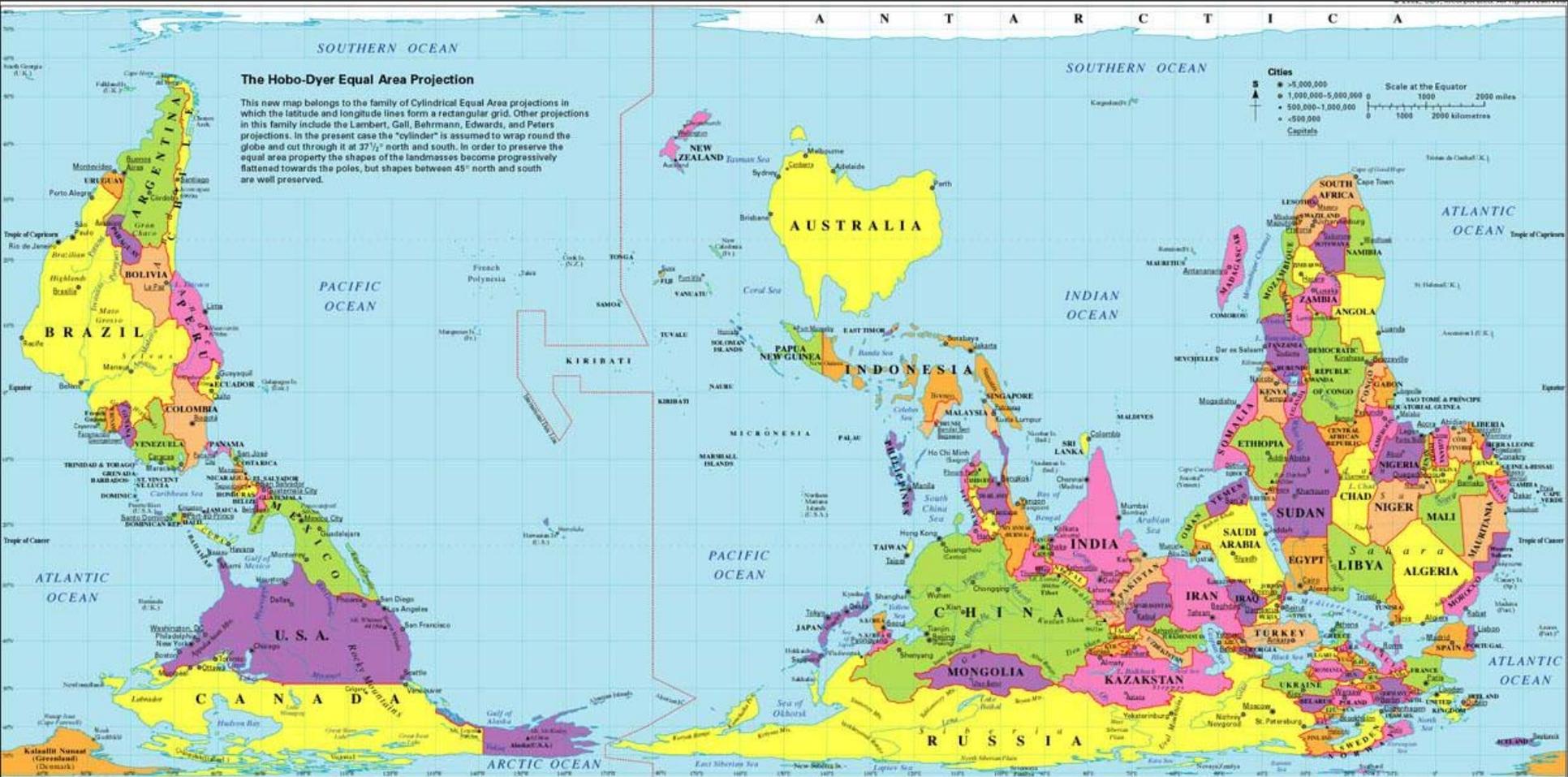
Coalition Partners Adaptation to Globalisation - A Perspective -

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A DIFFERENT PERSPECTIVE...



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A LOCAL PERSPECTIVE...



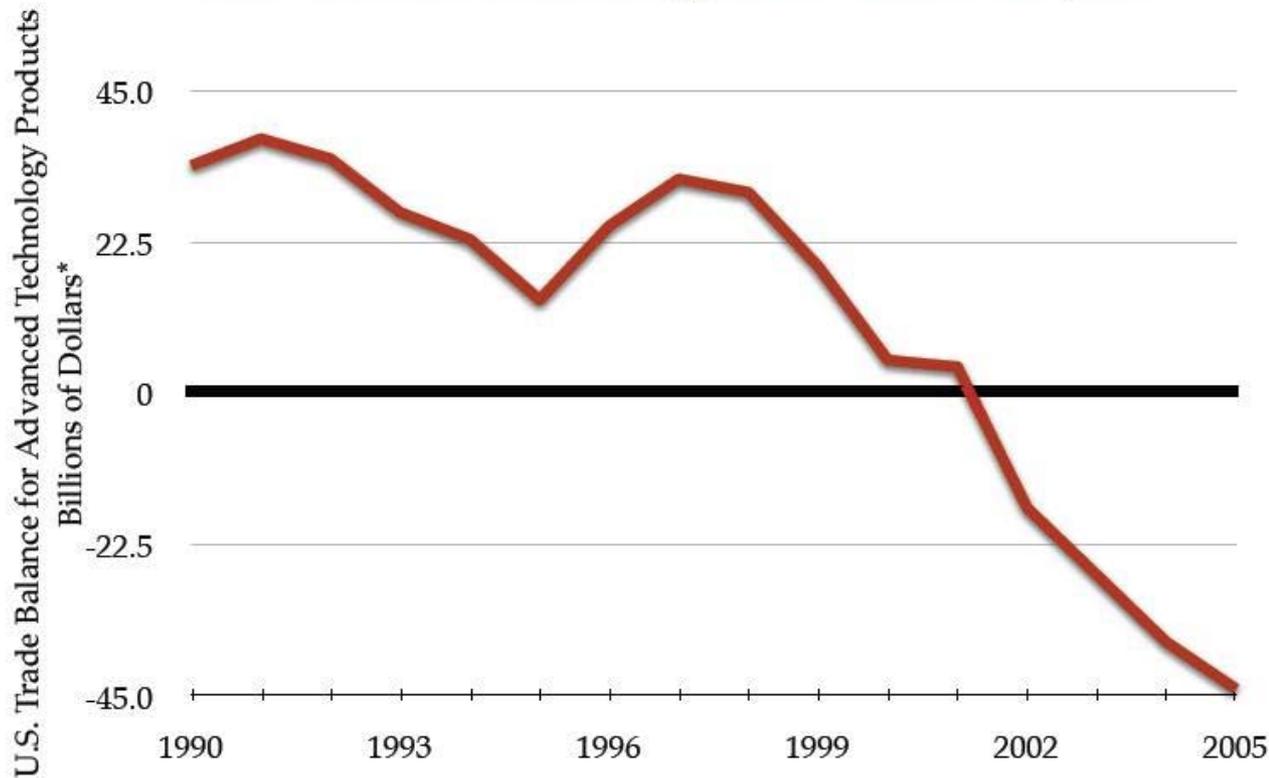
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GLOBALISATION OF TECHNOLOGY...



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U.S. Advanced Technology Trade Deficit Deepens



Source: U.S. Census Bureau Foreign Trade Statistics, *U.S. International Trade in Goods and Services*.

Compiled by the APS Washington Office.

* Constant Chain-weighted 2000 Dollars

From: Task Force on the Future of American Innovation,
November 2006 (www.futureofinnovation.org/2006report/)

UK's DCDC STRATEGIC TRENDS 2007-2036 (1)



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Key areas of S&T Impact:

- Sensor and network technologies
- New energy technologies
- Cognitive Science
- Nanotechnology
- Biotechnology
- ICT

UK's DCDC STRATEGIC TRENDS 2007-2036 (2)



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Key areas of S&T Risk:

- Uncertainty
- Unintended consequences
- Technology dependence
- Information explosion
- Narrowing technological advantage
- The role of AI
- Authenticity of information
- Erosion of civil liberties
- Ethical challenges
- Inequality

Extracts from the UK MoD's Development, Concepts and Doctrine Centre's Global Strategic Trends 2007-2036, pp 56-66.

UK's DCDC STRATEGIC TRENDS 2007-2036 (3)



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Defence Implications:

- Information warfare;
- Encryption - reduction in indicators & warnings;
commercial implications of quantum computing;
- Technology leakage - incl. via “ethical scientists”;
- Defence R&D - following COTS, partnerships,
increasing globalization;
- Rapid obsolescence;

UK's DCDC STRATEGIC TRENDS 2007-2036 (4)



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Defence Implications:

- Defence niches - will be maintained however;
- Ethical intervention - increasing;
- Wider availability of affordable technology;
- Rapid mobilisation - ICT-enabled "Flashmobs";
- Unmanned technologies - increasing legal & ethical issues



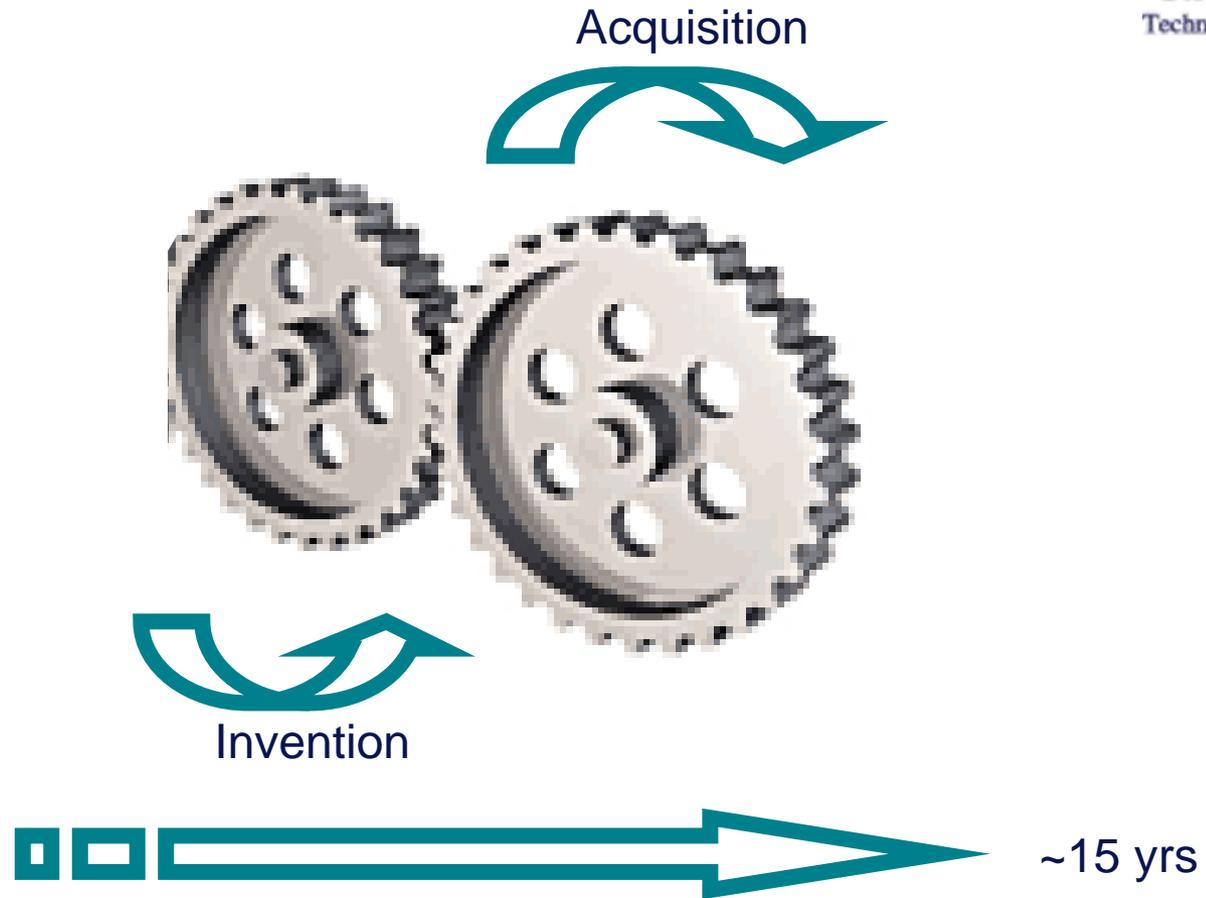
CONFLUENCE AND DYNAMICS (1)

- The “dynamic” of a technology typically follows the well-known “S”-curve;
- Current and near-term trends are due to a confluence of only two technologies - we’re living in a time dominated by the confluence of electronics & photonics → an era where we’re exploiting “classical quantum”;
- This confluence is both an enabler for changing dynamics (knowledge diffusion), and potentially a catalyst for new confluences (e.g. bioelectronics, cognitive electronics, ...)

CONFLUENCE AND DYNAMICS (2)



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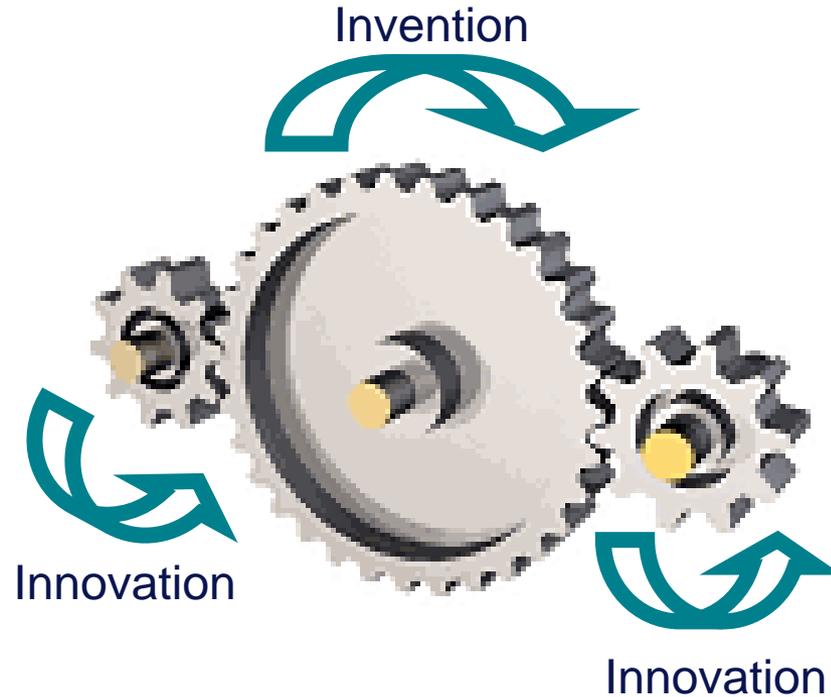


The old Defence paradigm - an invention cycle and an acquisition cycle

CONFLUENCE AND DYNAMICS (3)



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A new reality - an invention cycle driving
multiple innovation cycles with negligible
(or integrated!) acquisition cycles

COMPONENTS OF THE INNOVATION CYCLE (1)



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TECHNOLOGIES

- Low(er) barrier to entry;
- Increasing international capabilities (education, information access, investment, ...);
- Ubiquitous technology (computing, comms, electronics, ...) enabled through dual use technologies and the opening up of societies and markets (Friedmann's 3rd Convergence, 3 billion new consumers - a market magnet, so it won't stop...);

COMPONENTS OF THE INNOVATION CYCLE (2)



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TRANSITION

- “Fit for purpose”, not MILSPEC;
- Focused problems, using ubiquitous technologies (eg wireless) - leads to multiple innovation cycles exploiting same basic “pool” of technologies...
- Tactics, Techniques & Procedures replace static standards
 - ⇒ which means learning by doing is key;
 - ⇒ not “train as you fight”, but “innovate to fight”

COMPONENTS OF THE INNOVATION CYCLE (3)



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PROCESSES

- Minimal, outcome focused, results driven; risk management, not risk avoidance;
- Tight feedback loop to technology and TTP innovation - it's all done at "the speed of need" (GEN Cartwright);
- There is an intrinsic "size" factor at play (it's easier to equip 20 people than 20000);
- Regulations/policy will not keep up with innovation (e.g. cyber now) \Rightarrow asymmetric policies enhance impact & likelihood of asymmetric threats

WHAT IT MEANS FOR COALITION NATIONS (1)



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Looking “outwards” (i.e. from the Coalition)

- We face the same threats, issues, ...

WHAT IT MEANS FOR COALITION NATIONS (2)



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Looking “inwards” (i.e. towards the US as a partner)

- For exactly the same reasons that drive the increasing threat, the potential to contribute is greater than ever before;
- Potential to better focus resources (share knowledge of priority threats) - US supplies the global “context” for targeted innovation

WHAT IT MEANS FOR COALITION NATIONS (3)

Looking “inwards” (i.e. towards the US as a partner)

- The threat sets will continue to change, increasing emphasis on “soft power”[†] - addressing these problems will benefit from different cultural viewpoints (e.g. social network analysis, cyber);

[†] - discussed in the UK MoD’s Development, Concepts and Doctrine Centre’s Global Strategic Trends 2007-2036.

WHAT IT MEANS FOR COALITION NATIONS (4)

Looking “inwards” (i.e. towards the US as a partner)

- Policy settings will determine whether the opportunities are realized e.g.

⇒ releasability directly impacts the “value” of the problem to be addressed;

⇒ Berry Amendment-like issues will determine the manner in which solutions can flow back to the US.



CONCLUSIONS

- Technology globalisation is inevitable and unstoppable;
- It will erode technology leadership;
- The innovation cycle will be as important as the invention cycle, but it's not just technology - TTPs & processes need to be included;
- The problem set will become more complex, not less, and be driven by other than "traditional" factors (or, traditional factors driven by new contexts);
- Strength and security assurance will arise through partnerships - "global reach" is not just a kinematic capability.

THANK YOU FOR YOUR ATTENTION



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