



Australian Government

Department of Defence
Defence Science and
Technology Organisation

Shaping Australia's Defence Future: DSTO Strategic Foresight Report 2014

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Chief Defence Scientist

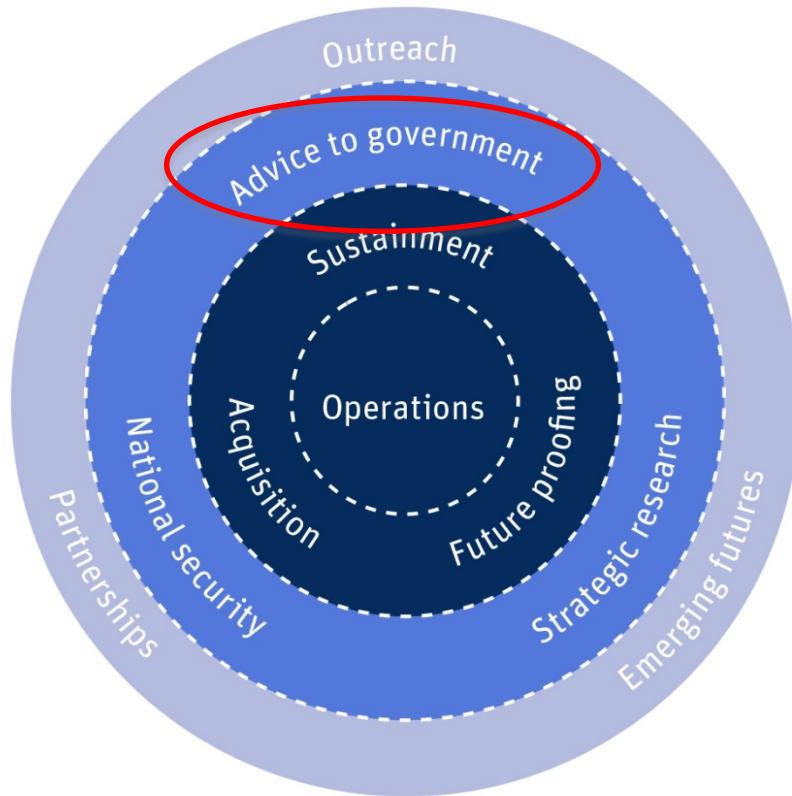
ADM Congress
25 February 2014

DSTO



Science and Technology for Safeguarding Australia

DSTO Purpose and Roles



DSTO is a national leader in safeguarding Australia by delivering valued scientific advice and innovative technology solutions for Defence and national security.

DSTO ENABLERS

TECHNICAL SERVICES	SCIENCE AND TECHNOLOGY TRAINING AND DEVELOPMENT	BUSINESS SERVICES
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Why a Foresighting Study?



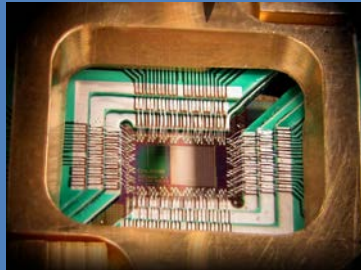
“Today we are on the cusp of an epoch-making transition, from being passive observers of Nature to being active choreographers of Nature”.

Michio Kaku

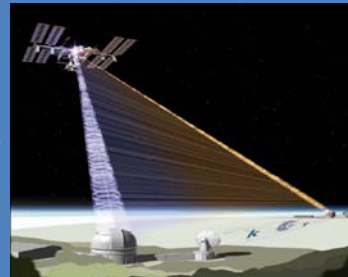
- “Foresight is a process by which one comes to a fuller understanding of the forces shaping the long-term future which should be taken into account in **policy formulation, planning and decision making...**” *J.F. Coates*
- **PROGRESS TO DATE**
 - Conducted several workshops internally and externally with CSIRO and RAND
 - Commenced analysis – this study is the first report
 - Strategic initiative focused on “Big Picture Analysis”

Forecasting and Futures

Technology Push (Exploratory Approach)



Future Technology



Future Capability

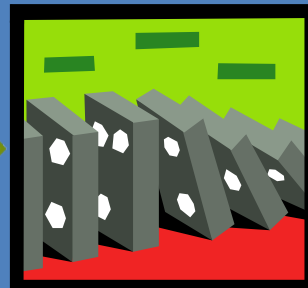


New Future

Technology Pull (Normative Approach)



Scenarios

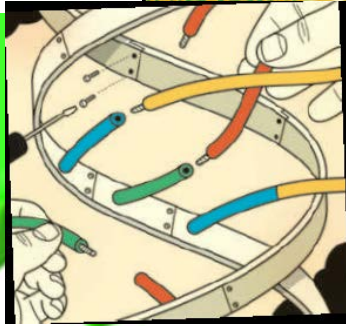
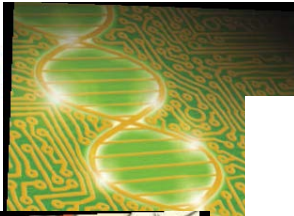


Effects

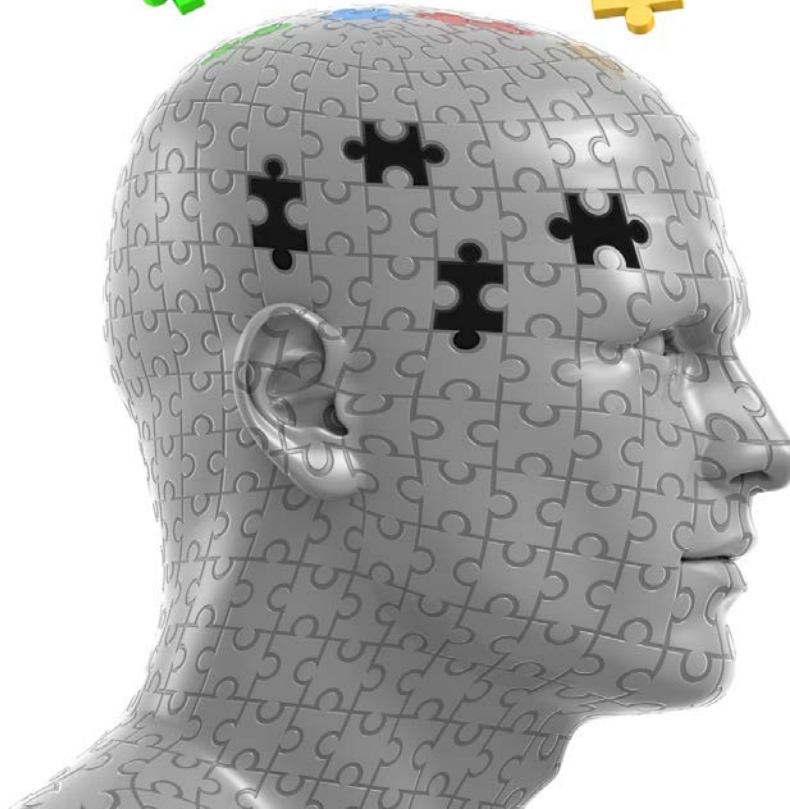


Technology/Capability

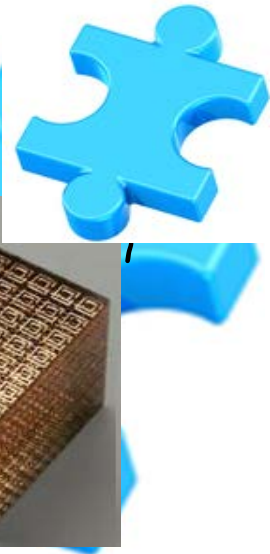
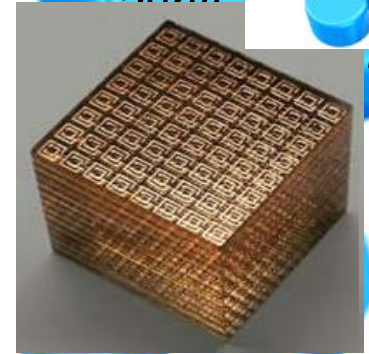
Biotechnology



HUMAN-MACHINE INTERFACE



Advanced Materials



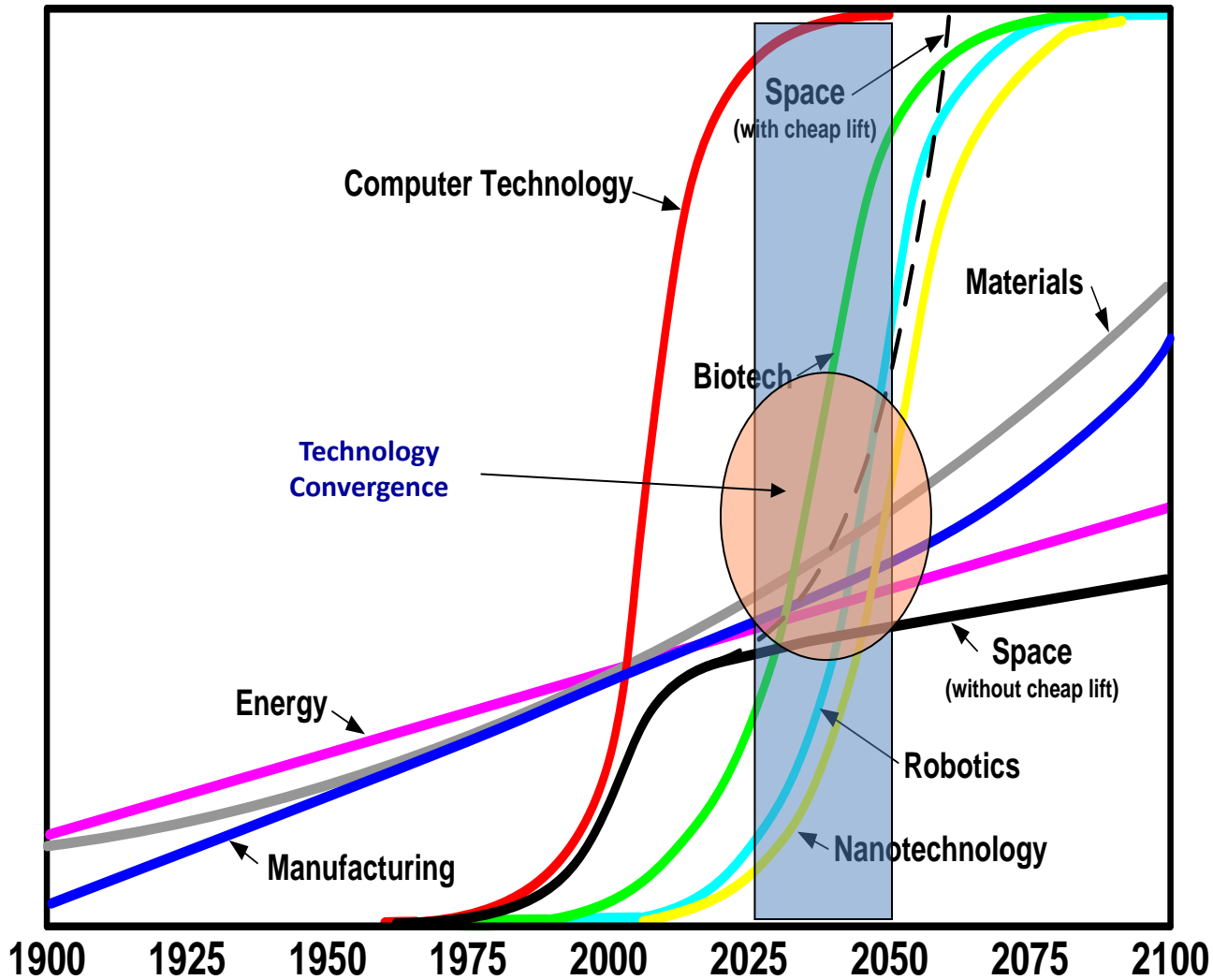
Automation



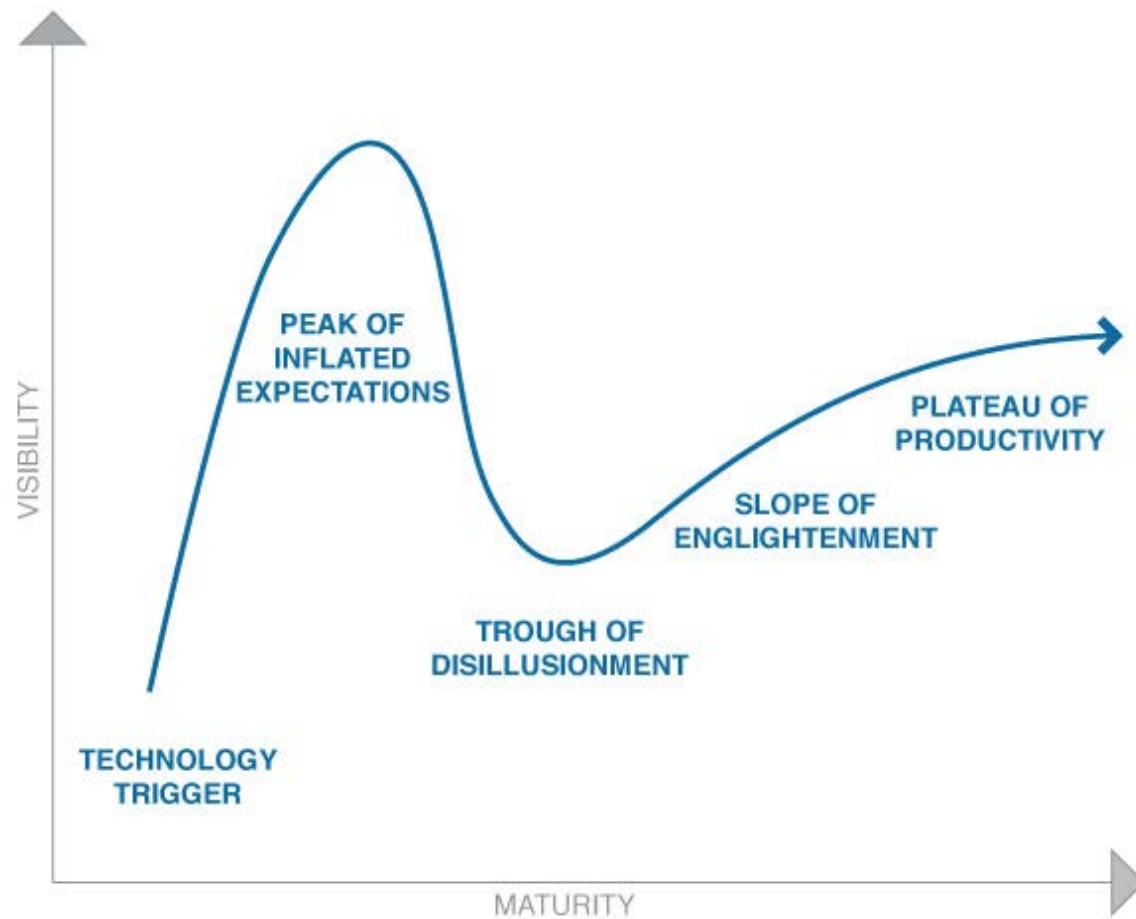
Cyber



Technology Development Curves



Hype Cycle



General Australian Perspective

Other Countries Defence and Intelligence Perspectives

Industry Perspectives and Popular Literature

Global Institutions (UN, OECD, ILO)



People and the Environment

Smart is the New Green Speed
Water Migration High Climate Change
Innovating to Zero eMobility
Emerging Markets Energy Nexus Rail Food More from Less
Resource Scarcity Megacities
Population Development



People and Technology

Biotechnology
Cognitive Science The Global Mind
Neuroscience and Neuroengineering
Innovating to Zero
You Can Run but not Hide
Changing Ways of War
Trusted Autonomous Systems
Small and Flexible
Great Expectations Virtually Here
Aging Population
Health Wellness and Wellbeing
Big Data
The World of Work



People and Business



Analysis Results: Four Key Implications for Defence and National Security

- Mastering Complexity
- Trust in Technology
- Smart Power
- Innovation Enterprise



Mastering Complexity

- Megacities will become dominant in 21st century.
Majority will be in Asia
- Civilian/military infrastructure - highly interconnected and interdependent, supply chains are convoluted/congested

IMPLICATIONS

- *Holding a square kilometre of ground....by what means?*
- *Networked systems could fail...unpredictably or by design?*

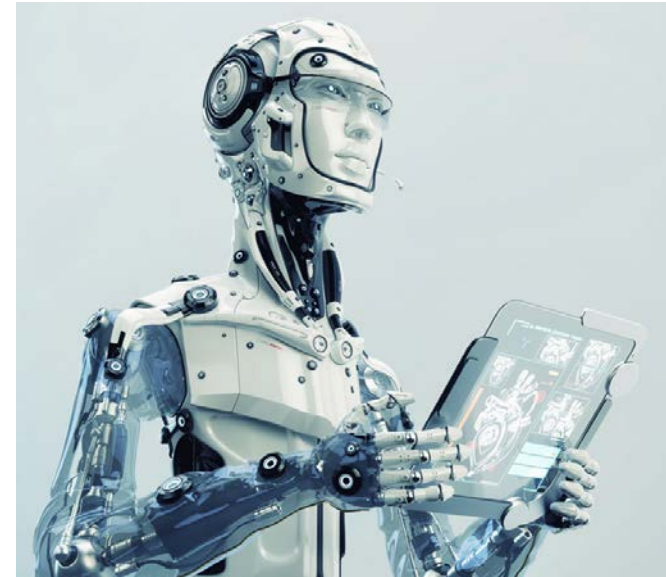


Trust in Technology

- Confidentiality, integrity and availability of information
- Prevalence and dependence on automation will change nature of work and workforce profiles

IMPLICATIONS

- *How will new technologies change what is required and who (or what) will undertake ADF roles?*
- *How much trust to place in machines and what level of error do we tolerate from them?*



Smart Power

- R&D expenditure growth in Asia is sustaining their economic growth; improving quality of their military capability
- Shift from discovery to mastery, providing opportunity for innovation, creativity and collaboration

IMPLICATIONS

- *Could Australian R&D capability wield “smart power” in region?*
- *What Australian technology must we maintain?*



Innovation Enterprise

- Global Middle in Asia will drive big shifts in consumption
- Commercial off-shoring to multinational compacts
- Agile manufacturing will supplant conventional production



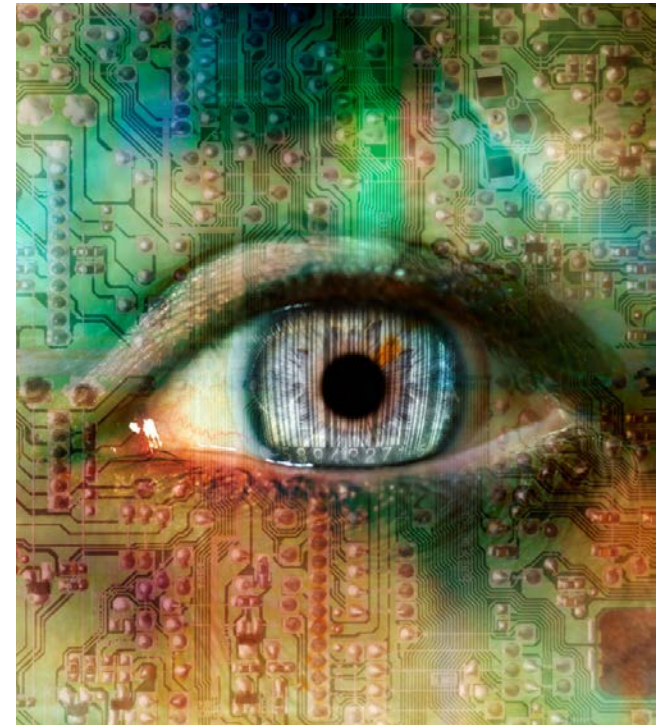
IMPLICATIONS

- *How will Defence adapt to not having full control of its critical capabilities ?*
- *Will new business models give Defence back some bargaining power?*



Next Steps

- Report - a starting point for informing:
 - Future S&T investment
 - Opportunities for collaboration
 - Input to White Paper
- Comments invited before finalising *Forward 2035* report for launch in March-April timeframe
- Visit DSTO website to comment
www.dsto.defence.gov.au/forward2035/





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Thank You and Questions

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