



Capability: Our Best Foot Forward

DEFENCE+INDUSTRY CONFERENCE

June 30, 2011

Mark Hodge - CEO

Capability through collaboration

Vision & Mission

Vision:

Provide technology solutions enabling industry to enhance Australian Defence capability.



Mission:

Through industry lead collaborative research programs, DMTC will develop & deliver advanced materials/ manufacturing technology that is incorporated into Defence industry products and services.

Background

Defence Materials Technology Centre – DMTC Ltd.

- 1st Defence Future Capability Technology Centre (DFCTC) est. by Defence
- Business model based on the successful CRC program
- Funded for an initial period of 7 years from June, 2008
 - Core: \$90M program (\$30M - Defence, \$8M - States, \$52M – Participants)
 - Additional \$20M program in Personnel Survivability - activity through 2016
- Staff level ~75 FTE (10 HQ) around 130 headcount (with Program 7 at full rate)
- Major activities across NSW, QLD, SA & Victoria (HQ in Melbourne)



Core Participants



BAE SYSTEMS



University of Wollongong



THALES



Australian Government
Department of Defence
Defence Science and
Technology Organisation



Australian Government



THE UNIVERSITY
OF QUEENSLAND
AUSTRALIA



Supporting Participants



SEAL Solutions
Smart Engineering and Logistics Solutions Pty Ltd



GOODRICH



Associate Participants



Personnel Survivability Partners



Diggerworks
FOR THE WARFIGHTER



Australian Government
Department of Defence
Defence Science and
Technology Organisation



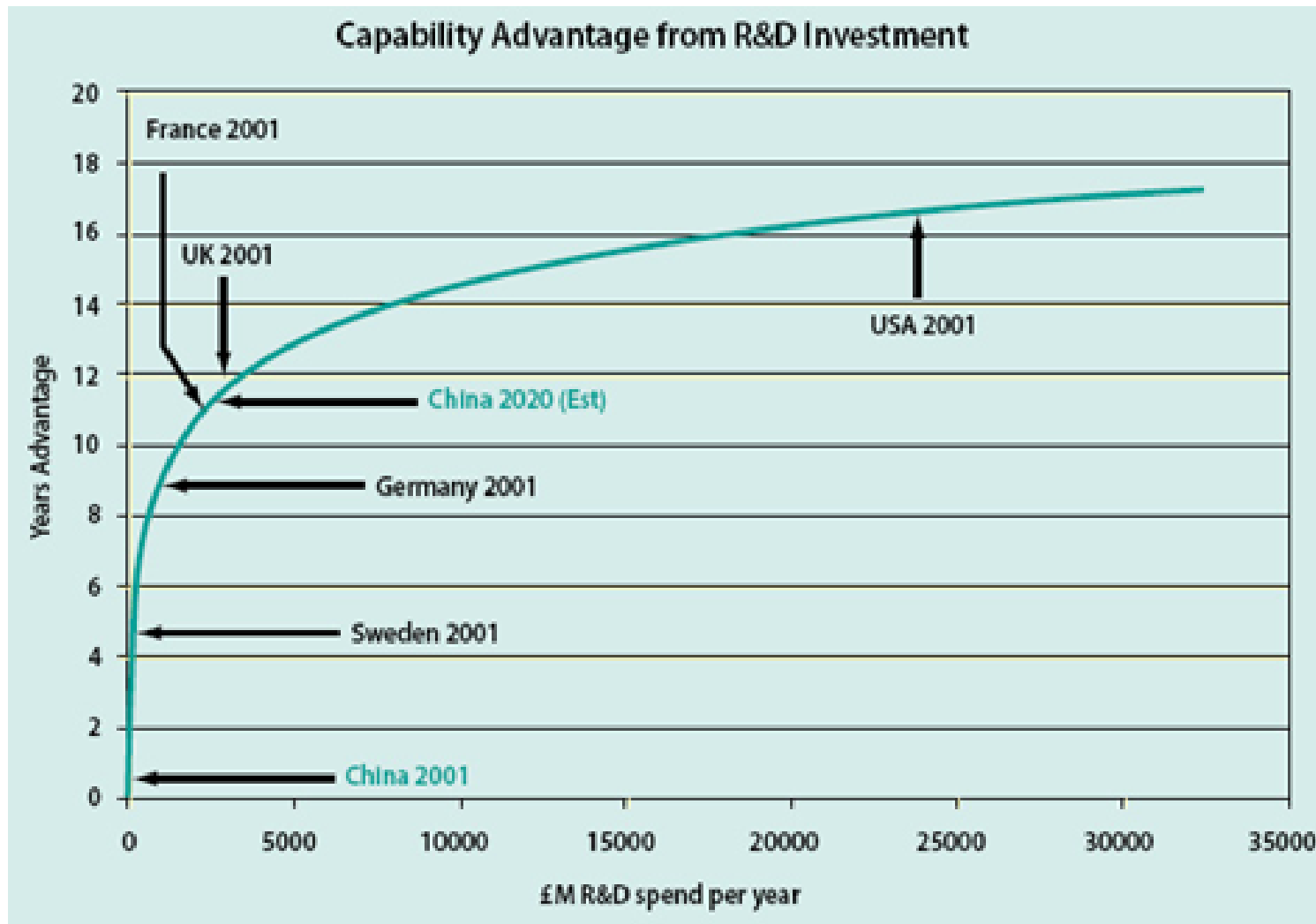
University of Wollongong



tectonica

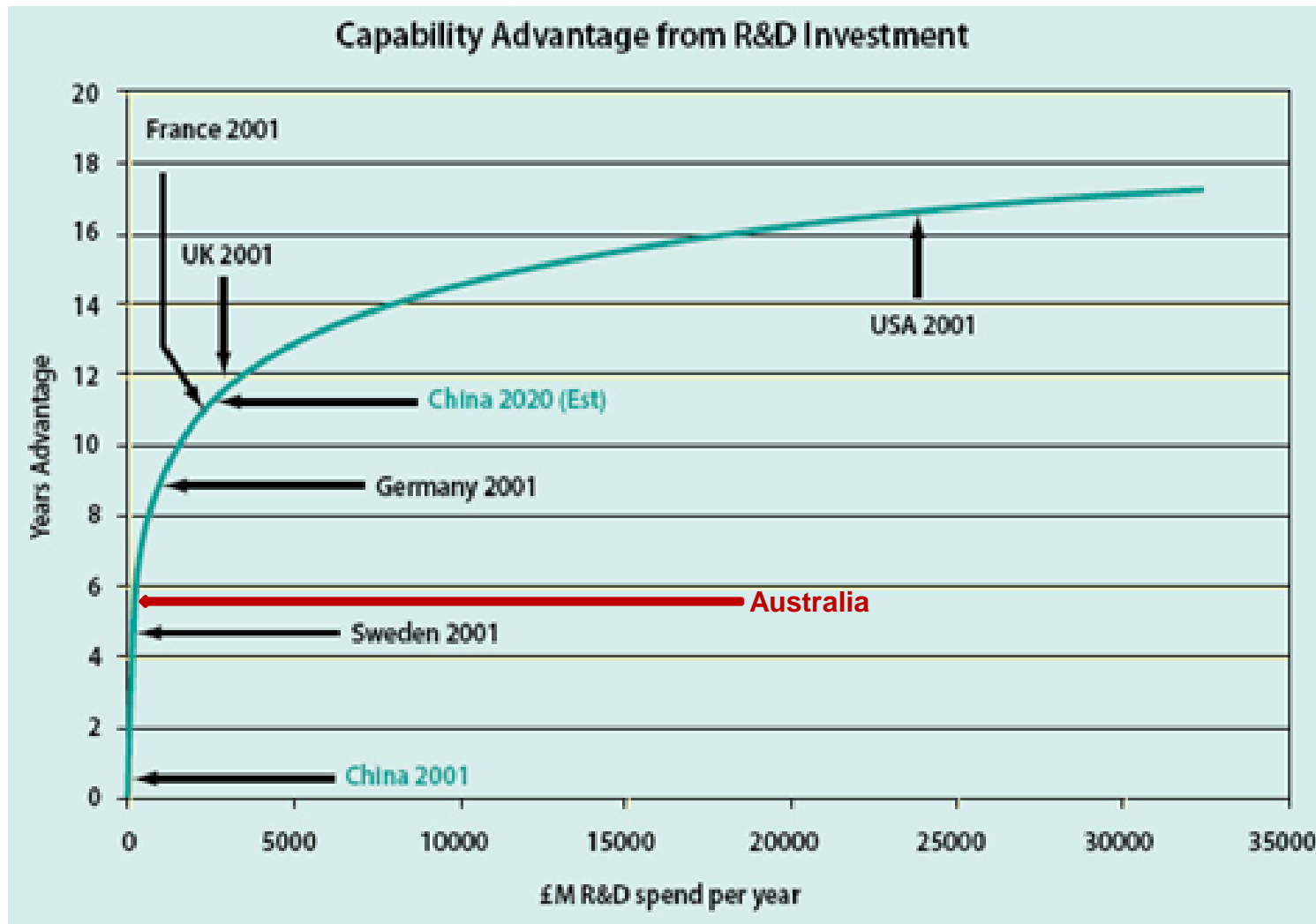


R&D: The Capability Case



Modified from UK Defence Industrial Strategy, December 2005 pg 39

R&D: The Capability Case



Modified from UK Defence Industrial Strategy, December 2005 pg 39

Activity Summary

- Production (eg. JSF vertical tail, AWD/LHD, Bushmaster)

- ~40%



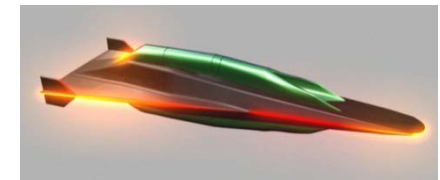
- Sustainment (eg. F/A-18, F135/136)

- ~40%



- Follow-on Development (eg. Hypersonics, subsurface materials)

- ~10%



- Response to Operational Capability Gaps (eg. Preliminary activities in leadup to Program 7)

- ~10%



Program-Technology Matrix



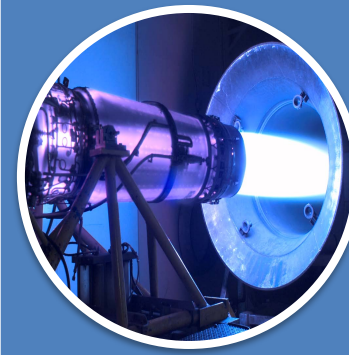
AIR PLATFORMS



MARITIME PLATFORMS



ARMOUR APPLICATIONS



PROPULSION SYSTEMS



PERSONNEL SURVIVABILITY

Titanium component fabrication & repair technologies

Prognostics, detection & repair for Al alloys

New generation composite materials & manufacturing processes

Robotics, automation & lean manufacturing

New ferritic materials & joining technologies

Manufacturing Process & Component Performance Modeling, Simulation & Validation

New manufacturing (additive manufacturing, laser-assisted manufacturing, etc.)

& composites

Textiles & Fabrics

Proposed Delivery Areas

1. Improvements to Current PPE Systems

- Reduction in weight, improved agility and better fit
- Improved ballistic protection of helmet and soft body armour
- Recognising and minimising Behind Armour Blunt Trauma

2. Extremity and Neck Protection

- Reduced weight
- Greater flexibility and wear-comfort
- Lower thermal burden
- Improved ballistic protection
- Systems integration

3. Burn Protection of Hands and Face

- Improved tactility of gloves
- Improved thermal insulation (gloves and balaclava)
- Reduced thermal burden (gloves and balaclava)

4. Head, Face and Eye Protection

- Better helmet system, functionality, weight and protection
- Reduction in weight and thermal burden of face protectors
- Improved eye protection against UV, dust, laser threats
- Improved comfort and visual acuity

Proposed Delivery Areas

5. Other Personal Protection Options

- Super-hydrophobic fabric - water repellent
- Integrated chemical & biological protection
- Reduced radar signature systems

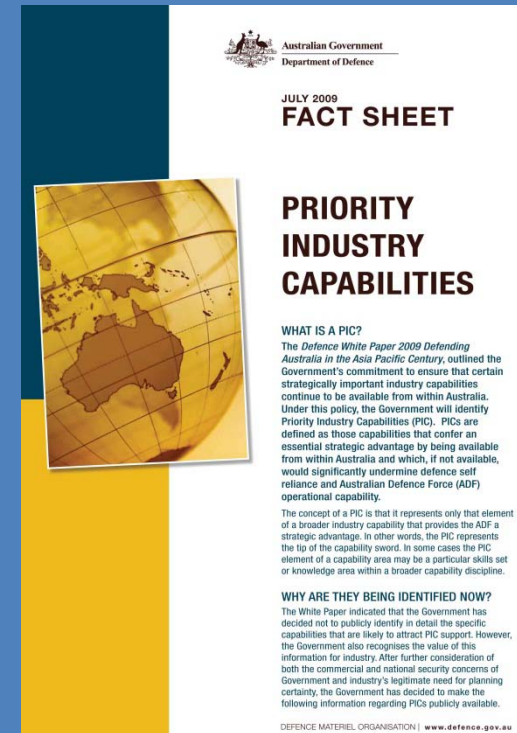
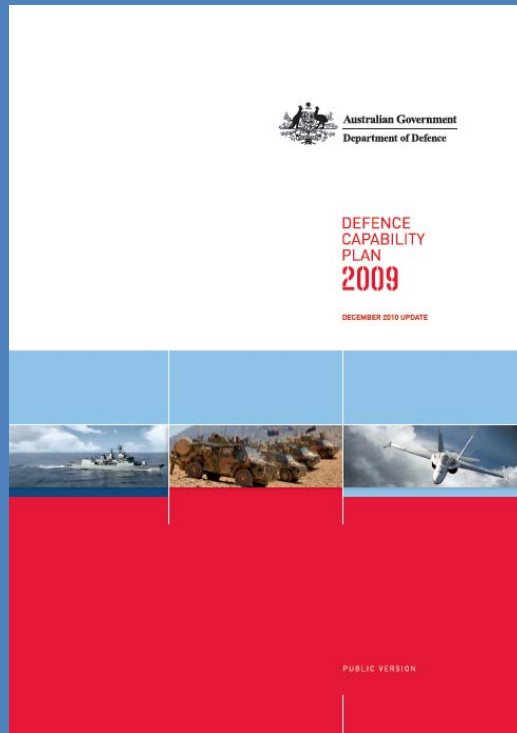
6. Injury to Humans and Response

- Human body models to quickly identify risks and opportunities
- Improved casualty care systems
- Increased probability of survival

Objectives

- Improve level of personnel protection for armed & support personnel
 - ↓ weight, bulk, cost etc.
 - ↑ multi-insult capability (blast/ballistic, agent protection)
 - ↓ signature (visible/IR/radar), adaptive/broadband materials
 - ↑ utility & fit (design integration, power management, anthropometry, load carriage, thermal management, etc.)
- Identify & exploit technical areas where we can actually impact physical performance systems
- Provide a path to the field consistent with ADF acquisition requirements
 - Address utilisation “valley of death” (eg. CTD chasm)
 - Practical enhancement of protection and/or performance of soldier/personnel

Strategic/Operational Context



Afghanistan – 2009*

Coalition Forces:

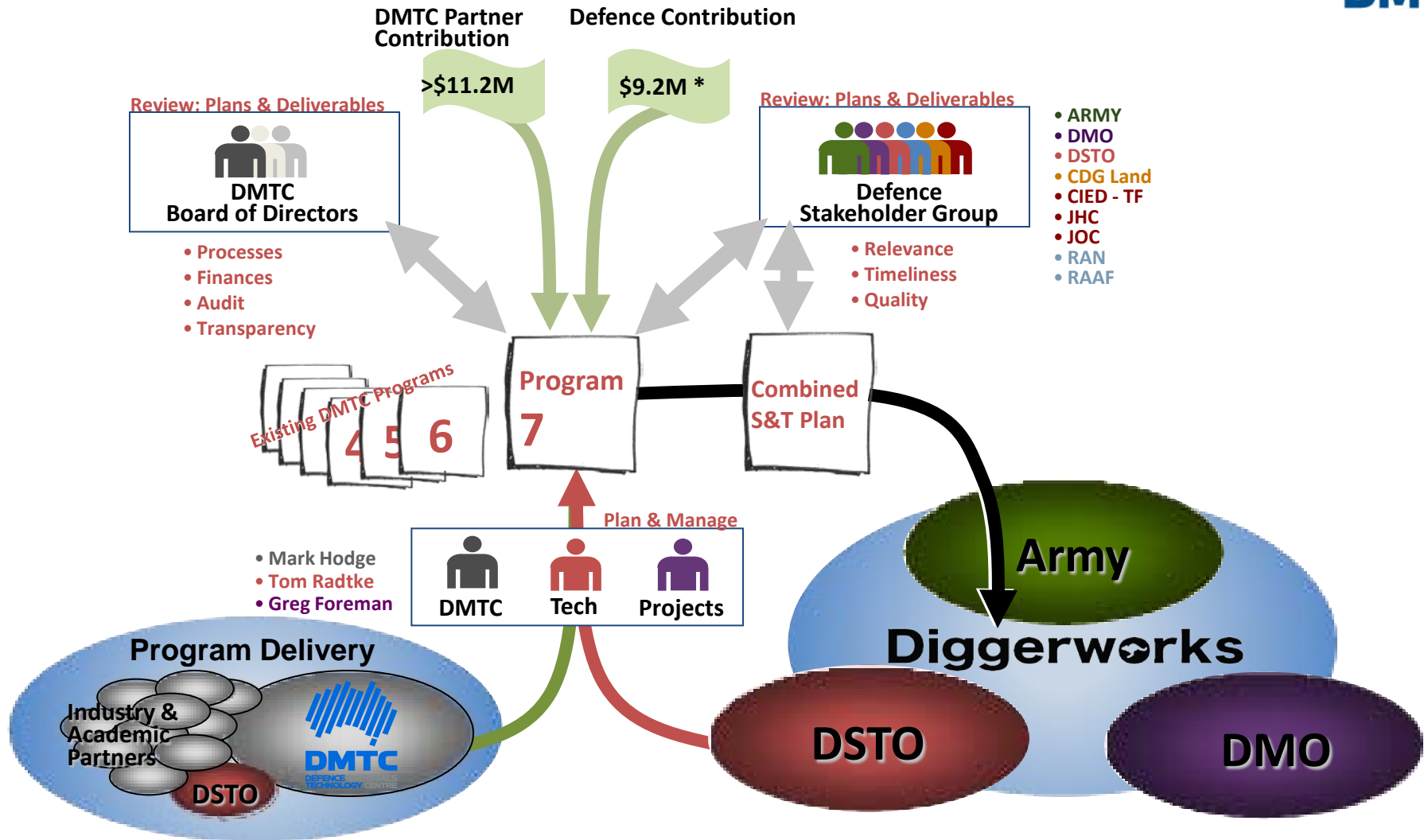
- 7,228 IED attacks
- 512 soldiers killed, (448 KIA)
- 280 of those were killed by Improvised Explosive Devices (IED)

ADF Forces:

- 1550 in theatre (around 50% of total global ADF deployment)
- 113 of 141 total ADF casualties between 2002 and 2009
- 31 of 37 ADF casualties in 2009 caused by IED either in dismounted or mounted combat operations.

*Defence website, March 2010

Program 7 Management



* includes DSTO contribution of ~\$1.7M cash & in-kind

* Over 5yrs

Proposed Technical Activities



1. Ballistic, Blast & Flash Protection

- Novel ceramic, metallic, polymeric materials
- Composites & laminates.
- Design, manufacture, verification & validation
- Systems integration

2. Signature Reducing Characteristics

- Coatings, novel materials
- Modeling
- Design & design integration
- Manufacture, verification & validation
- Systems integration

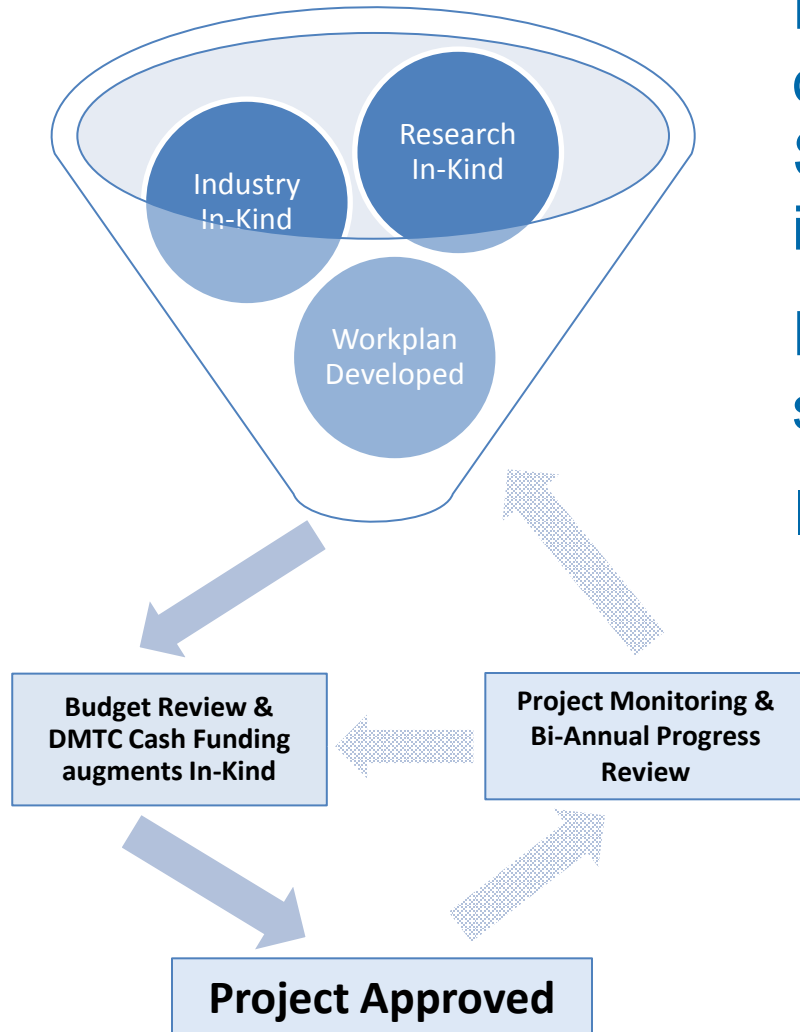
3. Utility, Fit & Comfort

- Materials solutions (joining & fastening technologies)
- Modeling & design (incl. aesthetics)
- Modularity
- Manufacture & integration

4. Environmental (airborne threats including CBR & thermal environment)

- Integrated or active/passive cooling
- Energy harvest
- Materials solutions
- Design, manufacture & integration

Operational Model



Partners leverage Commonwealth & outside investment against partner S&T capability through collaborative, integrated supply chain model

Formal program management structure in place

Industry/End User-Led Project Focus

- Industry treated as “first amongst equals” for purposes of project development, utilisation/ commercialisation pathway
- Projects without strong path to utilisation (end-user involvement) are “at-risk”

Value for money

- SC model, industry focus drives relevance, value for money
- Each party leverages contributions of others
 - Typical ~4:1 leverage
 - Drives co-investment
- Financial Management
 - Low & controlled overhead
 - Contributions from industry and research sector expected to grow over the life of the current Commonwealth contract.
- Industry focus and Defence aligned project evaluation through Diggerworks maximises relevance to Defence
- No direct linkage to procurement process
- Best value proposition is preserved – Capability Enhanced

Early Outcomes

Advanced, armour-grade ceramics

- Capability to produce complex shaped strike-face materials
- “Best of Breed” technology – no equivalent global capability
- Local production capability ~ July 2011
- PIC: Combat Clothing & Personal Equip.
- 100% import-replacement



Helmet development

- R&D/pilot scale production of lightweight combat helmet
- Significant ↓ weight & modest ↑ ballistic performance confirmed

Ballistic Fabric

- Ballistic/blast resistant fabrics (groin protection) - license in neg.

IP Management



Robust Model – geared towards rapid utilisation of technology

DMTC Gets:

- Guaranteed access to background IP
- Legal and beneficial ownership of project IP

Participants Get:

- Automatic, royalty-free & non-exclusive rights to project IP

Restrictive Covenants:

- IP use is Field Limited & restricted to local entity only on royalty-free terms
- Project Based
- Minimum contribution required to trigger access

Defence Gets:

- **Best Value: Improved capability in products & services**

Contact

Dr. R. Mark Hodge – CEO

Level 2, 24 Wakefield Street
Hawthorn, Vic 3122
Australia

Email: mark.hodge@dmtc.com.au

Ph: +61 (3) 9214 4447

Fax: +61 (3) 9818 0622

