



CRACKING THE 'NUT'

Integrated Soldier Combat Systems Solutions for the Australian Digger



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SCOPE

- **The ‘Nut’:**
 - Achieving integrated Soldier Combat Systems while ensuring continual enhancement.
- **How to crack it:**
 - Diggerworks
 - Soldier Combat Systems Development Cycle
 - Focus on Integration – Reduce the Burden
 - Adaptive Acquisition
- **Outcomes and Activities**



Achieving and Integrated Soldier Combat System

- Recent operational experience has highlighted the need for a focused approach to the development, adaptation and integration management of soldier combat systems.
- The Australian Defence Force is seeking a more responsive and ‘adaptive acquisition’ approach, whereby rapid feedback and modification of equipment should be adopted to meet the Force Generation cycle.
 - Brigade Rotation Model - **Ready, Reset, Readying**



Australian Government

Department of Defence

Defence Materiel Organisation

LAND SYSTEMS DIVISION

Diggerworks

FOR THE WARFIGHTER



What is Diggerworks

- A virtual organisation comprising agencies involved in soldier combat systems (SCS):
 - Modernisation & Strategic Planning Army, Capability Development Group, Defence Materiel Organisation and Defence Science and Technology Organisation.
- Is based around the Integrated Soldier Systems Development Directorate in Land Systems Division:
 - Soldiers, Engineers, Project Managers, Scientists.
- Facilitates and coordinates the collaboration of the agencies in defining and delivery SCS capabilities.
- **Diggerworks is not Land 125 rebadged.**



Mission

Diggerworks is to identify options and deliver **integrated** soldier combat systems solutions in order to enhance the capability of the warfighter.



Purpose

- **Development** – Continually improve SCS. Find solutions that enhance the performance of the soldier.
- **Systems integration** - The soldier is an integrated system, not an aggregation of individual components (remove the Christmas tree effect).
- **Configuration management** - Army, through the Integrated Soldier Systems Development Directorate, has informed control over soldier combat system.
- **Modernisation** - Develop the requirements of the future soldier systems within the context of Army's force modernisation objectives and Defence capability development plans. **Land 125 Phase 4.**



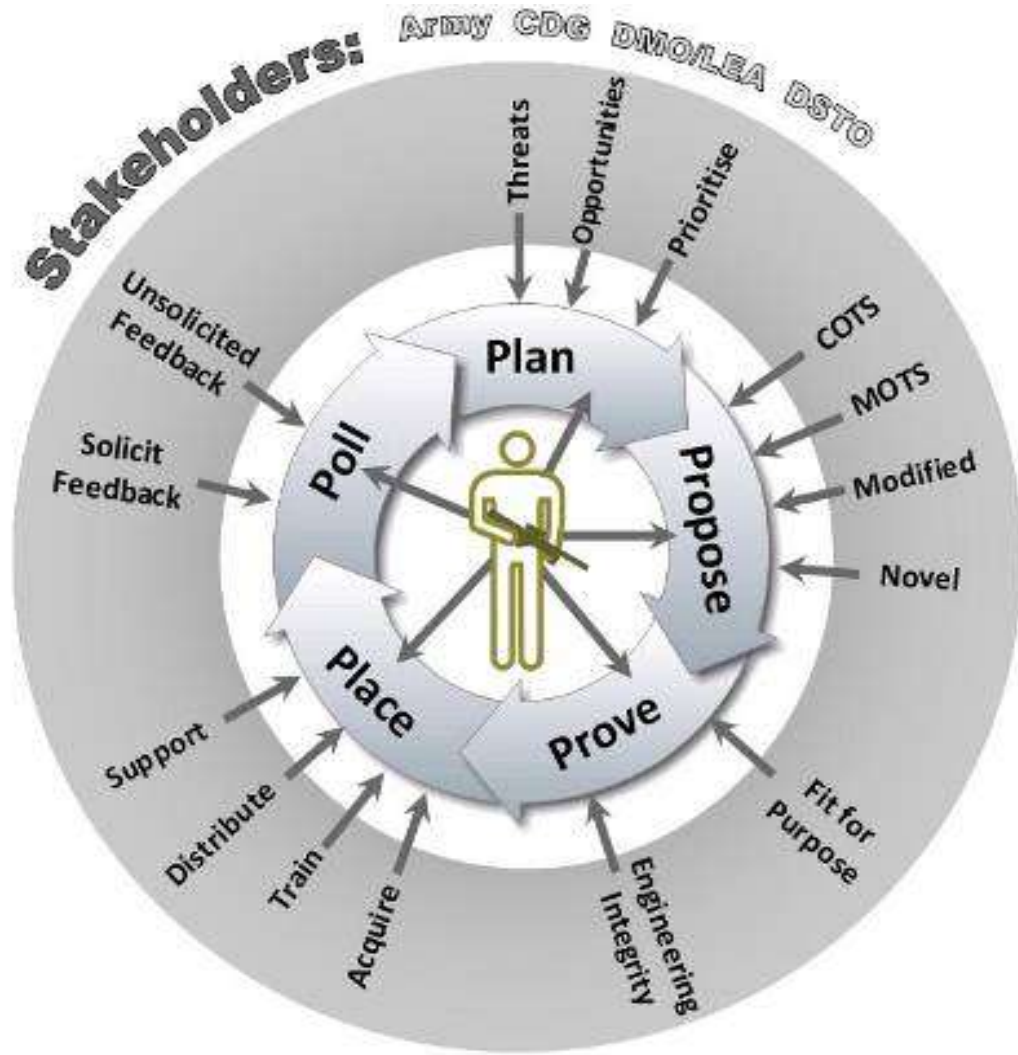
Method

- **Identify the problem or requirement**
 - From the field
 - From modernisation concepts
- **Analyse options**
 - Technology evaluation
 - Industry engagement
- **Develop or identify the integrated solution**
 - Science and Technology
 - Design Engineering
 - Test and Evaluation
- **Hand off to Program for acquisition**





SCS Development Cycle





Key Requirements to make it work

- Constant and effective engagement with the user and industry.
- Soldier feedback. **This is not passing the buck.**
- An adaptive acquisition process that provides for a continual enhancement of soldier combat systems.



Diggerworks Focus

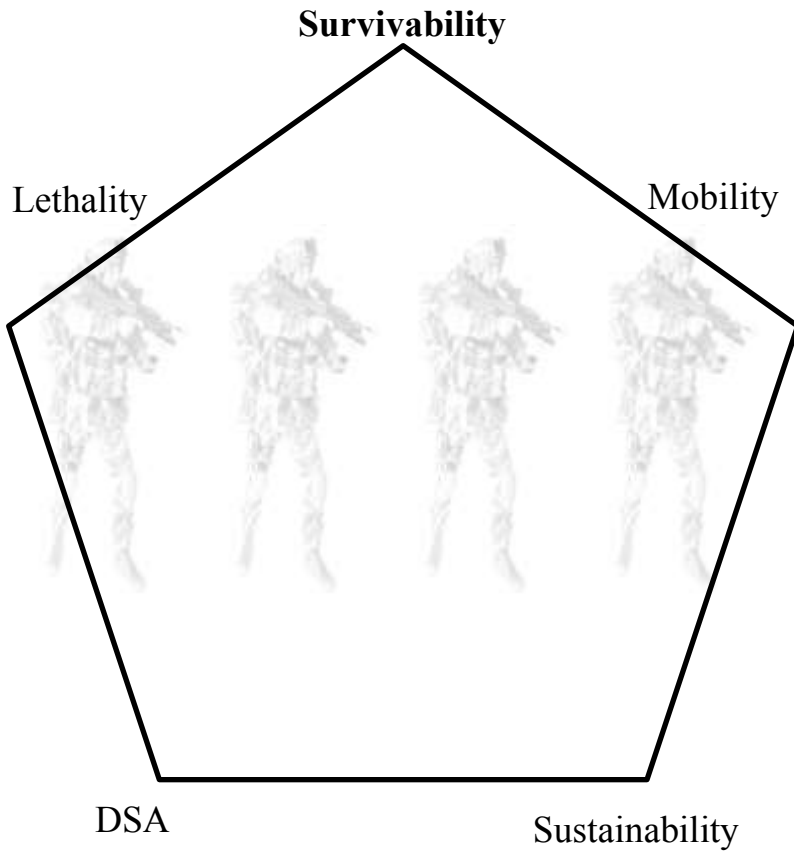
- **Integrate** current soldier combat systems:
 - **Reduce the burden**
 - **Increase survivability:**
 - Protection
 - Mobility
 - Lethality
 - Dismounted Situational Awareness
 - Sustainability
 - Improve interoperability.
 - Integration of the individual within the Tactical Small Unit.



The Integrated Soldier System?



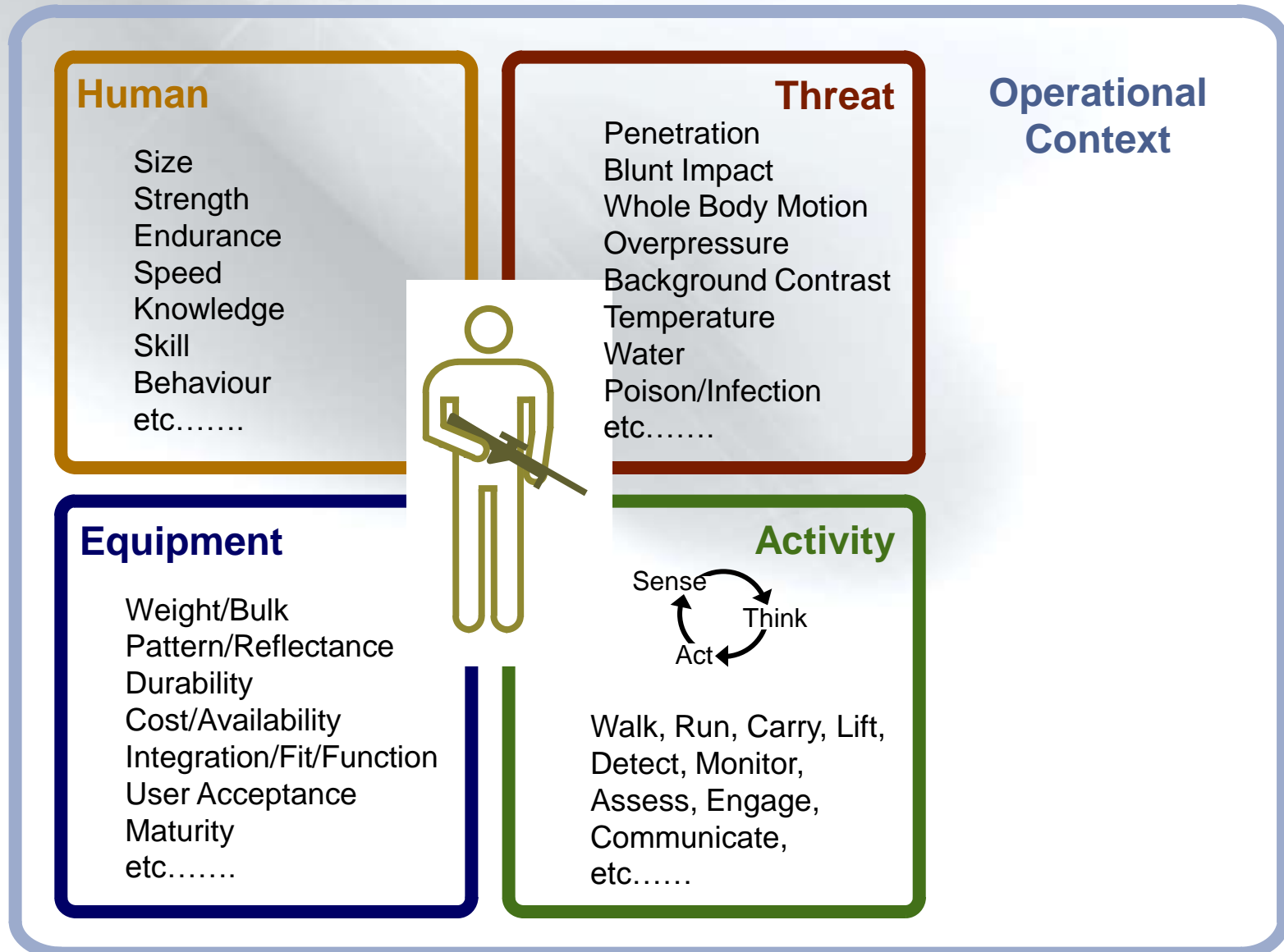
BALANCE AND INTEGRATION



Development of an Integrated Soldier System through successive and considered enhancement

The Parameters of Human-System Performance

Understanding the implications of these parameters on system **fitness-for-purpose** underpins effective decisions. Critical insights across these domains are distributed across the stakeholder group, or remain to be discovered.





Key Outcome

- **Diggerworks is recognised as the configuration and integration manager for the close combatant.**





Adaptive Acquisition

- A concept that supports the continual development, design and/or procurement of equipment to enhance the capability of the combat soldier.
- In terms of SCS this is based on a ‘refresh’ concept where current close combat capabilities are upgraded through industry innovation, technological advances, and in-house solutions.



Adaptive Acquisition

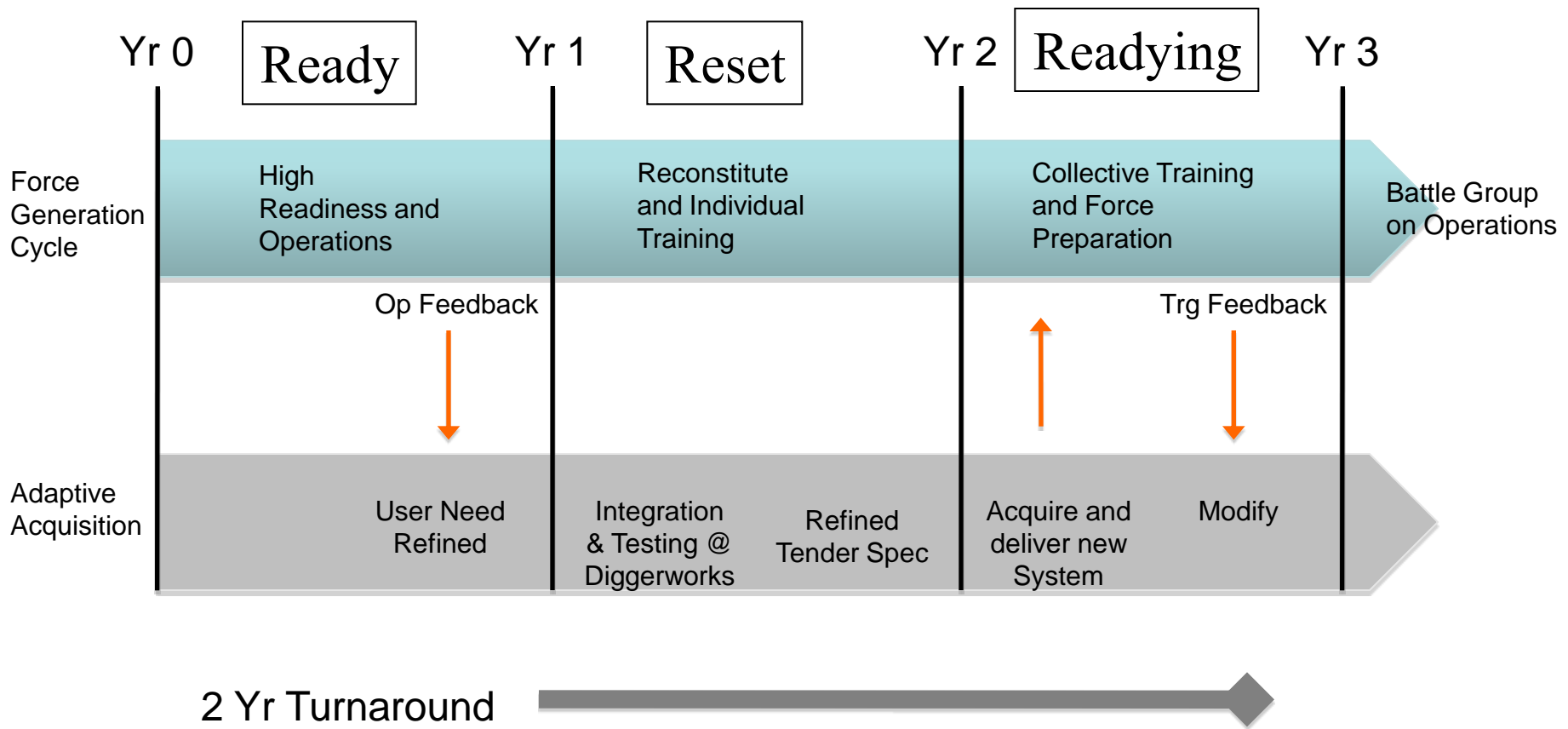
- ‘Buy less more often’.
- Enable change to happen quicker.
- No longer is everyone to be equipped the same.
- The close combatant is to be treated differently.



Adaptive Acquisition

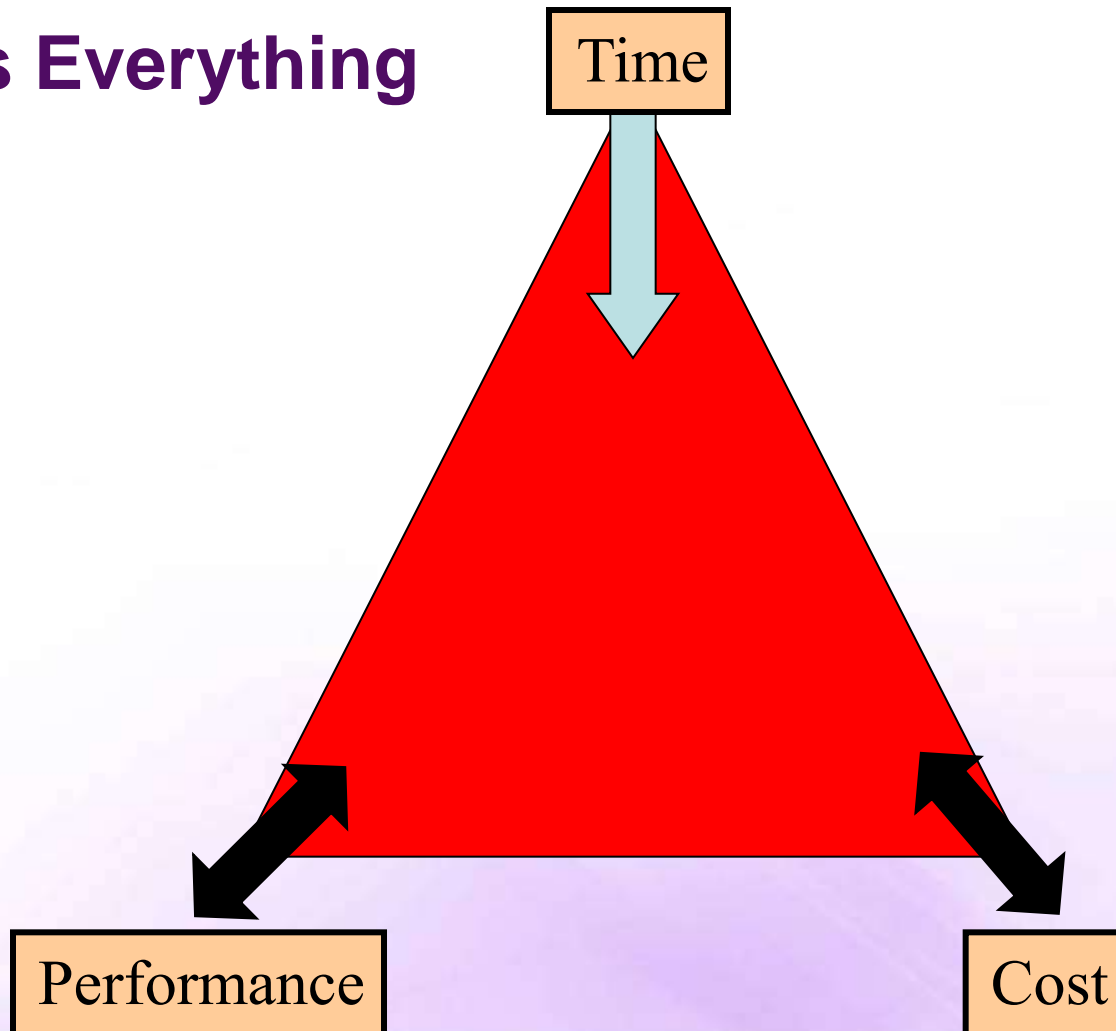
- **Tiered Approach for equipping the soldier:**
 - Tier 1 – Specialist
 - Tier 2 – Close Combatant
 - Tier 3 – General Combatant

Adaptive Acquisition in Support of the Force Generation Cycle





Time is Everything

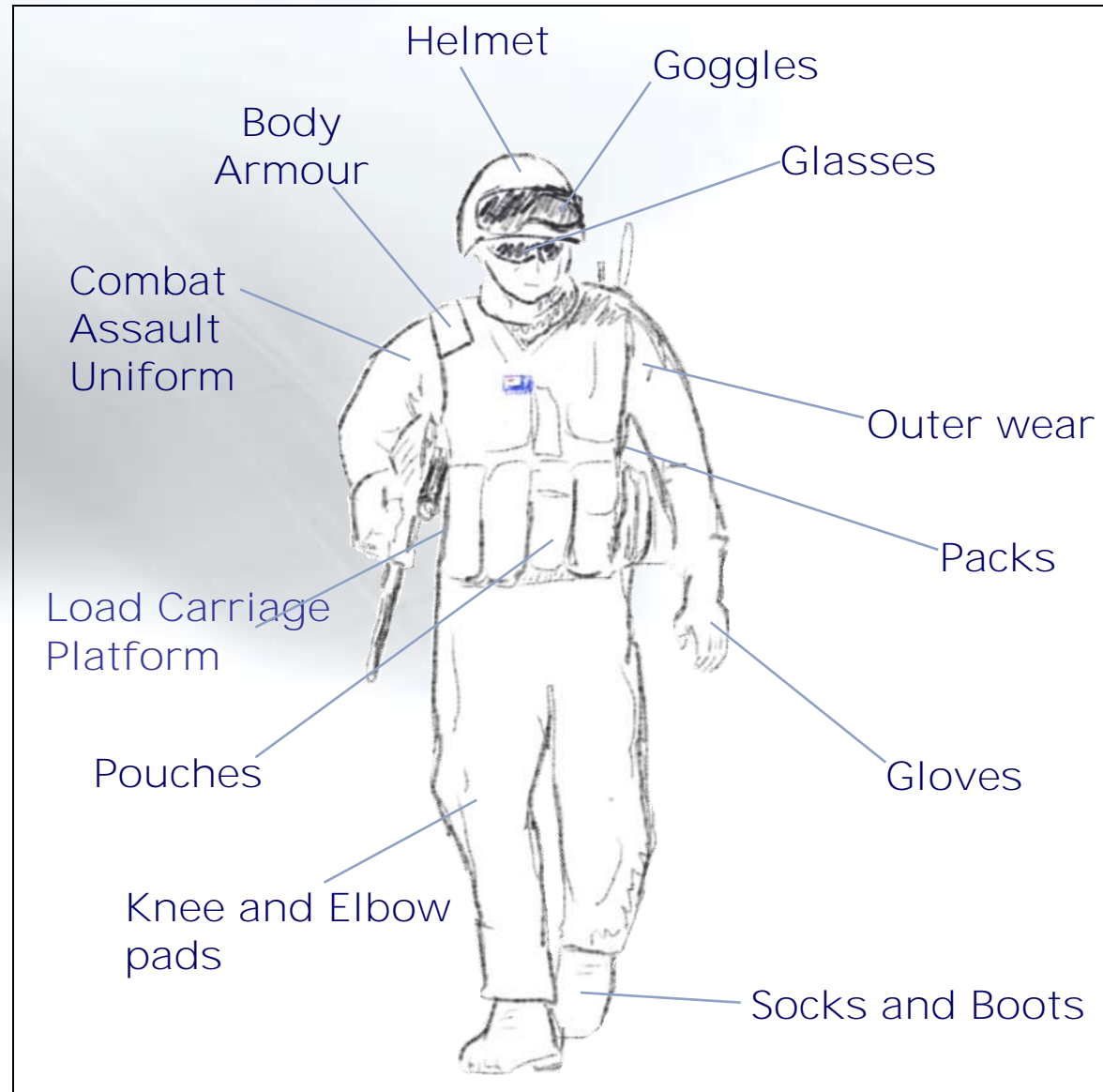




OUTCOMES

Soldier Combat Ensemble (SCE)

- The SCE is a sub-system of the Soldier Combat System.
- It includes those items that a combat soldier wears to provide him the ability to carry equipment or provide physical protection from the environment and threats.



Enhanced Soldier Combat Ensemble for Close Combatants in Afghanistan

Pack-Carry-All



BLOPS-G



Ballistic Glasses

Enhanced Combat Uniform



Pack-Small



TBAS

TBAS - Pouches

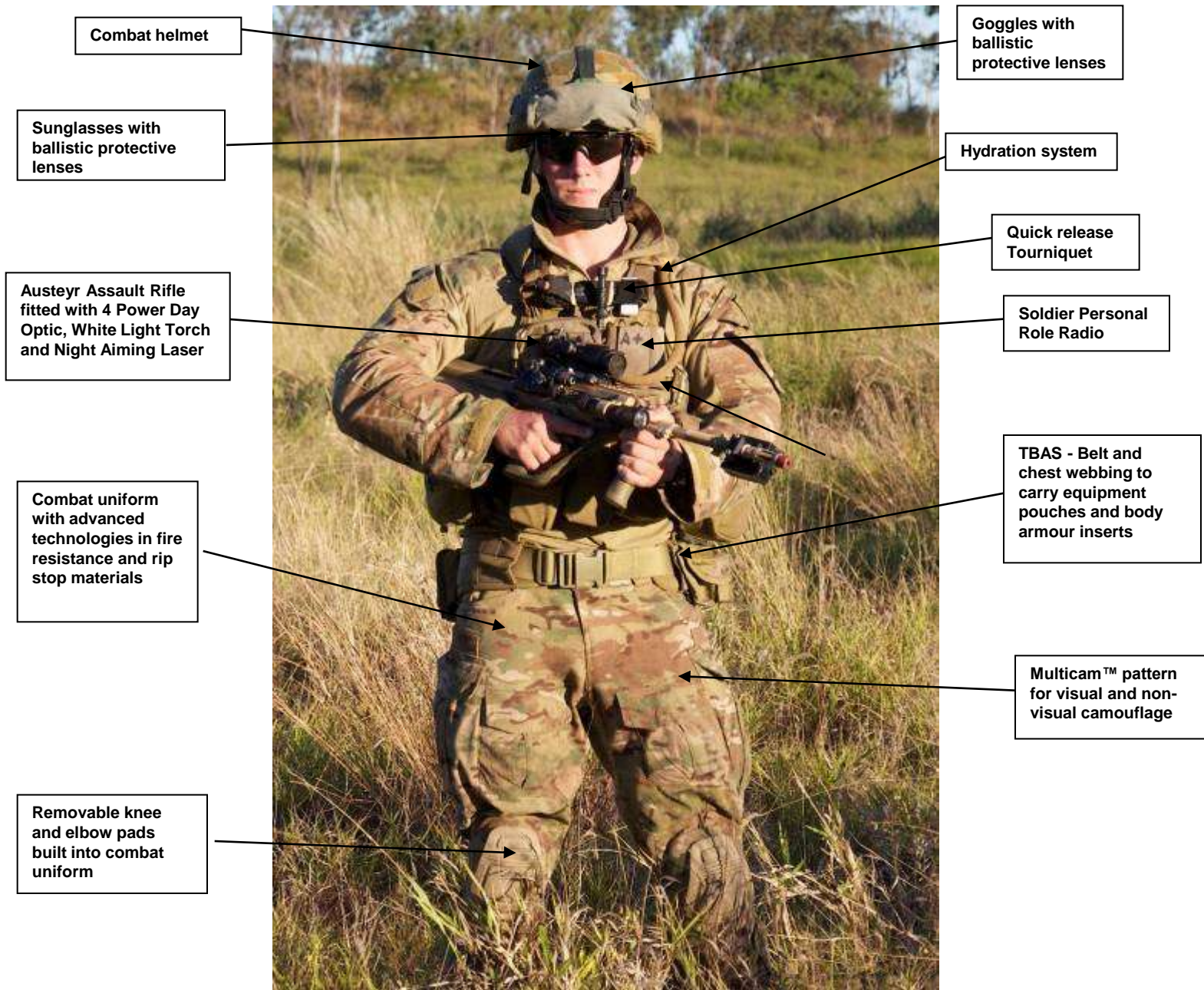




TBAS Design Methodology

- Design conducted as an iterative development.
- All development work driven by input from the soldiers.
- All major design decisions must be evidence based and cleared by a Design Review Board made up of representatives from each of the units participating in the user trials.
- All user trials to be managed by an independent authority.
- Pre production samples to undergo a soldier review before production is approved.





Combat helmet

Goggles with ballistic protective lenses

Sunglasses with ballistic protective lenses

Hydration system

Austeyr Assault Rifle fitted with 4 Power Day Optic, White Light Torch and Night Aiming Laser

Quick release Tourniquet

Soldier Personal Role Radio

Combat uniform with advanced technologies in fire resistance and rip stop materials

TBAS - Belt and chest webbing to carry equipment pouches and body armour inserts

Multicam™ pattern for visual and non-visual camouflage

Removable knee and elbow pads built into combat uniform

THE ARMY CLOSE COMBATANT



Current Activities

- Pelvic Protection Systems
- Integrated Hearing Protection
- Individual Water Purification
- Combat Helmets
- Anthropometric study of personnel across Army.
- Development of an ADF standard for the ballistic resistance of body armour.
- Developing concept technologies with Defence Material Technology Centre - Program 7





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