

# **Safe Safekeeping:** **Protection for Peace Keepers / Border Control**

## **4<sup>th</sup> Biennial Conference**



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**10 October 2012**

# Outline



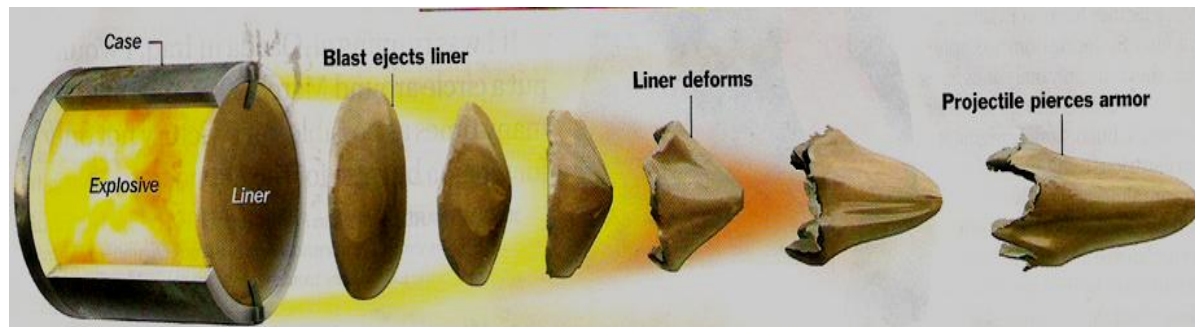
- Introduction
- Landward Sciences competency areas
- Border safeguarding:
  - Mobility packages
  - Protection against dangerous animals
  - Camouflage

Landward Sciences  
conducts research in the areas of  
detonics, ballistics, protection and operator support systems  
that focuses on keeping the soldier safe  
from landward threats.



# Introduction

- Examples of landward threats include:
  - Landmines
    - Anti-vehicle
    - Anti-personnel
  - Improvised Explosive Devices (IED's)
  - Explosively Formed Projectiles (EFP's)
  - Enemy fire
  - Vehicle accidents
  - Dangerous animals?
- To protect personnel and equipment against both existing and emerging threats, the threats must be researched and new protection concepts devised.

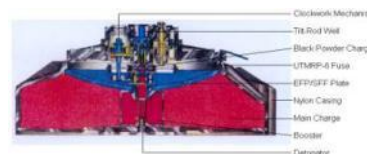


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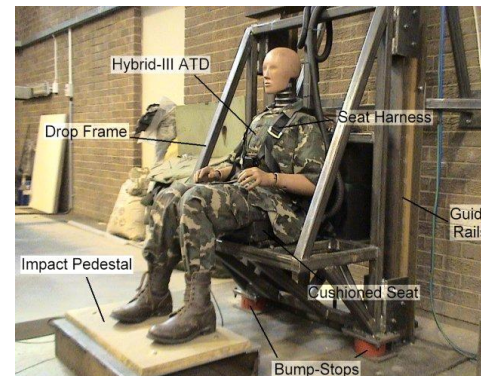
# Landward Sciences Key Competency Areas

- **Vehicle protection**
- Human vulnerability
- Blast characterisation and Blast enhanced explosives research
- EFP, SC, warhead and IED protection research
- IED disruption
- Explosive remnants of war
- Soldier systems
- Vehicle mobility
- Test, measurement and evaluation
- Short-duration computational modelling



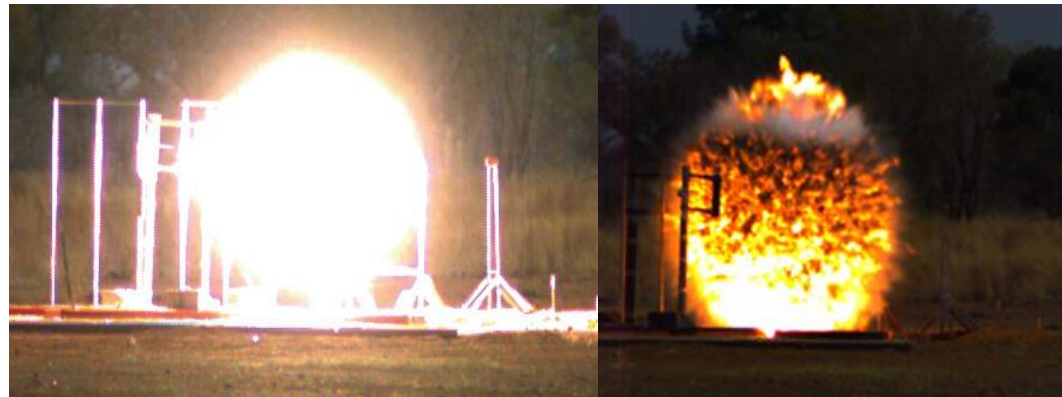
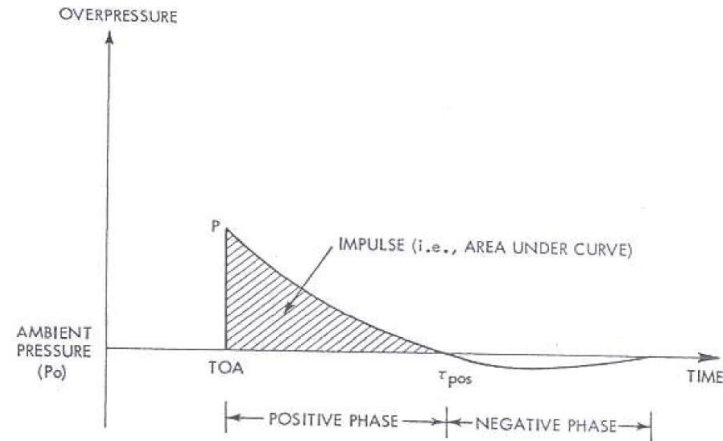
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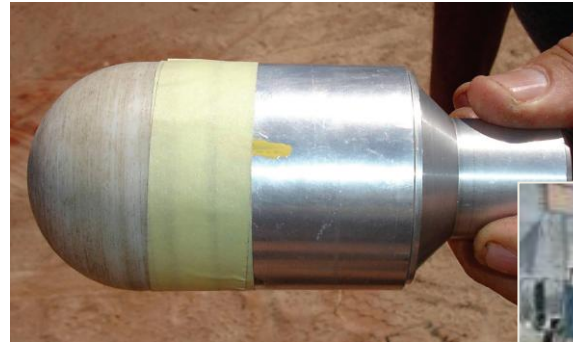
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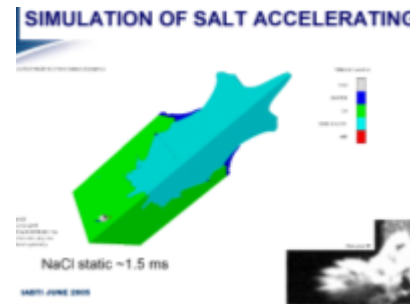
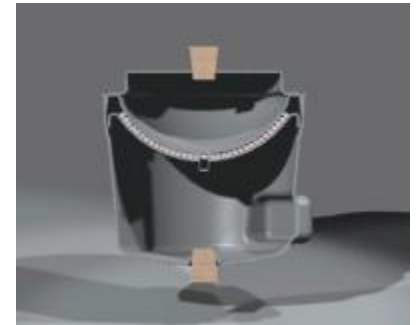
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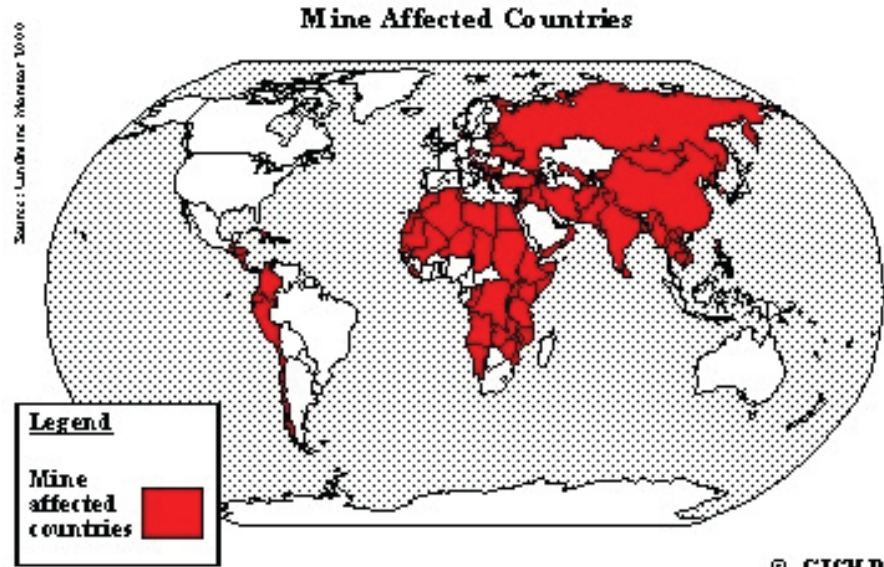
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- Vehicle mobility
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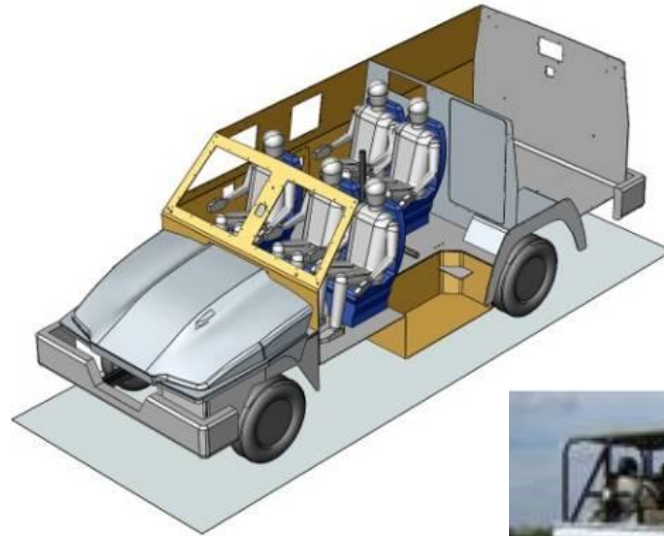
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- **Soldier systems**
- Indirect fire weapons
- Vehicle mobility
- Specialised security technology
- Test, measurement and evaluation
- Short-duration computational modelling



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- **Vehicle mobility**
- Test, measurement and evaluation
- Short-duration computational modelling



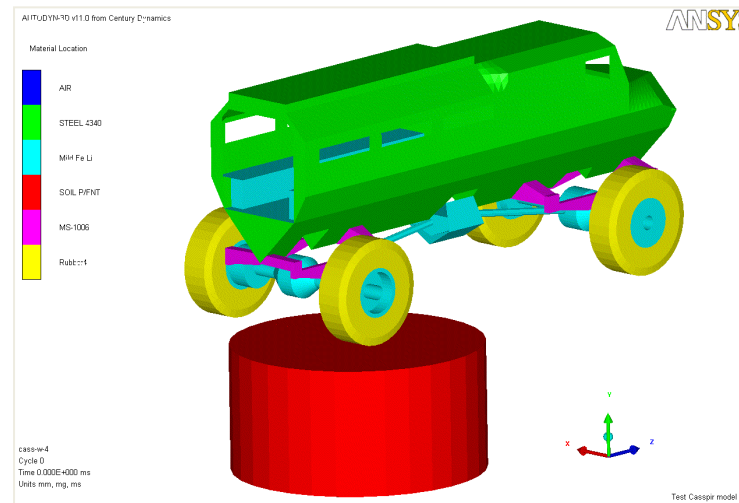
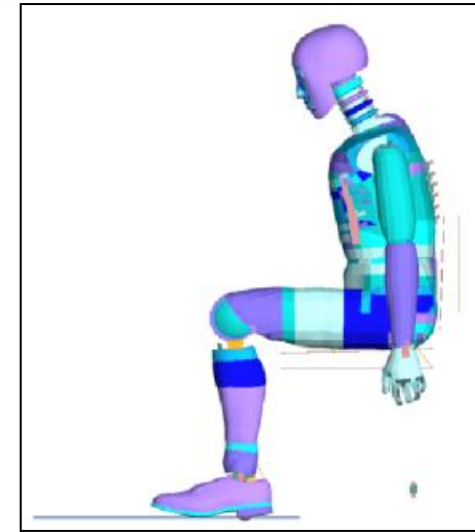
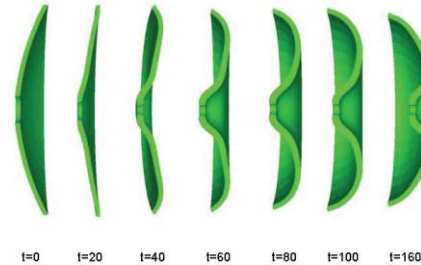
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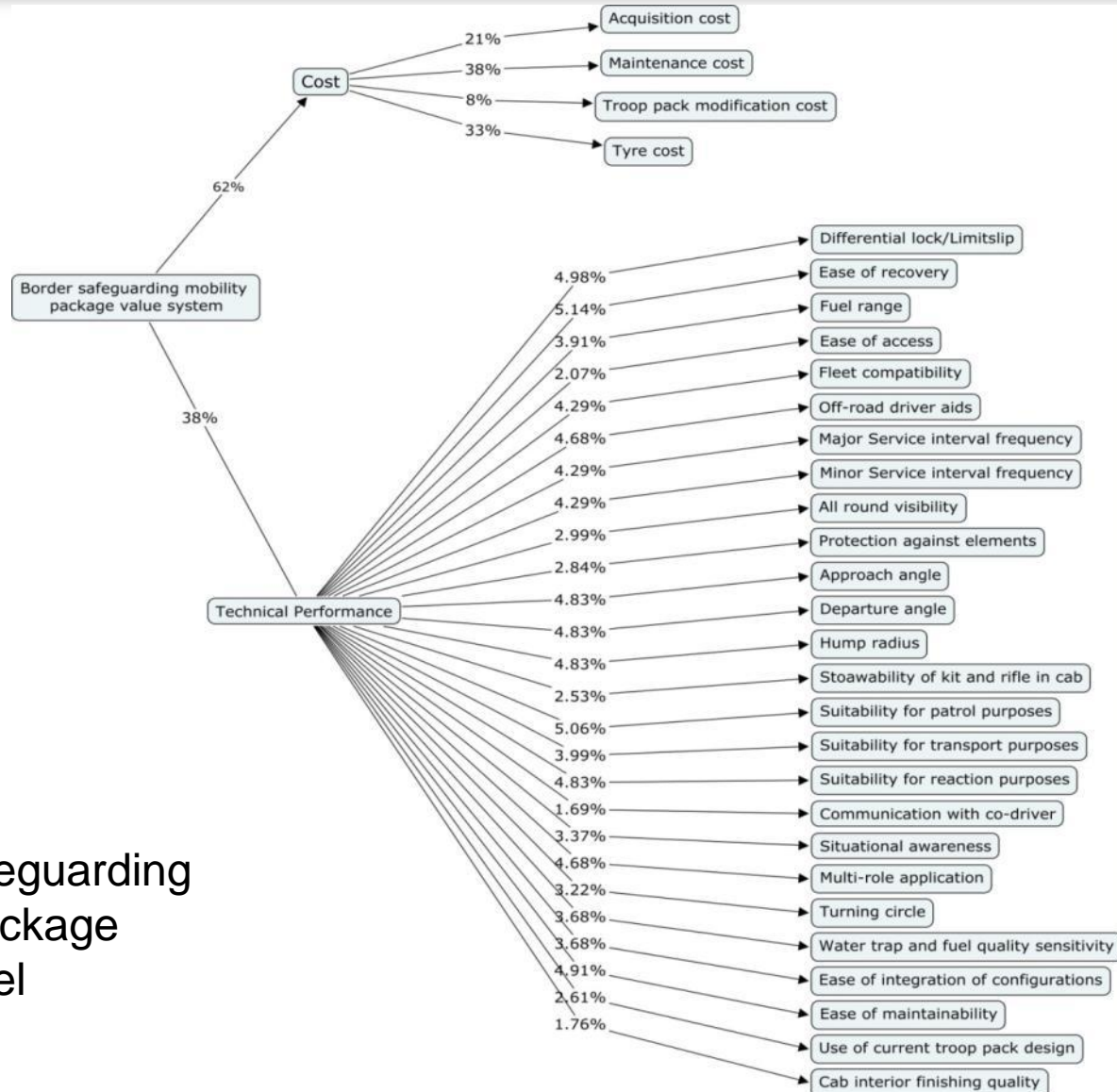


# Border Safeguarding: Mobility Packages

- Requirement for vehicles to be used for border patrol purposes
- Family Of Vehicles (FOV) concept
- Standard platform onto which different modules can be fitted
- Modules:
  - Troop vehicle
  - Logistics vehicle
  - Command and Control vehicle
  - Ambulance
  - Sensor vehicle (future development)



# Border Safeguarding: Mobility Packages



- Border safeguarding mobility package value model

# Border Safeguarding: Mobility Packages

- Troop vehicle

- Roll over protection structure certified according to ISO3471
- Incorporates floating mounting system developed in conjunction with Toyota
- Carry 5 passengers in rear (+2)
- 20l Water container
- Canvas provides protection
- Flip-up seats
- 4-point seatbelts
- Provision for rifles



# Border Safeguarding: Mobility Packages

- Logistics vehicle

- Fuel dispensing system – 180l
- Water dispensing system – 120l
- Rations and general log items carrying
- Heavy duty Tow bar
- Tyre inflation system
- Fire extinguishers
- Light recovery capability – A-frame, tow straps and high lift jack



# Border Safeguarding: Mobility Packages

- Command and Control vehicle
  - Common roll over protection structure as ambulance
  - Can accommodate 4 people in transit, 5 people static
  - Independent power management system
  - Accommodates:
    - Integrated tactical C&C system
    - UHF and HF communications
    - Ground to air communications
    - Tactical operational administration functions
    - Tactical inter-departmental co-ordination
    - Tactical situational awareness



# Border Safeguarding: Mobility Packages

- Ambulance

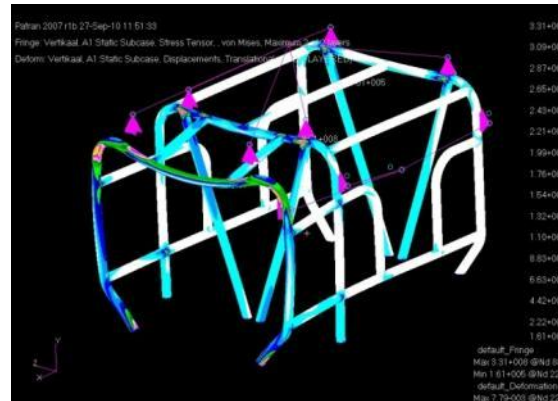
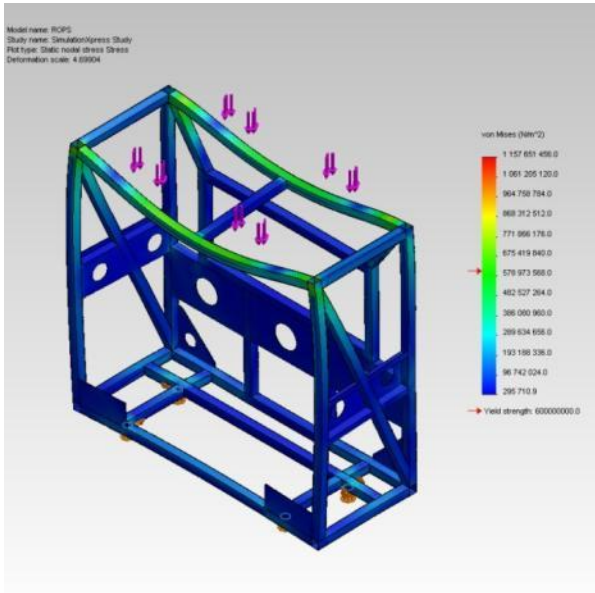
- Common roll over protection structure as command and control vehicle
- Can accommodate 2 people lying down or 1 person lying down and 2 people seated, in addition to the driver and 2 medics
- Contains all basic medical equipment



# Border Safeguarding: Mobility Packages

## • Roll over protection structure

- Design
- Material selection
- FEA
- Concept demonstrator
- Structural testing
- Certified to ISO3471
- Approved by OEM



# Border Safeguarding: Mobility Packages

## • Evaluation

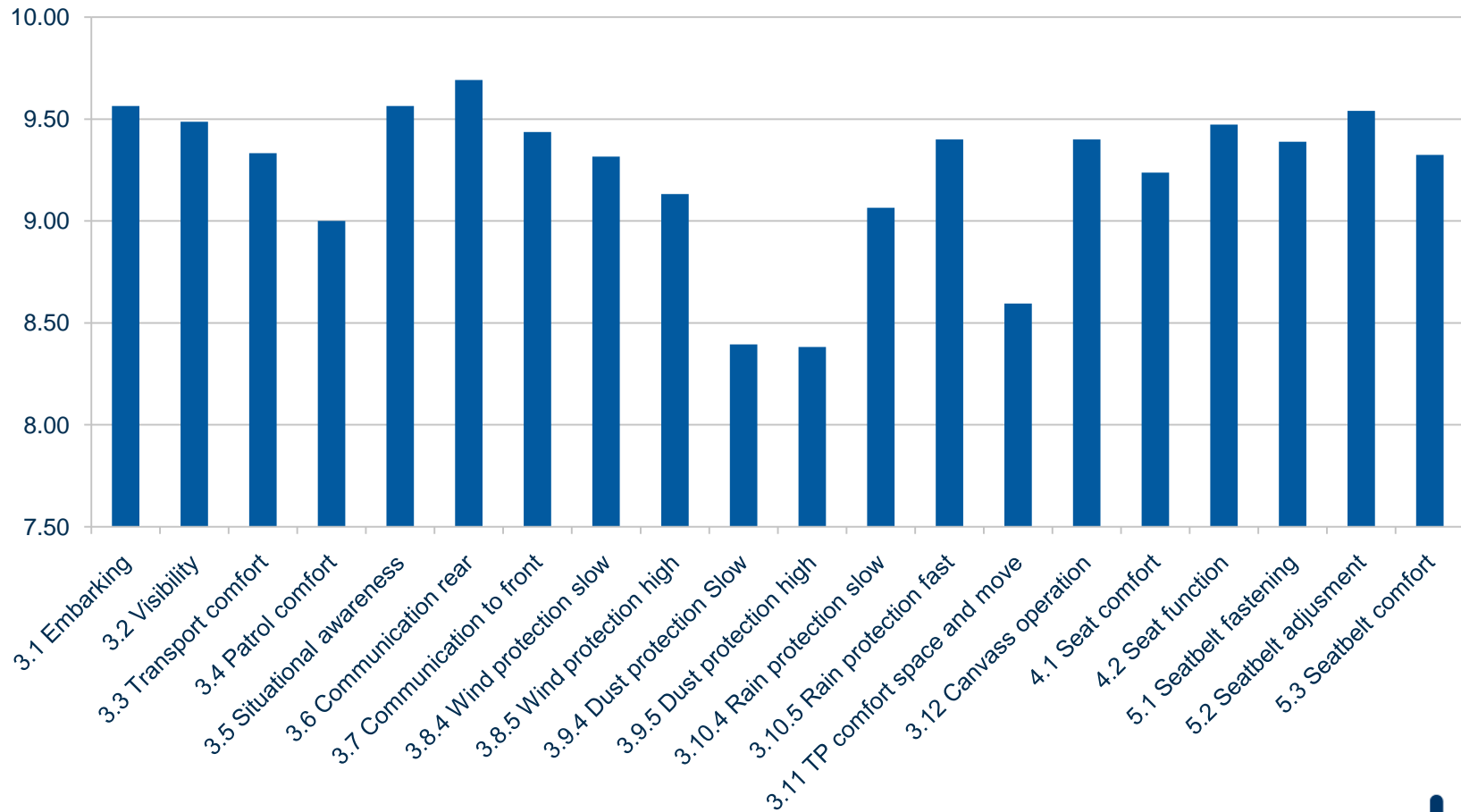
- At Gerotek Test Range:
  - Tilt testing (32 )
  - Belgian paving
  - Sine track
  - Rough track
- Field testing:
  - In areas of operation
  - Different terrains
  - Day / Night





# Border Safeguarding: Mobility Packages

- Feedback from troops



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# Border Safeguarding: Protection from Dangerous Animals

- **CJ Ops Requirement:**

- Protect soldiers when deployed in SANParks areas
- Using COTS technologies
- Approved by SANParks



- **Positive feedback on the following COTS products:**

- **Early warning systems:**

- PIR early warning
- Electronic tripwires

- **Identification:**

- Torch

- **Deterrents:**

- Electric fence
- Air horn (Lion, Rhino, Leopard)
- Pepper spray (Elephant, Lion)



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# Border Safeguarding: Camouflage

- Dismounted soldier does not have a personal net
- Requirement for:
  - Concealing movement in OP's
  - Animal protection
  - Environmental protection
  - Camouflage and concealment
- Objectives:
  - Lightweight
  - Winter / summer
  - All terrain
  - UV protection
  - Visibility from underneath
  - Insect repelling
  - Insect screening
  - Wind shield
  - Physical barrier
  - Thermal protection
  - Modular
  - Shade net



# Border Safeguarding: Camouflage

- Results

- Very effective for visual camouflage, both short- and long range
- Thermal camouflage by means of layering
- Lightweight
- Easy deployable and easy storage
- Easily integrated with other deployed systems, e.g. Pathfinders or portable radars
- Designed in line with WHO guidelines for mosquito screens
- Chemically treated for insect repellence
- Can be used for vehicles too
- Double sided for different terrains (summer / winter)



# Thank you



## Acknowledgements:

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**CSIR**

*our future through science*