

# Centre for Defence Enterprise

## Support to Operations

### Dr Helen Almey

### Head of CDE

**CDE**

Defence Research 2010

[www.science.mod.uk](http://www.science.mod.uk) [www.dstl.gov.uk](http://www.dstl.gov.uk)

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# This Afternoon

## ■ CDE

- The journey so far
- The future

## ■ Delivering Innovation in Support to Operations

- Rob Eason
- Col James Daniel – Enduring S2O nfocus
- Lt Col James York – Infantry Trials and Development Unit
- Lt Col Chris Borneman – Future S2O focus

# Centre for Defence Enterprise

## The Journey So far

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# Centre for Defence Enterprise

“Our Challenges, Your Ideas”

- Initiated by Lord Drayson and launched in May 2008
- Internet based innovation portal (accredited by MOD security)
- On-line proposal submission using structured web-forms
- On-line assessment and status tracking for bidders
- Standard contractual Terms and Conditions
- 15 day decision cycle
- Technology seminar/workshop programme
- Direct engagement with military end-users

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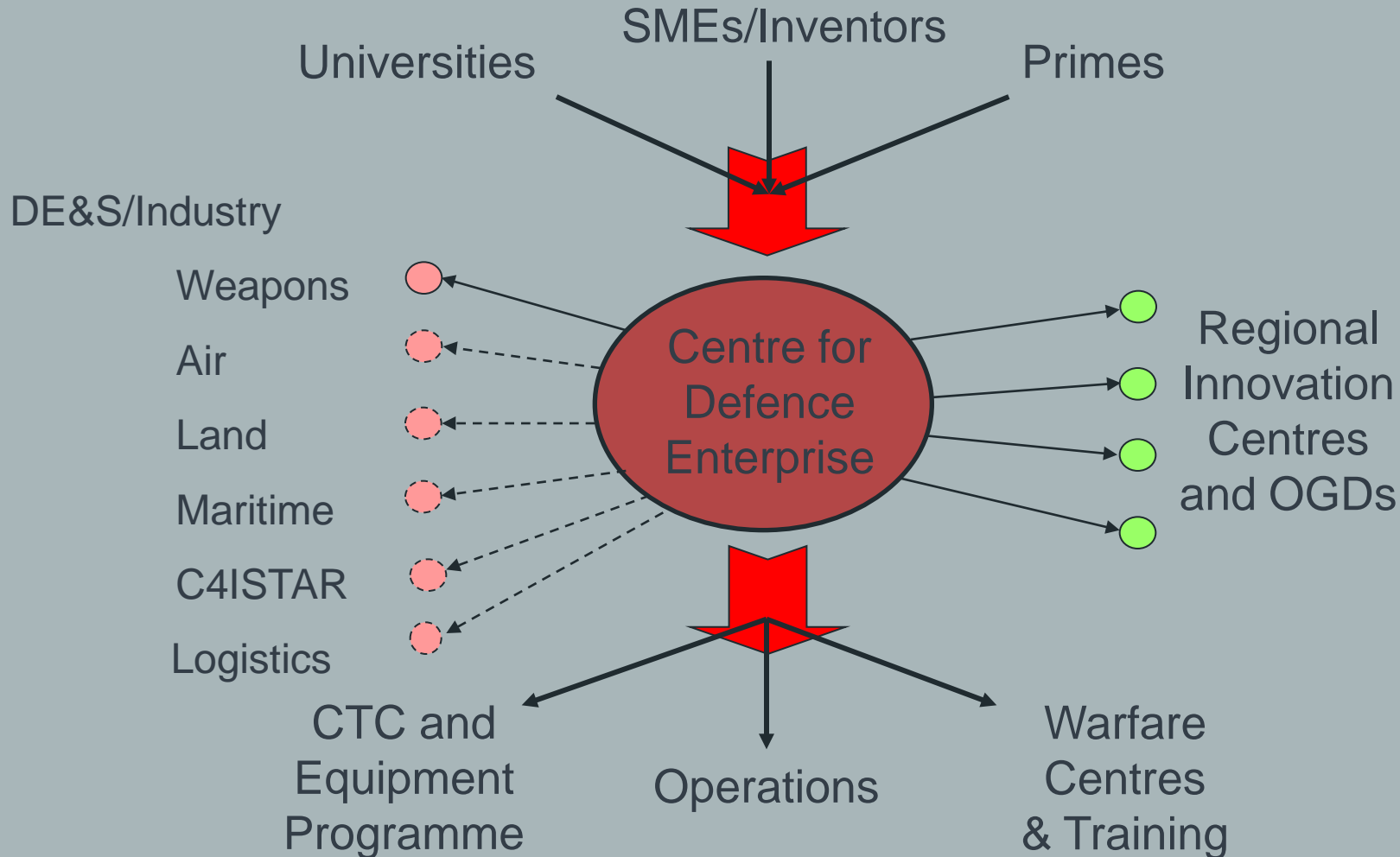
## The First 22 Months

- Over **1,100** CDE accounts opened to date
- Received over **1,300** proposals
- **Over 90%** of proposals assessed within 15 working days
- Funded approx **12%** of **open** innovation proposals received
- Funded approx **25% themed** call proposals received
- About **60%** of funded proposals placed with **SMEs**
- Many funded proposals with organisations new to Defence

**£8m invested in innovation through CDE**

# Centre for Defence Enterprise

“First Point of Contact for all new ideas”



# The Four CDE Products

## 1 Unsolicited innovation proposals

- Proposals accepted at any time in any area of Science & Technology
- Assessed on a monthly basis

## 2 Themed calls for proposals

- Research calls addressing a specific research theme
- Call documents issued scoping the challenges and requirements
- Proposals assessed within CDE guidelines after the published closing date
- MOD working in partnership with TSB/SBRI

## 3 Seminars & Workshops -28 held to date

- Describing MOD challenges & research requirements
- An opportunity for face-to-face discussions

## 4 Surgeries – Monthly and Regional

- An opportunity to discuss potential proposals face-to-face with CDE
- Direct feedback on proposals

# Benefits of CDE to **Industry**

- A route into the Defence market
- Access to research contracts
- Rapid response to proposals
- Potential to:
  - Widen customer base
  - Increase market awareness of capability
  - Attract additional funding
- Clear and simple contract T&Cs and IP agreements
- Visibility of MOD requirements and challenges
- Direct advice and feedback

# Benefits of CDE to MOD

- Attracts innovative civil technologies to defence
- Widens the MOD supplier base
- Provides internal and external challenge and stimulus
- Provide opportunities for military end users to become directly engaged in science and technology
- Increases the potential for shared funding of research
- Delivers innovative capability to UK Forces

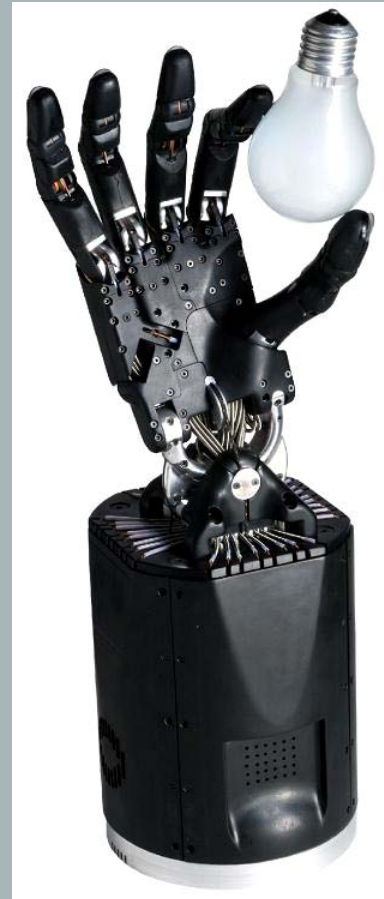
# CDE in Action

- **£4.2M** invested to date on **64** open innovation contracts
- Williams F1 -adapting Kinetic Energy Recovery System originally designed for use in racing cars and road cars into a device which could reduce the fuel used by our Forward Operating Bases
- Southampton University- designing a Rankine Engine and Micro Generator, which captures exhaust gases from diesel engines & uses their heat to generate further power
- Frazer-Nash Consultancy -Powerwheel technology, originally developed for use by GB paralympians, can be attached to a wheelchair to give detailed feedback about how that wheelchair is being used.



# CDE Successes – Shadow Hand

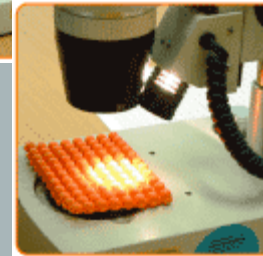
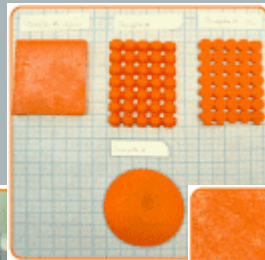
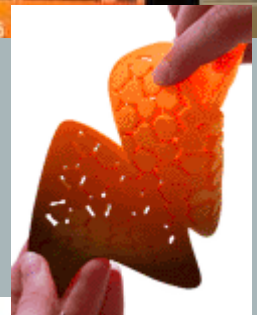
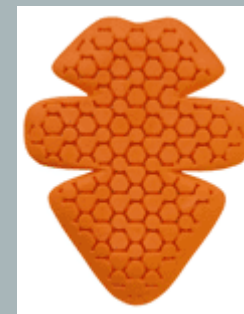
- Intent was to ‘remote’ the human operator from threat or hazard
  - Increase dexterity of tools at the target
  - Defeat complex targets



- Dexterous hand provides the same movement capabilities as the human hand
- Potential to be significantly better than a human hand in a heavy glove
- 24 DoF manipulator providing the kinematic motion capability of the human hand

# CDE Successes – d3o

- A specially engineered material made with intelligent molecules
- The molecules normally flow with movement but lock together to absorb impact energy when ‘shocked’
- Potential for helmet and body armour liners and elbow and knee protection.



# CDE in the news...

guardian.co.uk

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## MoD's vanguard: a mix of robot bomb defusers and kneepad goo

Innovative technology at the Centre for Defence Enterprise

Sam Jones

guardian.co.uk, Thursday 11 February 2010 16.02 GMT  
Article history



Rich Walker of Shadow Robot Company with a robotic hand that could be used by army bomb disposal personnel. Photograph: Ben Stansall/AFP/Getty Images

A robotic hand that could defuse bombs remotely, a camera with the ability to detect minute changes in the landscape and a mysterious orange goo that absorbs the impact of bomb blasts are among new battlefield technologies unveiled by the Ministry of Defence.

The innovations, designed to make life safer for frontline troops, are

silicon.com > Management > Public Sector

## Gadget-charging uniforms and shock-absorbing gel: New tech for UK troops

Photos: The projects on their way to the 21st century battlefield

Post a comment Print

By Nick Heath, 15 February 2010 12:01

Photo 1 of 4

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## Electricity-conducting uniform will allow soldiers to shed heavy loads

An electricity-conducting uniform which allows soldiers to shed the 60 AA batteries and reams of cables they carry with them in to battle is being developed.

Published: 7:30AM GMT 12 Feb 2010

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The uniform will be made of the usual cotton or nylon but with tiny, electricity-conducting silver threads woven through it and is designed to make troops lighter and more efficient.

At present, they carry an average of 120 pounds (50kgs) of kit including sleeping bag, water, food, weaponry and electronic devices and spend an average of 40 minutes per day changing batteries.



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From The Times

February 12, 2010

## Robot hand could protect soldiers on the battlefield



The 'intelligent' substance d3o at the display

Tom Coghlan

2 COMMENTS | RECOMMEND? (4)

A robot hand that could defuse bombs, luminous goo that flows around soldiers' moving bodies but hardens to protect them if they are hit and a uniform that conducts electricity are among the first fruits of the Ministry of Defence's version of the Dragons' Den.

The Centre for Defence Enterprise (CDE) in Harwell, Oxfordshire, is an initiative that aims to harness British scientific innovation for

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MOTHER'S DAY



Gifts for hip Mums

Forget chocs and slippers. Here's what she really wants

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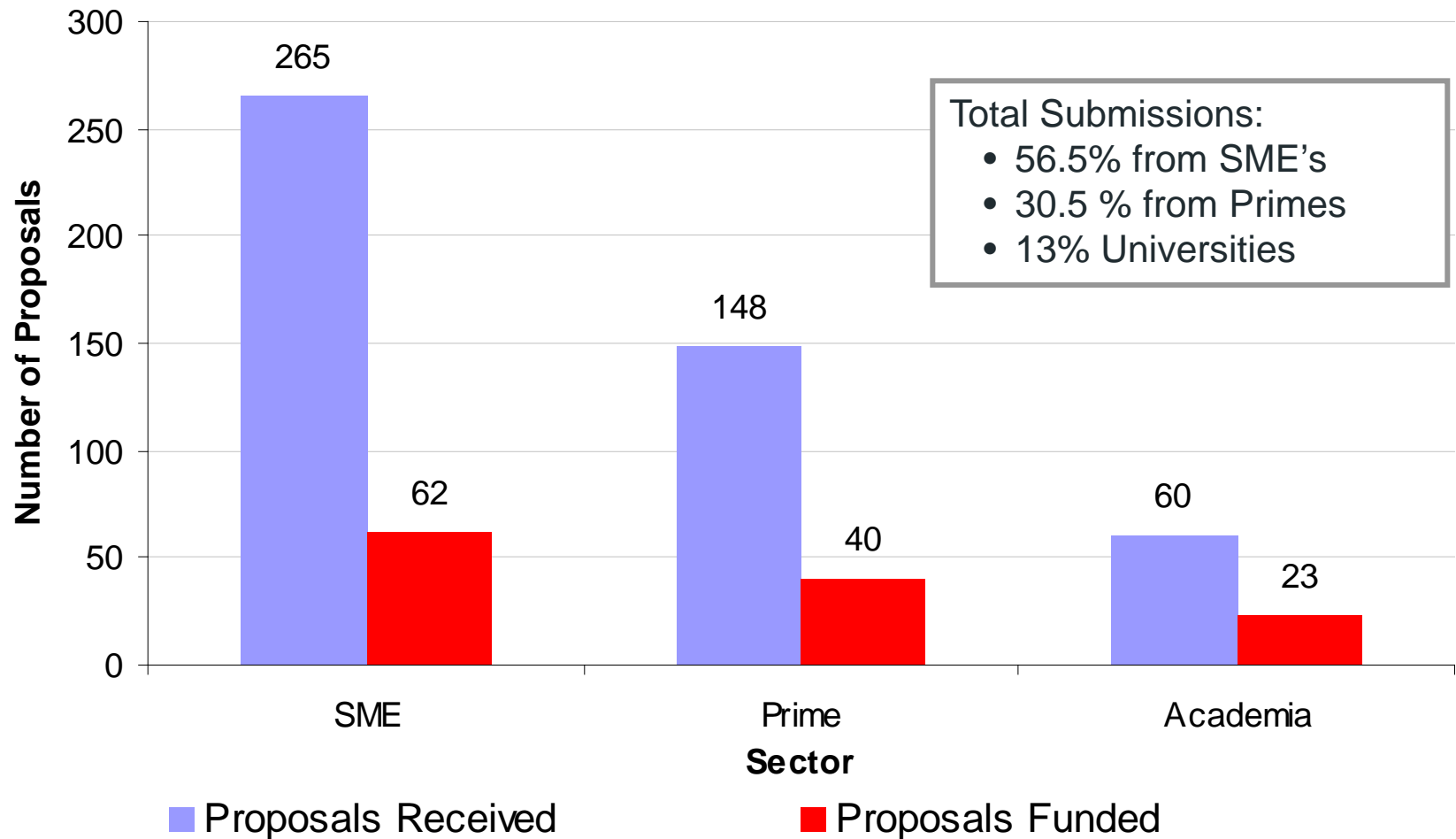
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# Overall Call Metrics

- **1047 proposals assessed**
  - 473 from Themed calls
  - 521 from Open calls
- **64 Open proposals funded (12.3%)**
  - 38 to SME's (59.4%)
  - 19 to Prime (29.7%)
  - 7 to Univ (10.9%)

# Themed Calls

## Proposals Received and Funded



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## The Future

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# Development of CDE

- **Move from experiment to mainstream**
  - Integral part of delivering the MOD research programme
- **Wider and deeper engagement with the supply base**
  - Increase in specialist staff
  - Forging new relationships
  - Consolidating current relationships
  - Developing innovative exploitation routes
- **Increasing the value of the throughput**
- **Review the CDE Defence Portal design**

# Strengthen Engagements

## ■ MOD

- Warfare Centres
- PJHQ

## ■ OGDs

- Home Office
- National Health Service

## ■ Industry

- Technology Strategy Board
- Knowledge Transfer Networks
- Innovation Centres
- Universities

## ■ Financial

- Venture Capitalists and Business Angels

# Agenda

Dr Almey	CDE	15:30	15:40	Centre of Defence Enterprise
Rob Eason	Head of Technology Development, PTG, DE&S	15:40	16:00	Converting Science and Technology into reality
Col Daniel	Dep Head of Technology Development, PTG, DE&S	16:00	16:20	Afghanistan - the operational context
Lt Col York	Commanding Officer, Infantry Trials and Development Unit	16:20	16:50	Afghanistan - Infantry Trials and Development Unit
Lt Col Borneman	Land Warfare Centre	16:50	17:20	Afghanistan - securing the population
Rob Eason	Head of Technology Development, PTG, DE&S	17:20	17:30	Summary and Q&A
Dr Almey	CDE	17:30	17:40	Portal proposal submission process, Close

A wide-angle photograph of a desert landscape. In the foreground, a dirt road with tire tracks leads towards the horizon. In the middle ground, several military vehicles are visible, including a yellow Land Rover on the left and a larger armored vehicle on the right. A bright orange fire or explosion is visible in the distance, centered in the background. The sky is dark and overcast.

# Questions?

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