

## QinetiQ as your R&D partner

**Research for SMEs  
a project and partnership building event**

**West Midlands European Centre, Brussels**

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1<sup>st</sup> July 2010



# Outline

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1. Overview of QinetiQ
  - Heritage
  - Role and positioning
2. QinetiQ's R&D business
  - R&D for government agencies and industry customers
  - Collaborative R&D in EU and national programmes
3. R&D on behalf of SMEs
  - Advanced Sensors Innovation Project
  - FP7 Capacities Research for SMEs
4. Partnerships for Open Innovation
  - Pera iNet Partnership
  - University Partnerships
5. Technology Platforms
6. Conclusions

# Credentials: QinetiQ's heritage of innovation

RSRE, RAE.... 1991 DRA, DERA.... 2001



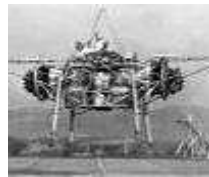
Heritage of invention



Radar



Jet engine



VTOL flight



LCD



Thermal Imaging

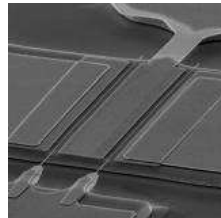


Carbon Fibre



mmWave

Continuing leadership in innovation



World's fastest transistors being developed for Intel



Global leader in military robotics



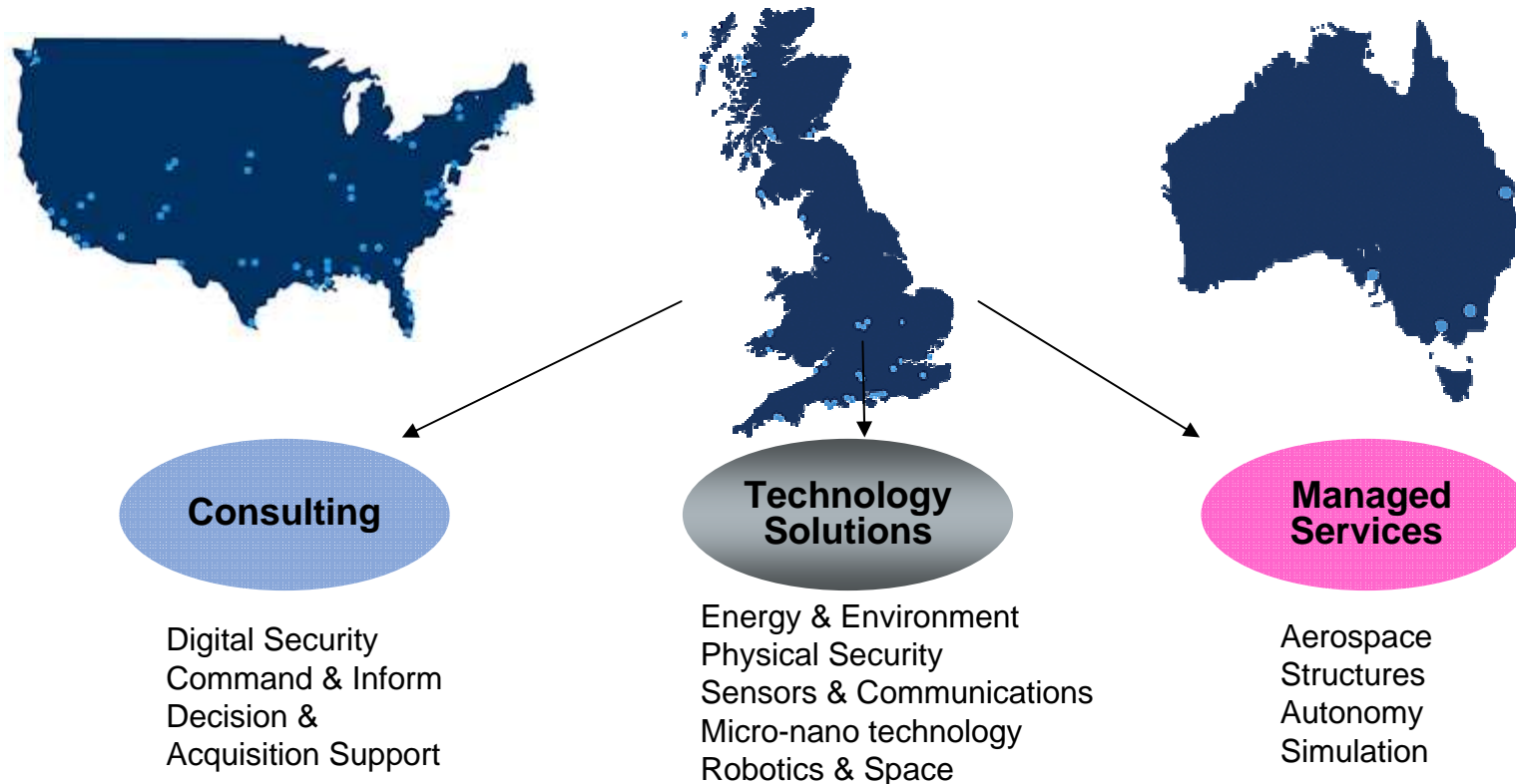
SPO20 — passive mmWave surveillance

# UK-based, global reach

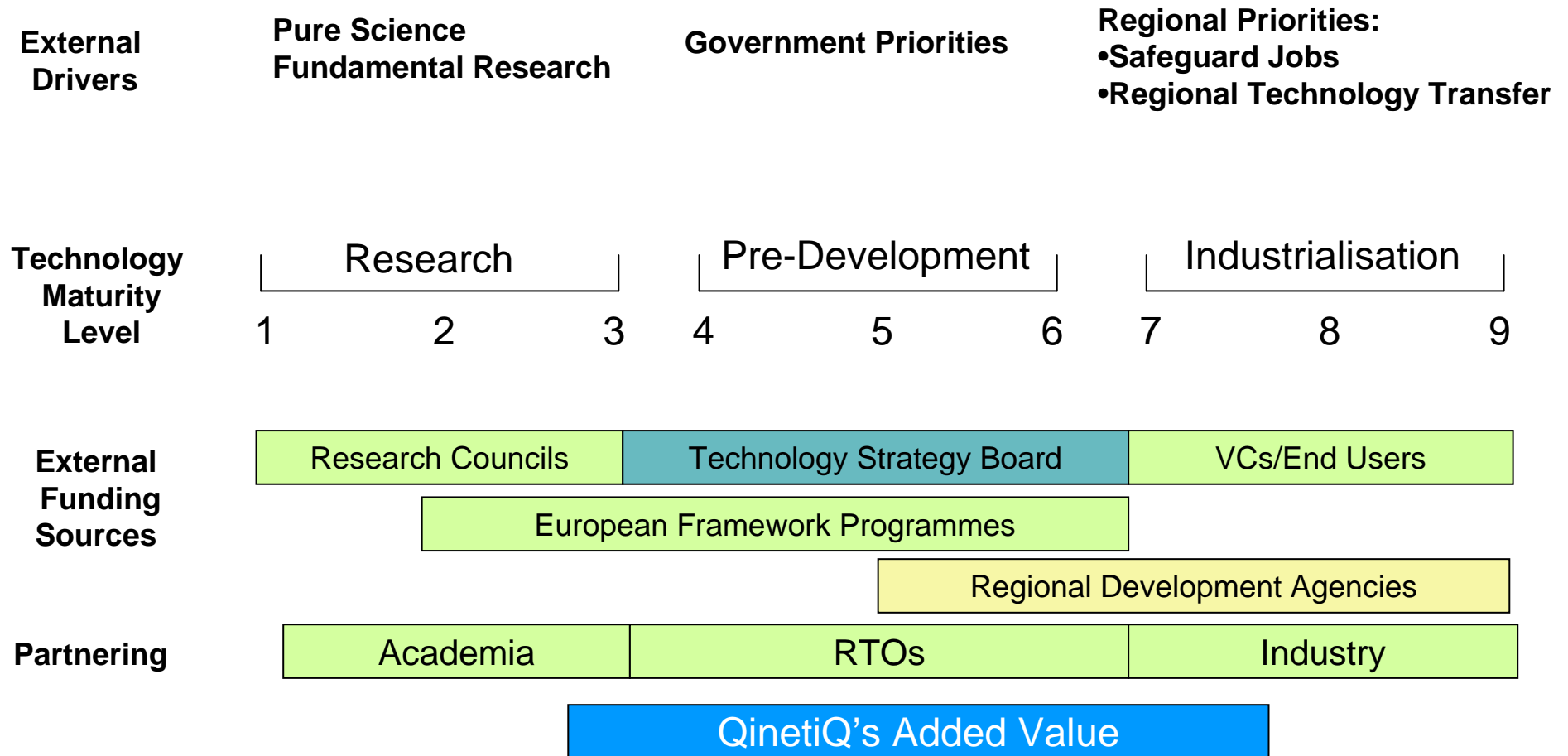
Head office is in Farnborough, SE England; other major UK site at Malvern in West Midlands

– 14,000 staff (about half in USA), approx €2Billion turnover

QinetiQ North America operations are : Mission Solutions, Systems Engineering and Technology Solutions QNA, with three defence consulting companies in Australia



# Where QinetiQ adds value



## QinetiQ's R&D Business

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Transitioning from and RTO to a

***“Market-led provider of innovative technology solutions  
and consultancy/managed services”***

### **WHY DO WE DO RESEARCH?**

**Future research must be aligned to underpin primary business  
in defence, security and aerospace**

- ***To build capability, collateral and intellectual property***
- ***To position our businesses in the marketplace***
- ***To develop skills and connections with end-users and supply chain partners***

### **WHY ARE WE HERE TODAY?**

***To find opportunities for collaboration with SMEs  
to further our mutual business interests***

# Types of R&D Activities

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- 1. Direct contract research for government agencies and industrial customers**
  - MoD, DoD, DARPA, ESA, Home Office
  - BP, VESTAS, INTEL
  
- 2. Collaborative research in EU and national programmes**
  - EU FP7 Cooperation (ICT, Security, Space, Transport), ARTEMIS/ENIAC JTI
  - UK Technology Strategy Board and Regional Development Agencies
  
- 3. R&D on behalf of SMEs**
  - Advanced Sensors Innovation Project funded by Advantage West Midlands
  - FP7 Capacities Programme and PERA I-Net Partnership

## Examples of QinetiQ's R&D (1)

*Enabling our customer's mission capability:*

- Maritime wide area surveillance for MoD
- Borderwatch security system for the Home Office
- Lensless camera development for DARPA
- Energy from waste for MoD and US DoD
- Satellite electric propulsion for ESA

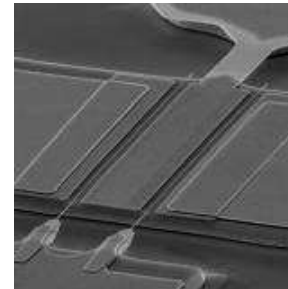




## Examples of QinetiQ's R&D (2)

*Supporting our customer's business strategies:*

- Radar absorbent wind turbine blades for VESTAS
- Corrosion monitoring sensor networks and down- well technology for BP
- "Intelligent infrastructure" for London Underground and other operators
- Next generation processor technology for INTEL Corporation



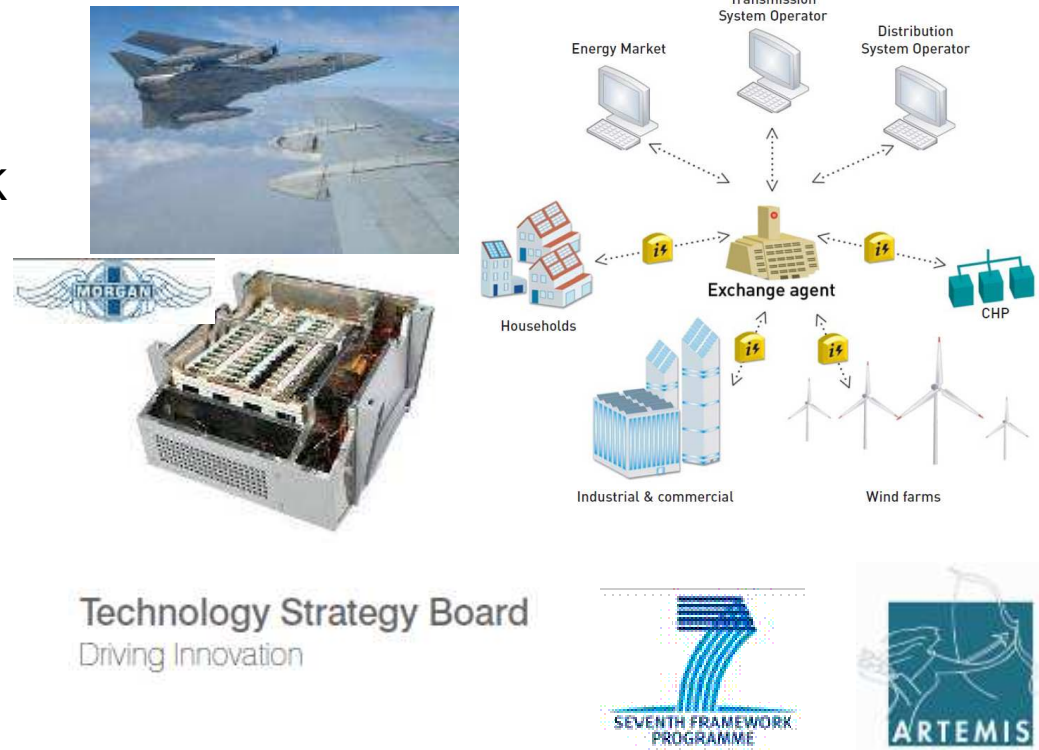
**Vestas**

**QinetiQ**

## Examples of QinetiQ's R&D (3)

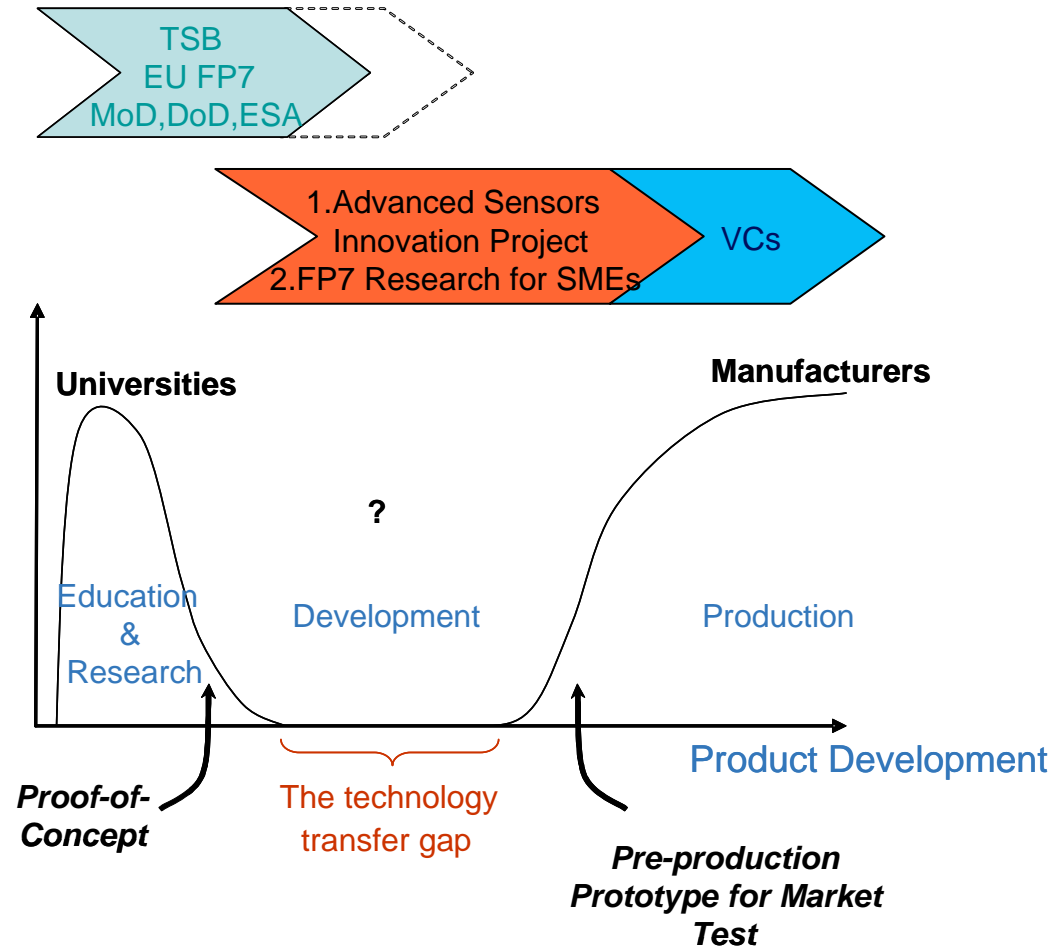
### *Market positioning through collaborative R&D:*

- ASTREA: opening up UK skies for UAV operations (UK TSB/ Reginal Agencies)
- Smart Grids (EU FP7 ARTEMIS and UK TSB)
- Hybrid drive and Li Ion batteries for advanced vehicle developers (UK TSB)
- SECRICOM: developing secure communications for EU crisis management (EU FP7)



# R&D on behalf of SMEs

## *Closing the Technology Transfer gap*



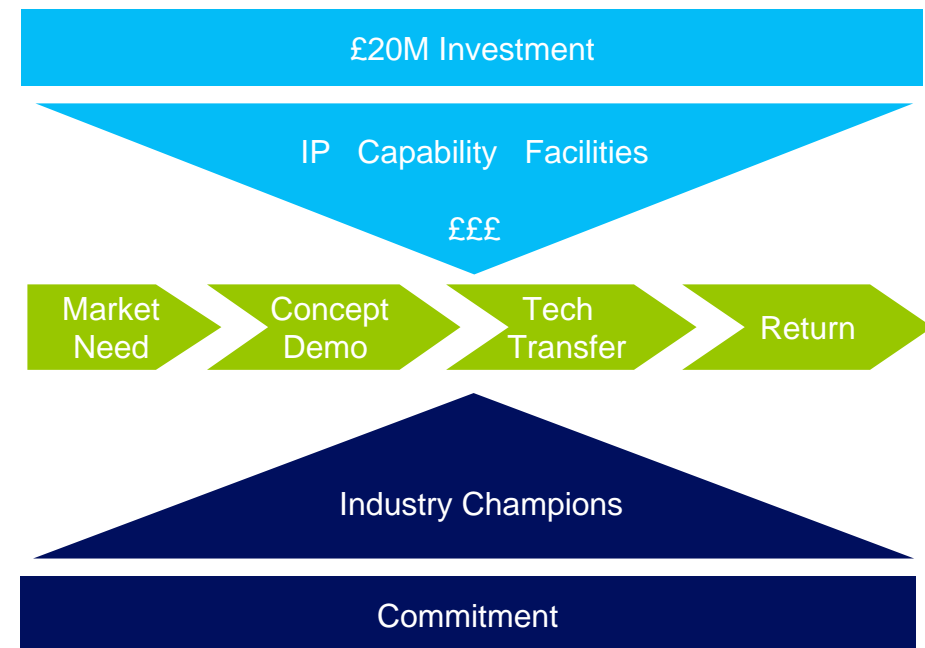
# Advanced Sensors Innovation Project – basic concept

## Objectives

- Identify compelling market needs
- Advanced Sensors
- Match & exploit technologies associated with the IP and capabilities contributed by QinetiQ
- Transfer technologies for product development & volume production
- Generate financial return

## Implications

- QinetiQ manages IP portfolio
- AWM owns a share of the IP
  - Typically 50/50 split on return
  - Focus on exit strategies



## Advanced Sensors Innovation Project – successes (1)

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Invention of a high temperature rechargeable battery that will reduce the cost and environmental impact from primary cell use and disposal in the oil industry



World leading solid-state infra-red components offering significant cost savings and performance benefits in markets such as gas detection equipment



Developing a sensor for use in British-made aircraft engines to reduce fuel consumption and greenhouse gas emissions

Transforming an existing licensed wind speed sensor into a versatile system to increase aircraft throughput at airports working with Air Traffic Control authorities & system providers



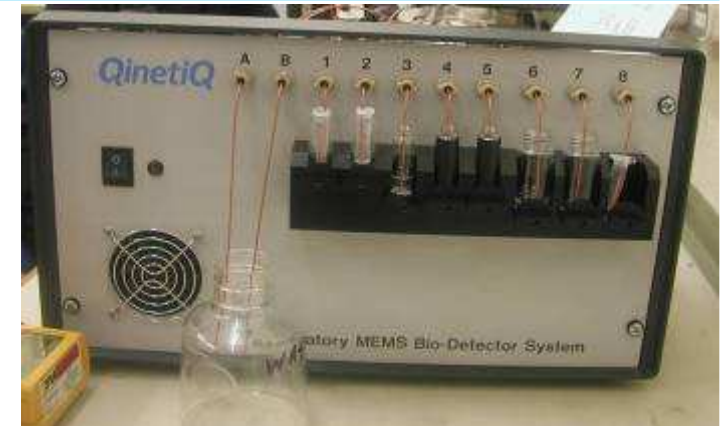
## Advanced Sensors Innovation Project – successes (2)

Successful proof-of-concept, lab-based Bio-detector to measure bio-markers in saliva for respiratory disease diagnostics

Final stages of prototype sensor testing being performed to reduce contamination in drug production

Demonstration of a topside and underneath dual-foot scanner for medical orthotics and specialised footwear fitting

Successful partner trials of an advanced vehicle identification system for the security market not reliant on number plate recognition





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European Commission  
**RESEARCH - SME** **TECHWeb**

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**Which sort of SME are you?**

Follow the path to the definition that matches your company...  
... and if you don't know if you really are an SME, just take the test!

**Research-performing SMEs**

Research-performing SMEs are those who have the ability to conduct research in-house.

Find out what opportunities there are for research-performing SMEs in FP7.  
[more ...](#)

**SME test**

Please click [here](#) to take the test.

This test is provided courtesy of the Walloon Region of Belgium.

Courtesy of Région Wallonne 

For further information on the definition of an SME, read this [leaflet](#) (297 kB). The leaflet was written for FP6 but is still valid for FP7.

[Top](#)

**Research-acquiring SMEs**

Research-acquiring SMEs are those who need to outsource their research to a university or research centre, who will perform the research on their behalf.

Find out what opportunities there are for research-acquiring SME's in FP7.  
[more ...](#)

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# European Framework 7 Programme 2007 - 2013

## COOPERATION (€32,365M)

Food & BioTech	Health	Environment	ICT	NMP	Energy	Transport	Socio-Economic	Security	Space
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## CAPACITIES (€4,217M)

Research Infrastructures	<b>Research for the Benefit of SMEs</b>	Regions of Knowledge	Research Potential	Science in Society	International Cooperation
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## EXPECTED IMPACT

Strengthen SME competitiveness and improve EU Industrial competitiveness

- New/ improved products, processes, services with distinct market potential
- Economic impact - creating new or expanding existing markets
- Enhanced access to markets and customers through EU level collaboration and networking

- Solving technological problems common for groups of SMEs
- Helping meet regulations and influence norms and standards



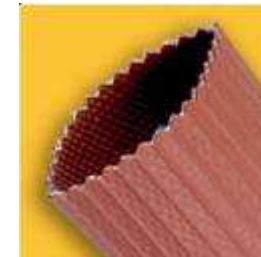
## Research for SME Projects involving QinetiQ

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**Easy Positioning of in-BED patients with reduced mobility (EPOSBED)**



**Fire Retardant Hoses Lines for Forestry Fire-Fighting Applications (FIRELI)**



**A wearable miniaturized fall detection system for the elderly (FallWatch)**

**Lightweight, long endurance body cooling for fire fighters (STAYCOOL) (in negotiation)**



# Example – EPOSBED: Easy Positioning of in-BED patients with reduced mobility

## The Need

- Proper in-bed positioning of patients with limited mobility improves their health and comfort
- Manual handling of patients by nurses causes many work-related back injuries:
  - 15 billion lost working days each year
  - annual cost of approx €6 billion to European hospitals



## The Market

- Revenues in the hospital specialty beds market reached approximately €800 million in Europe in 2005, with an annual growth rate of 9% as a consequence of the population ageing.
- Despite strong demand there is not a satisfactory product in the market.

## The Solution

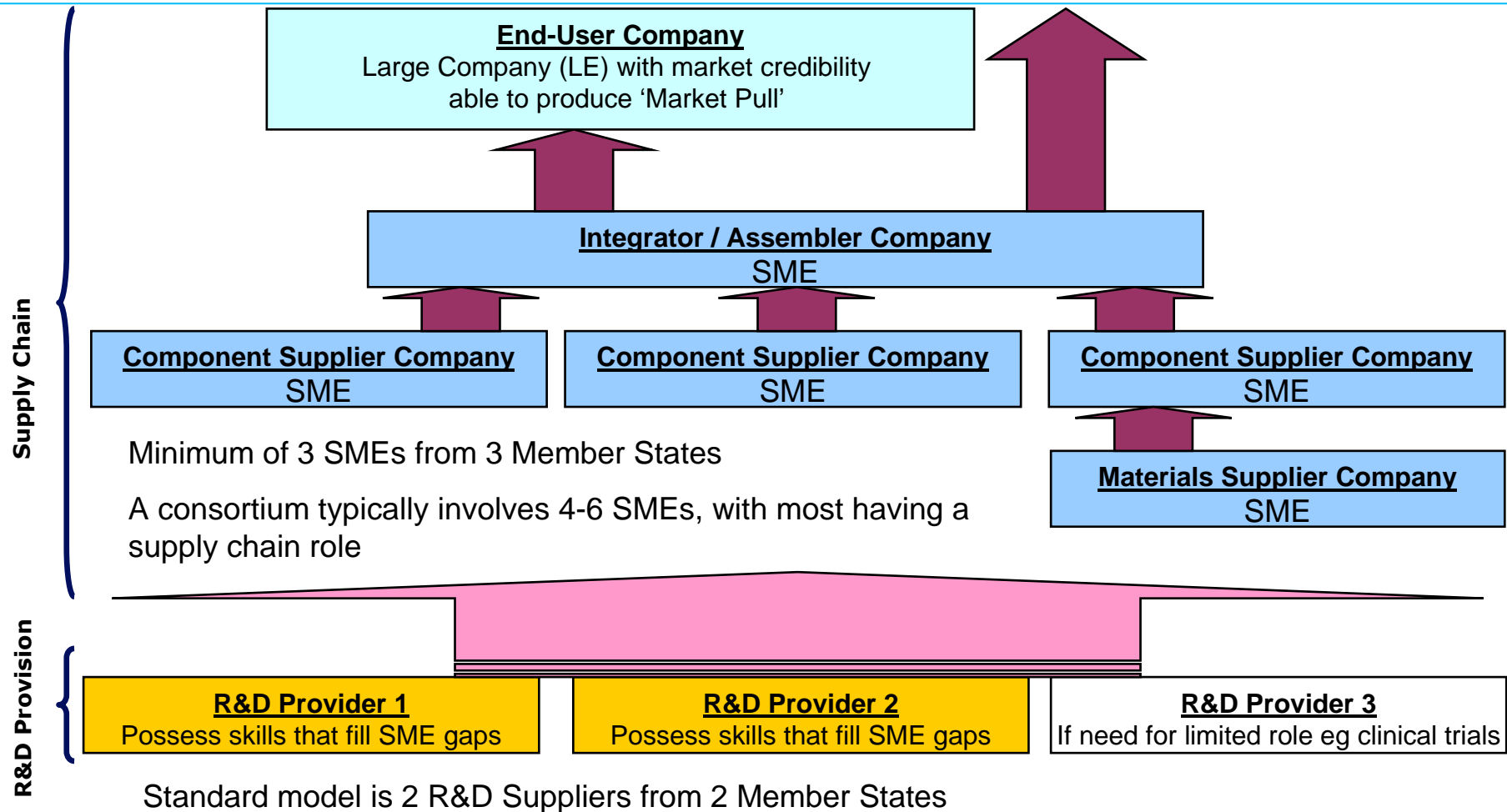
- A speciality bed with a positioning functionality that allows patients with limited mobility to change their position in bed without need of assistance.

## The Consortium

- Six SMEs from different industrial sectors and countries covering the supply chain.
- Two R&D centres of excellence in Sensors and Mechanical Actuators – ITAV (Pera) and QinetiQ.
- A Large Enterprise with an international distribution network.
- A Healthcare Organization representing the end users.



# Typical consortium configuration – FP7 Research for SMEs



# Partnerships are key to Innovation

## Universities

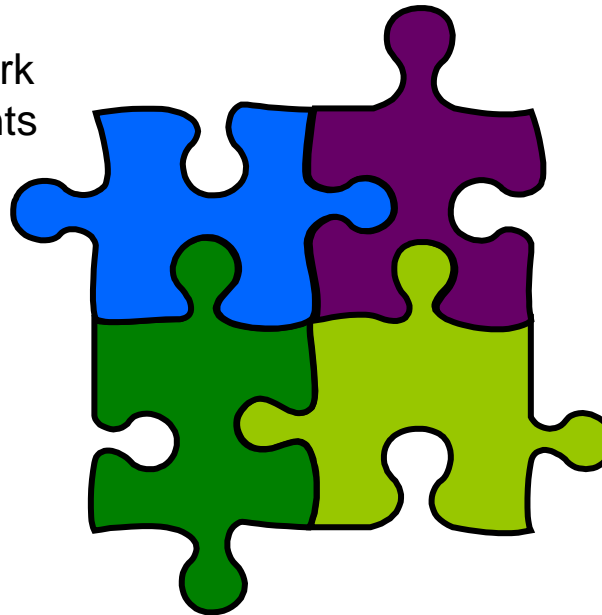
- Basic research: Invention
- Intellectual rigour
- Global knowledge network
- Research Staff & Students
- Equipment

## Early adopters

- Challenging problems
- Development funding
- First to market position
- User engagement
- Product refinement

TRL 1-3

TRL 4-7



TRL7-9

TRL 8-9

## RTOS

- Open Innovation
- Applied Research
- Engineering
- Market traction
- Supply Chain partnerships

## Manufacturing Companies

- Scale
- Routes to Market
- Global reach
- Product evolution
- Demanding standards

# Pera iNet Partnership

Pera is a 'not-for-profit' European Research and Technology Organisation (RTO) based in UK and Europe focused on improving growth and competitiveness of industry and business

Pera has set up a partnership (iNet) of RTOs who have all signed a strategic agreement with Pera to collaborate in developing FP7 SMEs projects

Pera offers extensive support to their iNet partners including a brokerage service to connect SMEs with RTOs

QinetiQ has signed an iNet Partnership Agreement with Pera and an NDA to discuss project ideas



- Technologies
- Assisted Living
  - Biomechanics
  - Coatings
  - Envirotech
  - Genomics
  - ICT
  - Materials
  - Mechatronics
  - Metrology
  - MEMS
  - Modelling
  - Nanoelectronics
  - Nanomaterials
  - OLED
  - Optical Engineering
  - Renewables
  - Robotics
  - Semantics
  - Smart Grids
  - Surface Chemistry
  - Vision Technologies

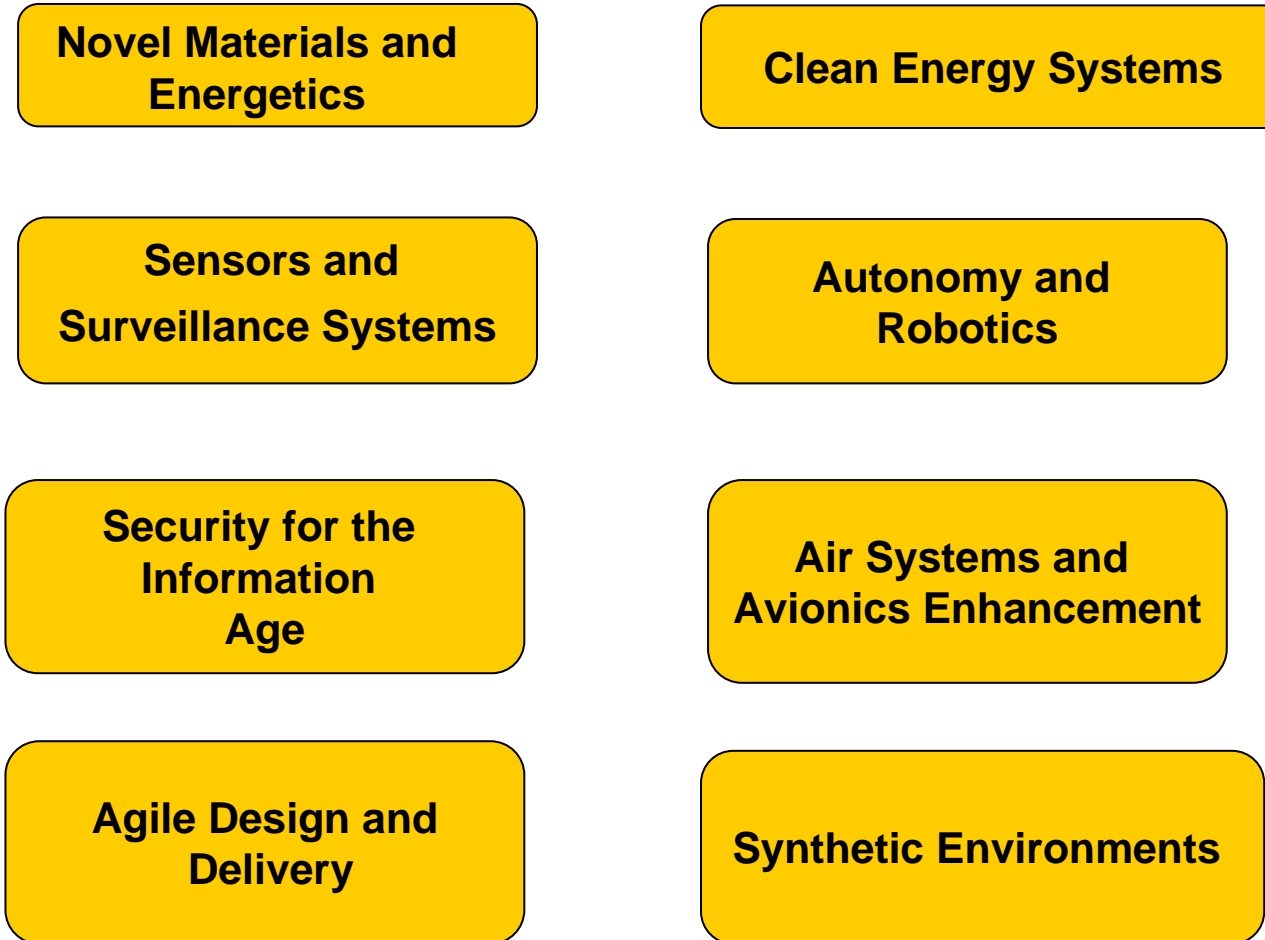


# QinetiQ's University Partnerships



# QinetiQ's Technology Platforms

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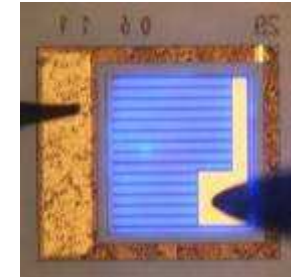




# Content of Technology Platforms (1)

## Novel Materials and Energetics

*Aerostructures, Smart Materials and Coatings, Compound Semiconductors and Quantum Technologies, Armour and Protection, Aerodynamics, Health Monitoring, NDT, Energetic Materials/Systems, Seekers, Blast Modelling, Oil & Gas Deep Well Technologies, Electronic Countermeasures, High Energy Lasers, Munitions*



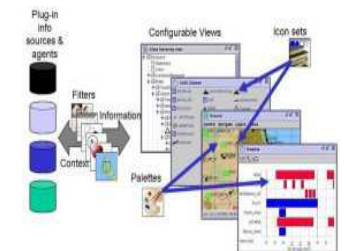
## Sensors and Surveillance Systems

*Security Sensors, Electronic surveillance and geo-location, Airport safety, Integration architectures, Asset and people tracking, Infrastructure protection, Border security, Signal/image processing, Multi-source data fusion, Microsystems, Lasers and Photonics, Gas and THz sensors, FPGAs/ASICs*



## Security for the Information Age

*Secure data hosting and operating systems, Security monitoring services, Penetration testing, Information assurance and management, Intelligence mining (data/ text/ video/ audio), Digital Forensics, Cyber Intelligence, Secure information sharing and communications, Cryptography, Guards and gateways, Comms for unmanned systems, Cloud computing*





## Content of Technology Platforms (2)

### Clean Energy Systems

*Batteries and Supercapacitors, Power management devices, Fuel cells and Reformers, Pyrolysis systems, Hybrid/Electric drivetrains, Energy from waste, Wind turbine technologies, Power scavenging, Flow modelling, Smart grids*



### Autonomy and Robotics

*Robot vehicles, Actuators, Payloads, Tele-operation /presence, Human cognition, Secure communications, Agent-based reasoning/decision support, operational control, space communications and sensors, on-board satellite computation, electric propulsion*



### Synthetic Environments

*Visualisation frameworks/platforms, Distributed simulation, Synthetic environments, Augmented reality, Human Performance and Ergonomics*



# Content of Technology Platforms (3)

## Air Systems and Avionics Enhancement

*Avionic and mission management, aircraft modification and instrumentation system design, installation and integration*



## Agile Design and Delivery

*Intelligent design, Rapid prototyping, Systems Engineering, Supply Chain Management, Range design/implementation, Test and Evaluation*



## Conclusions

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QinetiQ is focused on delivering innovative technology-based solutions, advice and services to customers in the defence, security, aerospace and associated sectors

QinetiQ performs R&D to

- (i) enable our mission-driven customers' capabilities
- (ii) support our industrial customers' strategies and
- (iii) develop our market positioning through collaborative programmes

QinetiQ bridges the gap between academia and manufacturing industry but tends to be further up the supply chain than traditional RTOs

- work in collaboration with universities/RTOs and in partnership with major primes
- productisation, systems integration, small-volume production, field trials, training

QinetiQ can support SMEs through targeted R&D, technology transfer and IP development

***QinetiQ is looking for opportunities to further our mutual business interests – if you have real needs for next generation product/service development please talk to us***

*Contact details:*

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# ***QinetiQ***

[www.QinetiQ.com](http://www.QinetiQ.com)