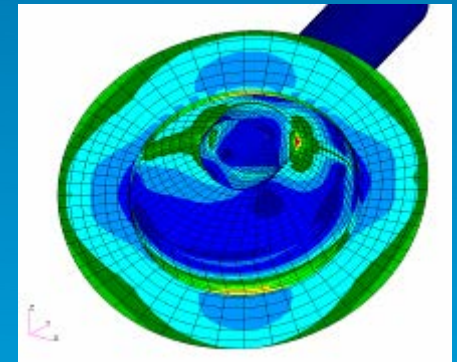


QinetiQ Maritime

Sea Power Seminar 2012 Submarine Capability beyond 2025

Ulvik, Norway – 29th August 2012

- Ian Pickard, QinetiQ Ltd
- Dominic Horner, QinetiQ GRC



Contents

1. Introduction to QinetiQ
2. QinetiQ Maritime
3. Maritime advice and technical services:
 - Maritime Facilities
 - Maritime Ranges and Signature Services
 - QinetiQ GRC Paramarine – Ship and Submarine Design
 - Maritime Mission Systems



Introduction to QinetiQ

QinetiQ delivers advice, services and solutions in support of complex national programmes with deep expertise in Defence, Aerospace and Security.

QinetiQ is a commercial company providing technical expertise to customers across the globe. We employ over 10,000 people, many with PhDs and Masters degrees.

We work across all military domains, delivering:

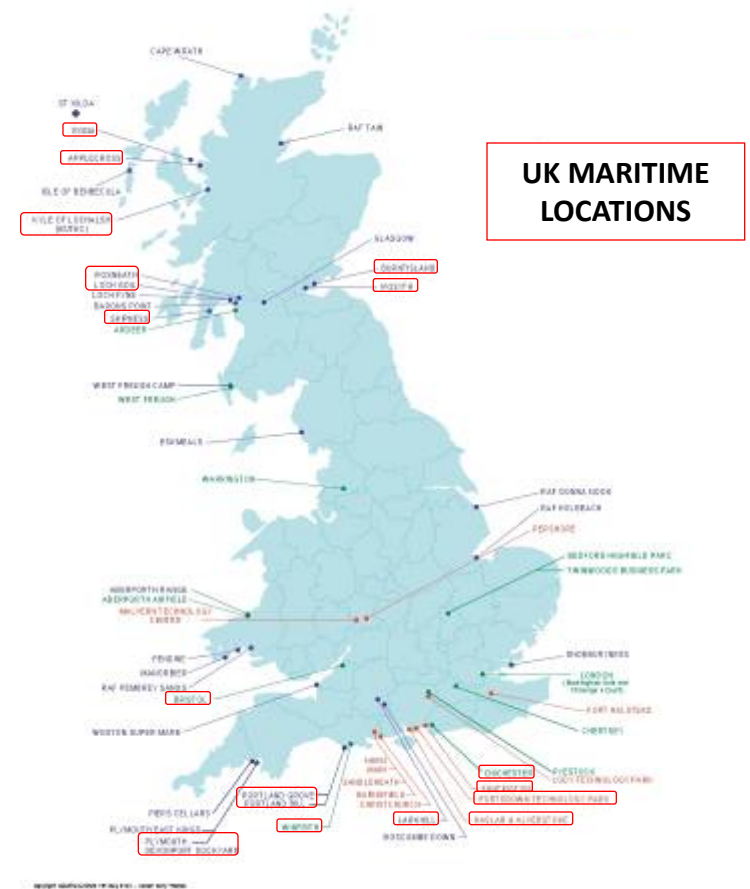
- Specialist technical and acquisition expertise
- Research
- Test, evaluation and technical assurance
- Innovative use of simulation
- Systems integration
- Cyber security
- Solutions



Understanding and mitigating national security risks

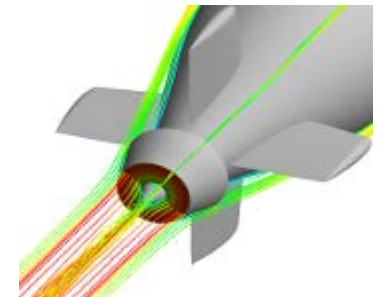
QinetiQ Maritime

- Europe's leading provider of specialist maritime defence acquisition lifecycle advice and services
- We enable the Royal Navy to deliver military advantage and cost effective capability via its ships and submarines
- We combine our unique facilities with our outstanding technical expertise and domain knowledge, drawing on our extensive historic body of knowledge
- Our independence from supply chain interests, coupled to our technical breadth, domain knowledge and agility, makes us the clear partner of choice for the UK Ministry of Defence and other customers



Maritime advice and technical services

- Maritime Life Support
 - Submarine Atmospheres
 - Submarine Escape, Rescue, Abandonment & Survival Support
 - Clinical Diving and Hyperbaric Medicine
 - Diving
- Marine Structures and Survivability
 - Submarine Structures
 - Survivability Assessments
 - Noise and Vibration
 - Shock Testing
- Hydromechanics
 - Propeller and Pump-jet
 - Submarine Hydrodynamics
- Acoustic Materials for In-service Submarines
 - Overseeing of cladding operations on new and existing boats
 - Retention of material development facilities
 - Maintenance of testing facilities at QinetiQ
 - Surveying of boats for tile loss
 - Maintenance of relevant Defence Standards



Maritime Facilities

- Ocean Basin
- Towing Tank
- Shock Tables
- Hyperbaric Medical Unit
- Life Support Systems Laboratory
- Experimental Diving Tank
- Acoustic Impedance Tubes
- Hyperbaric Test Unit
- Deep Trials Unit
- UNDEX Capability
- Quiet Water Tunnel



Maritime Ranges and Signature Services

- Trusted partner of the MOD and RN for over 50 years
- Services include:
 - Acoustic ranging and reporting
 - Electromagnetic open sea/harbour entrance ranging and degaussing system optimisation
 - Submarine magnetic treatment
 - Radar Cross Section ranging
 - Electronic Support Measures system calibration
 - Weapons trials (Spearfish & Stingray), USV / UUV trials
 - Signature training
 - Signature management
 - Full acceptance test & trials of new class & equipment fit



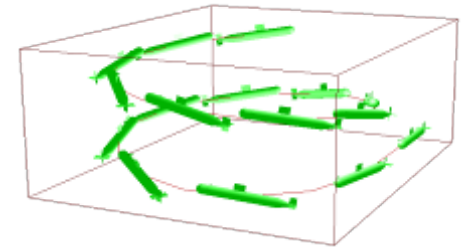
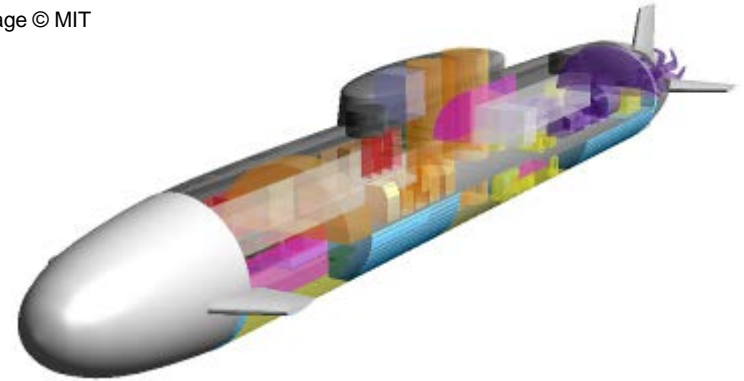
QinetiQ GRC Paramarine – Ship and Submarine Design

Paramarine is the world's only integrated naval architecture design and analysis product for ships and submarines.

Features include:

- Geometric Modelling
- Stability
- Structures
- Manoeuvring
- Powering and Endurance
- Engineering based cost estimates
- Concept design

Image © MIT



Paramarine draws together sophisticated **graphically based design** and **engineering analysis** to **compress the early stages of the design** process. It delivers **reduced risk** and **cost** and **improved understanding of the design** in the early stages.

Clients include: BAE Systems, ASC, DCNS, Navantia, Kockums, UK MOD, DSTO Australia, DND Canada, NAVSEA, Deep Blue Technology, BMT DSL, Alion Science and Technology

Maritime Mission Systems

- Portsdown Technology Park is the UK's focus for the design, integration, test, evaluation and front line support for the Royal Navy's software intensive combat systems
- The Shore Integration Facilities provide skilled engineers, synthetic test environments and secure facilities to ensure the availability of safe, effective combat systems for the Royal Navy.
- Maritime Systems has capabilities in secure maritime communications network solutions and sensor signal processing algorithm development, integration and tracking solutions.



Your first port of call

- World class test, evaluation, trials and analysis through the maritime platform lifecycle
- Evaluating safety & performance of platforms, systems, people and equipment through validated tools & techniques
- Providing independent evidence and in-depth expertise to support decision making
- Leading system design and integration services

For more information email Maritime@QinetiQ.com

Tel: +44 (0)8700 100942

www.QinetiQ.com