

Expression of Interest

Maritime Future Technology Watch presentations/pitches to Defence Science Technology – Maritime Platform Performance

Date: 4-5th May 2017

Workshop Location: Defence Science Technology – Fishermans Bend - Melbourne

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Defence Science Technology Program Manager: Dr Zenka Mathys, Dr Terry Turner

Close Date: 3rd March 2017

Acceptance of EOI: 8th March, 2017

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Introduction

The Defence Science Institute will be hosting representatives from the Defence Science Technology – Maritime Platform Performance group who are keen to identify emerging research programs in Maritime Platform Performance from within both the Australian industry and academic sector.

The Maritime Platform Performance (MPP) Major Science and Technology Capability (MSTC) within Maritime Division undertakes research in platform performance in relations to: seaworthiness/seakeeping, materials, structures and systems to enhance the capability, sustainability, survivability and safety of Royal Australian Navy surface ships and submarines.

Any industry representatives/academic(s) who have current and/or future novel research/ideas in the following areas:

- a. Platform Seaworthiness, Seakeeping and Safety:-** With a focus on new developments, modelling and simulation tools and assessment techniques. Typical areas of interest are: design eg. novel hullforms, seakeeping, launch and recovery of manned and autonomous systems, structures, materials, environment monitoring/prediction, hull monitoring, resilient structures and novel construction techniques.
- b. Platform Warfighting Capability:-**
 - Suitability – the suitability of the platform to perform its warfighting/mission requirements (i.e. fit for purpose, safety, Life of type, remotely controlled/autonomous operation)
 - Capability – the warfighting/mission capability of the platform (capability definition, requirements development, cost capability implications, structural integrity, equipment/systems performance, human performance)
 - Threats – what warfighting threats are and will be out there in the future (and the implications for maritime platforms - weapons, asymmetric warfare, can platforms be protected?, is it worthwhile protecting platforms?, how will future warfighting be conducted?)
 - Vulnerability – what vulnerability improvements/implications will there be for future platforms (materials/active materials & structures/resilient structures, design,



construction, equipment/system resilience, vulnerability assessment, active mitigation of weapon effects)

- Recoverability - what recoverability improvements/implications will there be for future platforms (damage detection & analysis, damage control technology/automation/robotics, damage control modelling, decision support, systems analysis modelling, atmosphere habitability and sensors)
 - Survivability - what survivability improvements/implications will there be for future platforms (fully autonomous platforms, survivability assessment, what level of survivability is needed for different platforms/missions?)
- c. **Platform Acquisition and Life cycle:-** Life of Type, Design Space Exploration, capability assessment, cost/capability trade-offs, Off-the-Shelf acquisition, decision techniques and decision support, capability assurance, modelling and simulation of systems, data communication/visualisation.
- d. **Power and Energy Systems:-**
- Mechanical engineering for naval platforms (e.g. condition monitoring, life extension, reliability, advanced control, magnetic gearboxes etc.)
 - Energy efficiency for naval platforms (e.g. energy recovery and management, process efficiency, power consumption reduction etc.),
 - Electrical systems for naval platforms (e.g. efficiency, smart/redundant architectures, reliability, and full electric ship technology etc.),
 - Materials and materials process for power and energy (e.g. energy generation, distribution, storage, insulation, conduction, super conductors etc.)
 - Modelling of power and energy for naval platforms (e.g. system architectures, next generation technologies and real time modelling for hardware in the loop etc.)

You are encouraged to apply to undertake a literature review and present research and the future directions concepts to the representatives from the DST-MPP.

You are invited to provide a brief description of your experience and area of interests (maximum 1 A4 page, 12 pt font) and if possible how this work may impact Defence into the future. If you are selected, you will be invited to undertake a literature review and to present the outcomes of this review to the DST-MPP representatives on the **4-5th May 2017**. A cost to offset participation in this **Maritime Future Technology Watch** program will be provided to successful applicants.