



CMR Defense Members Meeting May 9-10, 2019, Raytheon Facility, Portsmouth, RI

FINDING INFLECTION POINTS

The setting is a world where we find ourselves increasingly on the back foot – our adversaries capabilities are growing, and their actions are more aggressive. Further, the resources for defense are increasingly under pressure. As the deficit, entitlements, and resulting debt service grow, they create demands forcing difficult choices in government spending. The nature of defense in the marine environment is evolving. Portions of our economy are moving offshore – but not in the traditional sense of **across** the ocean to other nations, but physically **into** the ocean. As energy, food, mineral, and other industries grow their footprint in the ocean, the nature of defense changes. The ocean is not just a barrier to adversaries and a route for force projection, it becomes an increasingly critical part of our economy. In summary, the old solutions cost too much and increasingly do not fit with the new realities, yet new technologies like robotics are still immature. This meeting is designed to foster a discussion of innovative solutions.

FORMAL MEETING AGENDA – May 10, 2019

0830 **Welcome, Introductions, Kickoff - Paul Ferraro, Raytheon; Jim Bellingham, WHOI**

0900-1100 Scalable Solutions for the Defense

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| 0900-0915 | Scaling Undersea – Jim Bellingham, WHOI - Multi-platform Systems Subsea |
| 0915-0930 | Scaling in the Air – Matt George, CEO Apollo: Long-range, Low Cost Autonomous Marine UAV |
| 0930-0945 | Scaling Communications – Heidi Perry, Lincoln Labs: Trends and Way Ahead |
| 0945-1015 | Technology Road Mapping – Oli de Weck of MIT, Roadmapping at the Industry Level - drawing on his experience on his experience creating a technical road map for Airbus' \$1B R&D portfolio. |
| 1015-1100 | Discussion |

1100-1200 New Dimensions in Threat - Emerging Gaps in Our Defense Posture

- 1100-1115 Offshore Energy & Security - Diana Grauer, TechnipFMC, Security in Oil & Gas
- 1115-1130 Food Security in the Maritime Environment – David Kelly, InnovaSea
- 1130-1145 Cybersecurity – Dan Fay of Microsoft Research
- 1145-1200 A.I. in the Navy – CAPT John McGunnigle, NUWC

1200-1330 Lunch and Discussion

1330-1530 Mapping the Future

- 1330-1355 Business Models – VADM Mike Connor (ret), CEO of Thayer Mahan, New Business Models for Defense
- 1355-1415 Unblocking the software bottleneck – Carl Kaiser of WHOI: Marine ROS Initiative
- 1415-1430 Technology Road Mapping – Meredith Cunha, Draper Labs
- 1430-1515 Discussion

1515-1530 Networking Break

1530 Defense Ecosystem

- 1530-1600 Strategies for Scalable Defense – Jim Bellingham and Leslie-Ann McGee with describe the new WHOI CMR initiative
- 1600-1630 Discussion

1630 Adjourn!



CMR Defense Members Meeting

Attendee List

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| John McGunnigle | Navy, Undersea Warfighting Development Center |
| Rob Mushen | Navy, Undersea Warfighting Development Center |
| Chuck Curtis | Navy, National Undersea Warfare Center |
| John Ranelli | Navy, National Undersea Warfare Center |
| Dan McLeod | Lockheed Martin |
| Greg Duckworth | Raytheon |
| Paul Ferraro | Raytheon |
| Wade Knudson | Raytheon |
| Bill Guarini | Raytheon |
| Randy Brandenburg | Raytheon |
| Dan Fay | Microsoft |
| Diana Grauer | TechnipFMC |
| Matthew Thompson | TechnipFMC |
| Matt George | Apollo Automation |
| Theophilos Gemelas | Department of Homeland Security |
| Heidi Perry | Lincoln Labs |
| Chuck Fralick | Leidos |
| Brian Dolph | US Coast Guard |
| Ken Morse | CMR Advisory Board |
| Matt Straub | Lockheed Martin |
| Meredith Cunha | Draper |
| Joseph Downing | Massachusetts Technology Collaborative |
| Oli de Weck | MIT |
| Kim Jung | MIT |
| Thomas Choinski | Naval War College |
| Will Bundy | Naval War College |
| David Kelly | InnovaSea |
| Mike Connor | ThayerMahan |
| Rich Carlin | Office of Naval Research |
| Bob Anderson | L3 OceanServer |
| Peter Hill | WHOI |
| Jim Bellingham | WHOI |
| Leslie-Ann McGee | WHOI |
| Carl Kaiser | WHOI |
| Hauke Kite-Powell | WHOI |
| Chuck Sears | WHOI |