

Executive Summary

The Naval Research Advisory Committee was asked to study the apparent increasing demand on Marine Corps operating forces from a multiplicity of sensors and communication systems, and to assess whether this “information load” might be reduced. The results might be subtitled “leveraging technology to enhance human cognition,” or “leveraging the human brain to make best use of technology.” There are a number of major themes from the Panels fact-finding and analysis done that should help to guide the Marine Corps as they view their future Information Technology needs:

- Exponential IT and sensor growth can enable greater Marine effectiveness,
- Humans are better than computers at pattern recognition and decisions in high ambiguity environments,
- Computers are better than humans at filtering “big data” and tracking details,
- Future end-user devices can provide real-time critical information in context to the individual Marine,
- IT systems can supply critical information in context, even with rapid situation changes and intelligent adversaries,
- User-centered design is difficult, but essential,
- Horizontal IT – cloud-architectures – and powerful end-user devices are key to supplying information in context, and,
- Designing for information in context requires an information architecture and agile application (i.e., apps) acquisition, which DoD 5000 policy can support.

The Panel developed a number of recommendations across specific areas.

- An “information architecture” should be developed to guide investments which build on the existing Marine Air Ground Task Force Command and Control (MAGTF C2) Information Exchange Requirements (IERs). It should include an iterative process that establishes requirements for critical information in context – accounting for new sensors, communications links, as well new tactical and organizational constructs.
- The Marine Corps should embrace concept-based experimentation when developing an information architecture through the integration of modeling and simulation, technology war-gaming, intelligence analysis, and field experimentation with a tight user-centered design process.
- A small group of Marines should be tasked to keep abreast of commercially available IT platforms – especially those featuring user-centered design – whose attributes can optimize human cognition. Also, the Office of Naval Research (ONR) disciplines of Information Technology and Human Cognition should be more closely integrated for Marine IT developments.
- Marine Corps procurement personnel should take advantage of DoD 5000 agile acquisition options when buying low cost, fungible IT assets and should write contracts that support rapid, continuous capability improvements.
- The Marine Corps should consider establishing a cadre of trained Information Management Officers at multiple levels of command – to ensure future IT developments and expeditionary operations are optimized for MAGTF information management.