Using A/I Technology to Ameliorate Friction Increases in Information Flow

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ABSTRACT

The flow of information is critical to the nation's defense, including the military reliance on economic strength. This nation has just gone through a historic spate of low domestic growth, so the problem is real and is imminent. Part of the issue with flow is the increase in artificial friction in its dissemination. This realization leads to some broad conclusions: 1) information friction is greatly reduced by technology; rear guard action by institutions and governments can delay, but not prevent this trend, 2) what people know is much more limited by their interest than by the cost or effort of finding the information, 3) already many choices are made more by preference than cost, 4) there are military analogs to these issues. This paper will identify and address the military issues, both historically and prospectively. The authors hold that there is a need as well as on ability to train people to learn differently *e.g.* the act of reading a book may no longer be the best paradigm. Possible remedial and prospective capabilities have been developed at the University of Sothern California that would ameliorate the negative impacts of any increases of information friction; they are discussed and analyzed. There are now both pedagogical and technical advances concerning Artificial Intelligence (A/I) that have been shown to be effective in enhancing the required education. A lowering of information friction should improve economic strength and defense communication efficacy, *e.g.* low friction would mean that information is free in a way that would expand economic strength which would have a significant impact on the warfighter. They discuss the impacts these could have on national defense. The paper contains examples of past events and suggestions of meeting future eventualities. The paper closes with a look at future studies and analyses.

ABOUT THE AUTHORS

Mark C. Davis, Ph.D. is currently retired after careers in the US Navy and as a computer design engineer for both IBM and Lenovo. Rising to the level of Distinguished Engineer at Lenovo, he was responsible for the design of laptop computer cross-disciplinary technology, including PC architecture, imbedded systems, open source and virtualization. Previous work was with IBM in the areas of software development and architecture involving security, storage and virtualization. Dr. Davis has been granted well over fifty patents that were filed during his service at both companies. He is a graduate of the Duke University NROTC program and was commissioned as an Ensign, attended nuclear power school, and served as an Submarine Officer for twelve years before leaving the service as a Lieutenant Commander to pursue a PhD. Mark holds a BSEE degree from Duke University and a PhD in Computer Science from the University of North Carolina, where his advisor was Professor Fredrick P. Books.

Dan M. Davis is a consultant for the Institute for Creative Technologies, University of Southern California, focusing on large-scale distributed DoD simulations. Before retiring, he was the Director of the JESPP project at USC for a decade. As the Assistant Director of the Center for Advanced Computing Research at Caltech, he managed Synthetic Forces Express, bringing HPC to DoD simulations. Prior experience includes serving at the Maui High Performance Computing Center as the Director of Contracts and Finance and at the Jet Propulsion Laboratory and Martin Marietta. He has served as the Chairman of the Coalition of Academic Supercomputing Centers and has taught at the undergraduate and graduate levels. As early as 1971, Dan was writing programs in FORTRAN on one of Seymour Cray's CDC 6500's. He saw duty in Vietnam as a USMC Cryptologist and retired as a Commander, U.S.N. He received B.A. and J.D. degrees from the University of Colorado in Boulder.