

Using Technology to Ameliorate the Increase of Information Flow Friction

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ABSTRACT

The flow of information is critical to the defense of the nation, including one of the major components of any nation, the economic strength, often quantified as Gross Domestic Product. 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 will delay but not prevent this trend, 2) what people know is much more limited by their interest than by cost or effort of finding the information, 3) already many choices are made more by preference than cost, 4) there are military analogs outside of national economic strengths and this paper will identify and address them. The authors hold that there is a need to train people to learn differently e.g. the act of reading a book may no longer be the best paradigm, there should be a lowering of information friction to improve economic strength and defense communication efficacy, e.g. low friction would mean that information is free and economic strength should expand, and there is a significant impact on war fighting. They discuss the issue of the impacts this will have on defense. The paper contains examples of what has happened in the past and how this nation is faced with similar situations in the future. Possible remedial and future actions that would ameliorate the negative impacts of the purported increase of information friction are discussed and analyzed. The paper closes with a look at future studies and analyses that may shed further light on this critical issue.

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, Cryptologic Specialty, U.S.N.R. He received B.A. and J.D. degrees from the University of Colorado in Boulder.