

Enabling Prosperity—Innovation in Science and Engineering

To innovate means to begin or to introduce something new, to be creative. In science and engineering this role is predominantly accomplished by the research scientists and engineers found in academia, federal laboratories and non-profit institutions. Historically there have also been a few companies with a unique science and engineering innovation capability, but they have mostly gone away.

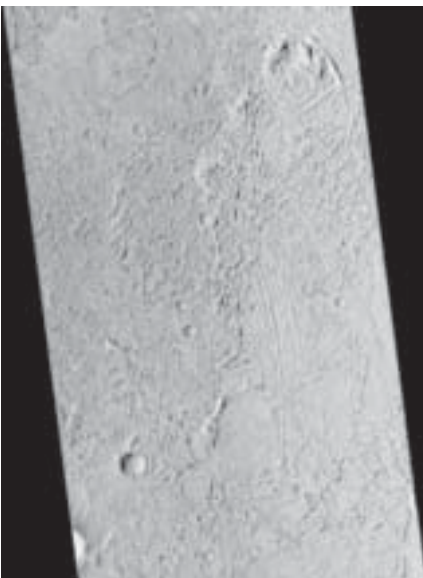
Industry is motivated by profit and therefore industry innovates by utilizing these more fundamental created ideas and concepts and developing and bringing to market a new or better product giving it a competitive edge. Industrial innovation is a critical link in enabling a nation's prosperity but is the final stage, not the fuel for the innovation. The innovative fuel for the industrial engine comes from the research scientists and engineers in the universities and government laboratories that create the "new" possibilities for future industrial products.

Some industrial leaders are not only up front in their support for the need for continued strong government funding support for research universities and federal laboratories, but will go on to state that without that strong government support of basic and applied

science and engineering research in these institutions, industry will have little to build from in the future. These industrial leaders have a vision as to the value and need for government funding of university and government laboratory research to ensure for a continual supply of innovative fuel for future prosperity and maintaining a competitive edge.

The community represented by TOS was created and to a great extent is sustained through government funding. This has provided tremendous innovative capability to nations over the decades and resulted in greatly increased prosperity and security. One needs only to look at the development of the offshore oil industry, national defense, fisheries, and other ocean related industry to recognize the innovative fuel that has been provided by the ocean science and engineering community. 🇺🇸

(The views expressed in this column are those of the author and do not necessarily reflect the position of the Naval Research Laboratory.)



LEFT: Satellite image of ice floe scour mark grooves and grounding ridges in southern Echus Chasma, Mars. RIGHT: Aerial photograph of contemporary ice floe scour mark grooves and grounding ridges on tidal mudflats in the St. Lawrence estuary, Canada. The curved martian grooves were formed by several scouring keels locked in a floating ice canopy at least 2 km wide that was probably driven by wind. Ice scour marks on Mars demonstrate the former presence of a seasonally or permanently ice-covered lake where winds and currents drove ice floes forward as they touched and scoured the lake floor sediments (see article by Woodworth-Lynas and Guigné, page 88).