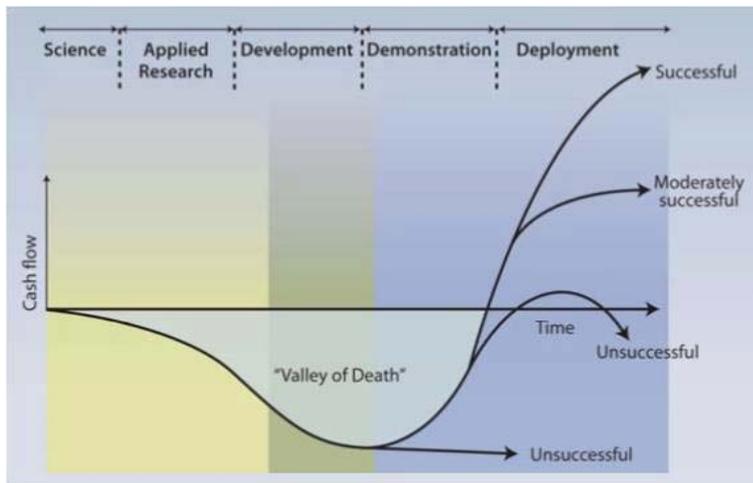


Promoting and Incentivizing Public-Private Partnerships that Improve Technology Transition to End Users from the Nation's Aerospace Research Laboratories
An AIAA Information Paper

ABSTRACT

In 2002, the President's Commission on Aerospace recognized that "partnerships and interconnectedness are keys to competitiveness in the future.... We need to create an environment and the incentives that will foster private-public partnerships." The Commission recognized that each sector – government, industry, labor, and academia – plays a different but critical role in developing and deploying new aerospace products and services. They cannot perform these roles separately and in isolation.



ISSUE BACKGROUND

A partnership is required. The Commission determined that government policies and investments in long-term research have not kept pace with the changing world. The "Valley of Death" as depicted in the chart created by the California Energy Commission shows that many great ideas are developed from basic science into potential applications but then fail to be developed further because industry

may not be aware of the technology, the technology may be of limited interest to industry, or it may not have been matured to a level that is useful for industry without significant further investment. Thus, many great ideas languish in the "valley of death." The nation lacks a streamlined innovation process to reduce the transition time from technology demonstration to operational capability. In order to do so, industry and the government must create an environment that will accelerate the transition of research into practical applications.

However, recent studies indicate that U.S. aerospace companies lack sufficient ability to access and capitalize on research conducted by the nation's government research laboratories. A March 2012 report by the NASA Inspector General (IG) recognized that "Creating new technologies to support programs is fundamental to NASA's mission, and facilitating the transfer of these technologies to other government agencies, industry, and international entities to generate U.S. commercial activity is one of the Agency's strategic goals. Technology transfer promotes commerce, encourages economic growth, stimulates innovation, and offers benefits to the public and industry." However, the results of the IG's study showed that NASA project managers and personnel within their Center-based Innovative Partnerships Office (IPO) "could improve their effectiveness in identifying and planning for the transfer and commercialization of technologies developed as part of the Agency projects ... we found a general lack of awareness of NASA policy governing the process Consequently, NASA has missed opportunities to transfer technologies from its research and development efforts and to maximize partnerships that could

provide additional resources, and industry and the public have not fully benefited from NASA-developed technologies.”

The 2012 study entitled “Recapturing NASA’s Aeronautics flight Research Capabilities” by the National Research Council (NRC) of the National Academies points to a need for more integrated research activity leading to flight verification in NASA’s aeronautics research programs. The NRC recognizes the critical need for flight research and states in its report that “Although ground testing and simulations will continue to add value to the advancement of aeronautics, only flight testing will convince industry, regulators, and the public that new inventions in aeronautics are acceptable.” However, the study also concluded that the NASA aeronautics program is budget constrained and that “an ‘augmented budget’ of a relatively modest amount ... could have a significant effect on the aeronautics program’s ability to conduct flight testing of several current initiatives.”

In spite of agreement on the overall goal for technology transition of government aerospace research, these studies indicate insufficient investment to enable development and demonstration of research to sufficient maturity for transition to other federal stakeholders and industry, and ultimately into fielded products.

At the same time, industry needs incentives to actively pursue government-funded basic research which industry would then adopt and mature. Policies and programs should be put in place to encourage and incentivize research partnerships between government and private industry from the critical early requirements phase to research completion and product deployment. Technology transition continues to be a function of the maturity level of the technology and industry’s need for it. The government’s investment in lower Technology Readiness Level (TRL) technology is generally significantly less than industry’s investment in fully maturing and transitioning that technology into an operational product.

Addressing a role that has developed out of the execution of the National Aeronautics Research & Development Plan, the Office of Science and Technology Policy has begun reaching out to the aerospace community to identify where the meaningful exchange and transition of research and technology from federal research programs to industry is and should take place. It is critical that stakeholders and end users have a voice in discussing what research and technology is undertaken and to what level it is matured. Congress should foster this effort by holding government laboratories accountable for sound management practices and commitments to progress toward research goals for maturing and transitioning technology.