IGI PUBLISHING
701 E. Chocolate Avenue, Suite 200, Hershey PA 17033-1240, USA
Tel: 717/533-8845; Fax 717/533-8661; URL-http://www.igi-pub.com
ITB14572
This paper appears in the publication, **Cases on Telecommunications and Networking**
edited by **M. Khosrow-Pour © 2006, IGI Global**

Chapter XIV

Integrating Information Technologies into Large Organizations

Gretchen L. Gottlich, NASA Langley Research Center, USA

John M. Meyer, NASA Langley Research Center, USA

Michael L. Nelson, NASA Langley Research Center, USA

David J. Bianco, Computer Sciences Corporation, USA

EXECUTIVE SUMMARY

NASA Langley Research Center's product is aerospace research information. To this end, Langley uses information technology tools in three distinct ways. First, information technology tools are used in the production of information via computation, analysis, data collection and reduction. Second, information technology tools assist in streamlining business processes,particularly those that are primarily communication based. By applying these information tools to administrative activities, Langley spends fewer resources on managing itself and can allocate more resources for research. Third, Langley uses information technology tools to disseminate its aerospace research information, resulting in faster turn around time from the laboratory to the end-customer. This chapter describes how information technology tools are currently cutting cost and adding value for NASA Langley internal and external customers. Three components from a larger strategic WWW framework are highlighted: Geographic Information Systems (GIS), Integrated Computing Environment (ICE), and LANTERN (Langley's intranet). Based on experiences with these and related projects at Langley, we suggest that there are four pillars of information technology project success: training; provision of useful services; access to enabling tools; and advertising and advocacy.

BACKGROUND

Established in 1917 as the first national civil aeronautics laboratory, Langley's mission is to be a world leader in pioneering aerospace science and innovative technology for U.S. aeronautical and space application. The center is dedicated to serving traditional aerospace customers and to transferring aerospace technology to non-traditional customers in response to changing national priorities.

More than half of Langley's effort is in aeronautics, improving today's aircraft and developing ideas and technology for future aircraft. The center's wind tunnels and other unique research facilities, testing techniques and computer modeling capabilities aid in the investigation of the full flight range — from general aviation and transport aircraft through hypersonic vehicle concepts.

The center manages a dynamic program in atmospheric sciences, investigating the origins, chemistry and transport mechanisms that govern the Earth's atmosphere. A key component of this study is to understand the impact of human activity on our planet. Langley is also contributing to the development of the Earth Observation System (EOS), a major part of the international Mission to Planet Earth.

To better reflect the needs of its customers the center has recently implemented a major reorganization of its management and operating structure consisting of: customer interface groups; a Research Group and an Internal Operations Group. Langley Research Center is a world class research laboratory which has a staff of well trained and highly productive scientists, engineers and support personnel, as shown in Tables 1 and 2 (Office of Public Affairs, 1995).

Other pertinent workforce facts include:

- Civil Service Employees 2,508 (Fiscal Year 1995)
- Contract Employees 1,975 (Fiscal Year 1995)
- Fiscal Year 1994 total procurements: US$525,000,000
- Fiscal Year 1995 Payroll: US$144,500,000 (includes all compensation)
- Total Program Year 1995 Budget: US$643,700,000

The NASA Langley Research Center occupies 787 acres of government-owned land and shares aircraft runways, utilities and some facilities with neighboring Langley Air Force Base. The center's more than 220 buildings represent an original investment of $687 million and have a replacement value of over US$2 billion. Langley's experimental facilities are: aerothermodynamic, subsonic, transonic, supersonic and hypersonic wind tunnels as well as scramjet engine tunnels. Langley's unique facilities include:

- Nation's only large flight Reynolds Number transonic tunnel
- Nation's only transonic dynamic loads/flutter tunnel
- Nation's only aerodynamic spin tunnel
- Nation's only high-Reynolds Number supersonic quiet tunnel
- Nationally unique aircraft landing loads and impact dynamics facility
- Highly specialized aero structures and materials research laboratories

Langley's 30 wind tunnels cover the entire speed range from 0 mph to nearly Mach 25. In addition to these unique facilities, Langley houses facilities for structures,