

Up Close with Brian Keegan, NASA's Chief Engineer

EEE Links - The faster, better, cheaper philosophy has generated interest in greater use of COTS. How do you see NEPP playing a role in this?

Keegan - I think NEPP is a key aspect in enabling the infusion of technology. There has been a lot of effort in trying to grasp how we can better manage programs and projects in general. Driven by the Mars failure, there have been many evaluations of the faster, better, cheaper philosophy and how we apply it. I think one important message that came out of the evaluations was the heightened realization of our dependency on technology. We need to infuse technologies in our programs not only to improve performance but also to improve reliability and reduce weight, power, volume and related resource needs.

As far as technology products are concerned, EEE parts are associated with the lower levels of assembly, and are extremely important elements of technology products. It is important for us to understand that the Agency's engineers need to determine how to apply new EEE parts to meet their requirements. NEPP plays a key role in providing the Agency the performance and reliability that we seek as we infuse emerging technology into our programs.

NEPP provides an understanding that will improve our ability to use parts technology in applications that enhance performance and reliability. We talk a lot about faster, better, cheaper relying on the products of a separate technology program. I personally see NEPP as a key element of that.

EEE Links - Do you see the NASA community trying to leverage off other industries?

Keegan - Yes, I think there is a need to leverage off of like things. I think it is

important to understand our needs. Then we can identify other customers of the EEE Parts community that have similar needs and work with them. It is important to maintain close ties with others in the EEE parts community as a way of helping to get our needs met. This approach will minimize the cost burden that we incur while still meeting our goals.



EEE Links - What are your expectations of the NEPP engineers and scientists?

Keegan - I expect the NEPP engineers and scientists to continue to understand parts applications in order to reduce undue failures and rework and to increase performance, reliability and safety. The NEPP engineers and scientists are an important part of mission success by characterizing technology in emerging areas. This provides greater confidence that parts have been tried and the probability of failure reduced. It becomes more expensive if problems are not uncovered until later in the development cycle. An important part of cost and schedule success is to minimize failures during systems test.

Another expectation is that the NEPP engineers will communicate their results to the Agency's projects and missions teams. These findings become key elements in our risk management processes. Risk management embraces the whole team. It has to be a project-wide/ team-wide activity. It is very important that the Agency continues to develop our people in the areas of risk

management and effective communication.

EEE Links - Explain what you mean by development of people.

Keegan - People need technical skills to get their job done but they also need interpersonal skills. The Agency's management needs to be proactive in helping the individuals become aware of the need for such development and in helping them obtain it.

EEE Links - How can NEPP improve NASA's parts assurance?

Keegan - It is very important to keep NEPP focused on the future and the emerging technologies. We need to keep near-term and future separate. The primary thrust areas for future NASA missions are higher performance, lower weight, and reduced power dissipation. NEPP needs to intensify its effort in technology assessment and characterization for emerging technologies. This effort needs to be congruent with the Agency's technology roadmaps. Also, NEPP needs to clearly define paths for infusion of these advanced technologies in ways that produce reliable results.

I am worried that tying NEPP too closely to parts assurance will be limiting on NEPP's ability to focus on the future. Parts assurance and NEPP are not one and the same. NEPP needs to be viewed distinctly. NEPP's emphasis is on the future.

EEE Links - How do you see the relationship between the NASA EEE Parts Assurance Group (NEPAG) and NEPP?

Keegan - A continued dialog between NEPAG and NEPP is critical. A joint program is not appropriate. We need to devote appropriate funding levels to both programs. NEPAG serves the projects of today and can draw funding from today's projects. NEPP focuses on the projects of tomorrow.

EEE Links - How would you measure the success?

Keegan - By whether or not customers are using the NEPP products to help them meet their project goals in ways that are faster, better, and cheaper.

EEE Links - How do you keep the vision of faster, better, cheaper working through the Agency?

Keegan - Management must believe in it. Faster, better, cheaper does work if the fundamental tenets are applied. If you save money but increase failure then nothing is accomplished. We need to apply faster, better, cheaper as a 3-dimensional paradigm. The Agency's managers need to make well-informed decisions by believing in the faster, better, cheaper philosophy for their projects. We can move towards improving all three simultaneously. The secret lies in properly using technology to enhance the way we do things. Originality and aptness of thought must apply. We cannot throw common sense and sound engineering practice out the window. We cannot blame poor planning on faster, better, cheaper. We must be willing to use new methods and new products but not without some reasonable understanding of the risk we are accepting as we do so. NEPP is a fundamental building block for being prudent in the risk we take as we apply new technology in pursuing faster, better, cheaper.

Mr. Keegan participated with Dan Goldin, the NASA Administrator, in the NASA Integrated Action Team (NIAT) Web Cast. The web cast can be viewed at <http://www.nasa.gov> and select NIAT web cast.

Brian Keegan's Biography

Mr. W. Brian Keegan was named NASA Chief Engineer in February 2000. The Chief Engineer reports directly to the Administrator and is responsible for overall review of the technical readiness and execution of all NASA programs.

The Chief Engineer also provides an integrated focus for Agency-wide engineering policies, standards and practices.

Since 1997, Mr. Keegan has been the Goddard Space Flight Center's Director of Applied Engineering and Technology. He was responsible for providing engineering support to a wide array of science instrument and spacecraft development projects.

In August 1994, Mr. Keegan was appointed the Deputy Director of Engineering. In this position, he directed a broad spectrum of activity, ranging from technology development to the design, development and test of components, instruments, subsystems, and spacecraft for various flight projects such as the Roentgen X-Ray Timing Explorer (XTE), the Tropical Rainfall Measurement Mission (TRMM), the Hubble Space Telescope (HST) Servicing Missions, and the Small Explorer

(SMEX) series of Space Science missions. In April 1997, he was appointed the Acting Director of Engineering. In September 1986, he was selected as the Deputy Director of Flight Assurance at Goddard, providing direction and leadership in formulating and implementing policy for design reviews, environmental testing, reliability, quality, and flight systems safety in conjunction with the significant revamping of these activities that followed the Challenger accident. In recognition of his accomplishments, Mr. Keegan was awarded the NASA Outstanding Leadership Medal in May 1994. Mr. Keegan joined NASA's Goddard Space Flight Center in 1966 as a structural engineer involved with test program planning and the derivation of environmental test requirements. Mr. Keegan received his Bachelor of Science in Physics from Loyola College in Baltimore in 1962. Mr. Keegan currently resides in Ellicott City, Maryland, with Charlotte, his spouse of 37 years.