

In This Issue



This issue of *ASK* features two apparently divergent themes. One is the importance of far-reaching innovation. In the interview, NASA Chief Technologist Robert Braun talks about supporting extensive new-technology development at NASA. That support will include money to refine and test new ideas and, even more importantly, accepting the fact that many ambitious new ideas fail. Failure is the price we must be willing to pay to achieve real technological breakthroughs. (“A man’s reach should exceed his grasp,” poet Robert Browning wrote—a woman’s, too, but Browning was writing in the nineteenth century in the voice of Andrea del Sarto, a sixteenth-century painter.)

The other theme, the focus of several articles, is nuts-and-bolts practicality. As Warren Moos, Dennis McCarthy, and Jeffrey Kruk report in “Redesigning the FUSE Mission,” the team that designed and built the Far Ultraviolet Spectroscopic Explorer avoided cancellation by finding a way to achieve the mission’s science objective at a little more than half the original projected cost. The Lunar Crater Observation and Sensing Satellite (LCROSS) mission, which sent a spacecraft hurtling into a lunar crater to measure water on the moon, met a tight budget and schedule by reusing and repurposing existing technology (“Moon Mission on a Shoestring”). And “Engineers Without Borders” tells how NASA engineers who volunteer to develop water-treatment systems in Rwanda bring what they learn about using limited resources to develop simple, reliable technology back to their work on spaceflight technology at Johnson Space Center.

What connects these themes? For one thing, the innovation Braun talks about will eventually turn into technical resources that make future missions possible and, in some cases, more economical and dependable. As he says, new-technology development is not an end in itself; it will provide the capabilities that new NASA flight systems will need.

Their other connection has to do with what John Ruffa calls the “non-technical” issues that are as important to mission

success as technical expertise (“Ten Systems Engineering Lessons Learned”). How people work together and relate to the organization is critical, whether the goal is radical innovation or the economical reuse of existing technologies. That is why Braun identifies culture change as essential to innovation and why the authors of “Moon Mission on a Shoestring” say that teamwork and effective communication are responsible for the low-cost success of LCROSS.

There are many such human factors. Probably the most important (in part because they influence the others) are trust, communication, and shared commitment to a mutual goal. Ron Taylor (“Nurturing Trust”) sees trust as the foundation of outstanding accomplishment in any organization. Ed Hoffman, in his “From the APPEL Director” column, describes the role of relationships, communication, and commitment in three leading Italian enterprises. Cathy Peddie’s “Reflections of a Deputy” shows how valuable a trusting, open relationship between a project leader and deputy can be. And T.J. Elliott’s “Islands and Labyrinths” is essentially about communication—how to forge the connections that allow people to share what they know.

Maybe these are obvious truths, but sometimes organizations focused on technology need to be reminded of the obvious: that project teams succeed when they share what they know, understand what their goal is, and trust that they’re working together to achieve it.

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