



NASA Knowledge Forum 3: Expanding Knowledge Networks

September 21, 2010

The NASA Academy of Program/Project and Engineering Leadership, in partnership with the Educational Testing Service (ETS), brought together knowledge experts from NASA, industry and academia for the Academy's third NASA Knowledge Forum in September 2010. ETS hosted the event in Princeton, New Jersey.

Over the course of the day, attendees shared stories and ideas about building, promoting, managing, and sustaining knowledge networks in their organizations. The growing variety, power, and reach of social technologies require organizations to better transfer and manage knowledge across networks. Forum attendees discussed this emerging trend as it applies to topics such as increasing organizational collaboration, locating knowledge sources, spanning international boundaries, creating physical spaces for optimizing knowledge networks, respecting privacy, and achieving user adoption.

In addition to NASA and ETS, organizations represented included the World Bank, Fuji Xerox, MWH Global, Harvard Business School, Best Buy, Future Work Place, Align Consulting, the American Society for the Advancement of Project Management, and Common Knowledge Associates. NASA's knowledge experts included participants from the Jet Propulsion Laboratory (JPL) and Goddard Space Flight Center (GSFC) as well as the Academy.

A Crowd Is Not a Network

"A crowd is not a network" said TJ Elliott, Chief Learning Officer at ETS, in his opening remarks. Simply connecting members in a crowd is insufficient for sharing and synergizing knowledge in networks. Most important information is difficult to index and not obvious. Rather, he said, quoting John Seely Brown and Paul Duguid, "It is not shared stories or shared information so much as shared interpretation that binds people together."

Elliott is intrigued by the challenge of shaping a knowledge network to achieve a shared interpretation among individuals. While the exact recipe for accomplishing a shared interpretation within a network is yet to be written down, Elliott believes that one essential ingredient is not imposing too much order on a network. Doing so is detrimental to the social basis of these networks, which are effective in part because they are voluntary and informal.

For instance, he said, a group of R&D researchers at ETS has been meeting at a lunch table since the 1960s. While there has been some turnover, the group has stayed together. If you were to sit at this table, Elliott said, you wouldn't necessarily hear a conversation about testing, but the group used these social occasions to generate and expand upon their networks to solve problems.

Elliott emphasized that managers may be damaging these knowledge networks by pushing or forcing them. He challenged the forum attendees to think about ways of conceiving of knowledge networks that encourage their growth rather than suppress it with force and control.

Deriving and Demonstrating the Value of Networks

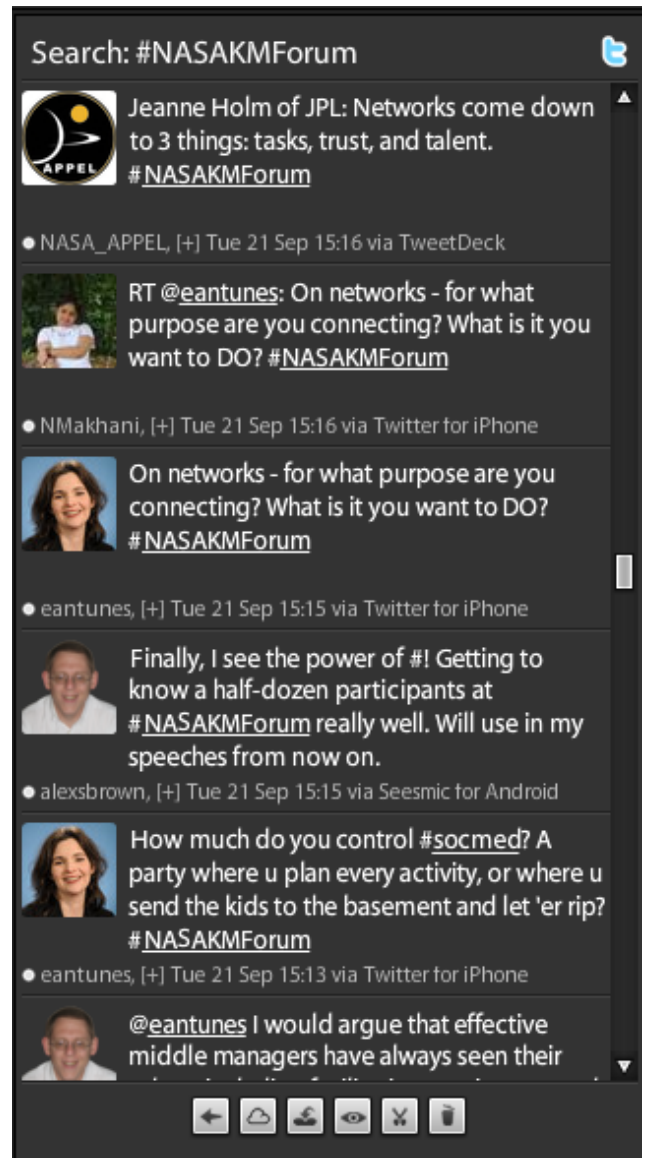
The first panel at the forum included Daniel Wilson, Research Director at the Harvard Graduate School of Education's "Learning Innovations Laboratory", Emma Antunes, web manager at Goddard Space Flight Center, and Naoki Ogiwara, Senior Consultant of Knowledge Management at Fuji Xerox. Larry Prusak, Editor in Chief of *ASK Magazine*, moderated the panel. He opened with a recollection of being a 12 year-old boy and throwing a birthday party that was not organized around carefully structured activities. He asked if there was a parallel to managing knowledge networks: should organizations try to manage and impose control on networking, or should they simply provide individuals with tools and stand back?

Antunes, developer of Spacebook, an internal social networking site for NASA, said that it should be easier to introduce new employees and introverts to social media tools within an organization. Accomplishing this relies heavily upon building trust, she said, adding that, "projects succeed when people have trust, good communication, and when they have access to networks." She also drew a distinction between "connection" and "collaboration," noting that as individuals get to know each other better, they are more likely to collaborate and share unwritten lessons learned.

"Networks are me-centric," continued Antunes. "A community has more of a sense of ownership—[it is] we-centric." Organizations have to trust people and empower them to develop both networks and communities. This trust originates from and grows with transparency, she said, "...matching what I say with what I do."

Explicitly defining the work is also key to the success of a network, said Daniel Wilson. The work of a social network or a terrorist network is well defined, but what is the work of a knowledge or learning network? According to Wilson, such networks have three functions: transmission, transaction, and transformation. Transmission is similar to what Facebook users do on their "walls," explained Wilson: they broadcast lots of information through posts. Transaction occurs when a conversation begins. Transformation is where we are failing, he said, and will be the focus in the next decade.

Wilson believes that enhancing the transformative properties of networks will involve finding ways to facilitate vulnerability and competence. As we design networks, said Wilson, we need think about how they enable us to become known to one another—even if that means sharing what we don't know. As Nancy Dixon,



Live-Tweeting the NASA Knowledge Forum

During the one-day NASA Knowledge Forum, attendees were actively tweeting (and re-tweeting) key points, questions, quotes, and related links on the discussion at hand in 140 character or less.

Participants referenced their forum-related tweets using the hashtag #NASAKMForum. Hashtags are embedded in Tweets to describe and categorize a message.

The Twitter conversation not only helped facilitate additional conversation online, but also during the breaks. Participants got to know one another in both virtual and real spaces.

founder of Common Knowledge Associates pointed out, knowledge sharing is a matter of openly “sharing ignorance through conversation.”

Jon Boyle, senior knowledge sharing consultant to the Academy, emphasized the importance of bridging the gap between digital natives and digital immigrants. Acknowledging this divide is important in the context of knowledge networks because each generation has a different comfort level with technology and a different conception of a network.

Building on Prusak’s opening story, Naoki Ogiwara shared his work at Fuji and how the organization is creating physical spaces and environments for network building. These spaces, explained Ogiwara, are designed to enable employees to build and share social and intellectual networks. At Fuji, for example, certain rooms were built with the goal of facilitating conversations about innovation

The panel concluded with a discussion about the impact social media tools will have on organizational structure. A shift is occurring. “I think traditional hierarchies are finished,” said Prusak. Organizations are crumbling under the weight of their hierarchies and market networks are beginning to emerge. “Advice and persuasion are types of knowledge,” said Prusak, and they are waiting to be shared.

Thought Exercise

TJ Elliot asked participants to finish the following statement:

When I think about expanding knowledge networks, I believe the most important considerations are....

After taking a few moments to think through the exercise, participants provided the following answers:

- storytelling
- finding value and reciprocity
- relevance
- efficiency/ease
- being open to innovation
- the ability to ask questions
- accessibility
- ownership of knowledge

What would you and your organization add to this list?

Expanding Knowledge Networks

The second panel, which explored expanding individual networks outside of an organization, was moderated by Don Cohen, managing editor of *ASK Magazine*, and included Rich Roberts, Senior Research Scientist at ETS, Klaus Tilmes, advisor to the World Bank’s Knowledge Strategy Group, and Jeanne Holm, Chief Knowledge Architect at the Jet Propulsion Laboratory, who is currently serving as the communications and collaborations lead for data.gov.

Cohen continued the discussion on keeping networks unrestricted to preserve the “serendipity that leads to innovation.” One of the things that fosters knowledge sharing, he added, is knowing how the knowledge you share is understood and appropriately used by others. The continuing connections in networks help ensure that people see the results of their knowledge contributions.

Klaus Tilmes agreed, saying that too many communities are accustomed to “throwing data over the fence and expecting people to do something with it.” There must be a purpose behind the data flowing through networks. He related success stories from the emergency response community, where social networks facilitate rapid circulation of up-to-date information. In particular, he said, the discussion about social media is increasingly tied to transparency. “The reality is that we would all like to see the reputation, our motivation, increasingly realized through networks,” said Tilmes, in the pursuit of more effectively reaching outside of organizations.

“People want to help out,” added Jeanne Holm. “Join the community and share what you know versus joining the community to find friends and connect with them.” Trust, tasks, and talent play significant roles in maintaining a network, she said. Give little tasks to progress to bigger tasks and engage a workforce or population. “When I have a question, how do I know I will get an answer?” she asked. Reassurance in the network facilitates its expansion and effectiveness.

Rich Roberts, who does research on non-cognitive variables such as personality and test anxiety at ETS, sees personality as among the most important factors to having a successful network, especially for teams. Successful networks consist of individuals who have a good work ethic, practice effective communication and are agreeable, emotionally stable, and open to new experiences. “If you’re going to have a healthy kind of network...personality is one of the best predictors of outcomes,” he said. When it comes to assembling and leading a talented, networked team, Roberts fills a specific role as a “soup stirrer,” making sure the network doesn’t stagnate.

Pen to Paper: Visualizing Knowledge Networks

At the end of the day, Matt Kohut, editor of the Academy's e-newsletter ASK the Academy, led the forum in knowledge network mapping exercise. Attendees each received a large Post-It the size of a flip chart and a felt-tipped marker so they could respond to the following questions:

- When you look for new ideas, to whom do you turn and what tools (if any) do you use?
- When you have something to share, with whom do you share and how do you share it?
- When you need to solve a problem, to whom do you turn and what tools do you use?

Participants were given 10 minutes to visually represent their answers on paper. The charts were then displayed on the walls for everyone to view and compare. Walking around the room, participants immediately noticed that no two drawings looked alike. Some 30-plus participants had visualized and drawn their go-to knowledge network differently. (See Figure 1 below.)

On a majority of the posters, social media figured prominently as a source or tool for finding or sharing new ideas. Many participants said that the depiction of their network depended on the topic or question. Upon reflection, many agreed that an important consideration for tapping into knowledge networks is the approachability of people within a network.

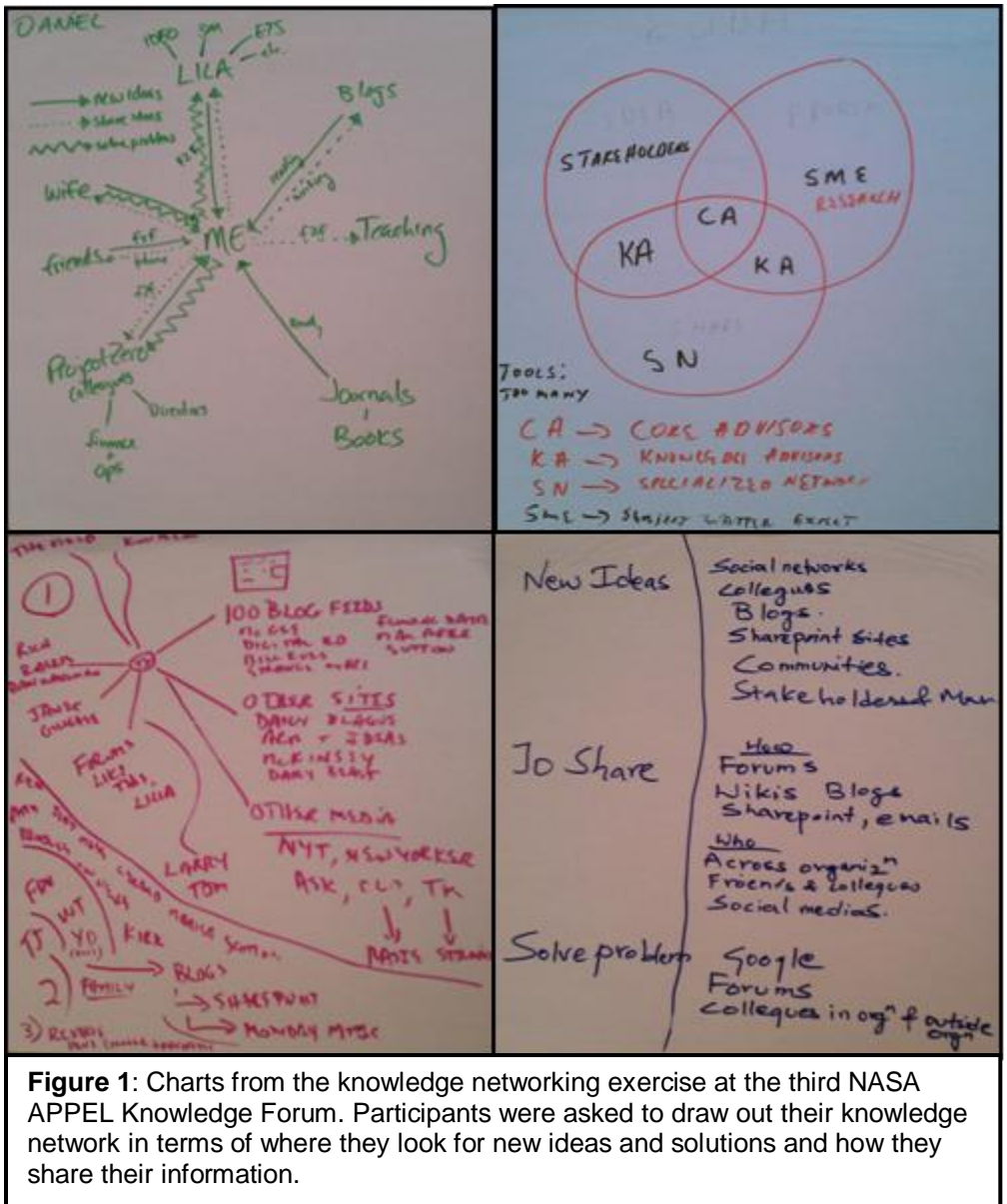


Figure 1: Charts from the knowledge networking exercise at the third NASA APPEL Knowledge Forum. Participants were asked to draw out their knowledge network in terms of where they look for new ideas and solutions and how they share their information.