In Brief

Every year, Microsoft Research bestows the Jim Gray Award on an innovator who has made ground-breaking, fundamental contributions to the field of eScience. The award recognizes leaders from technological and scientific backgrounds who pursue open, supportive, and collaborative research models.

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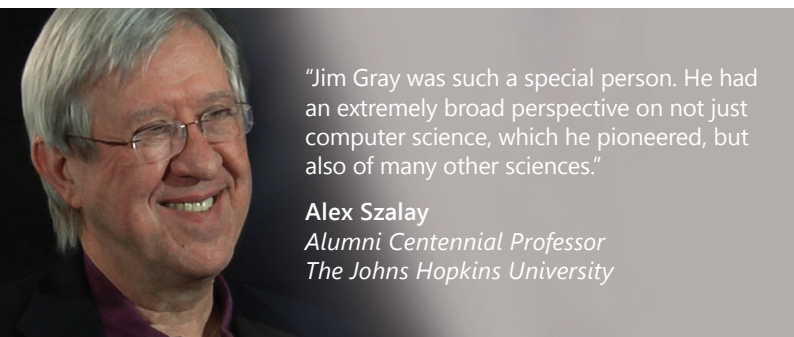research.microsoft.com

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Jim Gray
eScience Award
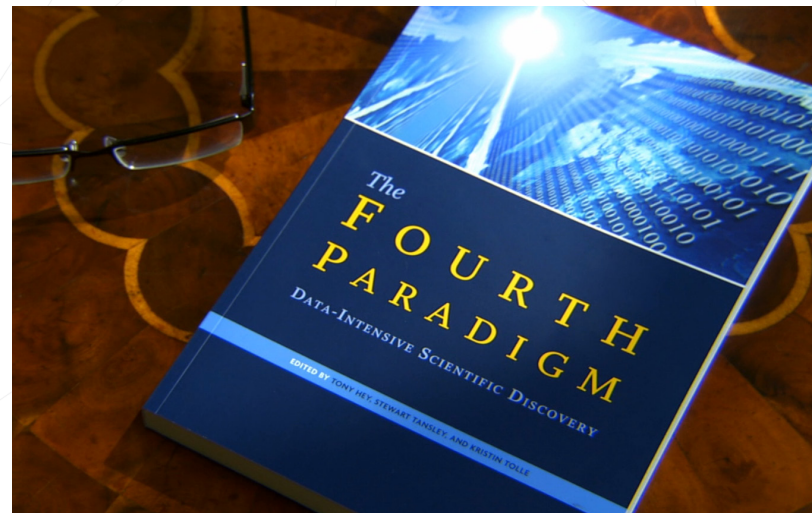
Although four years have passed since his disappearance at sea, the legacy of Jim Gray, a Technical Fellow for Microsoft Research and a Turing Award winner, lives on in the annual Jim Gray eScience Award. Every year at its annual eScience workshop, Microsoft Research bestows this honor on a researcher who has made an outstanding contribution to the field of data-intensive computing. The award recognizes innovators whose work truly makes science easier for scientists.

Jim Gray postulated that data exploration, or, as he termed it, eScience, is the evolutionary next step in scientific exploration, a "fourth paradigm" following the original, empirical paradigm

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2009: JEFF DOZIER, for his achievements in advancing environmental science through leading multi-disciplinary research and collaboration.
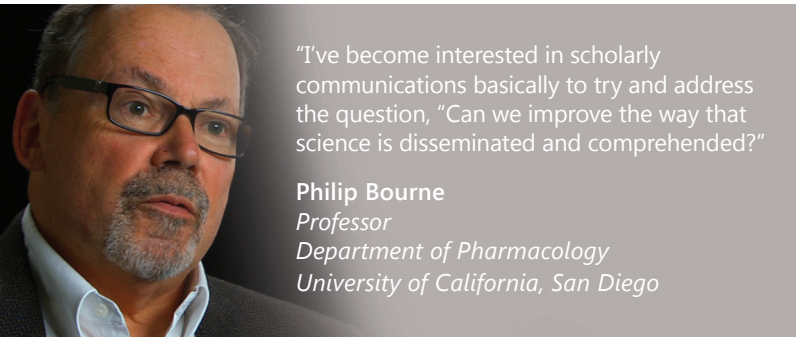
2010: PHILIP BOURNE, in recognition of his groundbreaking work in computational biology and the free dissemination of science.

2011: MARK ABBOTT, in recognition of his outstanding contributions to integrating biological and physical science, early innovations in data-intensive science, and educational leadership.

and the subsequent theoretical and computational paradigms. In a lecture just 17 days before he went missing, Jim outlined the increasingly important challenges and opportunities afforded by the availability of previously unimaginable volumes of data and continuous research dedicated to creating new understanding of the world around us.

Here, then, are the Jim Gray eScience Award winners, as of December 2011:

2007: ALEX SZALAY, for his foundational contributions to interdisciplinary advances in the field of astronomy. Alex's groundbreaking partnership with Jim Gray set the stage for the advancement of the field of eScience across a range of scientific domains.

2008: CAROLE GOBLE, in recognition of her contributions to the development of workflow tools to advance data-centric research.

Winners are united in their praise for the award's namesake. Jeff Dozier remembers Jim Gray was "…always very interested in what other people did, and he really made you feel special when you were with him." Alex Szalay echoes the sentiment, noting that "Whenever he talked, he made you feel special, and made you feel that your idea was the greatest in the world." Mark Abbott adds that "Jim brought the best of computer science down to real-world problem." And Carole Goble sums it nicely: "Jim Gray was such an awesome colossus."

Alex Szalay remembers Jim Gray for his expansive scientific knowledge:

Jim Gray was such a special person. He had an extremely broad perspective on not just computer science, which he pioneered, but also of many other sciences. He was also able

to absorb deep knowledge in many other sciences in a very short period of time: I gave him some astronomy books; he went away sailing and came back an astronomer.

Not surprisingly, the winners also laud Jim for his commitment to collaborative science. In the words of Phillip Bourne:

[eScience] is a collective thing—this is something we ought to do together because we're all pushing for the same thing that Jim had the original vision for...The essence of what Jim was trying to get across—which is the importance of the whole fourth paradigm—[is] the idea of how we manage data, how we effectively use data and ultimately get to knowledge from that data and communicate that knowledge.

My area is mainly in computational biology. I actually use computers to try and solve biological problems. I've become interested in scholarly communications basically to try and address the question, "Can we improve the way that science is
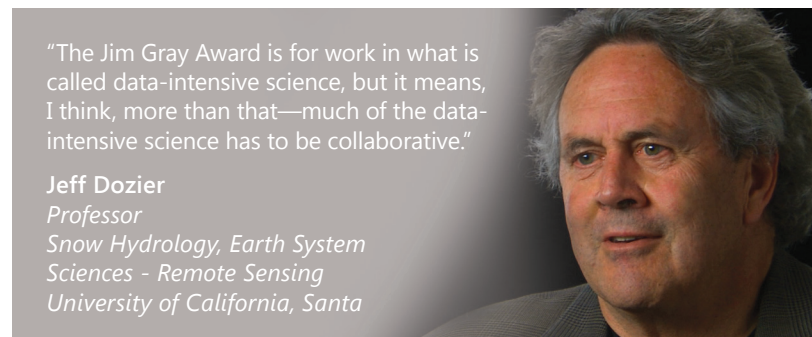
disseminated and comprehended?"

Jeff Dozier states:

The Jim Gray Award is for work in what is called data-intensive science, but it means, I think, more than that—much of the data-intensive science has to be collaborative.

I'm an Earth-systems scientist, mainly interested in hydrology. The study of snow in the hydrologic cycle is important because so much of our water supply comes from melted snow. Worldwide, probably a sixth of the world's population depends on snow and glacier melt for their water supply—that's over a billion people. Our group freely shares everything we do, all the measurements we make, all the data we collect up the mountain. That way, we help science progress. All the people who have won the Jim Gray Award have done a lot to help other scientists do better work.

Mark Abbot also stresses the significance of collaboration:

Collaboration is just essential, because studying these complex

The study of snow in the hydrologic cycle is important, Jeff Dozier notes, because an estimated one-sixth of the world's population (more than 1 billion people) depends on melted snow and glaciers for their water supply.

Research scientist Mark Abbott used a computer to collect 8,000 water samples that were analyzed within an hour, enabling him to examine the structure of the ocean in much greater detail than was possible before recent technological advances.
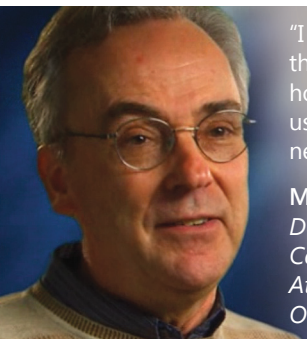
"I think winning the Jim Gray award is more than recognition of ocean sciences, and I hope it will inspire other young scientists to use computer and information technology in new ways. "

Mark Abbott
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systems, no one person can understand all of the science, all of the technology, all of the nuances associated with the data.

Ocean science is trying to understand the ocean. I think it goes beyond that. It tries to see how the ocean impacts the entire planet. How does it interact with the atmosphere? How do things on the land affect the ocean? When I first started out as a young Ph.D. student, people would collect water in bottles, and they'd get 200 samples. And those 200 samples would take one year to analyze. I, on the other hand, was using a computer to collect 8,000 samples and it was analyzed within an hour. I think it allowed us to look at the fine, detailed structure of the ocean and see things that we couldn't see by a sample every 200 yards.

I think winning the Jim Gray award is more than recognition of ocean sciences, and I hope it will inspire other young scientists to use computer and information technology in new ways. How do you bring all of these complex and enormous datasets together—how do you bring people together—and how can I get better science by using computer science tools?

Bringing collaboration down to an everyday analogy, Carole Goble explains:

What I'm most passionate about is accelerating scientific discovery. My inspiration for collaboration is 14-year-old girls. Fourteen-year-old girls collaborate big-time. They're never off the phone; they're always on [some] website. They're always in Facebook; they're always twittering away; they're constantly gossiping. We need scientific gossiping. I apply Facebook ideas to collaborating and sharing all scientific protocols.

The common element among all the winners is a commitment to collaborative, data-intensive science, the very essence of what Jim Gray called eScience. The future of eScience depends upon

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Professor
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the development of tools that enable scientists to manage and understand data more rapidly and easily. Tony Hey, corporate vice president of Microsoft Research Connections, envisions this future as one where "...people won't be talking about eScience, because it will be the normal way to do science—so eScience will become simply science as we move into the future."

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