NAHUM GERSHON ON STORYTELLING
"ONCE UPON A TIME..."

Both the government and commercial sectors want alternative, but effective, methods of presenting complex information that will make it easier to grasp and to use. Storytelling may be the key.
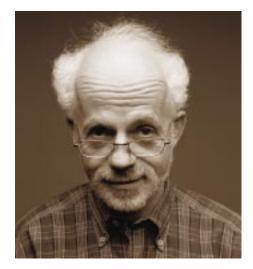
NAHUM GERSHON IS A STORYTELLER. He even looks the part. Animated, articulate, and charming, his face lights up with childlike delight as he explains storytelling and its importance to data and information visualization and presentation.

He describes himself as an "American with a slight Israeli accent." He is multilingual, which helps him in conversation as he travels the globe in his work as a noted authority in the field of data and information visualization and presentation. "But I started as a chemist. And a biologist. After coming to the United States in 1977, I worked at the National Institutes of Health as a biologist. Biology is a very visual science, so while there, I became interested in the 'visual stuff.' I discovered my medium. I love this medium. I am one with it. And it has taken me from there to here at MITRE."

And his work as a senior principal scientist in MITRE's Center for Information Technology may well revolutionize the field of information technology.

Information visualization and presentation uses visual elements, text, and the human ability to "fill in the blanks" to present very complex information in an intuitive, storylike fashion.

The power of a story well told

"A well-told story conveys great quantities of information in relatively few words and images in a format that is easily assimilated by the listener or viewer," explains Gershon from his McLean, Va., office. "Sto-

rytelling is, of course, not a new concept. It's a technique that has been used to transmit information and culture since the dawn of humans. The twist here, as far a s technology is concerned, is that you tell stories using the technologies we have available to us today to convey the understanding of that information in a compelling and engaging way."

Stories have a lot of power because they can be transmitted indirectly and convey

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Computer-based storytelling could well revolutionize the way people interact with information on computers.

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a good deal of information. In the story of "Sick" Jim (next page), much information is conveyed within the framework of a short story.

"I can tell you a story in three seconds that you may remember the rest of your life," Gershon says. "Will you remember as well if I read you a list of facts containing the same information? No."

He continues, "What is the moral of the story of Little Red Riding Hood? Don't go alone to the forest and don't talk to strangers! If you just tell your children, 'Don't go alone to the forest and don't talk to strangers,' the first thing your kids will do is go to the forest and find a stranger to talk to."

But when children hear the Red Riding Hood story, they get connected to the tale.

They identify with the protagonist, become frightened with her and triumph with her. "And they must mentally visualize the story and determine for themselves the lesson to be learned," Gershon says. "By doing so they learn the lesson better and are more accepting of the message."

Gershon adds, "But the most compelling part of using storytelling in information visualization and presentation is that you are relying on what the users already know and their capability to understand and connect things. You leave holes in the story so the users can fill the gaps for themselves. By doing that, you have the pitfall of having different people fill in the gaps in different ways. But there are also incredible advantages, one of the most important being that the user is drawn into engaging with the story."

And, to illustrate the concept to his listener, he tells a story...

How to plan your summer vacation

"We are going on vacation to Tuscany, Italy." He holds up a blue travel guide. "I can get information from this text, presented in a very factual way. It will be very authoritative and give a lot of factual information. But it will be very difficult, without spending a lot of time digesting all this information, to get an understanding of the place I'm going. You don't see the forest for the trees. It's very factual and dry, and not very appealing."

Gershon snatches up a copy of another travel guide. Now here is a picture book of Tuscany—much more visual and palat-

able. "Fragmented pieces of text, attached to pictures, to give you a paragraph of information about significant buildings, floor plans, statues, and places of interest, with a map pointing to where you can find them," Gershon notes. This book gives you an outline, "an overview of the place, but no depth or context. There is no emotion attached to the place."

He then picks up a volume of a collection of stories and essays about the region written by distinguished writers. This guide is filled with the color of Tuscany—the side roads, outdoor markets, the wines and food, the history, the people.

"Here you can read of someone else's experiences of Tuscany. It enriches your knowledge, and you can experience the flavor of the place through another's eyes, soul, and words," Gershon says.

Information visualization and presentation can give you the ability to capitalize on all of these approaches.

"As you read the story, because it's related to an actual place, you want to see the pictures of what it looks like," Gershon says. "A church, perhaps, or a piazza. And then you may want more information about a building. Where to find it; who built it; the history. You can have pieces of information attached to this item of interest that will allow you to delve more authoritatively into the subject; you can have the full text at your disposal. You can go back and forth, or have access to all the information you need at the same time.

"I could give you a bullet list of the sites in Tuscany you should visit while you're there that would take you to the same locations, but which would you rather use as you plan your itinerary? My information visualization and presentation approach or the sterile, bulletized list?"

Storytelling elements enhance decision making

Gershon emphasizes, "Using storytelling elements to make a presentation more storylike may make it more convincing; it may be shorter, more complete, and better understood; and it may be more attractive and more memorable. You can use storytelling 'tricks' to alter the presentation of dry facts to make it more storylike, and therefore more effective and interesting."

Computer-based storytelling offers the possibility of radically changing the way people interact with information presented on computers. Rather than represent data in a simple, logical context, such as a list, graph, or a table, information can be organized into images, animations, text, or visual sequences. Visual techniques—aerials to establish an overall scene, zooms to focus attention, dissolves and transitions to combine disparate pieces of information, and pacing strategies to show the rhythms of events and the passage of time—help the brain quickly order and compress information. That, in turn, creates understanding and the ability to make decisions.

The applications of storytelling

In terms of applications to the real world, industries that manage massive databases, such as transportation, telecommunications, or energy transmission, could use storytelling techniques to enable quick decision making, for example, on the restoration of electricity after a blackout.

Nor is the power of storytelling lost on the Department of Defense Advanced Research Program Agency (DARPA), which is integrating storytelling concepts into the Command Post of the Future Program. Commanders will very soon be using storytelling techniques to communicate mission priorities with subordinate commanders, enabling better decision making at all levels. The Intelligence Community Advanced Research and Development Activity (ARDA) uses storytelling concepts to enhance its Geospatial Intelligence Information Visualization Program (GI2Vis). This program will enable information analysts to use storytelling techniques to effectively brief colleagues, superiors, or policy makers.

To optimize the use of storytelling in the Defense or Intelligence Community, "we must first understand the new medium and its potential applications to its environment before we can start to develop technology to assist in integrating storytelling into presentations," Gershon cautions. "We, as technologists, always seem to rush to develop technologies, even sometimes before we understand the full capabilities or difficulties its users will encounter."

Gershon concludes, "We should be careful not to jump into the middle of technology before we understand the medium and the applications. Evaluate the medium. Understand it and its potential impact on the users. Then develop the technological applications."

—*Robin Carrington*