April 2015

SRI International

Alumni Association

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MESSAGE FROM CHAIRMAN PETE VALENTI

Pete Valenti

Hi, Folks,

Happy spring, especially to you alumni in areas that had such a harsh winter. I hope you are thawing out and seeing some sunshine.

For Bay Area alumni, it's time for the Spring Fling. Mark your calendars for Wednesday, April 29. We will be visiting the Shoreway Environmental Center in San Carlos to see what happens to all that stuff we drop in our recycle bins. Details are on the enclosed flyer. Thank you to Tom Anyos for planning the trip and arranging for the box lunches.

The UK alumni are probably planning their annual outing, too. We'll look forward to hearing about it and seeing the photos.

This newsletter once again showcases the breadth of SRI's research. Who knew robots could be soft? The alumni who attended our September reunion and heard Roy Kornbluh's talk know, and now the rest of you will also learn about this remarkable technology. Steve Ciesinski relates some facts about Silicon Valley that I'll bet not many of us who live here were aware of. SRI is leading a team contending for the $2 million Wendy Schmidt Ocean Health XPRIZE, using a novel device to measure the acidity of the ocean. On the security front, SRI engineers are finding new applications for Iris on the Move technologies, which confirm people's identity at a glance, and biochemists are developing synthetic polymers for countering chemical and biological threats. SRI's education researchers recently published two reports, one on a possible opportunity to expand preschool in California and another on the obstacles educators face as they try to meet the needs of foster youth.

Don Nielson shares the exciting news that Doug Engelbart's original mouse will be displayed at the Smithsonian Museum and takes us back to those early days when Engelbart's "Mother of All Demos" changed the face of computing.

Borrowing the Taxi Tales driver's seat (or, maybe more accurately, passenger's seat), Norm Nielsen takes us on a wild ride in Cuba, while Peter Weisshuhn treats us to dinner and a petty-crime drama in Paris.

Finally, call me biased, but the spring issue contains my favorite feature: the annual SRI Alumni Association Financial Statement.

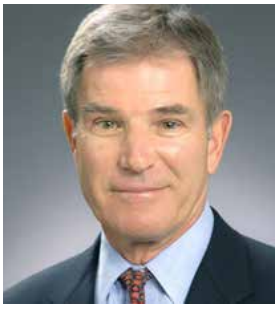
Stay connected!

VP and General Counsel Abramson Retires

Richard Abramson, SRI's Vice President of Business Affairs and General Counsel, retired from SRI on April 3, having served in this role for 14 years. Richard plans to travel, spend more time with his wife, and pursue his love of writing. In announcing Richard's retirement, SRI President and CEO Bill Jeffery said, "SRI has benefited considerably from Richard's more than 30 years of legal and business experience. His impact on SRI's 'spirit' has been profound and will be a lasting legacy. "

On Richard's departure, Deputy General Counsel John McIntire will become Acting General Counsel. John joined SRI in 2003 and has played a central role in many of SRI's significant transactions. His responsibilities will be to lead the legal team, support and advise the Board of Directors as Secretary, and provide counsel to SRI as a whole. In his 20-year career, John has held corporate and business development roles with SAP in Asia and Europe and served as vice president of Global Intellectual Property. He was a corporate strategy consultant with McKinsey & Company and launched his career at Wilson, Sonsini, Goodrich & Rosati / Venture Law Group. He holds a J.D. from Yale Law School.

What Makes Silicon Valley Work?



By Stephen Ciesinski, President of Global Partnerships at SRI

A February 5, 2015, *San Jose Mercury News* article looked at innovation in Silicon Valley and what makes it tick like no other technology hotbed. Researchers at the Massachusetts Institute of Technology (MIT) and the National Bureau of Economic Research built a map pinpointing the locations of successful start-ups based on such criteria as IPO or acquisition and the factors that led to their success. It turns out that location had even more to do with innovation than previously thought.

Start-ups in Menlo Park, Mountain View, Palo Alto, and Sunnyvale topped the list. Silicon Valley was ranked as the area responsible for the ideation, creation, and materializing of more successful start-ups than anywhere else in California.

The MIT study found that the San Francisco Bay Area has two distinct advantages:

- A higher initial quality of start-ups
- A broad range of elite research institutions and universities, including Stanford, UC Berkeley, UCSF, and Lawrence Livermore Labs.

So if this ecosystem is solidly in place, what accelerates the innovations that lead to successful new ventures? What makes a community or area thrive when it comes to creativity and the development of unique and thoughtful products and services?

I think it's the involvement and perseverance of extremely bright, curious, energetic, and ambitious people who want to change the world in a positive way. These creative minds want to realize their dreams in their own ventures and not have their ideas and results hidden within a large company or bureaucracy. With growing opportunities for innovators to receive serious training, education, and mentoring on how to start and build companies, the risk and intimidation of starting something that matters are greatly reduced.

The trends identified in the study map closely to SRI's Five Disciplines of Innovation® program. We say it's not enough just to have a bright idea—innovation comes from the creation and delivery of new customer value in the marketplace with a sustainable business model for the enterprise producing it. In short, innovating is a process, not simply an event. In a nutshell, our approach entails

- Identifying important customer and market needs (a big idea that has merit, as confirmed through market research)
- Ensuring a unique approach (a solution that has true and clear value) to meeting those needs
- Assigning an innovation champion (a subject expert with the passion to succeed) to advocate for the cause
- Building a productive, supportive team (world class in every critical position)
- Creating organizational alignment (investors, board members, senior management, key contributors, everyone involved).

Yes, it certainly is hugely significant to be in an environment like Silicon Valley that contains world-renowned research centers and a high quality of new venture support systems, but it's equally essential to have a proven formula for innovation to achieve ultimate success.

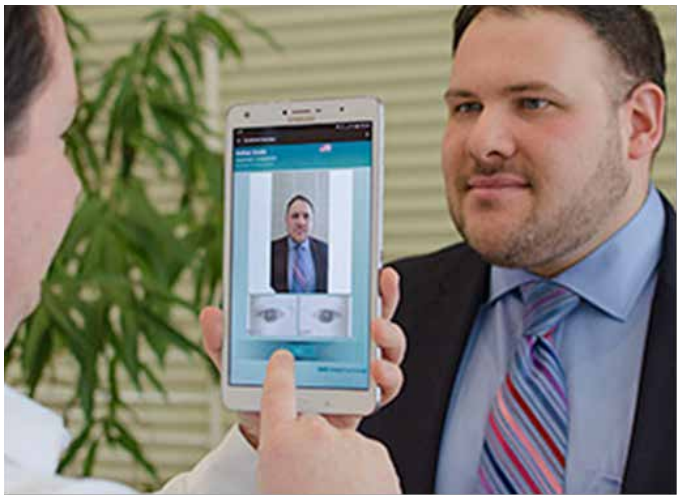
In case you're interested, here are the top 10 cities for high-tech success that MIT and the National Bureau of Economic Research identified:

1. Menlo Park
2. Mountain View
3. Palo Alto
4. Sunnyvale
5. Redwood City
6. East Palo Alto
7. Emeryville
8. Portola Valley
9. Grover Beach (San Luis Obispo)
10. San Mateo

This is an excerpt from an article posted in SRI's blog on February 24, 2015.

SRI Offers Iris Biometric-Embedded Products for Mobile Business-to-Business Applications

SRI recently announced an exclusive license of Iris on the Move® (IOM) technologies to Samsung for use in Samsung's mobile products. SRI also entered into a supply agreement to start production and sales of the IOM technology-embedded Samsung mobile products for business-to-business applications. The initial product for this supply agreement will be a customized Samsung Galaxy Tab Pro 8.4 tablet with a built-in IOM module.



SRI will be seeking initial adopters of the new product for various security and identity management applications. This new product will provide fast, easy-to-use, and accurate biometric identity management solutions for its users.

IOM biometric systems combine the accuracy of iris recognition with a quick, convenient solution for secure access control and identity authentication. Unlike other biometric readers that require users to stop or to position their eyes close to a camera, IOM products allow people to simply glance and go. Tests have shown this purely iris-based solution to be more than 1,000 times more accurate than published fingerprint data.

Soft Robots Are Reshaping the Future of Robotics

By Roy Kornbluh, Principal Research Engineer

Editors' note: *SRI alumni who attended the September 2014 reunion will remember Roy's fascinating talk and demonstration on this subject.*

When people think about robotics today, they tend to think of hard and rigid metal structures driven by powerful motors. Many robots do in fact have hard structures (not to mention hard and rigid actuators, sensors, and grippers), which can make them heavy, slow, inefficient, expensive, and potentially dangerous when it comes to working side by side with people.

But what if robots could emulate humans or other creatures in nature? What if they could harness the manual dexterity of humans, the maneuverability of birds, or even change their surface texture based on environmental context? Unlike traditional robots, nature offers hard and soft structures, actuators, sensors, and grippers that achieve many of these capabilities. Soft structures and systems are also inherently safer when interacting with people.

New Trend Toward "Soft" Robotics

We are now seeing fundamental changes in the field where improvements in materials are literally reshaping robotics. The new trend is moving toward "soft robotics," driven by improved capabilities, lower costs, and increased safety for human interaction. The SRI Robotics Program is at the forefront of this movement, with innovative materials technologies that are changing the way many types of industrial, medical, consumer, automotive, and aerospace robots are powered and operated. Key SRI technologies at the heart of this evolution are electroactive polymers or "artificial muscles," electroadhesion gripping, and electrolaminates.

Electroactive polymer artificial muscles expand when a voltage is applied and contract when the voltage is removed, thus converting electrical energy into mechanical

motion. Unlike other voltage-controlled materials, such as piezoelectrics, artificial muscles have the force and stroke of natural muscle. These characteristics can enable robots to mimic the dexterity and mobility of humans. In contrast, pneumatics—a technology that powers most of today's soft robotics—requires noisy air compressors, hard-to-control valves, and awkward hoses.

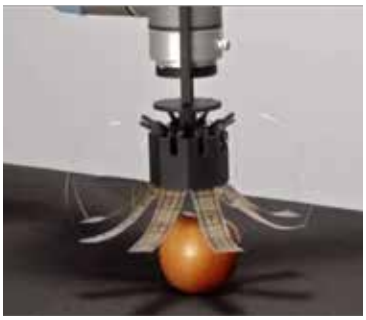
SRI's patented smart material, "artificial muscle," behaves much like a human muscle. It expands when exposed to an electric current and contracts when the electricity is removed, converting electrical potential energy into mechanical motion.

Another robotics trend enabled by electroactive polymers is the ability to change surface texture and even develop skins that can sense pressure and contact, which is particularly important as robots start to work side by side with humans. A driving force behind these new sensing developments is the need for wearable sensors that achieve comfort and function by matching skin impedance. Because these stretchable polymers can also act in reverse with low hysteresis, meaning that they can generate power by being stretched and contracted while achieving consistent results, they can also be built into clothing and fabrics to measure motions and forces. Commercial organizations are developing electroactive polymer materials based on SRI licensing for a diverse range of applications where softness, flexibility, and electrical activity for actuation or sensing are important.

The market is also starting to see soft grippers with new capabilities. Unlike their rigid counterparts, soft grippers can pick up a wide variety of objects with minimal sensing and control. An extreme example is found with "jamming" grippers, in which a flexible sack is filled with a powder-like substance that can conform around an object of almost any shape. A vacuum process then makes the soft gripper rigid, enabling it to pick up the object through friction—without any intelligence or complex processing.

Electrostatic forces can be used to pick up and move objects that might be too delicate to squeeze with the forces needed to produce sufficient frictional forces. Similar to the principle of rubbing a balloon on hair to create electrostatic attraction, this soft and flexible technology allows for electrically controlled adhesion to grip almost any object.

Grabit Inc., an SRI spin-off company, provides a good example of this technology in action for materials handling. Using electroadhesion technology licensed from SRI, Grabit's robot hands can grip a wide variety of objects. Electroadhesion can also more securely transport objects moving along conveyer belts—resulting in a quicker, more flexible, and cost-effective option for many manufacturers and product distributors. The SRI Robotics team has applied this electroadhesion technology in wall-climbing robots that are effective on a range of surfaces—even damp or rough surfaces. These robots can be used for inspection and surveillance, as toys, or even eventually for cleaning hard-to-reach places in buildings.



Grabit Inc.'s Each Pick prototype demonstrates the acquisition and transfer of unwrapped products of various shapes, sizes and weights.

Changing Form Factors

And what if materials could change from soft to hard on demand? SRI is working on electrolaminate technology that can enable a material to change from being pliable like rubber to rigid like steel—without adding significant bulk, mass, or power to the materials. These materials—types of metamaterials or mechanical materials—are built of repeating elements. Connections within the elements can be changed by electrostatically clamping different layers together. Compared with more traditional smart materials and systems, electrolaminates use only low-cost and lightweight flexible polymers, offer far greater stiffness variation and elongation, and can react quickly. These characteristics result in lighter, cheaper, less complex structures that can absorb a great amount of energy. To date, we've demonstrated electrolaminate straps able to hold up to 150 pounds.

Perhaps one of the most compelling applications for this technology is human performance enhancement. In a Veterans Administration–funded effort, SRI's electrolaminates are enabling MIT's FitSocket technology to more effectively adapt to changing loads and limb volumes for prosthetic limbs. Inspired by the construction of a barrel with straps that hold it together, SRI has developed straps from electrolaminate materials that comprise the interface

between prosthetic limbs and the human body. The straps become rigid when the limbs are in motion and then soft and flexible when the limbs are at rest. For DARPA's Warrior Web project, SRI's electrolaminates are used to construct undergarments to work with the human body's musculoskeletal system to absorb energy and then release it for reducing physical burden on military soldiers. Such materials can make robots interact more safely with humans by, for example, allowing the robot's structure to become soft should a potential collision situation be detected.

These examples are just a few of the applications and capabilities that are possible because of advances in soft robotics, driven by the notion that robots can approach the capabilities of natural creatures. Not only can soft robotics provide options that are faster, stronger, and more dexterous than traditional hard robotics, they can be safer and more cost-effective. Of course, there still are many applications where rigid capabilities are required. But as humans and robots work together more closely, imagine that if a rigid robot came close to hitting a person it would sense that and either stop or even shape around the human part. With advancements in soft robotics, that time is not far away.

This article was posted in SRI's blog on March 24, 2015. This version has been slightly edited.

SRI Leads Research Team to Next Phase of Wendy Schmidt Ocean Health XPRIZE Competition

By Eric Kaltenbacher, Program Manager, Advanced Technology & Systems Division

The health of the world's oceans impacts all of our lives, because oceans are much like the lungs of our planet, albeit acting in reverse—consuming carbon dioxide (CO_2) and releasing oxygen. The Wendy Schmidt Ocean Health XPRIZE aims to improve understanding of how CO_2 emissions are acidifying the oceans through a $2 million competition to create pH sensor technology that accurately and affordably measures ocean pH levels.

Unfortunately, the high level of CO_2 in the atmosphere is changing the chemistry of the oceans because the absorbed CO_2 reacts with the water to form an acid. Over time, this results in the oceans becoming more acidic (a process known as ocean acidification) and has serious implications for the entire marine ecosystem. A lower pH value corresponds to an increase in acidity. While decreased ocean pH has been documented in specific areas, the ability to measure ocean acidification across coastal regions, in high latitudes, and through the ocean depths will increase understanding of the magnitude of the problem so that future solutions can be developed.

An SRI-led group, TEAM SEAS, is competing for the XPRIZE. We recently completed Phase 2b Lab Trials in which participating teams' technologies underwent a rigorous three-month trial in controlled laboratory conditions to test the accuracy, precision, and stability of their sensors. TEAM SEAS and 13 other teams have just started Phase 3 Coastal Trials. Our technologies will face challenging coastal conditions to evaluate performance over a month-long, real-world test.

TEAM SEAS, left to right: Lori Adornato (SRI), Eric Kaltenbacher (SRI), Bob Byrne (USF), Jac Fought (Battelle), Sherwood Liu (USF).

Along with marine researchers from SRI, TEAM SEAS includes researchers from University of South Florida (USF), who helped develop the spectrophotometric elemental analysis system (SEAS) technology that forms the basis for our entry. TEAM SEAS also includes colleagues from Battelle Memorial Institute, who provide expertise in protecting instruments from growth of biological organisms and from the high pressure of deepwater environments.

The TEAM SEAS instrument uses the spectrophotometric technique to measure pH, which is like measuring chemistry in a swimming pool: Take a sample of water, add a reagent or dye, and compare the resulting color to a reference chart. The SEAS instrument, however, uses light sources and detectors to measure the optical signal—or color—of the water with very high accuracy. Adding to the instrument's inherent accuracy is the distance through which the optical signal is measured to determine pH—it is much longer than

that of other instruments and therefore looks through a bigger sample of water.

The SEAS-pH DEEP sensor.

While measuring the pH level of ocean waters is the focus of the XPRIZE competition, the SEAS instrument is adaptable. It can also measure other elements in water, such as pollutants, nutrients, and trace metals, without reconfiguration. Because the instrument's broad color detector applies fine-grain resolution for detecting color, it can use the same procedure for other measurements simply by using a different reagent and identifying the color change associated with its reaction with that analyte.

Another powerful aspect of the SEAS instrument is that it includes programming to set up basic operation, and the user has full control. The commands are written in easy-to-follow terms, such as "turn on pump," "turn off pump," and "read detector," making it very quick and easy for the user to program a list of commands to run the instrument. For example, if the user wanted to switch from measuring pH to measuring a nutrient, he or she would modify the command to dispense a different reagent and to monitor for a different color. This flexibility and adaptability of the SEAS instrument should prove to be useful for researchers in the oceanographic field, particularly when it comes to securing funding for one instrument with many uses, as opposed to a separate instrument for each use case.

Beyond oceanographic research, there are other potential applications for this instrument in the future. Because it doesn't require a large sample volume to take measurements, it could be useful in monitoring fertilizer runoff from farms or even measuring the quality of drinking water. In the meantime, the XPRIZE competition gives us the opportunity to put the instrument through real-world testing while advancing our understanding of ocean health.

This article was posted in SRI's blog on March 25, 2015. This version has been slightly edited.

New Study Finds California's Local Control Funding Formula Presents Challenges and Opportunities for Expanding Early Childhood Education

A study on early implementation of California's Local Control Funding Formula (LCFF) has found that early childhood education (ECE) was not among school districts' priorities in the first round of LCFF budgeting. Few districts added new ECE programs or dollars. Yet the study also revealed that the authority and flexibility the LCFF gives districts to determine how to allocate their education resources creates a potential opening for expanding preschool offerings for the state's three- and four-year-olds.

With funding from the Heising-Simons Foundation, SRI Education, a division of SRI International, and J. Koppich & Associates conducted the research and produced the report *Early Implementation of the LCFF: Staking Out the Ground for Early Learning*. The study found that advocates for expanding ECE under the LCFF face both challenges and opportunities. ECE is one of California's few remaining categorical programs. The state allocates targeted dollars to fund preschool for low-income children who qualify, and LCFF regulations neither prohibit nor require districts to expend added dollars on ECE. The study found that districts currently have no incentive for including ECE among their competing budget priorities. Moreover, study findings showed that educators disagree among themselves about whether ECE is part of the K-12 mission. Some see preschool as necessarily connected to K-12, whereas others see it as a separate system with different responsibilities and goals. Those who favor expanding early childhood education must convince districts that increasing these early learning programs is in their interest and brings them educational dividends.

The report points to opportunities such as an LCFF requirement for parent engagement in district budget building. As preschool parents take their children's needs to the LCFF arena, ECE can begin to receive a fuller hearing, increasing the possibility that districts will consider these programs as they develop budget priorities.

In addition, study findings suggested that the state's new Transitional Kindergarten (TK) program, which represents recaptured learning time between preschool and kindergarten, could serve as a bridge between advocates for added ECE dollars and proponents of more programs and services for K-12 students.

The report concludes by lauding California's strong policy commitment to early childhood education. This year's state budget increased the number of state-funded preschool slots, with the promise of more to come. In addition, a recent public opinion poll found that significant majorities of Californians agree on the importance of high-quality preschool. The LCFF provides an opportunity to translate existing policy and public opinion to expanded ECE options.

New Study Finds California School Districts Struggling to Develop Support for Youth in Foster Care

In research on foster youth and California's Local Control Funding Formula (LCFF), SRI Education and J. Koppich & Associates have found that most school districts are just beginning to grapple with how to address the needs of foster youth, despite the fact that foster youth have the lowest educational and life outcomes of any student group. The report *Foster Youth and the Early Implementation of the LCFF: Not Yet Making the Grade* reveals serious gaps between the state's intent to highlight foster youth as a target group and the state's, counties', and districts' systems of support for this particularly underperforming group of students.

While acknowledging the complexity of the foster youth system and the steep learning curve confronting districts, the report identifies obstacles educators face as they try to meet the needs of foster youth. For example, the Foster Youth Services program has a narrow definition of foster youth, resulting in some youths' not having access to its counseling and tutoring services. While the LCFF has a broader definition of foster youth, few districts have programs to fill the service gap. The study also found that California lacks a comprehensive data system to track foster youth. Although a system is under development, it seriously undercounts foster youth and does not provide educational data needed to determine what supports are necessary. As a result, school districts are scrambling to identify foster youth and gather their educational records.

Data sharing problems faced by County Offices of Education, school districts, and welfare agencies are also highlighted in the report. Foster youth are far more likely to transfer between schools than other students, and without timely information sharing foster youth face barriers to their academic progress. Although AB 490 (the Educational Rights and Stability for Foster Youth Act) sets expectations for two-day transfer of educational records, immediate enrollment, and other educational rights, data sharing problems persist.

Despite the obstacles, educators and others working with foster youth expressed optimism about the potential of the LCFF to help meet the needs of this population. Through district case studies, the report highlights local strategies to improve school stability, add counseling and tutoring programs, strengthen advocacy, change school climate for foster youth, and provide relevant professional development to school staff.

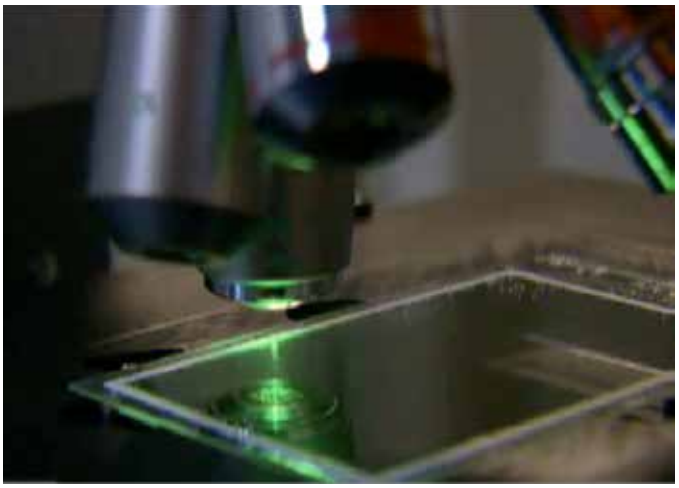
The research was commissioned by the National Center for Youth Law and its funders, including the Walter S. Johnson Foundation and the Stuart Foundation.

SRI Biosciences Awarded $10 Million Contract Under DARPA Program to Develop Synthetic Polymers for Countering Chemical and Biological Threats

SRI Biosciences, a division of SRI International, has been awarded a $10 million contract under a DARPA (Defense Advanced Research Projects Agency) program to reimagine how proteins are constructed and to develop novel medicines and diagnostics as countermeasures to chemical and biological threats.

The new contract is part of DARPA's Folded Non-Natural Polymers with Biological Function program, known as Fold F(x). The initial goal of the program will be to develop biologically active non-natural polymers that are structurally similar to naturally occurring proteins but without their limitations, such as sensitivity to heat denaturation or chemical degradation.

To develop the new polymers, SRI is combining its expertise in medicinal chemistry and biopolymer design with a breakthrough approach to screening vast numbers of compounds. The novel polymers are being made from entirely new types of monomer structures based on drug-like scaffolds with high functional group densities. SRI's compound screening innovation is based on its proprietary Fiber-optic Array Scanning Technology (FASTcell™). Originally developed to identify circulating tumor cells in a blood sample, FASTcell can distinguish a single tumor cell among tens of millions of healthy ones in a few minutes. With DARPA support, SRI is expanding this technology to screen 25 million compounds in just one minute.



SRI is adapting its FASTcell technology to screen libraries of non-natural polymers.

"Our goal is to develop a method that can enable rapid, large-scale responses to a bioterrorism threat or an infectious disease epidemic," said Peter Madrid, Ph.D., program director in SRI Biosciences' Center for Chemical Biology and co-principal investigator and leader of the chemistry effort of the project. "We are looking for non-natural polymers to detect or neutralize identified chemical or biological threats. Once we find potent molecules, we will be able to produce them at mass scale."

The overall goal of the Fold F(x) program is to expand on the utility of proteins and DNA and to overcome their limitations by reengineering their polymer backbones and side chain diversity—creating new molecules with improved functionality such as stability, potency, and catalytic function in environments usually hostile for biopolymers. The knowledge to design new functional molecules from first principles does not exist yet. The alternative is to synthesize enormous libraries of non-natural polymers and screen for sequences that have a desired action. Finding a single effective compound, such as one that can block a virus, may require screening hundreds of millions of compounds.

Initially, the program will focus on screening massive numbers of non-natural polymers for potential uses against security threats. As a proof of concept, the team will design, synthesize, and screen chemically unique libraries of 100 million non-natural polymers for activity against a variety of agents, including toxins such as ricin and viruses such as the H1N1 bird flu strain of influenza. As the program evolves, it may progress to include a range of possibilities, such as how to synthesize molecules to fold such that they emit light, have enhanced levels of strength or elasticity, or store power.

INTERNATIONAL JOURNAL

In this issue, faithful correspondent Peter Weisshuhn treats us to an account of a memorable evening in Paris.

An Evening in Paris

By Peter Weisshuhn

I love bouillabaisse, the French seafood soup of the Mediterranean. The best of these delicious concoctions I have enjoyed in Marseille and along its coast. Some Paris restaurants serve it, but something is lost on the way north, namely, the three essential varieties of Mediterranean fish, which are uncaringly replaced by conventional types. As it turned out, Jean-Claude, the manager of SRI's Paris office, was from Marseille, so I asked him for advice. He, too, loved that dish and told me that he had found only one restaurant in Paris that did it right. It was small, with only seven tables, owned by a man called Nicholas; he and his wife did all the cooking. I would have to phone for a reservation to get a table, if I was lucky.

I called at once and spoke to Monsieur Nicholas, who was a little reluctant to let one of his few tables for two go to a single guest, Jean-Claude being unable to join me on the only evening I had left on that trip. But when I said I was from London and that his restaurant had come so highly recommended and how I loved bouillabaisse, he agreed that he would hold the table if I came early, at eight. The restaurant was Chez Nick, on rue Taylor, near the Place de la République. It must have closed years ago.

I made sure I got there before eight and was greeted by M. Nicholas and given the second table from the door. At this early hour I was the first guest, which gave me the opportunity to talk with my host. He and his wife had moved up from the south 40 years before and, given their ages, expected to retire in a few years. In recent years, they had opened only for dinner with a limited menu of three specialties, which, along with the soup, were pigs' trotters and a lamb dish. As became apparent when the other guests arrived, they were all well known to the host, greeted with hugs and kisses, with

news of family and mutual acquaintances exchanged right by my table, in a wonderful ambiance of genuine intimacy, of which I had not experienced the like. All the tables were soon taken. I was the only foreigner.

My bouillabaisse was perfect, accompanied by a white wine chosen by my host. I had bought and liked that wine, a white Corbières, in England, and noticed a bottle of its red variety at the table next to mine. As, in Paris fashion, the tables were only inches apart, I could follow the conversation of my neighbours, two old boys. They enjoyed their outing and seemed approachable, so I asked them about their wine, as I had not known of a red variety. Well, nothing would do but I had to taste and then partake of their wine, whereupon conversation continued à trois. They had been friends for years, now retired. One had been a hospital porter, his friend an employee in the municipal waste treatment plant. Their modest pensions allowed them the luxury of a meal out only on special occasions, and Chez Nick was their favourite place. To follow our coffees, I ordered a round of Armagnac brandy, which procured us another half hour of animated conversation. I bade farewell to my new friends, paid and thanked M. Nicholas for the splendid bouillabaisse, and wished him and his wife good health and the energy to carry on for many more years.

I may have been a little unsteady on my way to the nearest Metro station below the Place de la République and was halfway down the steps into it when I noticed the large sign above forbidding entry: "Défense de descendre." Just then a young man rushed down past me, and the glass doors opened to admit him. So I continued down, assuming that the prohibition applied in the commuting hours but now, at 11 p.m., the area devoid of people, it permitted two-way traffic. As I proceeded along the corridor, looking for a ticket kiosk or machine, I saw the young man engaged in an unfriendly exchange with three men. As they turned their attention to me, he ran off and I became uncomfortably aware that we four were now the only people about. Their leader informed me that I had broken the law by descending those stairs and would have to pay a fine. Given that they wore leather jackets that looked nothing like a uniform, I asked them by what authority they collected fines. They claimed to be part of the Metro security. They then wanted to see my passport, to which I agreed on condition they first show their ID. Only one of them pulled out some document but flashed it past me so fast I could read nothing. I did the same with my passport, not letting them touch it. I was now fairly sure that they had no official role but were just out to prey on solitary passengers. It would have been a threatening situation for a woman, especially a tourist.

Then another man came along that corridor and one of the gang went after him. When my two blackmailers renewed their demands, I said that in London we did not use such unfriendly tactics and that I had expected better treatment from French officials; all I wanted was to be told where the billetterie was so I could buy my ticket. That did not suit them. So I suggested that the night was still young and I could stay until they helped instead of treating me like a criminal. When another man came along, one of the remaining captors went after him, presumably hoping for an easier victim. The thus abandoned gang member now became visibly unsure, so I told him to just show me the way and he could come along to see that I bought a ticket. Presumably relieved, he pointed around the corner, where, 20 meters along, there was a machine. Half an hour later I was in my hotel, safe from these petty crooks, of which there is a surprising variety in Paris, each with a technique for relieving the public of valuables.

Reading the last Taxi Tale involving John Lomax and Jack Chown, both of whom were instrumental in helping Norm develop a career at SRI, inspired him to write this taxi saga.

A Cuban Taxi Story

By Norm Nielsen

Recent international news concerning the reestablishment of political and economic ties with Cuba brings back fond memories of early days at SRI. In 1960, the Engineering Division at SRI was supported primarily by the Cold War, and all of us did a lot of international traveling with regard to military programs. Taxi transportation was essential and frequent for those of us who worked on extended field programs around the world. I was one of the lucky ones who lived aboard the Motor Yacht *Acania*, a 135-foot yacht outfitted as a radar electronics research station, operating on the Atlantic Missile Range off the coast of Florida. We were in the port of Cape Canaveral after spending 18 months at the island of Antigua tracking missiles and had been completely out of touch with everyday news or the political climate between Washington, D.C., and Cuba. We knew of the military conflict in Cuba, but Fidel Castro had won that, so our vision was that of nightclubs, casinos, and

Broadway-style shows. There were several tourist flights out of Miami, so Jim Hubbard, Archie McKinley, and I decided it would be fun to go for the weekend.

In the course of a business phone conversation back to SRI, the project supervisor, Roy Long, mentioned that "Oh yes, and some of our guys are going over to Cuba this weekend." Wow! Within a few minutes, there was a return phone call from SRI's upper management, stating that it was not advisable for any SRI staff to be in Cuba, but if we did go, we were required to leave all of our company identification behind.

The evening flight out of Miami was full of party people getting ready for a night on the town and perhaps returning early in the morning. It was after dark when we arrived in Havana without reservations or any idea of where we were going to stay or what we were going to do. We were just looking for some adventure and would deal with one thing at a time, and right now we needed a taxi ride into town. There was a long line of cabs, and several drivers requested our business. We picked the guy who spoke the best English with the biggest smile. If I'm not mistaken, his name was Ermano, and he sure liked to talk. He had more questions for us than we did for him. He said he knew a perfect hotel for Americans, and it was apparent that he assumed we had retained his services for the entire weekend. As we drove the relatively dark residential streets toward downtown, we could see people marching in the side streets. There were many groups of about 40 men and women drilling in formation and holding brooms, shovels, or whatever as if it were a rifle on their shoulder. After watching this military-style training for many blocks, our group became very quiet, and my thoughts were, "What have we got ourselves into? Maybe we should have listened to SRI management."

We had been told by a passenger on the plane to exchange our dollars for Cuban pesos after we got into town and we would get a better exchange rate than at the airport. Ermano said yes, he knew the best place, and he soon turned up a side street and parked in front of a questionable-looking drinking establishment. Again I was questioning our judgment, but we were assured that this was the right place. We were directed to a back room of the bar, and sure enough there was a man sitting at a card table with a lot of money in front of him. Ermano seemed to be arguing with the man in Spanish about the exchange rate, or maybe it was the commission he was going to get. It was obvious that the rate we got was a great deal better than that posted at the airport. I didn't think about it until later, but we had been in the country only about an hour and had probably already broken an international law by dealing on the black market.

With some pesos in our pocket and a cold beer at the bar, we began to ask Ermano some questions about all the military activity going on in Havana. It turned out that this was his favorite topic, and he really got enthusiastic about what a great guy Fidel Castro was. Ermano insisted that we stop by his house not too far away and see for ourselves what Castro had already done for him and his family. He said that he owned his own house free and clear, that it was given to him by Castro for fighting in the revolution. We entered a small third- or fourth-floor walk-up apartment that was not very attractive by American standards, but to Ermano it was a piece of paradise and he was very proud. The living room walls were covered with Cuban flags, and one prominent wall displayed a poster-size picture of Fidel Castro. There were many smaller pictures of people in military uniform, and Ermano's wife explained who they were in detail as Ermano translated for us. Both he and his wife had fought in the revolution with Castro, and as a result they were given this apartment when the building was confiscated from the rightful owners and the apartments distributed to the people.

The hotel that Ermano took us to was modest but clean, with a great location overlooking the harbor. I soon wished I had paid more attention in Spanish class when I almost scalded myself in the shower adjusting "C" for cold water (*caliente* = hot). Outside it was very noisy, and when I looked out the window there were Russian helicopters landing and taking people for rides as a public relations scheme. It was great to see a more modern American chopper from Guantanamo show up and fly circles around the Russians just to show off.

Ermano was waiting for us outside the hotel and had a list of suggestions for places we should visit. The first was the National Capitol Building, where the Castro government was displaying all the wealth confiscated from the former dictator, Fulgencio Batista. The customs officer alone had a personal collection of several display cases with hundreds of gold and diamond-studded watches. Then we visited a cockfighting arena in a barn on the edge of town; cockfighting was legal and practically a national pastime. About 60 people were holding cash in their hands to bet on the cocks with metal spurs that would fight to their death.

As most young men know, when traveling in Third World countries, a taxi driver's knowledge includes the local nightlife where he might collect a fee for passenger delivery,

and our Ermano was no exception. He took us to a relatively nice dance hall that employed many very well dressed, pretty young ladies. We would buy tickets for a small price and give one to each girl that we danced with or spent any time talking to. I was standing at the bar when a man came up to me and spoke what sounded like Russian, but I wasn't sure and just said, "Sorry, I don't understand." He came back to me in perfect English and apologized, saying that he was an American security agent from Milwaukee and thought I was a Russian technician. When I asked why he picked me out, he said I was wearing the uniform, slacks and a checkered short-sleeve shirt. We looked around the room, and he pointed out about ten men dressed exactly the same. Later, we learned that these technicians were most likely an advance party for installing Russian missiles aimed at the United States.

The last day of our visit, Ermano took us to a rum distillery for a tasting tour. We sat with eight or ten people, and a bartender was assigned to our table. It was rather unusual in that when one person requested a drink, such as a banana daiquiri, everyone at the table got a banana daiquiri, and they were not just a small taste as at our wineries, but a full-size drink with garnishment. Needless to say, we soon had several drinks waiting in front of us and lost track of time. But Ermano was looking after us and got us to the airport in time for our flight.

It is safe to say that without our friendly taxi driver/guide this trip could have turned out much differently, and we might not have had the adventure or received the same political and cultural insight into the Cuban people and their government. His services will always be memorable and greatly appreciated.

HISTORY CORNER

SRI Discovers New Element?

On April 1, 1990, the *San Francisco Examiner* published an article titled "SRI Discovers New Element." The author was given as I. B. King, and the "discovery" was attributed to "SRI physicists," but it's not clear whether anyone at SRI was actually involved in composing this April Fools' Day joke. Here is a summary of the claimed attributes of the "new element":

Name: Administratum

Atomic number: 0 (no protons or electrons)

Atomic mass: 312 (1 neutron, 125 assistant neutrons, 75 vice neutrons, 111 assistant vice neutrons)

Force particles holding the nucleus together: meson-like particles called morons

Half-life: approximately three years

Decay process: repeated reorganization of constituent particles, with the atomic mass increasing with each reorganization

Reactivity: inhibits all processes on contact

Distribution: concentrates in government agencies, large corporations, and universities

Applications: being studied by a government committee, with SRI serving as support contractor for the study

Twenty-five years later, it's safe to say that Administratum is alive and well; perhaps its half-life needs to be recalculated.

The Mouse Goes to Washington

By Don Nielson

Typing "mouse" into Google gets you hundreds of millions of responses in just a fraction of a second. But eight out of the first ten citations are not at all about the pesky rodent. If you then enter "the mouse," essentially all you see relates to this ubiquitous computer appendage that had its start at SRI. Our language has accommodated this new meaning to the extent that chances are, unless the context is an issue in the garage or attic, in all likelihood "mouse" will refer to this creature of the digital age.

It was born of necessity once Doug Engelbart saw the cathode ray tube as the medium through which he was to enter his new world where computers were to augment our intellectual tasks. I believe the mechanism of the original mouse was suggested by the workings of a planimeter, but he turned to colleague Bill English to build it…over a half century ago! Since then, several billion have gone into use.

The original mouse shown here, in both its pristine and well-worn forms, was in Engelbart's possession until his passing in 2013, after which it returned to SRI. What will now happen to it is the subject of this brief note.

The original SRI mouse (top) showing the wheels that enabled two-dimensional tracking and (bottom) Engelbart holding the original mouse in its more mature condition.

SRI has decided to loan the original mouse to the Smithsonian Museum in Washington, D.C., to be displayed this coming July in its Lemelson Center for the Study of Invention and Innovation. The target period is for five years. At first, the notion was to donate this original to the Smithsonian, but SRI's new president decided, because of its intrinsic worth, to make it a loan instead. Alice Resnick, Vice President of Corporate and Marketing Communications, is shown below making the transfer in late February. What follows is a description of the mouse that I gathered to accompany it to the Smithsonian. Should you not know of its history, this will give you a brief glimpse.

Alice Resnick transferring the mouse to Smithsonian representative Jeffrey Brodie.

In the early 1960s, Engelbart was beginning to create at SRI the realization of something he had carried in his imagination for years. A caption I wrote for his pictures states: "He became a visionary who was among the first to see computing machines not just as more powerful calculators, but as the means to augment humans in their intellectual pursuit of large critical problems. He saw computers as being able to offer to a single user an intimate workspace with responsive access to information that, importantly, could be shared with all the collaborators needed to address those same problems."

Creating that intimate environment was not at all straightforward in the 1960s. He and his talented SRI colleagues began with the configuration shown below. It is the only image we have showing that very first mouse in a setting that includes both the workstation and the computer to which it was connected. The display is a radarscope, and the computer is a CDC 160A. The time is June 1965.

The workstation, with mouse, and the CDC 160A computer to which it was attached.

Close-up view of the workstation with its keyboard, command buttons, and mouse.

In a report to NASA dated July 1965, English, Engelbart, and Bonnie Huddart described the above setting as follows (note that the text you see below is an image of report text created by using the system it describes):

2b1 When the user is seated at the work station console, the CRT display is directly in front of him. It presents an arbitrarily specified section of the 17,000-character working text which is stored in the computer's auxiliary memory.

2b2 The typewriter-like keyboard just in front of the user allows him to enter mnemonic character sequences (called "operators") to designate controlling actions to the computer, or to enter arbitrary sequences of characters (the so-called "literal" input) to be inserted into the working text.

2b3 At the user's left is a fourteen-button control panel with which he may alternatively designate the operators for some of the most heavily used editing commands.

2b4 Within comfortable reach of the user's right hand is a device called the "mouse," which we developed for evaluation (along with others, such as light pen, Grafacon, joystick, etc.) as a means for selecting those displayed text entities upon which the commands are to operate.

2b4a As the mouse is moved over the surface of the table, its position is constantly being monitored by the computer, which displays a special tracking cross, which we call the "bug," on the screen in a position corresponding to that of the mouse on the table.

2b4b A user soon finds it very easy to keep his eyes on the screen and cause the bug to move about upon it as quickly and naturally as if he were pointing his finger (but with less fatigue).

With time, this interface arrangement matured. The control panel was replaced by a five-key "keyset" on which members of the group learned to input up to 32 different commands.

As time went on, smaller and cheaper cathode ray tube displays appeared that were built for showing digital information including graphics. And, with the advent of time-share computers, multiple users could meet on a common electronic workspace, part of Engelbart's vision of collaborative work.

As the 1960s progressed, sponsorship of this work at SRI had shifted largely to the Advanced Research Projects Agency (ARPA), and eventually pressure arose to give it some exposure. Engelbart chose the 1968 Fall Joint Computer Conference in San Francisco. But there, instead of conventionally just telling the world about this new approach to computing, he wanted to *demonstrate* it! The results were so startling and powerful it is still known uniquely as the "The Mother of All Demonstrations."

The venue was the San Francisco Civic Auditorium, and a standing-room-only audience had come to see. Engelbart and English were located there with their standard workstation, while the computer and other workstations were at SRI in Menlo Park, connected by an ad hoc microwave repeater atop Skyline Drive. It was December 9, 1968.

It is hard to overestimate the gutsiness of this endeavor. But though some real-time magic had to be employed in the background, to the audience it worked flawlessly for an hour and a half. The demonstration was so unusual that some who were there didn't think it was

even real. For the first time, the world got a glimpse of responsive, interactive computing that was both personal and collaborative. As evidence of its prescience, it was computing as it is universally practiced today.

Trimmed-down versions of the displays, a dozen of which could form a workstation on the same time-share computer. These photos date from about 1969.

To let you experience some of what the audience saw, I extracted three video clips from that demonstration. First is the introduction of the system and word processing (the first popular text editor, EMACS, was still almost a decade away); the second shows hypertext linkages; the third demonstrates joint collaboration on the same text file with both audio and video supplementation. These clips can be reached at https://www.youtube.com/playlist?list=PLkz8-g0Emr8yqY9c_YV3PlSfQjv5Mg8WE. By way of connection to the past, if you are able to click on this link and be led somewhere to view these video files, you are simply using the same kind of hypertext link first publicly demonstrated that day.

In spite of the attention the technology gathered that day and how it changed the face of computing, it is fair to say that Engelbart never believed that the world had captured all of his vision. I closed the message to the Smithsonian with this observation:

Douglas Engelbart.

"By 1968 Doug Engelbart and his SRI colleagues had shown to the computing world a revolutionary alternative to batch processing. But outside a modest part of that technical world, his ideas were slow to catch on and he had to patiently wait for everyone else to come along. This transition was to be aided by the plummeting cost of computing power and the emergence of networking. But when the world eventually caught on, he saw it as gravitating much more toward personal or individual computing rather than the collaborative model he sought.

But in reality that ultimate goal, the enablement of group collaboration, is alive in countless ways across the world by means of the global Internet, which, incidentally, also had some of its roots in his SRI lab. And, as he had hoped, broad collaboration using this technology is being applied in solving some of the world's most important challenges!"

Note: A larger set of highlight videos from The Mother of All Demonstrations is available at https://www.youtube.com/playlist?list=PL76DBC8D6718B8FD3.

Breaking news: Doug Engelbart's historic demonstration has been "reimagined" as a music-theater work titled *The Demo*, composed by Ben Neill and Mikel Rouse. The world premiere performance took place at Stanford's Bing Concert Hall on April 1 and 2. According to the website for the performance, "the piece reimagines his demonstration as a technologically infused music and media event, a new form of hybrid performance, equal parts meditation, elegy, and fantasia, set simultaneously in the 1960s and today."

Bay Area Spring Fling to Shoreway Environmental Center: April 29

After you've rolled your recycle container to the curb for pick-up, do you know what happens to it? The truck comes, dumps your recycle in with that of your neighbors, and drives away. Where does it go? What happens to it? Who oversees that the paper goes one place, the plastics another, and the rest somewhere else? Where is that someplace else? Do they sell your recycle or just dig it into a landfill? Are these questions that keep you awake at night? Well, now you can find out!

Come to the Alumni Association's Spring Fling on April 29 at the Shoreway Environmental Center in San Carlos. You'll be amazed at what they do with your cast-off recycles!

There is a $15 fee per person, which includes a box lunch. Please send in your completed reservation form, including payment to the SRI Alumni Association, to Tom Anyos at the address shown on the enclosed flyer by April 24. For questions, please contact Tom Anyos at tomanyos@aol.com. We hope to see you there!

Wanted: Editor for SRI Alumni Association Newsletter

The SRI Alumni Association is looking for a managing editor for its newsletter, which is published three times a year. Duties include obtaining, selecting, and writing articles and other items related to SRI and members of the association, as well as managing the publication process from draft materials to final production. Assistance will be available from the previous editors and from the newsletter's current design/layout artist. To see past issues of the newsletter, go to the Alumni Association's website at http://www.sri.com/about/alumni and click on "Publications." If you or someone you know would be interested in volunteering for this position or would like further information, please send a message to steering-committee-alumni@sri.com.

SRI International Alumni Association

Cash Flow/Income and Expense

Year ending December 31, 2014

CASH BALANCE as of 01/01/14		**$15,351.04**
INCOME		
Cash income from membership dues and fees	$7,925.00	
Dividend income from bank account funds	$6.47	
Contributed funds		
SRI Federal Credit Union	$1,500.00	
SRI International	$500.00	
TOTAL INCOME	$9,931.47	**$9,931.47**
EXPENSE		
Services provided by SRI International		
Report production services	$6,690.75	
Postage and mailing expense	$1,744.06	
Computer charges	$80.00	
Special events and awards		
Annual reunion expense		
Food and beverage (Includes credit of $358.93 from 2013)	$4331.63	
Music	$450.00	
Non-refundable bus deposit (Resulting from cancellation of Spring Fling - Can be used for future activities)	$498.70	
Other expenditures and costs		
Office supplies	$434.50	
Membership ID cards - 300 cards	$346.16	
TOTAL EXPENSE	$14,575.80	**$14,575.80**
CASH BALANCE as of 12/31/14		**$10,706.71**

Who Do You Believe Made an Exceptional Contribution to the Success of SRI? Nominate That Person for the SRI Alumni Hall of Fame!

The SRI Alumni Hall of Fame honors former staff members who made exceptional contributions to the success of SRI. See the table at the right for past years' inductees. We are seeking nominations for Hall of Fame candidates by June 5.

All former staff members are eligible, but nominees should meet the following criteria:

- Significant, lasting contributions to the success of SRI
- Contributions recognized by staff, management, or clients
- Contributions in any area of research, management, or service, such as
  - Establishing a new laboratory or a new field of research
  - Performing an outstanding recognized service
  - Clearly demonstrating qualities of leadership, vision, and creativity
- What did the person leave behind?
  - Enhanced reputation for SRI
  - New or enhanced research, business, or support activity or facility.

Please prepare a write-up of about 300 words indicating how your nominee meets these criteria. If you have questions about the nomination process, members of the Steering Committee will be happy to answer them. Send the write-up or questions to steering-committee-alumni@sri.com or SRI Alumni Association, 333 Ravenswood Avenue, AC-108, Menlo Park, CA 94025-3493. Again, the due date is June 5.

Welcome

The SRI Alumni Association welcomes new members:

Lynn McGreevy Bartee
Pat Wagenhals Coffey
Thomas Little
Bincy Ninan-Moses
Cecelia (Sandy) Smith

And welcomes back previous members:
Joe DeGraw
Eldon Fernandes
Melba Harrison

We look forward to your participation in the Alumni Association and hope to see you at our next group event.

Current SRI Alumni Hall of Fame Members

2013	Adam Cheyer, Don Lorents
2011	Ed Acton, Earl Blackwell, Joe DeGraw, Elmer Reist
2009	Ted Mill
2008	David Golden, Ken-ichi Inouye, Kinney Thiele, Peter Hart, Bob Dehn
2006	Bill English, Jeff Rulifson, Carl Spetzler
2005	Catherine Ailes, John McHenry, Charles Tyson
2004	Charles Spindt, Robert Stewart, Shigeyoshi Takaoka, Masato Tanabe
2003	Jack Goldberg, Marion Hill, Earle Jones, Peter Lim, William Royce
2002	Mike Frankel, Paul Jorgensen, Donn Parker
2001	George Abrahamson, Dale Coulson, Philip Green, Kitta Reeds, Carl Titus
2000	Hewitt Crane, William Estler, Elizabeth Feinler, Douglas Keough, Kenneth Lunde, Donald Nielson
1999	Richard Foster, John Granger, Melba Harrison, Richard Honey, Ralph Krause, Thomas Morrin, Jerre Noe, Allen Peterson, Lorraine Pratt, Don Scheuch, Ronald Swidler, Mike Villard
Prior Years	Bill Baker, Emery Bator, Fran Bohley, Charles Cook, Bonnar Cox, George Duvall, Kenneth Eldredge, Douglas Engelbart, William Evans, Dennis Finnigan, Gustave Freeman, Weldon Gibson, Jane Goelet, Bruce Graham, Chuck Hilly, Jesse Hobson, Fred Kamphoefner, Ray Leadabrand, Albert Macovski, Frank Mayo, Joseph McPherson, Arnold Mitchell, Chozo Mitoma, Tetsu Morita, Jean Nelson, Gordon Newell, Nils Nilsson, William Platt, Thomas Poulter, Ed Robison, Charles Rosen, Robert Shreve, William Skinner, Felix Smith, Robert Smith, Mimi Stearns, Lawrence Swift, Robert Vaile, John Wagner

Note: No new members were inducted in 2007, 2010, 2012, and 2014.

Directory Addendum

The enclosed directory addendum (covering the period August 1, 2014, to March 31, 2015) contains new members and corrections. Please add it to your 2015 Directory.

VISA!

New Services for your Visa® cards starting April 6

UChoose Rewards® · Custom Cards Online · CardValet · Visa® Benefits

CHOOSE!
New UChoose Rewards® for Visa Rewards Credit Cards. Turn your purchases into cash, airline tickets, gifts and gift cards with the new online rewards center.

PERKS!
Visa Benefits are being expanded to ALL CARDS, plus adding: lost luggage, trip cancellation and trip delay.

CUSTOMIZED!
MyCardCreate is a new online portal that lets you personalize your Visa debit and credit cards at no charge!

CONTROL!
New CardValet app lets you proactively manage your Visa Cards through your mobile phones. Control when, where and how your cards are used!

CORE! Central to all of our cards
NO annual fee • NO foreign transaction fee • NO balance transfer fee • NO cash advance fee • Great rates

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Jane Cano*

Jane Cano, a former SRI staff member, died at home in Los Altos Hills on January 25, 2015, of colon cancer. She was 78 years old.

Born on the island of Oahu, Hawaii, she came to California and worked for a time at the U.S. Geological Survey next to SRI. She began her SRI career in 1984, when she was offered a position as Administrative Assistant, which she held until her retirement in 2005. In retirement, she maintained her connection with SRI as a volunteer by supplying flowers and watering plants in Building A and for various events. As a valued member of the SRI Alumni Association, she provided centerpieces for the annual alumni reunions and helped with administration of the events. Her picture appears often in the reunion photos published in the newsletter each year.

A lover of all things Hawaiian, Jane continually demonstrated her generous and caring Aloha spirit, quirky sense of humor, and joyous outlook on life and love. Her free spirit, effervescent personality, and infectious smile will be remembered by the generations of staff members whose lives she touched. Jane's friends and family celebrated her life in the International Building with tributes, food, music, and Hawaiian dance.

Jane is survived by Sam, her husband of 31 years, and by son Ray, sister Lily, brother-in-law Herbert, sister-in-law Elizabeth, and two grandchildren.

Ned Chapin

Ned Chapin, a former information systems scientist at SRI, died on December 27, 2014, at age 87.

Born on the Olympic Peninsula in Washington, Ned attended Stanford University and received an MBA from the University of Chicago in 1949. After serving in the U.S. Army Corps of Engineers during the Korean War, he received a doctorate from the Illinois Institute of Technology in 1959.

Ned was a Systems Analyst at SRI from 1956 to 1961. His research on information systems focused on new and improved techniques of systems analysis and systems design and on programming general-purpose computers to enable them to apply these new techniques. After leaving SRI, Ned had a long career as an independent consultant in the computer and information systems fields, working through his own company, InfoSci Inc., based in Menlo Park. He also served as Professor of Information Systems in the California State University system and was a founding member of the Computer History Museum in Mountain View.

Ned is survived by daughters Suzanne and Elaine and grandson Kiel.

Jon Clemens

Jon Clemens, a former vice president at SRI, died in Camas, Washington, on January 7, 2015, at age 76.

Born in Sellersville, Pennsylvania, Jon received B.S., M.S., and Ph.D. degrees in electrical engineering from the Massachusetts Institute of Technology. Jon began his career at the RCA David Sarnoff Research Center in Princeton, New Jersey, where he focused on development of the RCA CED Videodisc system. The family moved to California in 1990, and Jon joined SRI as Senior Vice President of Sciences. After leaving SRI in 1995, he was President and CEO of Sharp Laboratories of America (SLA) in Camas, Washington, until he retired in 2003.

Jon is survived by his wife, Arlene; children Terri, Gina, and Steven; grandchildren Evan, Trevor, Marisol, and Andres; brothers Paul and Ed; and sisters Becky and Mary.

Phyllis Dorset*

Phyllis Dorset, a former editor and publications supervisor at SRI, died in Redwood City on March 14, 2015, at age 90.

Born in Tacoma, Washington, Phyllis graduated from the University of Washington with a degree in English in 1948 and

earned her master's in English literature in 1950. She undertook further studies at the University of New Mexico and worked for the Sandia Corporation there before accepting an editing position at SRI in 1966. She spent most of her career in the Engineering Sciences and Systems Development Division. She will be remembered for her quirky sense of humor, passion for the English language, commitment to adding clarity and precision to the written word, and ability to teach and mentor her coworkers. She was a Specialist Technical Writer/Editor when she retired in 2006.

Phyllis authored several nonfiction books, including *Historic Ships Afloat* (1967) and *The New Eldorado: Colorado's Gold and Silver Rushes* (1970). She also contributed to literary journals, including an essay on her professor, the poet Theodore Roethke (*Sewanee Review*, Summer 2005).

In 2007, Phyllis and her late husband, Donald, donated their Menlo Park home in trust to the University of Washington. Proceeds from the home's sale have funded graduate student fellowships in their names in the university's English Department and College of Engineering.

Phyllis is survived by numerous cousins and their families.

Bernard Elspas*

Bernard Elspas, a former computer scientist at SRI, died after a short illness on November 27, 2014, at age 89.

Born in New York City, Bernie was fascinated by math and music from a young age. After attending Bronx High School of Science, he received a B.S. from City College and an M.S. from New York University. He then moved with his new bride, Martha, to California, where he completed his Ph.D. in electrical engineering at Stanford and joined SRI in 1955.

At SRI, Bernie was assigned to the ERMA project, which helped Bank of America move from paper filing to an electronic system. During his career, he worked in the areas of switching theory, error correction, and artificial intelligence. He was a Staff Scientist in the Computer Science Lab when he retired in 1990. In 1976, he was named a Fellow of the IEEE. As part of the ERMA team, he received SRI's Weldon B. Gibson Achievement Award in 2001.

Bernie is survived by son Sherman (Shlomo); daughter Barbara; grandchildren Alex, Sam, Raphael, Sarah, Rebecca, and Jacob; and many nieces and nephews.

Joan Gates

Joan Gates, a former SRI staff member, died on Friday, November 7, 2014, at age 87.

Joan, who grew up in Belmont, California, won a Westinghouse Science Talent Search award in 1945. The prize was a scholarship to Stanford, and Joan graduated with a B.S. in physics in 1948. After graduating, she joined SRI, where she did research on air pollution until 1953.

After leaving SRI, Joan was a stay-at-home mom until her youngest child entered school in 1970. She then started teaching science at Notre Dame High School in Belmont. She was also a K-5 science specialist for Portola Valley schools.

Joan was an admired local artist who worked in stained glass, necklace weaving, quilting, garment sewing, and fabric dyeing. She also received many compliments on her garden and floral displays.

Joan is survived by her husband, Robert (Rusty); children Keith, Kenneth, Jennifer, Daniel, David, and Judith; five grandchildren; one great-grandchild; and brother Pete.

Philip Lewis

Philip Lewis, a former chemistry specialist at SRI, died of pneumonia in Alexandria, Virginia, on January 9, 2015, at age 84.

Born and educated in South Wales, United Kingdom, Phil received his degree in chemistry from the University of London. Seeking more opportunity, he came to the United States in 1951, where he was quickly drafted and served with the U.S. Army in the Korean War. In 1961, he moved to San Francisco and joined SRI, where he led the production of the multiclient publication *Directory of Chemical Producers*. After leaving SRI in 1969, he held positions with several federal government agencies, where he assessed the environmental impacts of chemicals and investigated chemicals in the food supply.

After he retired in 1990, Phil undertook a busy second career as a community volunteer, using and sharing his knowledge and passion for cycling, sailing, storytelling, science, and

music with schoolchildren, residents in adult day care centers, and numerous friends and acquaintances. He volunteered at George Washington's Mount Vernon estate, and he traveled abroad with the International Executive Service Corps to help former Soviet-bloc and African countries develop their economies.

Phil is survived by his wife, Helen, whom he met at SRI; daughters Sandra and Anne; son Douglas; grandchildren Henry, Julia, and Stephen; and sister Cicely.

Philip Merritt*

Philip Merritt, a former electrical engineer at SRI, died at his home in Sunnyvale on February 20, 2015, at age 87.

Born in Pacific Grove, California, Phil earned a B.S. from UC Berkeley in 1952, an M.S. from MIT in 1953, and a Ph.D. from Stanford in 1960, all in electrical engineering. He began his career at SRI as a member of the Project ERMA team and developed the magnetic ink character recognition system used on most checks today. Later, he formed and managed the Information and Control Group in the Control Systems Lab within the Engineering Division of SRI to extend the use of the digital computer in modern control theory. He received several patents for his work at SRI. As part of the ERMA team, he received SRI's Weldon B. Gibson Achievement Award in 2001. In 1968, he left SRI and co-founded Systems Control, Inc., where he served as President. After holding top executive positions in several more companies, he retired in 1995.

Phil is survived by children Philip, Karen, Jennifer, Nancy, and Thomas; grandchildren Rebecca, Alexander, Benjamin, Lindsey, Alyssa, Ryan, Kyle, and Shannon; and great-grandchildren Addy, Valisa, Mia, and Elise.

Abelino "Abe" Vigil

Abe Vigil, a former SRI staff member, died on February 8, 2015, at age 94.

Born in Taylor Springs, New Mexico, Abe enlisted in the U.S. Army in 1941 as a heavy machine gunner and was deployed to the Philippines. After several months of ground combat against the Japanese Imperial Army on the Bataan Peninsula, his unit was ordered by U.S. commanders to surrender. Abe survived the ensuing Bataan Death March and spent more than three years as a prisoner of war. He was freed from Prison Camp Maibara in Japan in September 1945.

After he was discharged from the Army, Abe returned to New Mexico. He worked for the U.S. Postal Service and drove a truck while putting himself through college. He graduated from the University of New Mexico with a bachelor's degree in 1954. Abe and his wife, Ruth, moved to Mountain View, and he joined SRI's Press Group in Central Publication Services in 1969. He was Supervisor of the group when he retired in 1981.

After retiring, Abe dedicated his free time to serving his community, contributing to the City of Mountain View Human Relations Commission, Community Services Agency, Veterans of Foreign Wars, and the United Way.

Abe is survived by sisters Margaret and Betty, children Mary Margaret and Abelino, grandchildren Suka and Abelino, great-grandson Dylan, and many nieces and nephews.

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*Member of the SRI Alumni Association

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