



REPORT

Innovation Ecosystem Meetings Begin

California State University East Bay President Mohammad Quayoumi hosted the first in what will be a series of meetings exploring aspects of California's innovation 'ecosystem.'

The meeting on October 14, "A Call to Action: Advancing California's Science, Technology, Engineering and Mathematics (STEM) Innovation Ecosystem," brought together industry and education leaders to discuss reinventing K-12 education, more effectively integrating technology into the education process, and how regional hubs of applied R&D can enable institutions of higher education to work with regional companies and entrepreneurs.

"When students start school with a solid foundation, it translates into enhanced success throughout the entire education pipeline, resulting in a more college-ready workforce," said Ken McNeely, president of AT&T California, who delivered the keynote address. "California companies have a vested interest in increasing their engagement with organizations that can make the greatest impact on our students and our future workforce, especially in high-growth STEM fields."

In addition to the panel discussions, speakers included Rey Ramsey, president and chief executive officer of TechNet; Brian Steel, vice president of corporate development at PG&E; and CCST Board Member Warren Baker, president emeritus of California Polytechnic State University, San Luis Obispo.

"There are compelling reasons to address the fundamental issues of what it will take to create, attract and retain top innovative talent in CA," said Baker. "Hopefully, new notions will emerge

from these discussions, such as how to best bridge the gap between policymakers with a need to know and take action and S&T experts with the knowledge and ability to inform."

In response to a request from 13 members of the State Legislature, CCST is conducting a comprehensive assessment of California's science and technology innovation ecosystem - specifically human capital, investment, and infrastructure. The project will address how California can "innovate to innovation", or i2i, by using the special resources and talent resident in the state and through partnerships which will likely foster the emergence of new ideas that will contribute to the economic development of the state. CCST will report on current global innovation systems and recommend to the Legislature actions that should be taken to sustain the state's role as a global leader in science and technology.

The CSU East Bay meeting served as a starting point to help inform a series of small roundtable discussions held in late October at the UC Merced, CSU San Marcos, Stanford University, and CSU Los Angeles.

"The purpose of the roundtables was to stimulate the best thinking of leading innovators," said CCST Executive Director Susan Hackwood. "These meetings, along with the CSU East Bay meeting, were held in order to identify strategic directions that will be summarized for the Legislature and presented to the next Governor by January 2011."

The next phase of the project will involve a more in-depth analysis focusing on major opportunities to identify specific actions by industry, research and government to promote innovation solutions and economic advantages.

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CCST is a nonprofit organization established in 1988 at the request of the California State Government. It is sponsored by the state's major postsecondary institutions, supported by California's federal laboratories and anchored by leading private-sector firms. CCST's mission is to improve science and technology policy and application in California by proposing programs, conducting analyses, and recommending policies and initiatives that will maintain a vigorous economy and ensure California's technological leadership.





CCST Advises State on SmartMeter Safety

Assembly Member Jared Huffman (Marin), joined by Assembly Member Bill Monning (Santa Cruz) has requested CCST to provide an assessment of the safety of SmartMeters. CCST has agreed to compile and assess the evidence available to address the following two issues:

- Whether FCC standards for SmartMeters are sufficiently protective of public health taking into account current exposure levels to radiofrequency and electromagnetic fields.
- Whether additional technology specific standards are needed for SmartMeters and other devices that are commonly found in and around homes, to ensure adequate protection from adverse health effects.

SmartMeters are electronic monitoring devices that continuously measure the electricity output from each household and business. They communicate on a regular basis back to the utility. The goal is to enable power companies to better understand patterns of power consumption throughout the day and adjust power generation accordingly. Traditional electrical meters only measure total consumption and do not provide information on when the energy was consumed.

Power companies across the United States and Europe are turning to smartmeter technology to increase the efficiency of their power distribution and pricing. The system also allows power companies to pinpoint exact locations of outages during blackouts. Consumers, however, have raised concerns about the technology.

The Pacific Gas and Electric Company (PG&E) and other utility service providers have been installing wireless SmartMeters statewide in California since November 2006 under the authority of the California Public Utilities Commission (CPUC), which is seeking to guide the development of a "smart grid" power system in California that can facilitate integration of new technologies such as distributed generation, storage, demand-side technologies, and electric vehicles. PG&E plans to

complete implementation of the devices statewide throughout their service regions by 2012; as of the beginning of October, over 6.5 million meters had been installed, of a total planned 9.8 million meters.

Public concerns over the devices, both in California and elsewhere, have been raised about the impact of the SmartMeter intermittent wireless transmissions and the overall issue of the cumulative effect of ubiquitous wireless signals upon peoples' health. PG&E assures consumers that the devices being installed fully comply with FCC safety standards and thus are not a health risk. In large part because of these health concerns, some local governments have sought temporary moratoriums on installing the meters, a move that helped prompt the legislative request to CCST.

CCST is being asked to address whether they do comply with the FCC standards and if those guidelines are sufficient to protect public health.

"We note that there is also public concern that the FCC standards are not sufficiently protective of public health and may not take into account the cumulative effect of radiation exposure from a growing number of sources and devices," said CCST Chair Charles Kennel, "While it is not possible to predict future evidence or further effects, we can give [the State] a conclusive assessment from current knowledge."

CCST's report is to assess whether FCC standards for SmartMeters are sufficiently protective of public health, and to ensure adequate protection from adverse health effects.

"The promise of the smart grid and SmartMeters is that they can provide a tool to help reduce energy use by offering instant feedback to customers who can shift their energy use from peak hours," said Assemblyman Bill Monning, who joined Assemblyman Huffman in asking for CCST's input on the matter. "[But] like any new technology, good data must support decisions about whether the benefits outweigh the costs."

Ontology Panel Advances pHIT Project

CCST's Personalized Healthcare Information Technology (pHIT) Task Force has completed a major component of the pHIT pilot study project, gathering all needed input from a four-member Ontology Panel assembled last Spring by the pHIT Task Force based on their expertise in oncology, ontology and information technology. The pHIT Task Force is chaired by Ramesh Rao, director, UCSD Division, California Institute for Telecommunications and Information Technology (CallT2)

An "ontology" is a knowledge representation model that allows information to be aggregated, integrated, and evaluated based on commonly understood terms. In the personalized medicine context, this enables standardized, automated health information exchange (HIE) and decision support in personalized health care.

"Three key case studies have been developed and are now being used to produce a prototype approach to support the aim of the pHIT project of integrating genomic and clinical data into an electronic health record platform," said Ontology Panel Leader Hope Rugo, M.D., professor of medicine and breast cancer specialist affiliated with the UCSF Helen Diller Family Comprehensive Cancer Center.

"We've broken down the case studies into a more specific list of terms that would be expected to be found in the ontology," said Ontology Panelist Matt Williams, M.D, clinical oncologist, University College, London (UCL). "Work has begun on extracting relevant portions of existing ontologies and terminologies to serve as a base for constructing the pHIT ontology," Dr. Williams noted.

An objective of the pHIT pilot study, supported by the Ontology Panel of experts, is to retrospectively collect and evaluate de-identified breast cancer patient records from Anthem Blue Cross and genetic/genomic test results from Genomic Health, Inc. and Myriad Genetic Laboratories, Inc.

The pHIT pilot study's goal is to develop a scalable prototype healthcare decision support system designed to integrate anonymized patient records with genetic/genomic test results. The system is to be built on an expertly designed personalized clinical ontology for breast cancer patients and integrated with an existing electronic health record system by CentriHealth. The existing elements of the CentriHealth Ontology (as made available to the pHIT Task Force) will be used to demonstrate how to use this newly developed ontology within the framework of an existing electronic health record platform.

As a set of minimal requirements, the ontology will be expected to:

- Represent key terms in the clinical domain
- Be able to represent simple time and location events (e.g. time/space stamping)
- Represent the data items found in the sample data
- Represent a substantial and authoritative ontology within the domain
- Interoperate with other key existing terminologies within the domain

New genetic/genomic tests and diagnostic tools are offering new opportunities for truly personalized medicine. However, an important aspect of effectively implementing personalized medicine is the existence of standardized, readily accessible medical records.

Information technology resources can facilitate meaningful use of genetic and genomic information in the course of patient care, but only if the infrastructure is in place to disseminate the information amongst healthcare providers.

The project is being conducted in cooperation with California state agency partners including the Business, Transportation and Housing Agency and CalPERS. The outcome of the current scope of work defined by the pHIT Task Force is an open source, publicly available application ontology that reflects the domain and provides a suitable platform for integrating both clinical and genomic data. The ontology will be developed using OWL 2 (an ontology language for the semantic web with formally defined meaning) and will be expected to conform to all relevant standards. The actual ontology will be fully documented and described so that it can be reused and easily understood by other users and possible collaborators.

Members of the pHIT Ontology Panel

Hope Rugo, M.D., Medical Oncologist, Clinical Professor of Medicine, UC San Francisco Helen Diller Family Comprehensive Cancer Center

Barbara Parker, M.D., Professor of Clinical Medicine, UC San Diego Medical Center (Moore's Cancer Center)

Maryann E. Martone, Ph.D., Professor-in-Residence, UC San Diego

Matt Williams, M.D., Clinical Oncologist, University College, London (UCL)

CAPITOL HAPPENINGS

Science and Technology Legislation Updates

Capitol Happenings is a section of the CCST Report that provides a brief summary and update on what is going on in state government, be it new action from the Governor's Office, legislative committees or new legislation.

Budget

The 2010-11 California state budget was signed a record 100 days late, with significant cuts to a wide range of programs, particularly social services. With a budget gap of \$19 billion to close, following a year when state lawmakers already made deep cuts to cope with a similar budget deficit. Assistance from the federal stimulus plan helped reduce cuts or even provided modest increases in some cases, particularly for education, but has not entirely offset reductions made in previous budgets.

The final budget cuts spending by \$7.5 billion, with almost half the cuts coming from schools. It also relies on \$1.2 billion the state will save by suspending for two years a business tax credit that lets companies count part of one year's losses against future earnings. Approximately \$2.8 billion are borrowed from internal state accounts, and \$1.5 billion was cut through lower costs for state workers through new contracts negotiated with labor unions. According to the Legislative Analyst's Office, two-thirds of California's \$18 billion deficit was bridged by one-time fixes, meaning that significant cuts are expected next year as well.

Education

The budget sent mixed messages for education, with higher education funding receiving an overall boost of 8.4% but K-12 education funding received a total rise of just 1%.

The new budget restores \$200 million that had been cut from the University of California in the 2009-10 budget. Combined with federal stimulus funds approved in September, the UC regained \$305 million in funding, almost

half of the \$637.1 million that had been cut in 2009-10.

Similarly, the budget restores \$199 million to the California State University system, the first restoration of state funding to the CSU since 2007. It also provides \$60 million for increasing enrollment on the 23 campuses. The restored funding will be used to partially fill in a \$305 million cut made in the 2009-10 year. The CSU system has reduced enrollment by 40,000 students since 2008 because of reduced state funding. A one-time federal stimulus of \$106 million will also help the CSU meet its payroll. Overall, the state-funded portion of each university's budget for 2010-11 is approximately the same as it was five years ago.

The final budget provides more K-12 education funding than the Governor had proposed earlier – approximately \$250 more per student than districts had anticipated based on the governor's May budget proposal. However, schools and community colleges will not see most of that money (approximately \$2 billion) until July, the next fiscal year. If districts were to use that money for the current school year, they would likely have to borrow to make their payments in the meantime.

ARRA Funding

The late timing of the final budget approval is also problematic for public schools. Because school districts must approve their budgets by late June, most have already dismantled programs, laid off staff and cut costs based on the May budget proposal.

California has been the largest recipient of funding from the American Recovery and Reinvestment Act (ARRA) to date, receiving over \$45 billion in awards since

the program began in 2009.

The most award funding for California has come via the **Department of Education** (over \$10.9 billion), much of which consists of State Fiscal Stabilization Funding (SFSF). This funding is intended to help **mitigate the effects of budget cuts to education at the state level**. Some of this funding helped restore over \$200 million in funding for the University of California and California State University System in the 2010-11 budget. However, spending for both these systems is approximately what it was five years ago.

Funding is also being used for specific programs such as **Enhancing Education Through Technology (EETT)**, a federal program whose primary goal is to improve student academic achievement through the **use of technology in elementary and secondary schools**. California has received \$71 million to help all students become technologically literate by the end of the eighth grade and to integrate technology with teacher training and curriculum development to establish research-based instructional methods that can be widely implemented.

Other major recipients include the **California Energy Commission (CEC)**, which to date has received \$314.5 million for **energy efficiency and renewable energy programs**. The Energy Commission is administering four ARRA funded programs: the State Energy Program (\$226 million), the Energy Efficiency Conservation Block Grant Program (\$49.6 million), the Appliance Rebate Program (\$35.2 million), and Energy Assurance Planning (\$3.6 million). In September, the CEC approved ARRA funding to launch Energy Upgrade California, a comprehensive statewide energy efficiency and renewable energy building improvement program, which

will be set up by the California Statewide Community Development Authority.

In August, it was announced that California was awarded over \$200 million in ARRA funding to improve California's broadband infrastructure. The projects that received funding are part of a program administered by the Department of Commerce's National Telecommunications and Information Administration and the Department of Agriculture's Rural Utilities Service to expand broadband access and adoption across the country.

Of the estimated \$85 billion that California is expected to receive from the Recovery Act, over \$42 billion has been awarded to date. Of the \$42 billion, more than \$18.5 billion are awards to safety-net programs such as Medi-Cal, unemployment insurance, and food stamps. Another \$10 billion are awards from the Federal Government directly to local governments, non-profits, and other entities in California. The remaining \$13.5 billion are awards directly to California state government entities for programmatic spending to create jobs.

Updates on ARRA awards and distribution in California are provided by the California Recovery Task Force at <http://www.recovery.ca.gov>. The federal government provides official updates on ARRA at <http://www.recovery.gov>.

AB 32 Receives Reprieve

Proposition 23, which would have suspended the implementation of AB 32 until the unemployment rate in California is 5.5 percent or less for four consecutive quarters, failed to pass, permitting AB 32 to continue and avoiding potential problems for the state.

The California Global Warming Solutions

Act of 2006, commonly referred to as AB 32, made national news in 2006 for legislating the bold target of reducing the state's emissions of greenhouse gases by 2020 to 1990 levels. However, perennial budget woes led people concerned about the costs of complying with AB 32 to propose an initiative that would forestall compliance with the measure, perhaps indefinitely.

However while Proposition 23 did not pass, Proposition 26, which reclassifies some environmental fees as taxes that will require a two-thirds vote of the state legislature to impose, did pass. Some environmentalists and green business owners have expressed concerns that that this will hinder the implementation of AB 32.

However, Mary Nichols, chair of the California Air Resources Board, said that since Proposition 26 applies only to laws enacted after January 1, it should not affect AB 32, which was signed into law by Gov. Arnold Schwarzenegger in 2006.

"We do not believe our efforts will be derailed as a result of Proposition 26 passing," Nichols said. "Undoubtedly there will be issues raised as a result of this passing. But the legal advice we're receiving is that [AB 32] is in place and we should proceed with it."

Measures that depend on AB 32 for their regulatory authority include the proposed cap-and-trade regulation, the "low carbon fuel standard" regulation, and the Air Resource Board's renewable energy standard regulation.

However implementation of AB 32 may face additional challenges down the road as Attorney Generals from Alabama, Nebraska, North Dakota and Texas claimed they would go to court if voters rejected the measure, basing their

legal arguments on the Constitution's interstate commerce clause.

Outreach to D.C.

During the summer, CCST, in consultation with its Federal Laboratory Affiliates, conducted a round of outreach meetings with California politicians in Washington D.C. Meetings were scheduled with both California Senators and Members on Appropriations and House Science Committees, and focused on NASA, in order to leverage JPL sponsored events celebrating the 400th anniversary of Galileo's discovery of Jupiter's moons.

On July 14-15, 2010, Charles Kennel, Susan Hackwood, and Angela Phillips Diaz met with key California Congressional members and staff, including Senators Feinstein and Boxer; Representatives Garamendi, Farr, and Calvert; and staff to Representatives Lewis, Royal-Allard, Schiff, Bilbray, Honda, and Woolsey. In all, a total of 11 offices were contacted. The timing of the visits coincided with discussion of the NASA Authorization Bill (Commerce, Science, and Transportation).

In addition, CCST in partnership with the California Institute for Federal Policy Research (Mary Beth Sullivan) hosted a lunch briefing for Congressional staff interested in NASA and the Federal Labs. At the briefing, CCST Chair Charles Kennel presented an overview of NASA's presence in the state and its impact, the importance of NASA contributions to California, and the relevance to California taxpayers, as well as the context of the FY2011 NASA budget. Introductory remarks were provided by Representatives Farr, Ehlers, and Garamendi.

Inaugural Class of S&T Policy Fellows Recognized by Legislature

As the first year of the California Science Technology & Policy Fellows program comes to a close, both houses of the California Legislature recognized the fellows placed within their respective chambers for their service.

"We want to thank all of the science fellows for a marvelous year," said Senator Joe Simitian (Palo Alto) on August 20 when the S&T Policy Fellows who had been placed in the Legislature were presented with resolutions from the Senate commemorating their service. "It's been tremendously productive."

The California S&T Policy Fellows program places professional scientists and engineers in the California State Legislature for one-year appointments. These professional development opportunities enable fellows to work hands on with policymakers to develop solutions to complex scientific and technical issues facing California through their interaction with the legislative process. They assist their respective legislators and committees in formulating

and evaluating S&T policy for California on issues ranging from healthcare to energy to water resource management.

The program was adapted for California from the American Association for the Advancement of Science Congressional S&T Fellowship program. The 2010-11 group of fellows will begin their terms in Sacramento in the beginning of November 2010 with a three week intensive "boot camp" training covering the Legislative process, the effective translation of science for policymakers, and tips for success in the legislative environment.

"We've benefited more from [the fellows] this year than they have from us," said Simitian.

As the first year of the fellowship comes to a close the fellows are identifying their new positions. While some are still interviewing and looking for new opportunities many have identified their next positions with industry, a national laboratory, academia, a public health

department, a state agency, and, in at least one case, a permanent staff position in the State Legislature.

"This has been a tremendous class of fellows with which to launch this new program" said Fellowship Program Director Lora Lee Martin, "As the fellows move on in their careers we look forward to continuing the relationship through their alumni connections to future classes."

CCST welcomed the second class of fellows to Sacramento on November 1st, 2010 to start their training bootcamp lead by Thad Kousser, UC San Diego, Lora Lee Martin and Doug Brown, Fellows Program Advisor.

The recruitment and application period for the third year of the fellowship (2011-2012) opens on December 1st and will run through the end of March 2011. Information about the application process and the overall program can be found at www.ccst.fellows.us.

Cal TAC Symposium Examines Assessments

On October 21st, the California Teacher Advisory Council (Cal TAC) brought together teachers and educational experts from around the state to discuss assessment systems in California.

The symposium at the Sacramento Convention Center, "Working Towards an Assessment System with Value: Informing and Strengthening STEM Teaching and Learning", focused on innovative formative assessments both in the state of California and in other states, including Oregon and Minnesota.

"The goal was for us to focus on core assessment purposes," said Cal TAC Chair Anne Marie Bergen, teacher in residence for the College of Science and Math at California Polytechnic State University, San Luis Obispo. "Processes devised to hold teachers and schools accountable

for 'learning' are only valuable if they provide data that support improvement. The tests emphasize the accumulation of facts, instead of the application of thinking processes or problem solving necessary for today's work force and citizens. This approach narrows the scope of learning and limits creativity of thought."

Among other things, the participants at the symposium discussed California's response to the Common Core State Standards, an internationally benchmarked educational framework developed by the Council of Chief State School Officers (CCSSO) and the National Governors Association Center for Best Practices (NGA Center) with a group that included parents, educators, content experts, researchers, national organizations and community groups

from 48 states, 2 territories and the District of Columbia.

"The next step is for the California Department of Education to bring implementation plans for the state's Common Core strategy to the Board of Education in November; the results of this meeting are just the first step in an ongoing process to help inform this policy," said Bergen. "The structure of the tests that our students take needs to engage them in the process of applying information to solve a problem. Testing has become the driver for education, rather than one of many tools to monitor student progress."

Cal TAC is a group of master teachers modeled after the very successful National Teacher Advisory Council, established in 2002 by the National Academies.

Achieving Emissions Goals to be Major Challenge for California, According to CEF Study



California must dramatically overhaul its energy systems if the state is to achieve its ambitious goals of reducing total greenhouse gas emissions to 1990 levels by 2020 and even lower by 2050, according to the California's Energy Future (CEF) project report being released this fall.

"Effective mitigation is going to require that we get down to a near zero emissions," said project co-leader Jane Long, Fellow of the Center for Global Strategic Research and Principal Associate Director at-Large of Lawrence Livermore National Laboratory. "Our study is about what would it take to do it."

The CEF committee found California's targets as challenging as expected. To reduce total emissions to 80 percent of 1990 levels by 2050 would require cutting the rate of emissions by some 90 percent when population growth is factored into the equation, according to Long. Even with increased efficiency, demand for electricity generation would more than double because eliminating fossil fuel use is critical to reducing emissions. The only substitutes for heating and transportation are electricity or biofuels. So electricity demand would increase and, for the heavy transportation that cannot be electrified, new biofuel sources would be required.

"The long view takes you to a different pathway than the 2020 view," said CCST Vice Chair Mim John. "Whether the state - or the nation for that matter - has the wherewithal to make a difference is really questionable at this point."

The study focused on existing technologies and known energy sources, primarily renewable energy, fossil fuel with sequestration of emitted carbon dioxide, nuclear power, and biofuels. The two-year study brought together scientists, engineers and economists to analyze possible paths to the energy future envisioned by the Global Warming Solutions Act of 2006 and Gov. Arnold Schwarzenegger's Executive order, S-3-05. The legislation, AB 32, calls for cutting emissions to 1990 levels in the next decade while Schwarzenegger's order requires emissions to be reduced to 80 percent of 1990 levels by 2050.

The report outlines three to six portraits of energy systems that would meet these goals and provide reliable, clean energy to California's growing population. In the first stage of its work, the committee conducted a set of "stress tests," simulations examining the scale of operations necessary for a known technology to meet the state's energy needs and emissions targets for 2050. They also attempted to predict what barriers might block efforts to reach that scale.

"I think what we're trying to do is have a long-term influence on how people think about the problem," said Long. "It's my belief that if you don't know where you're going, you won't get there."

The starting point for the CEF project was a \$3 million national America's Energy Future study supported by the National Academy of Engineering, the National Research Council, Dow Chemical, the Kavil Foundation, the Intel Corporation and

the U.S. Department of Energy. Increasingly, CCST has taken responsibility for interpreting and focusing the National Academies' research for a California audience. It performed a similar task in 2005, when it analyzed the implications for the state of the National Academies' report, *Rising Above the Gathering Storm*, at the request of the Governor.

Dozens of experts from Lawrence Livermore, Lawrence Berkeley, UC Davis' Institute of Transportation Studies, California Institute of Technology, UC Irvine, Stanford's Energy Modeling Forum, the Electric Power Research Institute, and the Natural Resources Defense Council have volunteered their time to conduct the analyses. Nobel Laureate Burt Richter testified on the report and the nuclear power component at the California Senate Energy, Utilities & Communications Committee Hearing on October 27th.

"I think it's going to inform policymakers on the changes and the steps we will need to make to move to a low carbon future in a dramatic way," said Jeffrey Byron, public-at-large commissioner of the California Energy Commission. "This is not business as usual. We need to change what we're doing and we need to start turning the big ship of state right now."

Upcoming
CCST Events

February 15-16, 2011
Sacramento
Board and Council meeting
and dinner program

May 31 - June 1, 2011
Sacramento
Council meeting
and dinner program

Council Member Endows Entrepreneurship Prize



Innovative entrepreneurs are critical to California's economic well-being. In order to encourage their success, CCST Council Member Fariborz Maseeh has donated \$1.03 million to fund the creation of the Maseeh Entrepreneurship Prize Competition (MEPC) for engineering students at the University of Southern California Viterbi School of Engineering.

"There is no other field like engineering where you have the power to create real change and solve problems that improve the world for everyone," said Maseeh. "Most engineers are tremendously skilled, but they're not necessarily entrepreneurial. This competition will encourage engineers to think like entrepreneurs as they work to win this prize."

The announcement took place at the 2010 National Academy of Engineering Grand Challenges Summit hosted at the University of Southern California from October 6-8.

Maseeh, who was appointed a CCST Council member in 2010, is founder and managing principal of Picoco LLC, an investment management firm which invests in various assets and manages several hedge funds. He also is the sole founder and president of the Massiah Foundation, a charitable organization which invests in transformational situations for broad public benefit. He is a worldwide recognized expert in the field of micro-electro mechanical systems (MEMS). He founded IntelliSense in 1991 with the vision of reducing the time and expense of creating next-generation MEMS devices. Under his leadership, IntelliSense successfully created the first custom design,

development, and manufacturing MEMS operation.

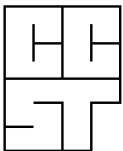
He said he chose USC for the award because it has the resources to assure success for its students.

"USC is a great fit for this award because of the school's tradition of engineering success, top leadership, and a commitment to a vision for a better world for their students and everyone their efforts impact," Maseeh said. "The school's namesake and founding donor, [former CCST Council Member] Andrew Viterbi, himself an electrical engineer, entrepreneur and philanthropist, set the bar that we're hoping the award helps the students reach."

The *CCST Report* focuses on CCST activities and highlights innovative science and technology research and applications in California. The Report is edited by Danny DeCillis, who welcomes information from readers about science and technology at work in the private, public, and education sectors. Layout and graphics by Sandra Vargas. The *Report* thanks CCST members for their generous assistance in providing material for this issue. If you would like more information about CCST initiatives, please contact us at:

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