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GATHERINGS OF LEADING INNOVATORS

The roundtables were intimate gatherings in different locations of the state to stimulate the best thinking of leading innovators from research, academia and business (see appendix F). They were hosted by a university and CCST member and facilitated by Collaborative Economics. Collaborative Economics worked with a CCST steering committee and staff to prepare the sessions and the summary of each regional discussion as well as this overall summary.

There were sessions in four locations:

- UC MERCED
- STANFORD UNIVERSITY
- CSU SAN MARCOS
- CSU LOS ANGELES

The roundtable discussions identified three major issues.

- **ECONOMIC INNOVATION:** How California will compete in the global economy and create high-paying jobs
- **EDUCATION:** How California will create an education system that prepares students for the workforce particularly with science, technology, engineering and math skills for the 21st century
- **WATER:** How California will meet its water challenges in terms of availability, efficiency and quality

ECONOMIC INNOVATION	
CHALLENGES	Unemployment and lack of high-paying jobs
	A world innovating faster than California
	Short-range R&D focus
	Barriers to innovation in biotech/health care
	Venture capital model is broken
	Lack of access to capital by small business
	Poor business environment (taxes and regulations)
	Lack of a statewide plan to improve California competitiveness globally
	No big goal to drive California's efforts (like the space race)
SOLUTIONS	California Innovation Initiative: focused on the translation of knowledge, backing high-risk/high-return ventures
	Innovation support at the micro level - including local networks, business, universities, nonprofits
	Regional innovation cluster strategies tailored to the unique strengths of California's regions
	Support for incubators and collaboration to decrease costs and risks
	Microfinance clusters with university collaborations
	Funding for high-risk start-ups/tech grants \$50,000-\$150,000
	Innovation tax credits and incentives for companies to spin off from universities and locate in California
	Identify constraints to innovation (bureaucratic procedures, regulations, disincentives) and stop them
Create a State Science Advisor or Office of Science and Technology Policy (OSTP) - perhaps CCST helps craft a state competitiveness plan that would support California's entrepreneurial strengths	

EDUCATION	
CHALLENGES	Teachers need to lead the design of new models of IT to enrich schools
	Use technology to assist individualized learning customized to the learner
	Web 2.0: wiki's tablets, internet, video conferencing provide new resources
	Opening schools/school district firewalls to allow classrooms to connect to scientists/engineers, other schools, other countries
	Funding formulas have not caught up with available education technology and training – access
	Technology infrastructure at schools; aversion by school districts to support new technology
	Children unable to use handheld computers (smartphones, etc.) in classrooms for education use (they are usually forbidden); unable to “block” texting and phone calls to use other features
	Maximizing use of on-line technologies
SOLUTIONS	California Education Innovation Consortium
	<i>State-chartered 501 (c)(3); university research units, technology companies, state officials, early-adopting schools</i>
	<i>A public/private consortium to develop best practices, incentives, tools, tests and evaluations, system architecture options</i>
	<i>Based on a model of distributed, unconnected, voluntary constituents</i>
	Scale best practices, CCST inventory and dissemination
	Use technology to share best teaching practices: open source professional development
	Promote technology adoption: best practices scale up
	Create a database of: best practices, video lessons, lesson plans, interactive websites and teach faculty/students/administration to use it
Create a statewide assessment that measures creative problem solving	

WATER	
WATER CHALLENGES	Lack of a comprehensive water plan that has broad agreement
	Agricultural issues need to be addressed
	Water, energy and air quality are connected
	Climate and population pressures impact water
	Sustainable energy, water and agriculture issues should be addressed
	Innovative ecosystems: water and energy are related
SCIENCE & TECHNOLOGY SOLUTIONS	Water Road Map 2010-2020-2050 based on science to drive policy and investment
	Launch X Prize for water technology
	Develop good water resource database for informed management and targeted pricing strategies
	New water information system including satellites and sensors for decision support from the Sierras to the Central Valley
	Wireless linked smart sensors – cost information display
	Development large-scale and micro systems (i.e. residence, small business) for grey water capture, treatment and local application for landscaping and other irrigation uses
	Implement agricultural water policies to balance demand and state plan needs
	Implement energy and water efficiency micro-irrigation and subterranean irrigation
	Develop drought-tolerant crops through biotech
	Smart meters for water: residential, industrial and agriculture
	Support market development for new technologies
	Create a water-energy-agriculture research initiative like the California Institute for Regenerative Medicine (Stem Cell Institute)
	Form collaborative efforts with other countries with similar water conditions
	Support development of low-energy desalination methods possibly linked with solar
	Support behavior change in addition to technological advance
Implement broad based rain capture strategies in urban areas	

UC MERCED

ROUNDTABLE PARTICIPANTS -- Tuesday, October 26, 2010

<p>STEVE KANG Chancellor UC Merced (host)</p>	<p>SUSAN HACKWOOD Executive Director CCST</p>	<p>RICHARD MILLER Interim Associate VC for Research UC Merced</p>
<p>RON ADDINGTON President & CEO Business Council on San Joaquin County</p>	<p>DOUG HENTON Chairman & CEO Collaborative Economics</p>	<p>MICHAEL MURPHY Associate Orrick Emerging Companies Group</p>
<p>WARREN BAKER Special Assistant to the Chancellor Cal Poly San Luis Obispo</p>	<p>DIANA HERRINGTON Mathematics Teacher Clovis High School</p>	<p>KIRK NAGAMINE CEO WET Incubator</p>
<p>ROGER BALES Director Sierra Nevada Research Institute UC Merced</p>	<p>DAN HIRLEMAN Dean of the School of Engineering UC Merced</p>	<p>DEBORAH NANKIVELL CEO Fresno Business Council</p>
<p>BILL BASSITT CEO Stanislaus Alliance</p>	<p>MIA KANG UC Merced</p>	<p>SAM TRAINA Vice Chancellor Research UC Merced</p>
<p>HANS BJORNSSON Vice Provost for Academic Planning UC Merced</p>	<p>JUDITH KJELSTROM Director, Biotechnology Program UC Merced</p>	<p>ROLAND WINSTON Director, UC Solar & Professor, School of Natural Sciences and School of Engineering UC Merced</p>
<p>RON DURBIN Director of Development UC Merced</p>	<p>LORA LEE MARTIN Director, Sacramento Office CCST</p>	<p>DAVID ZOLDOSKE Executive Director Water Resources & Policy Initiatives California State University</p>

ROUNDTABLE SUMMARY

ECONOMY	
CHALLENGES	Jobs
	Unemployment
	Sustainable development
	Clean/ sustainable energy
	Culture: lack of unity
	Culture for change
	Business environment, tax, regulations, etc
	Negative migration of business
	Budget- prisons (leadership)
	State fiscal issues
	Site of government
	One-sided economic base (agriculture)
	Lack of shared vision
	Proposition voting system
	CA business climate inadequate support for education

EDUCATION	
CHALLENGES	K-12 science education
	Poorly educated work force
	Literacy
	Education
	Educating next generation of globally competitive ... and scientists
	K-12 product insufficiency
	K-12 education lagging
	Low participation rate of students from under served communities and minority students in stem areas

EDUCATION

SCIENCE & TECHNOLOGY SOLUTIONS

- Use internet for networking and bring the world into the classroom
- Consortia to link K-12 science teacher with university and industry
- Motivation with application examples, visible displays
- Computer-game based learning for STEM education
- Business partnership with schools: virtual field trips with activities, classroom support
- Use “gaming” for education
- One good example: NEED project funded by PG&E
- Provide STAR tests at beginning of year (not-end) to teach to abilities (or trash those tests)
- Emphasize creativity, de-emphasize “teaching to the test”
- Model successful STEM programs
- Outcome based goals for education: not test scores
- Science teacher training to keep high school teachers competent as well as passionate (send universities for research and training)
- Science and math K-12 commitment, from teacher training to school supplements to resources partnerships
- Make education system performance based
- Identify best stem teachers – through tech bring to every classroom, online and into training programs
- Reinstituted a focus on science in K-6 curriculum
- Support funding for academics
- Make our current system mirror the charter school system!
- Create more Career Learning Academics with dual enrollment and/ or articulation agreements with higher education, creates relevancy
- Showcase and market academic excellence (STEM) comparable to athletic stars
- Distance learning, other resources: virtual field trips
- Well managed schools
- K-12 improvement
- Teacher/ student/ interactive technology
- Tie education -> skills -> experience -> career
- Facilitate transition of IP from class/ lab to business use
- Technology and teacher training
- S&T solutions

WATER	
CHALLENGES	Comprehensive water plan (broad agreement)
	Water for the state
	Energy water air quality
	Water
	Climate change impacts
	Air quality
SCIENCE & TECHNOLOGY SOLUTIONS	Good data on water using best tools
	Solar thermal can be applied to: water, industrial heat, electricity, cooling and refrigeration, manufacturing, solar tubes in the US
	Comprehensive statewide water monitoring system
	New CA water information system, from satellites and sensors to decision support, for Sierra Nevada and Central Valley
	Wirelessly linked smart sensor based cost information display -> savings
	Common water resource database for informed management
	Require cost/ benefit analysis of agricultural state water policy so as to not impact job retention or creation
	Water summit- broad state engagement: new players to table
	Create efficient irrigation system, use compute modeling for policy analysis
	Build civic infrastructure circle of steward empowered with authority to develop and execute new water plan – no legacy no entitlement
	Agricultural water on demand, metered matched to optimum plant need
	Need significant more data on water resources
	Smart meters for water – residential industrial agriculture
	Water conservation incentives (\$)/ ad campaign (also K-12 educate re conservation)
	Demonstration projects funded by state
	Create incentive and funding for increase in R&D
	Support market development for new technologies
	Provide incentives and funding for entrepreneurs and start-ups
	Water: give the SJ Valley an equal vote
	Educate the public about water in a positive way, create learning activities for fairs, schools, parks
	Create a culture of conservation “be green”
	Require water meters
Create drought tolerant crops through biotech	

PARTICIPANTS WHO WOULD LIKE TO STAY INVOLVED

EDUCATION

- Kirk Nagamine
- Diana Herrington
- Bill Bassitt
- Judy Kjelstrom (teacher training)
- Steve Kang (CCST council member)
- Roland Winston (K-12 educational software, interaction with young children, e.g. sound and animation to teach)

OTHER

- Ron Addington, CEO
Critically interested in all of the issues covered today.
- Mike Murphy

WATER

- Rogan Bales (water information system, satellites and sensors to decisions support)
- David Zoldoske (water resource data collection and management)
- Judy Kjelstrom (biotech crops)
- Sam Traina
- Steve Kang (water nexus)
- Roland Winston (energy and water)
- Ron Durbin (energy, solar, and its relationship to water)
- Deb Nakivell (steward leadership to connect issues – ie. Water is about food security and health)

STANFORD UNIVERSITY

ROUNDTABLE PARTICIPANTS -- Wednesday, October 27, 2010

<p>ANN ARVIN Vice Provost & Dean of Research Stanford University (host)</p>	<p>SUSAN HACKWOOD Executive Director CCST</p>	<p>ANDREW MICHAEL Vice President, Sustainable Development Bay Area Council</p>
<p>KATHARINE KU Director, Technology Licensing Stanford University (host)</p>	<p>DOUG HENTON Chairman & CEO Collaborative Economics</p>	<p>WILLIAM F. MILLER Professor of Public & Private Management Stanford University</p>
<p>BILL BERRY Executive Director NASA Ames Research Center</p>	<p>STEVE HIPSKIND Chief, Earth Science Division NASA Ames Research Center</p>	<p>JOHN MORGRIDGE Director TOSA Foundation</p>
<p>CAMILLE BIBEAU Assistant Director for Advanced Technology Lawrence Livermore National Laboratory</p>	<p>CHARLES KENNEL Distinguished Professor of Atmospheric Science, Emeritus Scripps Institute of Oceanography</p>	<p>CYNTHIA MURRAY President & CEO North Bay Leadership Council</p>
<p>CHUCK CASTELLANO BASIC Consultant</p>	<p>CYNTHIA KROLL Senior Regional Economist, Haas School of Business UC Berkeley</p>	<p>KAREN SCOTT Manager, Government Relations Sandia</p>
<p>RON COCHRAN Executive Officer Lawrence Livermore National Laboratory</p>	<p>JUDE LASPA Deputy Chief Operating Officer Bechtel Group, Inc.</p>	<p>JIM VANIDES Education Program Manager Hewlett Packard</p>
<p>SALLY DOMENICO Vice President Bay Area Council BASIC</p>	<p>CATRIONA MACGREGOR GLAZEBROOK Mind Research Institute</p>	<p>JEFFREY WHITE Project Director & Executive Producer CA Environmental Legacy Project</p>
<p>COREY GOODMAN Former President, Biotherapeutics & Bioinnovation Center Pfizer</p>	<p>LORA LEE MARTIN Director, Sacramento Office CCST</p>	<p>PAT WINDHAM President Windham Consulting</p>

ROUNDTABLE SUMMARY

ECONOMY	
CHALLENGES	More good jobs
	Grow businesses at cutting edge of sustainability issues keep part of growth in CA
	The world is innovating faster than CA
	Barriers to innovation: other countries and states giving better incentives to start ups
	Continuous improvement of CA natural and social resilience
	CA global competitiveness in innovation, science and technology
	Lack of statewide plan to improve CA competitiveness globally
	Poor business environment (regulation, bureaucratic process, taxes)
	Disconnect between scientific research findings and public policy
	Institutional SILO's (crossed out)
	Barriers to innovation in biotech/healthcare, venture capital model is broken
	Fostering P-P-Ps: federal, state, local, CA institutions
	Efficiency in government processes- all levels
	Governance leadership fiscal
SCIENCE & TECHNOLOGY SOLUTIONS	Secretary of science in Governor's office
	State science czar (like OSTP; presidential science advisor)
	Create an "OSTP" for CA
	Create innovation Czar for Governor's office
	State competitiveness plan
	State science advisor
	Given that most legislators are not scientists or technologists, need trusted individual or body that can advise on science vs. non-science
	More scientist-fellows (a la CCST) roaming the corridors and working with legislature
	Need state support for public-private partnerships that synergize respective capabilities – overcome Congress resistance
	Science education and policy for legislators
	Economics: California innovation foundation, focused on translation of knowledge, backing then risk high return ventures
	Provide a roadmap for better public awareness of the benefit and impact of S&T on all citizens
	Map how R&D leads to CA jobs
	Energize entrepreneurship at all levels: LG biz, SMB, incubators, micro-enterprises, student
	Need to align risk-reward trade-off at appropriate scale of organization
	Incentive marketization of innovation: lending, tax credits, fund I hubs
	Bring business into classroom
	Better utilize federal assets in CA labs land
	Catalyze universities effectiveness for knowledge transfer
	Innovation support at micro level, ... on local networks: business, universities, non profits
Make state assets more available to entrepreneurs, businesses	

ECONOMY (cont.)	
SOLUTIONS	Recreate variations on “secret sauce” work environments across the state (academic, industry, national institution)
	Sacramento reacts to public pressure- need to help public understand the linkage between S&T and the economy
	Create incentives in state & federal government to support risk taking and innovation
	Identify constraints to innovation (bureaucratic procedures, disincentives etc) and stop doing them Don't add something new on top
	P-P-P CA “OSTP” federal resources labs/ lands
	Encourage opportunity: incentives, education, \$, attitude

EDUCATION	
CHALLENGES	K-12 better results NOT just S&E
	Higher ed – maintain quality, meet new challenges
	Outdated K-12 education (math-science)
	K-12 quality, higher education engagement in issues
	STEM ed is so 20th century
	Results/ costs of current ed system/ method
	Poor education system (esp STEM)
	Dysfunctional incentive architecture in education
	Universal pre-school, close achievement gap before kindergarten
	Education “ecosystem” K-12, hands on science in the classroom. Schools- teachers need technology and material and presenters to invigorate the young mind to feed the pipeline of innovation and scientists/ engineers
	Maintaining competitiveness in attracting best and brightest for tomorrow's work-force
	Deep-broad-agile workforce coupled with non-traditional partnering and work environments
	Creating an environment for technical education for the socially and economically have-nots
	Educating, attracting and nurturing creative people. Sustaining an atmosphere of creative ferment
Enduring \$ and attention to make the breakthrough advances needed in materials science, simulation etc for economic competitiveness	

EDUCATION

SCIENCE & TECHNOLOGY SOLUTIONS

- Extended school day
- Innovation from the side: junior achievement
- Education innovation centers focuses on STEM disciplines/ linking scientists, EDUCATORS business and government (?)
- Teach science as creative process, not as memorization; hands on discovering – in lab or in silos
- Technology helps kids learn – teachers teach
- A California innovation foundation to which teachers and/ or schools can apply for peer-reviewed grants
- Organized teacher corps volunteer science & engineering engagement
- Partnerships with business and higher education for stem in classroom and to bring science students into business and higher education settings
- Have every school – or district have a Rolodex of S&T experts to draw upon to bring S&T demo’s into the classroom (& materials and technology)
- Train parents in low performing schools to run family science programs at their schools
- Use of “gaming” to learn
- Ubiquitous wireless to ALL schools and homes.... And PD for all teachers and parents
- Measurement issues
- Implement data collection: longitudinal data on each student, baseline & year by year data collection on achievement performance, re: metrics
- Principals academy
- Consolidate school districts – 1200 too many
- Public/private partnerships to increase efficiency and save \$\$
- Long-term stable funding for UCs and Cal States
- Incentivize CA inter-segmental higher education, CCC->CSU->UC
- As part of long term plan: reduce # of mandatory classroom tasks, stick with programs that are probably 80% right
- Create a long-term plan for k-8 and end the politization process
- State science project
- Change governance and funding for ed in CA: pre K, K-12, CC, CSU and UC
- Find a way to harness the power of social networks to promote S&T education and awareness
- Child centered learning

WATER	
CHALLENGES	Climate-population pressures on water
	Price of water
	Sustainable energy, water, and agriculture
	Innovation ecosystems for: water, energy, innovation
	Climate change
	Resources management esp. water
	Statewide ubiquitous broadband: doesn't exist... it's like a home where only a few rooms have electricity
	Infrastructure, fix: transportation, broadband/ telecom, energy and water
SCIENCE & TECHNOLOGY SOLUTIONS	A water-energy- agriculture initiative like the stem cell institutes
	Water road map 2010-2020-2050 to align policy and investment
	Meter full supply, public effort (ad campaign for conservation)
	Leverage fed investment in earth science and earth observation to inform water management
	Bio mimicry: sustainable systems and use
	Educate public and create projects to RECYCLE and REUSE water – So. CA way ahead of us on this / (No. CA)
	Water movement uses 20% of state's energy – incentivize water and energy conservation – green retrofits of existing buildings
	The water issue cannot be solved by science and technology alone, it is heavily influenced by system priorities, pricing and political realities
NASA- CISCG P/P	

PARTICIPANTS WHO WOULD LIKE TO STAY INVOLVED

EDUCATION

- Jeffrey White (Humboldt State University), I am interested in staying involved with this endeavor my focus is on the intersection of science/ research with education (both from k-12 and informal) and the use of technology and media to further both.
- Jim Vanides (I can offer more details behind what the future of STEM learning and teaching can look like, based on emerging innovations from past grantees (2004-2009), and our new HP catalyst initiative.) www.hp.com/go/hpcatalyst

OTHER

- Cynthia Murray
- Camille Bibeau (economy, education, natl labs)
- Cynthia Kroll (Interested in reviewing document. In follow-up, interested in Nexus between education, business, community. Also, our center is just beginning to look at energy use and sustainability in real estate- water becoming part of this.)
- Catriona Glazebrook (education and water)

WATER

- Steve Hipkind (water PPP's)
- David Zoldoske (water resource data collection and management)

CSU SAN MARCOS

ROUNDTABLE PARTICIPANTS -- Thursday, October 28, 2010

EMILY CUTRER
 Provost
 CSU San Marcos (host)

ROBERT HECHT-NEILSON
 Professor, Computer Engineering
 UC San Diego

STEPHEN ROCKWOOD
 Former Vice President
 SAIC

DAVID DANSBY
 Science Teacher
 El Toro High School

DOUG HENTON
 Chairman & CEO
 Collaborative Economics

BRIAN SHAY
 Secondary Mathematics Teacher
 Canyon Crest Academy
 San Diego

JANET ENGLISH
 Science Teacher
 El Toro High School

CHARLES KENNEL
 Distinguished Professor of
 Atmospheric Science, Emeritus
 Scripps Institute of Oceanography

JOHN WEEKS
 Professor of Geography
 San Diego State University

SUSAN HACKWOOD
 Executive Director
 CCST

AL KERN
 Director, Biotechnology Programs
 CSU San Marcos

JULIE MEIER WRIGHT
 President & CEO
 San Diego Regional EDC

DONNA KING
 Senior Project Coordinator
 CCST

ROUNDTABLE SUMMARY

ECONOMY	
CHALLENGES	No big goal to drive all our efforts (like the space race)
	Vision – it enabled
	Poor business climate
	Unfriendly business environment
	Growing regulator structure stalling creativity
	Tax structure and tort system hostile to business innovation
	Improving infrastructure in CA to benefit growth and development
	Changing demographics
	Changing demographics minority/ majority populations
	Basic changes in demographics and values
	Impacts of above on education
	Fuel and energy availability and sustainability
	\$56 billion/ year in US Health Care fraud
	No effective method for fighting this
	Until now: NN tomography
SCIENCE & TECHNOLOGY SOLUTIONS	Innovative management
	New technology transfer model
	Create technology progress and innovation thru greater venture \$
	Integrate bus, innovation and cross disciplines in education
	Improve science and technology education from K forward
	Create new tech programs for students not going to college
	Meaningful incentives for job creation taxes, regulations, land use, etc.
	<i>Remember that for business, our main competition is other states, not other countries</i>
	Eliminate capital gains tax for investments in CA companies held for 5 years
	Green card for all outstanding UC STEM Ph.D. graduates
	Education: cross disciplines and innovation
	Agricultural use/ water
	Investment incentives for VC \$... tax credits, etc to bring Technology from Universities

EDUCATION	
CHALLENGES	Lack of problem solving and innovation in our classrooms and curriculum
	STEM education and school governance, unions, drop-outs
	Education gap
	Educating, attracting, and keeping a high talent workforce
	Prepared workforce to meet innovation needs to solar future issues
	More public/private partnerships to improve tech in education
	Including the “wisdom of practice” into all educational “solutions”
	The practical issues of creating a critically-thinking, problem-solving K-16 population
	Inspire student “Exploratorium”
Competitive analysis and states	
SCIENCE & TECHNOLOGY SOLUTIONS	Best practices school experiences teaching models
	Business-government, education partnerships funding
	A bond issues to create a stem innovation endowment: SIB allocated if there is a SIB industry match, ... income of \$80 m/yr, open to all educational levels
	Incent using new technologies for problem- solving in actual or virtual classrooms
	We need more info about how well students are doing at different levels throughout the state. Cal Pass is building that database and needs more funding.
	Inspire all kids to creative problem solvers in math and science
	Identify the top-tier, passionate students. Develop their skills and interest in science. Increase access to top scientists/ engineers.
	Introduce a “meet the wizards” day event 10 wizards – each presenting for 30 mins 100 students 2 hours of discussion in each of 10 groups 4 cycles during the day
	Reinstate grants for schools to create STEM programs
	Make it easier for STEM professionals to work/ support classrooms/ schools and/or become teachers
	Have seniors in high school take math & science
	Loosen curricular restrictions for honors students to be able to innovate and problem solve early in their academic career
	Technically creative and exciting program. to challenge the “bright” students
Extensive info sharing (best practices)	

EDUCATION (cont.)	
SOLUTIONS	Enhance cross disciplines in science to meet today's integrated technologies
	Greater flexibility to teachers to promote excellence
	Greater rewards to the best teachers who do this
	Elevate math and science curriculum – 4 years
	12-part media/science inspirational extravaganza
	<i>Top-tier students</i>
	<i>Top-tier scientists/ professionals</i>
	<i>Monthly “challenges”</i>
	<i>Generates media excitement</i>
	Social media project: connect creative students
Year of science, media- contests: projects	
Westinghouse Awards: students	

WATER	
CHALLENGES	Incentive rain water and grey water collection (much like how we incentive solar and hybrid cars)
	Agricultural use needs to be addressed
	Monstanto, ... testing, drought resistant crops
	S&T and water management infrastructure should interact
	San Diego doesn't have a “water problem” – Carlsbad desalination plant
	Technology is available for water: but, policy for use may be issue

PARTICIPANTS WHO WOULD LIKE TO STAY INVOLVED

EDUCATION

- Brian Shay (education & innovation)
- Emily Cutrer (educational innovation)
- David Dansby (education)

CSU LOS ANGELES

ROUNDTABLE PARTICIPANTS -- Friday, October 29, 2010		
<p>ALFONSO CARDENAS Professor of Computer Science UC Los Angeles (host)</p>	<p>JEROME GARCIA University of La Verne</p>	<p>PHIL LA POLT Director, Office of Research & Development CSU Los Angeles</p>
<p>SUSAN HACKWOOD Executive Director CCST</p>	<p>CHARLES KENNEL Distinguished Professor of Atmospheric Science, Emeritus Scripps Institute of Oceanography</p>	<p>KEITH MOO-YOUNG Dean, College of Engineering, Computer Science & Technology CSU Los Angeles</p>
<p>RANDOLPH HALL Vice Provost for Research Advancement University of S. California</p>	<p>TANGANICA TURNER Science & Technology Representative Assembly Member Anthony J. Portantino</p>	<p>ASHISH VAIDYA Provost & Vice President for Academic Affairs CSU Los Angeles</p>
<p>DOUG HENTON Chairman & CEO Collaborative Economics</p>	<p>DONNA KING Senior Project Coordinator CCST</p>	<p>JULIE MEIER WRIGHT President & CEO San Diego Regional EDC</p>
<p>CYNTHIA KURTZ President & CEO San Gabriel Valley Economic Partnership</p>		

ROUNDTABLE SUMMARY

ECONOMY	
CHALLENGES	Regional cluster strategy
	Sustain S&T innovation leadership enhance long range R&D
	Short range R&D focus- too much
	Focused location for R&D industry
	Overseas R&D
	State R&D strategies
	Jobs of future- cluster strategies
	Developing regional clusters. Education, private and public sectors working together
	Lack of access to capital by small business
	Streamline entrepreneurship process – access to capital - \$50,000 – million manufacturing
	High corporate taxes, (little) no state investment into new economic drivers
	CA cost of doing business and regulatory morass
	Smart people for smart jobs
	Talent and experience support for company formation and start-ups
Nurturing and retaining new talent	
SCIENCE & TECHNOLOGY SOLUTIONS	More planning at regional and sub-regional level
	Develop regional and statewide road maps and clusters for R&D and Innovation create match funding to implement roadmap
	Support for incubators and collaborative to decrease startup costs/ risks
	Incubators near universities faculty/ inventors more likely to “spin-out”
	Microfinance clusters with university collaborations
	Funding high risk “start-ups”/ tech \$50 - \$150 k grants program across “Valley of Death”
	Funding for identify and training for jobs in 2 + years (get training going now)
	Hiring tax incentives for jobs up to \$50k? \$100k?
	Provide innovation tax credits and incentives for companies and universities to spin off and locate companies/ must be > 10 years
	Launch initiatives and support for long range STEM R&D innovations coupling academic and industry innovators
	Eliminate cap. gains tax for investment in small co held for 3 years? 5 years?
	Increase support for new positions in higher ed (UC, CSU) to drive innovation
	Support group (entity), idea -> people

ECONOMY (cont.)	
SOLUTIONS	Increase salaries for Ph.Ds
	Tapping into global capital (Asia) networks
	State university graduate school flexibility – from legislative mandates
	innovators support system
	engineering benchmark other state: Texas, Georgia Research \$
	FTE does not work: engineering needs a new paradigm
	New funding model for engineering programs
	Work group on issue
	Clusters/ incubators, engineering

EDUCATION	
CHALLENGES	Cluster formation –Aaron (spin-out/ university role/ central player)
	Improve and leverage more synergy between academic institutions and industry innovations
	K-12 pipeline in science and tech
	University- industry partnerships
	Lack of sufficient STEM talent
	Attraction of “new generation” STEM talent
	Science education: <i>Hierarchy of natural sciences</i> <i>Decreased mathematics skills</i>
	Budget (effect on all education)
	Quality of K1-2 education, drop-out rates
	Improving effectiveness of higher education in workforce preparation and generation of new knowledge
	Education K-12 (Cal ranks near bottom)
	Improving effectiveness of pre K-12 education system

EDUCATION (cont.)	
SCIENCE & TECHNOLOGY SOLUTIONS	Integrate more IT advances into enhancing education at all school-university education
	Digital education: how we connect it to education of future given our demographics
	NSF cyber learning- transforming education project
	Better ties and programs between education and business (e.g. work study, interns, types of skills needed in future)
	Make school \$ more flexible- both K-12 and higher education
	Teaching training/ talent retention studies have shown teacher adeptness is sig factor in school room
	Develop and enhance more innovation and entrepreneurship in higher education in particular
	Learning state= year of science
	Programs that change the perception of scientists and engineers
	Development of STEM teacher specialty that rewards teachers of math and science at elementary level
	Increase the number of teachers (K-12) who actually have a STEM major (BS)
	Programs: after school, summer that focus on middle school and JR. HS. that reveal the foundational courses of STEM
	Integrate a K-10 model of instruction with 11-12 being work force development/ college preparation. K-10 would be year round...
	Increase inquiry based project based instruction in K-12 -> reduce testing requirements
	Innovative teaching methods/ techniques
	Bigger emphasis on STEM specific programs funded, state-wide
	Integration of more IT advances in enhancing particularly STEM education at all levels: grammar school K-12 to college
	Role of higher education in workforce development for innovation economy
	STEM Education (K-16)
	Cyber learning- transforming education
Innovators support system	
Competitions	

WATER	
SCIENCE & TECHNOLOGY SOLUTIONS	Educating on water issues and long-term impact
	CA a leader in innovative water technology
	Get the water bond on the 2012 ballot
	Uses 2010-2012 to educate Californians re-water!
	Increase public awareness for our water problems and challenges
	Increase engagement of universities and federal and state agencies through CA-CESU (projects on water monitoring, etc)
	Desalinization- new tech (nana-filter) more capture/ reservoirs)
	Privatization of water infrastructure to capitalize on new tech
	Water solutions, long- term planning and training for jobs (Cynthia Kurtz)

DIGITALLY DESIGNED EDUCATION FOR A CLASSROOM WITHOUT BORDERS

BIRCH AQUARIUM AT SCRIPPS, UC SAN DIEGO

Wednesday, December 1, 2010

MEETING PURPOSE

To explore the opportunities to apply new technologies to education and produce recommendations for significantly more effective approaches to educate California’s workforce

GOALS

1. Identify a new approach to digitally design education process and associated products and incorporate as a fundamental component of the i2i project; and
2. Catalyze the creation of a new public-private partnership able and willing to get to the next stage of implementation

ROUNDTABLE SUMMARY

EDUCATION OPPORTUNITIES & CONSTRAINTS	
OPPORTUNITIES	Teachers need to lead design of new models of IT to enrich schools
	Leverage excellent teacher talent by using it digitally
	Use technology to help kids with different abilities
	Use technology to assist individualized learning- custom to the learner
	Recognize the The malleability of the mind of children – their able to grasp so much so soon
	Web 2.0: wiki’s, moodles, tablets, internet, video conferencing—new resources
	Student access to tech (computers, digital media, etc.)
CONSTRAINTS	There is no easy way to open up school/ district firewalls to allow classrooms to connect to scientists/ engineers, other schools, other countries
	Funding formulas have not caught up with available education technology and training – access
	Technology infrastructure at schools; aversion by school district to support new tech
	Address kids lack of sufficient interest and willingness to study the foundational math and science course
	Children unable to use handheld computers (iPhone, etc.) in classrooms for education use (they are usually forbidden); unable to “block” texting and phone calls to use other features
	Union resistance
	Government must takes lead in persuading unions to allow innovation
	Budgets
	Combative culture teacher vs. system
	Lack of understanding of technology
Limited resources	
OVERCOMING CONSTRAINTS	A System integration challenge – educational, economic, social
	End –end system is broken- needs new top down time phased architectural
	Need a Vision-standards distributed system
	The growth of innovative schools. New ways to teach.

EDUCATION SOLUTIONS

BIG IDEA

Long term: California Education Innovation Consortium
State chartered 501 c(3); university research units, technology companies, state officials, early adopting schools

Public private consortium to develop
Best practices, incentives, tools, test & evaluation, system architecture options
Distributed unconnected voluntary constituent

Use tech to share best teaching practices. Open source professional development.

Promote Technology adoption: best practices scale up

Scale best practices... CCST inventory and dissemination

“blended learning” via: avid and other proven scalable programs

Information-enabled networks of learns supported by a guide on the side (not sage on the stage)

Technology education for educators

Can use tech to share best teaching practices. Open source professional development.

Create a database of: best practices, video lessons, lesson plans, interactive websites and teach faculty/ students/ administration to use it

Maximize internet based teaching tools

System change: architecture

State assessment system based on 21st century skills

Create a statewide assessment that measures creative problem solving (credit to R.W.)

Technology can be the tool that helps the kids interact/ measure/ test their ideas

Redesign the teacher ed to include more: technology, creative thinking, less emphasis on “teaching to tests”

Include teachers at all “tables” making educational decisions

UC online

PARTICIPANTS WHO WOULD LIKE TO STAY INVOLVED

- Pete Garcia: Best Practices
- Peter Preuss: Develop best practices new technologies
- Barbara Shannon: Best Practices Scalability
- Farboez Maseeh: Current Best Practices- digitally designed education
- Brian Shay: assessment, best practices
- Janet English: assessment
- Ben Daley: better assessment systems
- Dan Goldin: consortia formulation
- Julie Wright P/P/P
- Bob Shapin: Industry partners
- Beth Simon: Consortia/ Industry

NATIONAL LABORATORIES ROUNDTABLE

NASA AMES

ROUNDTABLE PARTICIPANTS -- Tuesday, December 14, 2010

BILL BERRY University Associates Silicon Valley LLC	DOUG HENTON Collaborative Economics	PATRICIA PONZINI UC Santa Cruz
CAMILLE BIBEAU Lawrence Livermore National Lab	JOHN HINES NASA Ames	DIANA RUDE CCST
JOHN BOYLE Purdue Partnership Center	MELINDA LEE Stanford Linear Accelerator Center	KAREN SCOTT Sandia California National Lab
JERRI CARMO San Jose State University	PATRICK MANTEY UCSC	EDWARD TURANO Lawrence Berkeley National Lab
SAM CHAPMAN Lawrence Berkely National Lab	MICHAEL MARLAIRE NASA Ames	JAYLAN TURKKAN San Francisco State University
RONALD COCHRAN Lawrence Livermore National Lab	LORA LEE MARTIN CCST	SANDRA VARGAS DE LA TORRE CCST
GREG DEASON Purdue Research Foundation	DAVE NICHOLSON USDA	PAT WINDHAM CCST
ANGELA PHILLIPS DIAZ CCST	RICH O'TOOLE NASA JPL	STEVE ZORNETZER NASA Ames
SUSAN HACKWOOD CCST	BRUCE PITTMAN NASA Ames	

ROUNDTABLE SUMMARY

TOP CHALLENGES	
TOP CHALLENGES	Shining light on CA S&T
	Showcase our ST&T assets/ progress w/in state (government, legislature) Examples: NASA and partners, open campus, etc Bring world expo 2020 to California
	Unleash S&T assets for economic development
	Explicit economic development mission for state supported educational institutions and the funding to go with it "Needs" definition and focused objectives Need near term return to foster innovation, not long-time horizon basic research sink-holes Budget cuts top public universities limit innovation programs with labs More virtual access
	Leverage CA/fed assets together (interface)
	Lack of state strategy or coordinate regarding leveraging intellectual/ research capacity Break down barriers to leveraging national lab and federal lab resources in CA Researcher and private sector collaboration Strategically link state endorsed or funded entities (like i-hubs) to national labs to enhance leveraging
	Fill STEM gap
	Access to STEM education typically limited; pipelines not solved CA underfunds STEM throughout K-12 Inadequate STEM education and too few STEM graduates More students to enter and stay in STEM education Education programs cannot have state investment – text book adoption Challenge: STEM increasing share of hard science degrees—now majority is computer science Attracting and retaining best and brightest
	Fuel Entrepreneurship. Start Ups
	Funding priorities based on ROI and benefits to CA needs Need to set priorities for investment- ROI among many alternatives State wants to spur small business success Challenges to avoid and bridge "valley of death" between R&D prototype to commercialization Investment capital Excessive regulations
	Align State-fed policies
	CA clean energy vs. national energy policy State and federal legislative alignment (or lack thereof) Budget cuts Major budget challenges (some of which could be solved by greater efficiencies) energy/ regs/ structure/ etc

SCIENCE & TECHNOLOGY SOLUTIONS

SCIENCE & TECHNOLOGY SOLUTIONS

Overall Strategy

Define a unified set of goals and objectives across CCST: goals, funding targets, tech areas

Deliberate development of grand challenges and priority investments

Create blue ribbon panel and universities (UC, CSU, CC) and fed labs to ID/ develop plan and needed policy changes at both State and Federal levels

Create CA commission to develop plans and policies to leverage fed investment in CA

Develop success metrics and grade entities on how well they score

Build in private sector voice

Identify and showcase assets

Bill Berry (overall strategy)

John Hines (strategy & objectives, definition and prioritization => technologies)

Patricia Ponzini (leveraging Ca/Fed assets, ID/ develop plan and policy changes)

Camille Bibeau (LLNL, Ron Cochran as needed)

Challenge as Catalyst

Pick one issue to align S&T around = H2O, water is CA tipping point and also worlds. Get it right here first!

Create target specific working groups to address specific issues/ objectives

STEM

Provide tech companies with tax incentive or matching \$\$ if they contribute to state STEM education fund

State to push federal agencies to tap federal labs to support STEM

Push DOL, NSF, D of Edu not just DOE and NASA

Make use of E education/ learning to make STEM more fun

Steve Zornetzer (STEM: tax incentives for tech sector to invest in state STEM fund)

Karen Scott (small business technology assistance STEM)

Strategies and Unleash Assets

Merge higher ed or develop new master plan

Explicit education mission for state institution and funding to go with it

Remind UC it is land grant – with obligation for knowledge transfer

Prioritize strongest ROI projects and eliminate weakest (BRAC approach) – legislature takes all or nothing expert recommendation

Create a CA virtual tech clearinghouse

State bonding authority for innovation infrastructure

Reauthorize PIER program (public interest energy research)

Funding for professional science master's programs "jobs, jobs, jobs"

SCIENCE & TECHNOLOGY SOLUTIONS

SCIENCE & TECHNOLOGY SOLUTIONS

Make explicit connection back to our leading industries

State support for tech transfer (Indianan has a state line item- California ignores)

SBIR Matching -> other state benchmark (eg GA res. Alliance)

Bruce Pittman (strengthen: unleash assets, overall strategy)

Jeff Gordon (business incubation and higher ed industry partnerships)

Sam Chapman LBNL (reauthorize PIER)

Identify and showcase assets

Advocate for legislation making fed/ state partnerships more feasible across agencies

State to push for tech transfer programs at labs

Legislative reps need to be far more proactive in promoting all nat labs in CA and helping to secure fed funding to promote jobs and bus growth across the state (e.g. Texas, New Mexico...)

Call on CA congressional delegation to grant enhanced use capacity at federal labs and otherwise support public private partnerships

Develop a technology assistive program for small business that taps federal labs across stat -> Sandia model

Maximize/ encourage person to person interactions

E.J. Turano (making CA an attractive place for the federal gov to do business)

Patrick Mantey UCSC/CITRIS