California Space Enterprise Strategic Plan

RECAP:
Education and Workforce Development Collaborative Meeting/Webinar May 14, 2009

For webinar briefings, see CSEWI.org or CaliforniaSpaceAuthority.org/stratplan/index.html Secured Work Area (user name: future; password: 04csa06)

1. Attendees:
   Hosts: The Honorable Andrea Seastrand, California Space Authority (CSA)
   California Space Education and Workforce Institute (Institute):
   Lynn Baroff, Executive Director
   Teresa Henderson, Project Manager

   Wally Aguilar – Regional Manager, North Hollywood Office, EDD
   Gerry Blackburn – Aerospace Legacy Foundation
   Victoria Conner – Strategic Vitality LLC
   Matt Everingham – California Space Authority
   Jamie Foster – California Space Authority
   Jon Gray –
   Wendy Holforty – NASA Ames
   Mat Kaplan – Cal State University Long Beach
   Margaret Lau – California Space Authority
   Tom MacCalla – National University, San Diego
   Nick Pelster – California Space Authority
   Judy Turner – California Space Authority
   Hal Walker – Chairman, 51st Assembly District STEM Committee

2. Andrea Seastrand, Executive Director of California Space Authority, welcomed the group on behalf of CSA's sister organization, the Institute, asking for self-introductions and a brief webinar protocol reminder by Jamie Foster, CSA.
3. Seastrand introduced new Institute executive director Lynn Baroff. Mr. Baroff began his remarks with the statement "It's not often someone has the chance to have a positive impact on his community…when you get it, you have to do it – that's why I am here!" Baroff comes from 17 years with the NASA Jet Propulsion Laboratory, most recently as a program manager. His first position with JPL was

as chief management trainer in the Human Resources department. He has a background in training and behavioral science and is currently Principal Investigator for a Standard Development Task out of NASA Ames, leading a distributed group in an exploration of how humans interface with robotic systems. He received a systems engineering certificate from Cal Tech and is also an adjunct faculty member of UCLA, teaching systems engineering for the Extension Program. (See bio at CSEWI.org)

4. Victoria Conner, consultant to CSA's California Space Enterprise Advisory Council (SEAC), provided an overview of the SEAC's mid-term review of the current California Space Enterprise Strategic Plan 2007-2010. Highlights:
    a. Numerous significant successes, with over 75% of the Plan objectives completed
    b. SEAC decision made to accelerate implementation of 2007-2010 Plan, completing it in 2009
    c. SEAC decision made to begin laying foundation for new plan as part of 2009 strategic planning meetings
        i. Spring Collaborative meetings/webinars to include domain-specific inputs articulating key changes in environmental landscape since 2006
        ii. Fall Collaborative meetings to focus on identifying critical issues to the domain
        iii. Fall Collaborative meetings will be in the a.m., with a SEAC meeting in the afternoon. All Collaborative participants will be invited and meeting will also celebrate early completion of the 2007-2010 Plan.
        iv. EWD Co-Chairs Dr. Bruce Gardner (The Aerospace Corporation) and Dr. Paula Arvedson (Cal State LA) have stepped down and will be recognized at the Fall SEAC meeting.
        v. Collaboratives are being requested to begin thinking about recruitment strategies and co-chair recruitment for new planning/implementation period.
5. Institute executive director Baroff led a discussion around the key landscape changes in the education and workforce environment since 2006
    a. Major impact of unemployment expected to continue, at least partially driven by the skills shift between what employers need in 21st century high-tech skills and what workers are bringing to the table. A new bubble in unemployment will occur in the workforce as soldiers return from Iraq and Afghanistan. It is important to identify the required skills needed by today's employers and the skills gaps in the workforce.
    b. High school drop-out rate is increasing, with as many as 50% of metropolitan high school students not receiving a diploma. How will they matriculate into society? Pockets of effort, e.g. 51st Assembly District STEM Committee, are working the issue, but how will we ensure that these students matriculate into society?
    c. Sea change evident in Sacramento, partially due to the drop-out rate: Career Technical Education (CTE) now enjoys much more support from

policymakers. (CTE, which evolved out of former vocational education, incorporates technician-level STEM learning). Challenge is that vocational education (and its related instructors, workshops, equipment) went away decades ago, and finding new CTE resources is difficult.

d. CTE workers, as evidenced by those at JPL building spacecraft, are part of the STEM workforce.
e. The 51st Assembly District of Los Angeles has recently established a STEM Committee, with Hal Walker and Ivor Dawson as co-chairs.
f. Awareness of the STEM workforce challenge is deeper and broader now than in 2006.
g. Cost of attending college and university is increasing. Educational institutions are raising tuition and fees. CSU just announced a 10% increase in tuition, community college fees are increasing, as well.
h. An important data point also is that STEM education is more expensive than other disciplines. Labs, equipment costs, etc. make the delivery of STEM courses more costly for education, making expansion of STEM coursework more problematic, and making current STEM programs easy targets for budget cuts.
i. Several of the economic development councils in San Diego and elsewhere are concerned about workforce issues. What seems to be needed is more understanding of required skills, capabilities.
j. A Capabilities Maturity Model for the aerospace industry was developed by the Department of Labor and has been vetted by aerospace stakeholders participating in the national Aerospace Community of Practice.
k. Cost of business has negative effects on job availability, especially for STEM, as high-tech businesses are not generally tied to a location.
l. Recruiting of workers from overseas for STEM careers is not the answer, we need to "grow our own" workforce.
m. Formerly, companies would hire trainees and bring employees up to speed with on the job training, but that is less common now – companies do not seem willing to invest in trainees, but would rather hire fully trained workers.
n. Lack of interest in on the job training is another impact of high costs of doing business (California just ranked as among most costly in the nation). As costs of labor, taxes and regulation rise, companies cut things like training to offset.
o. The dynamics of industry and the workplace have changed. Industry is outsourcing, partnering virtually. Knowledge capture is a priority; California can no longer count on weather (as it did at the start of the era of flight) as an asset strong enough to create/keep jobs. We need to understand the new dynamic.

6. Seastrand announced that the STEM Collaborative Action Plan, developed through the collaborative efforts of 400 statewide STEM stakeholders from industry, education, academia and informal science, is being used as a foundation for a follow-on effort led by Cal Poly San Luis Obispo. Effort is being

funded by the Gates/Bechtel Foundations. Also developed as part of the STEM Collaborative Action Plan project was the STEM Inventory, a unique tool for STEM practitioners.

7. Teresa Henderson navigated the group through an online overview of the STEM Inventory
    a. Inventory is a searchable database of STEM public-private programs
    b. Videos and interactive elements have been added
    c. Goal is to use the STEM Inventory to create an online STEM community of practice
8. Lynn Baroff announced that on September 25 and 26 the Institute, the South Bay Science Foundation and the Alliance for Regional Collaboration to Heighten Education Success (ARCHES) will co-sponsor a “STEMFEST”. Target is two audiences: parents, teachers. Day two will feature teacher workshops, Day one will feature a forum feature the progress of STEM CAP implementation.
9. Andrea Seastrand briefed the group on the progress of the EWD objectives in the California Space Enterprise Strategic Plan 2007-2010. All objectives being deemed complete, the group was congratulated on its efforts in finishing its portion of the Plan two years early!
10. Next steps:
    a. Environmental landscape changes discussed (above) will be presented at the SEAC’s May 27th webinar
    b. Fall face-to-face meeting of the EWD Collaborative will take place in the Los Angeles area, with meeting date/location to be announced. Meeting will be in the a.m.

California Space Enterprise Strategic Planning

2009 Update

Thursday, May 14, 2009

EWD Collaborative

Plan's Mid-Term Review

- Held February 4, 2009 LMCO Sunnyvale
  - Strat Plan tracking: >75% of 113 objectives completed or on track (2 yrs ahead of 2010 Plan end)
  - Key Successes by Collaborative
  - Next steps/"course corrections"

Key Plan Successes to Date

- California Space Center - $3M Pledge of DOC
- PPA: Lt. Gov's Aerospace Advisory Committee
- PPA: ASA Hearings (ITAR 2008/STEM 2009)
- PPA/SRTD: Space white papers to Presidential candidates
- BDRG: Creation of economic development model for innovation/entrepreneurship
- BDRG: New int'l opportunities small companies
- SRTD: Venture capital event for entrepreneurs
- SRTD: New CSA lunar testbed at NASA Ames

Key Plan Successes (cont'd)

- CSIBV: Smart Supplier initiative
  - 3000 suppliers oriented to 21st Cent global supply chain environment (thru survey – fdn for self-assessing)
  - Analysis:Supplier "common learning outcomes" needed
  - Supplier Capabilities Maturity Model
  - Annual 21st Century Supplier Transformation Forums
- CSIBV: Innovation Asset Inventory/Aerospace Portal
- CSIBV: CA Space profile updated (A.T.Kearney)

Key Plan Successes (cont'd)

- EWD: STEM Collaborative Action Plan for CA – 10 STEM recommendations/400 public/private stakeholders, NASA "inspire, engage, educate, employ" model adopted
- EWD: statewide STEM Inventory
- EWD: Numerous education/workforce WIRED grant projects completed (e.g. mentoring, etc.)

SEAC: Changes in Landscape since 2006

For electronic versions of SEAC Meeting Recap, Briefings, etc. visit:

http://www.californiaspaceauthority.org/html/collabs/index2007.html

User: future; Password: 04csa06 (See SEAC Meeting Feb. 4, 2009)

- Increase in counterfeit parts/impact on supply chain
- State near bankruptcy, new taxes
- U.S./global economic crisis, tax impacts, deficit
- New Administration: new appointees, regs, opportunities
- DOD budget threats; NASA budget increase
- Opportunity/challenge of “Green” economy
- New spacefaring nations: Iran, North Korea, Brazil, India
- Broken acquisition system: too few $/too many programs
- WF impact: increasing drop-outs, increased tuition

Plan Objectives Targeted for Elimination

- CSIBV 2.2.5 Forum/university payload launchers
  - Duplicative - CSA to co-sponsor existing forums
- EWD 4.4.5 CEF demo re: skills classification
  - CEF withdrew from WIRED grant; new project created
- EWD 4.3.5 Professorial internships
  - Accomplished through IISME, other efforts

Support for Challenging Objectives

- BDRG 1.2.6/CSA to identify contractor opportunities
  - Unfunded/Reco: find resources, link to them
- BDRG 1.2.8/Case for small biz funding for ITAR
  - Reco: Identify existing ITAR training opps thru MFarrell
- CSIBV 2.3.5/Prioritize CA aging space infra needs
  - Reco: Identify needs through annual legislative survey; adjust objective to supporting infrastructure enhancement
- SRTD: Participant recruitment!
  - Reco: Leverage new CSA lunar testbed presence at Ames (e.g. consider Space Roundtable in Silicon Valley)

Support for Challenging Objectives (Cont'd)

- EWD 4.1.1/Case for class time to teach science
  - Mark "done" – STEM CAP *is* the case;PPA to advocate
- EWD 4.2.1/Recruit celebrities, role models
  - Reco: Keep working it! (Ideas in Recap)
- PPA: Increase participation, support
  - Recos: recruit corp gov't liaisons; tie in meetings with tours, policymaker presentations, etc.

Process Inputs/Discussion

- Enhance communication
  - SEAC to stakeholders/Board; formalize meeting notes
  - More direct contact between SEAC/Collab chairs
  - More SEAC Support Team interface with Collabs
- Recruitment
  - More online meetings
  - Joint meetings when appropriate
- Measuring/assessing results
  - Participation measure of success – need more participation in collaboratives

Course Correction

- SEAC Support Team recommended and SEAC approved following course corrections:
  - End current Plan implementation end of 2009 (75% now completed, probably 95% can be accomplished)
  - Use 2009 SEAC/Collab meetings to complete current plan, but also to begin new planning process (due to early completion plus large number of changes in business/space environment)

Course Correction (cont'd)

- Hold spring Collab meetings online (to reduce travel costs/increase participation) by May 15
  - Work/track remaining objectives from 2007-2010 plan
  - Provide domain-specific inputs for new plan's environmental assessment
  - Seastrand, Foster or Conner will attend for SEAC, cross Collaborative continuity
- Small Business Group/Space Venturing on hold
- SEAC spring meeting: online by May 30th

Course Correction (cont'd)

- Host fall Collaboratives/SEAC same day as 2007-2010 Plan "Celebration"
  - Fall Collab meetings in a.m. covering final tracking of objectives, identification of critical issues to domain
  - Fall SEAC meeting afternoon
    - Establish final status of objectives
    - Review of final environmental assessment for new plan
    - Synthesis of critical issues identified by Collabs in a.m.
    - Celebrate implementation of 2007-2010 Plan! (potentially schedule same day as annual Member meeting)
- Jan-June 2010: Goals/Objectives new plan
- July 2010 on: Implement new plan

Required Agenda Items for Spring Collab Online Meetings

- Overall 2007-2010 Plan update including proposed course corrections
- Review of Status: Outstanding Objectives from 2007-10 Plan (Collab-specific)
- Domain-Specific Environmental Assessment
  - Changes in the state/U.S./global landscape since 2006 most impacting Collaborative's domain (Business Development, Retention, Growth or Science, Research, Technology Development, etc.)

Required Agenda Items for Fall Collaborative Meetings (a.m.)

- Final Status: Collab's 2007-2010 Plan Objectives
- Review of Collaborative's Environmental Assessment Inputs (any important new inputs since spring submission)
- Domain-Specific Critical Issues for New Space Enterprise Strategic Plan (those issues unique to a Collaborative, especially)

EWD Changes

- New CSEWI Executive Director to head EWD
- New Space Professionals Working Group (NSPWG) to get new liaison
- EWD chairs (Dr. Bruce Gardner, The Aerospace Corporation and Dr. Paula Arvedson, Cal State LA) stepping down
- New EWD chairs to be appointed by end of 2009

Process Changes

- Matt Everingham new SRTD liaison (from Ames)
- Seastrand, Foster or Conner to attend Collab meetings for continuity/communication across Collabs/with SEAC
- Webinar or telecon of SEAC Co-Chairs with Collab Chairs/Liaisons before each Collab mtg
- Web 2.0 model to be considered for new Plan
- SEAC recaps to be formalized (Status of Objs)
- Board to receive more frequent updates (first held April, 2009)

Appreciation to Collab Chairs, Liaisons

As “trustee” of California Space Enterprise Strategic Planning and facilitator of Plan implementation, CSA and the SEAC Co-Chairs would like to thank the Collaborative Chairs, CSA Staff Liaisons and Collaborative and SEAC participants for their outstanding efforts in bringing the 2007-2010 California Space Enterprise Strategic Plan to an early close.

Congratulations!!!

(P.S. We still have to finish our

2009 work on Plan objectives)

Status of Education and Workforce Development Objectives California Space Enterprise Strategic Plan 2007-2010

Thursday, May 14, 2009

EWD Collaborative Webinar

Goal of EWD Initiative

From 2007-2010

California Space Enterprise Strategic Plan

Enhance space-related education and ensure appropriate 21st Century space workforce

4.1 Intent

Strengthen California Infrastructure for Science, Technology, Engineering and Math (STEM) Education

4.1.1

Build a case for increasing time to teach science in K-12 – Done

STEM Collaborative Action Plan (STEM CAP) developed by CSEWI under WIRED is the case. It develops a rationale for all of STEM and includes advocacy for more science class time as an action item.

4.1.2

Document need for additional supplies/materials for science/math – Done

Documented in STEM Collaborative Action Plan developed by CSEWI under WIRED DOL grant as part of "Challenges at Hand" section.

4.1.3

Establish rationale for STEM-targeted professional development funding – Done

Rationale established with statewide STEM Collaborative Action Plan completed November 2008 (see "Challenges at Hand" section) by CSEWI under WIRED DOL grant

4.1.4

Create or identify portal for web-based teacher access to STEM curriculum – Done

STEM Inventory (www.steminventory.com) was developed by CSEWI as part of Project 3.5 of the WIRED DOL grant

4.1.5

Integrate STEM skills across the curriculum connecting with other 21st Century workforce skills and disciplines by interfacing STEM with systems thinking, communications, and collaboration skills – Done (?)

Addressed by Satellite Educators Conference, Regolith competition, statewide science fairs, robotics competitions and other student opportunities developed to showcase both STEM and complementary skills

4.1.6

Design career awareness element for STEM-related careers, both at professional and technician level – Done

Addressed through virtual California Space Education Center (Project 3.13 of WIRED DOL grant), the Satellite Educators Conference, STEP conference, other means

4.1.7

Address recruitment of STEM teachers from industry retirement pool – Done

Addressed in Project 3.9 of WIRED DOL grant, California Troops to Teachers project to design recruitment materials, explore feasibility, as well as in Governor-sponsored EnCorps organization efforts. Baton for effort passed to EnCorps from Troops end of 2008.

4.1.8

Seek consideration for California college admissions to count earth/space sciences – Done

Mission to Planet Earth, an earth sciences high school curriculum, was developed under Project 3.12 in the WIRED DOL grant and has been submitted to the University of California for approval as a Lab Science D curriculum (which would also qualify it for CSU admissions approval).

4.1.9

Devise strategies to address access, equity and seamless transitioning – DONE

STEM CAP recommendations 1 & 7 foster attention to ensuring access and equity, as does STEM CAP Action Item to design "prestigious fellowships" (e.g. Noyce scholars) aligned with commitment to teach in low-performing schools. STEMTRAX concept developed by CSEWI addresses seamless transitioning. Virtual Classroom project fosters access, equity. Project 3.3 WIRED DOL (balloon launches) engaged 500 disadvantaged students in STEM project. STEM CAP forums included working groups on Access, Equity and Seamless Transitioning

4.1.10

Describe strategies to ensure effective partnering among education, academia, industry, informal science, government and the general public – DONE

Development of STEM Collaborative Action Plan engaging 400+ stakeholders from above categories accomplished this. Satellite Educators Conference also addressed this.

4.1.11

Foster teacher professional development opportunities in real world settings – DONE

CSU system has MOU w/Lawrence Livermore National Lab to provide 100+ teachers/year a "teacher as scientist" experience. Industry Initiatives for Science & Math Education (IISME) solicits summer fellowships for working teachers and has plans to expand its program to southern California. The STEM CAP recommendations/actions address this as well.

4.1.12

Ensure student experiential opportunities, hands-on STEM learning, e.g. Project Lead the Way, Galaxy Explorers, etc. – DONE

El Camino College created seven Project Lead the Way high school programs, CA passed legislation supporting technician apprenticeships, Project 3.11 of WIRED DOL grant created high school hands-on outreach programs from community colleges to high schools, and STEM CAP addressed this, as well.

4.2 Intent

Motivate and inspire students to pursue math and science.

4.2.1

Recruit celebrities, youthful role models and champions to convey STEM message – DONE

Corbin Bleu of High School Musical recruited to participate in Northrop Grumman Zero Gravity launch.

Sally Ride event held at Orange County.

Note: Tom Hanks still a key target recruit (for parent/teacher support)

4.2.2

Promote through a variety of popular culture and media outlets, including virtual media – DONE

Addressed through WIRED DOL Project 3.13, the virtual California Space Education Center (Phase II social networking site)

4.2.3

Ensure K-6 as well as K-12 targeting - DONE

Math Moves You (Raytheon), LEGO, Chico Learning Lab, Satellite Educators Conference, Urban Science Corps and other projects address this.

4.2.4

Include high-interest activities such as teacher-student competitions, essay contests, science fairs, etc. with awards ceremonies, media events to publicize- DONE

Addressed by Project 3.13 Regolith (WIRED DOL grant) as well as by Pete Conrad project and other efforts such as the STEP conference. Numerous other nonprofits and groups address this as well. Also addressed through Buzz Aldrin Education/Workforce Award by CSA.

4.2.5

Engage teachers and parents, educating them about the benefits of technical careers - DONE

Addressed by Math, Engineering, Science Advancement (MESA) statewide, Satellite Educators Conference, virtual California Space Education Center (WIRED 3.8 project).Will also be addressed by STEMFEST Fall 2009

4.2.6

Support informal science network projects through web-based publicity, industry partnerships, public school visitations, etc. - DONE

Accomplished through several WIRED projects: 3.5 development of STEM Inventory, 3.3/3.10 industry partnerships, the ACD Speakers Bureau development, etc.

4.3 Intent

Increase real-world expertise in schools, education expertise in industry; improve continuity across public/private sectors.

4.3.1

Inventory current industry, informal science and public sector STEM activity, fostering partnering where appropriate - DONE

STEM Inventory includes entries from within education, industry, informal science

www.STEMINVENTORY.com

4.3.2

Link educators willing to assist employers with developing more strategic STEM investments - DONE

STEM Collaborative Action Plan Steering Committee and Advisory Group accomplished this. CSEWI also has a new initiative to accomplish this.

4.3.3

Perform demo using real-time space project through distance learning supported by industry professionals - DONE

WIRED "virtual classroom" project accomplished this.

4.3.4

Create at least two new space-focused graduate internships - DONE

Accomplished by WIRED Projects 3.3 and 3.10

4.3.5

Create at least two new space-focused professorial (externships) internships - DONE

IISME organization has accomplished this.

4.3.6

Create opportunity (ities) for space and/or STEM-related classroom teacher training of at least 500 teachers - DONE

MESA and Space Information Labs (Endeavour Center) accomplished this through WIRED grant.

4.3.7

Support employer outreach to retirees through California Troops to Teachers and other programs to attract new recruits into STEM teaching through accelerated certification - DONE

See 4.1.7

4.3.8

Create a resource bank of industry professionals interested in linking with educators wishing to provide STEM classroom or before/after-school enhancements - DONE

Aerospace Community Developmenmt (ACD) project (Speakers' Bureau) Phase II WIRED grant

4.3.9

Seek out a diverse district for intensive demonstration project, with industry, publicizing success- DONE

Accomplished through ARCHES STEM CAP demonstration projects and Phase II STEM continuum project.

4.3.10

Partner with other organizations providing education support, e.g. AIAA, Planetary Society, etc. to coordinate, leverage activity - DONE

AIAA and Boeing co-sponsored STEM CAP Forum; AIA and CSA/CSEWI partnering on STEM efforts, ARCHES/CSEWI partnered on STEMCAP and CSEWI/ARCHES/South Bay Science Fdn partnering on STEMFEST

4.3.11

Create a space industry orientation program in at least three university graduate advisor offices - DONE

Accomplished through WIRED Project 3.8

4.4 Intent

Expand key 21st Century worker skills to support space enterprise needs

4.4.1

Perform systems engineering demonstration project: 100 incumbent workers in SE training; inventory SE programs available and execute outreach strategy to publicize to space enterprise community - DONE

Accomplished through WIRED Project 3.4

4.4.2

Develop a community college manufacturing technician certification program - DONE

Accomplished through WIRED Project 2.4 through El Camino College

4.4.3

Develop a community college mechatronics curriculum - DONE

Accomplished through WIRED Project 3.11 through Allan Hancock College

4.4.4

Analyze skills of at least three current federal lab jobs of today for probable skill needs of tomorriow, e.g. advanced energy - DONE

Accomplished through WIRED Projects 1.2 and 3.1

4.4.5

Sponsor a demonstration project by the CA Engineering Fdn to create a classification system based on the generic skills and knowledge of the 21 initial categories of competencies – Cancelled, WIRED funding reprogrammed

4.4.6

Sponsor a Learning Collaboratory of workforce professionals in the California Innovation Corridor, supporting their understanding of 21st Century workforce needs through employer panels and presentations, interviews, surveys and feedback – DONE

Accomplished through WIRED Project 3.14

4.4.7

Annually identify education/workforce issues for inclusion in CSA Legislative/Policy agenda. Draft rationale for positions taken – DONE

Accomplished through annual legislative survey distributed to CSA stakeholders and Education Workforce handouts prepared for California Space Week in Washington DC and Space Day in Sacramento