The Center for Effective Global Action (CEGA) is a hub for research on poverty and global development, with a network of 80 academic researchers anchored at the University of California, Stanford University, and the University of Washington. Our faculty affiliates use rigorous evaluations, tools from data science, and new measurement technologies to assess the impacts of large-scale social and economic development programs. CEGA brings a scientific lens to global development, integrating empirical economic analysis with expertise in agriculture, public health, education, engineering, and the environment.
Front Cover Image: Traffic and mobility is difficult in downtown Patna, Bihar, India.
Female members of a nutrition education center receive polio immunizations for their children in Kamuli, Uganda, 2015.

Image: Brandie Nonnecke
Everywhere we look, markets are being transformed by new digital data streams, sensing technologies, algorithms, and analytics. Yet these advances have been relatively slow to impact poverty and inequality. We are changing this.

In the last year, we have been developing a host of innovative tools to promote equitable economic development — from our Digital Credit Observatory, which aims to build new markets while protecting consumers, to our work in the energy sector, which leverages smartphones to monitor electricity reliability. We are also working with governments to design and test algorithms that monitor for corruption and fraud, with the aim of improving delivery of much-needed services for the poor.

CEGA’s vision is a world that uses data and rigorous analysis to fight poverty.
CEGA also innovates in “analog.” For example, in Senegal our researchers have been testing agricultural policies that improve product quality while increasing farmers’ profits. In Uganda, we have been studying teacher incentives designed to improve classroom performance and increase student learning outcomes. The Center also has become a leader in the ‘open science’ movement, developing new tools to improve the transparency, reproducibility, and trustworthiness of social science research.

This year we entered new territory with the launch of the Opportunity Lab, an exciting initiative that incorporates a focus on domestic poverty and inequality. The O-Lab’s work, which draws on Berkeley’s strengths in U.S. labor, taxation, criminal justice, environment, and social safety net policy, will complement our ongoing programs in developing countries and allow us to address challenges that cross borders.

Every project we launch helps solve a puzzle related to poverty, inequality, and development. Each study generates new knowledge to advance the field, and many will go on to inspire evidence-based scale-ups. In a time when the value of research is routinely challenged, we are working toward a world in which science and evidence are used to advance human development.

Edward Miguel
Faculty Director

Temina Madon
Executive Director
Agricultural productivity is key to transforming rural economies in the developing world, but more evidence is needed to improve the productivity, profitability and welfare of smallholder farmers. The Agricultural Technology Adoption Initiative (ATAI), co-led by CEGA and the Abdul Latif Jameel Poverty Action Lab (J-PAL), generates rigorous evidence on agricultural technologies that can improve livelihoods.

17 new studies launched in Zambia, Niger, Mali, and three states in India. $1.3 million in research funding awarded in 2016-2017.
A key priority for ATAI is to share research and policy insights with a broad range of stakeholders. Over the last year, we held a series of multi-day workshops for policy-makers in Nairobi, Addis Ababa, Accra, and at the World Food Prize in Des Moines. CEGA and ATAI also hosted the 2017 World Bank Annual Bank Conference on Africa, which focused on agriculture. In addition, our researchers provided customized trainings in Dakar, Kigali, and Nairobi for field and government partners to encourage the use of rigorous evidence in agricultural programming.

This year, we also had exciting new research advances. CEGA affiliates Marshall Burke and David Lobell released a new monitoring tool that uses high-resolution satellite imagery to estimate crop yields on small plots in East Africa. Supported by ATAI and CEGA’s Measurement initiative, this innovation could dramatically reduce the costs of agricultural program management, helping policy makers and donors to evaluate and renevate their strategies for rural development.

In India, start-up Precision Agriculture for Development (PAD), which was inspired by ATAI research, has been developing mobile agricultural extension products that provide farmers with custom assessments of their plots, along with targeted information to improve yields. This year, PAD began working with CEGA data science experts to develop machine learning algorithms that will improve the quality of personalized recommendations.
In the context of growing demand for energy in low and middle income countries, there is limited evidence to guide policymakers in the design of large-scale, sustainable, and cost-effective energy solutions. The Energy and Economic Growth (EEG) program, funded by the UK Department for International Development (DFID) and led by Oxford Policy Management (OPM), rigorously studies how modern energy systems can reduce poverty and bolster economic growth in the developing world. CEGA helped OPM launch this program in 2016.
Over the past year, CEGA has worked closely with EEG to set the stage for its research investment. Together we commissioned a series of state-of-knowledge papers on energy access and reliability, clean energy technology, renewables integration, and utility governance and regulation. Policy workshops in Nepal and Tanzania, and a research & matchmaking conference in Washington, D.C. engaged a range of energy stakeholders to help shape the EEG agenda.

**18 State-of-Knowledge papers produced by leading energy researchers.**

**80+ participants at policy workshops in Nepal and Tanzania.**

Meanwhile, CEGA affiliates contribute to a growing body of research on the returns to investments in reliable, sustainable energy systems in the developing world. This year, CEGA’s Technology initiative supported a study in Kenya that is monitoring leakage, accountability, and technical construction outcomes for a massive grid extension program rolled out by the central government. The study will explore how to reduce leakage and other governance issues that can affect the impacts of large-scale electrification.
Financial Inclusion

For the world’s 2 billion unbanked adults, improving access to digital payments and financial services could facilitate critical income- and welfare-generating activities. To help develop the market, CEGA launched the Financial Inclusion Lab (FIL) in 2015, supported by a gift from Visa.
In July 2016, Visa and CEGA convened a research exchange that led to the selection of four pilot studies. In one of these pilots, CEGA affiliate Michael Callen is exploring the feasibility of using mobile payments to transfer earthquake reconstruction funds in Nepal. The initiative is also supporting two ongoing large-scale studies by CEGA affiliate Paul Gertler and colleagues. They are working in Mexico to measure the effectiveness of e-payment-enabled tablets for small business owners, and in the Dominican Republic to evaluate lines of credit for national cash transfer recipients, featuring automatic repayment.

$32,500 in DCO pilot funding awarded to projects in India, China, the Dominican Republic, and Haiti.

$60,000 in Visa pilot funding to projects in Sierra Leone, Nepal, Kenya, and the Dominican Republic.

This year, CEGA launched the Digital Credit Observatory (DCO) with a $4 million grant from the Bill & Melinda Gates Foundation. Over three years, the DCO will fund a coordinated body of research on the delivery, impact, and regulation of digital credit and consumer protection products. In May 2017, the DCO hosted a matchmaking workshop, convened a Digital Credit ‘Community of Practice,’ and funded its first set of research studies. Five pilot grants were awarded to support early-stage, exploratory research that will feed into the greater DCO evidence base.
Global Networks

Through its Global Networks portfolio, CEGA invests in the next generation of researchers living in developing countries. The portfolio currently includes two programs that equip social scientists in Africa and Asia with the skills, knowledge, and networks needed to carry out rigorous policy research in their home countries.

4 visiting fellows from Ethiopia, Kenya, and Uganda.

130 participants at the Impact Evaluation Summit in Dar es Salaam.

Image: Kuranda Morgan
In 2016-17, the East Africa Social Science Translation (EASST) Collaborative brought four Fellows to UC Berkeley to audit courses, carry out research, and build new academic collaborations. They will join a network of more than 20 EASST Fellows who have studied at UC Berkeley and other CEGA universities. Collectively, this network has engaged hundreds of students and policy-makers in rigorous impact evaluation.

To accelerate the translation of evidence into action, this year we launched a “Policy and Partnerships” grant competition. The award helps EASST fellows to develop government partnerships, with the aim of bringing research findings directly into policy-making. Two Uganda-based fellows were awarded grants: Kizito Omala will help scale-up Teaching at the Right Level (TaRL) in partnership with the Ministry of Education, and Jayne Tusiime will design a new evaluation of the recently launched Community Health Workers Extension Strategy (CHEWS) in conjunction with the Ugandan Ministry of Health.

Convening our scholars with regional partners and decision-makers is an important goal of the EASST network. In July 2016, EASST hosted a multi-day Impact Evaluation Summit in Tanzania, in partnership with the University of Dar es Salaam and the World Bank’s Strategic Impact Evaluation Fund (SIEF). Seven Fellows and three partners presented their research findings to a mix of academics, government and NGO staff, and donors. In conjunction, SIEF and EASST hosted an impact evaluation workshop which was attended by 100 policy-makers from the region.
In April 2017, the BRAC-CEGA Learning Collaborative (BCLC) was renewed with funding from Canada’s International Development Research Centre (IDRC). The program institutionalizes the use of rigorous impact evaluation within BRAC, focusing on programs in Uganda, Tanzania, Sierra Leone, Liberia, and South Sudan. Over the next three years, we will bring 6 BRAC Fellows to the US for training. The program will also host research and matchmaking events, train BRAC program managers in impact evaluation methods, and fund research projects co-led by BRAC and CEGA researchers.
In Spring 2017, BCLC held a travel grant competition to seed new research collaborations between BRAC and CEGA researchers, as well as and contribute to BRAC’s capacity to incorporate rigorous evidence into its programming. The three awardees will explore the effects of emergency loans for extreme weather events; the relationship between a household’s choice to migrate and their financial decision-making; and the impacts of BRAC’s Safe Citizen Program which provides girls with tools to “protect, protest, and resist sexual harassment in public places.”

3 grants awarded to teams of BRAC and CEGA researchers to seed new research.

6 ongoing studies jointly conducted by BRAC researchers and CEGA affiliates.
Behavioral factors like procrastination, social pressure, choice overload, and belief in misinformation can prevent individuals and their health care providers from achieving optimal reproductive outcomes. CEGA researchers partner with service providers and government agencies to identify these behavioral constraints, design interventions to overcome them, and then rigorously evaluate effectiveness in “real world” settings.

**New**
multi-country study of provider bias in Pakistan, Burkina Faso, and Tanzania.

**100+**
participants attended annual conference on Behavioral Economics and Global Health.
With support from the William & Flora Hewlett Foundation, CEGA’s Behavioral Economics in Reproductive Health Initiative (BERI) has provided seven catalytic grants to researchers addressing reproductive health challenges in Sub-Saharan Africa, and an additional six grants to fund behavioral economics (BE) research in global health more broadly.

Five studies—including those exploring social reminders for antenatal care, commitment devices for institutional deliveries, and the engagement of male “influencers” in social networks—are ongoing as of fiscal year 2017. All BERI projects are carried out in partnership with ministries of health or major NGOs collaborating with government, to maximize the likelihood of in-country scale-up of research findings.

Additionally, BERI recently expanded its portfolio to include impact evaluations in Burkina Faso, Tanzania, and Pakistan. The “Beyond Bias” project, a collaboration with Pathfinder International and the Bill & Melinda Gates Foundation, aims to improve adolescent reproductive health outcomes by reducing provider biases and improving contraceptive counseling and services. As a result of this expansion, BERI is now involved in both the demand and supply sides of the health sector.
Institutions

Public institutions are critical to economic growth, yet they remain among the most under-studied contributors to global development. To help close this evidence gap, CEGA is evaluating strategies to improve public service delivery and strengthen the political process in developing countries.

$3 million in research funding awarded in 2017 to support new studies. 17 studies launched in 9 countries and 4 Indian states.

Civics training delivered through women’s group in Madhya Pradesh, India. Image: Soledad Artiz Prillaman
Central to CEGA’s work this space is the Economic Development & Institutions (EDI) program, led by Oxford Policy Management (OPM) with support from UK Aid. In partnership with EDI, CEGA is funding a portfolio of randomized trials to inform the design of taxation policies, judicial systems, electoral processes, and pay-for-performance systems.

This year, EDI funded 17 pilot and full-scale randomized evaluations. In one study, CEGA affiliate Katherine Casey will conduct groundbreaking research on how political debates in Sierra Leone influence voter decisions, with lessons for other low-income countries. In another study, affiliate Aprajit Mahajan is working with CEGA data scientist Ofir Reich and the Delhi tax authority to develop machine learning algorithms for identifying likely VAT evasion by firms.

Also this year, CEGA explored how technology increases government performance, accountability, and citizen engagement. In May 2017, we hosted our eighth annual Evidence to Action (E2A) symposium on “Smart Government: Harnessing Technology for Public Good,” with participation from 12 high-level decision-makers and 24 private sector technology partners.
CEGA is committed to improving the quality and reliability of evidence generated by development researchers. Toward this end, we promote the use of novel tools for targeting and evaluating anti-poverty programs, especially in data-scarce regions of the world. Our portfolio includes applications of sensor networks (IoT), satellites, and machine learning that lower the costs of data collection while improving the range and frequency of development outcomes that can be captured. Additionally, the Center cultivates new approaches for tracking study respondents and measuring impacts over time, recognizing the value in understanding the long-run impacts of poverty alleviation programs.
In October 2016, CEGA held its third annual measurement conference, on Infrastructure Monitoring. The event, held jointly with the World Bank’s DIME Group, convened academic researchers, private sector partners, and World bank staff to discuss cutting edge technologies for evaluating the performance of infrastructure investments—from transport systems and utilities to rural infrastructure (such as irrigation and crop warehousing). Participants included tech sector companies like Planet, Premise, DigitalGlobe, Facebook, and Cisco plus researchers from Berkeley, MIT, Stanford, UC San Diego and more.

**New collaboration on retrospective long-term impact evaluations.**

**60 participants at third annual Measurement Conference.**

CEGA is also a partner of “Expanding the Reach of Impact Evaluation (ERIE),” a consortium program supported by USAID’s Global Development Lab, facilitating retrospective long-term impact evaluations of completed interventions. The evaluations in the ERIE portfolio either leverage existing program data to assess whether observed short-term impacts are sustained, or investigate results that might only be expected over the long run, often using satellite imagery.
Inequality has risen to the top of the public and intellectual agenda. In the United States, the share of wealth held by the top 0.1% is at a level almost as high as in the Gilded Age. The Berkeley Opportunity Lab (O-Lab) uses rigorous empirical research to address persistent issues of poverty and inequality both domestically and abroad.
This year CEGA supported the launch of the O-Lab, an affiliated research initiative focused on domestic poverty and inequality. Complimenting CEGA’s work abroad, O-Lab tackles questions about the causes and consequences of economic inequality in the United States and other high-income countries. Its research is organized around the following six themes:

- Climate & Environment
- Social Safety Net & Employment
- Education & Child Development
- Taxation & Inequality
- Health
- Crime & Criminal Justice Policy

In 2017, O-Lab held two events in San Francisco and one at UC Berkeley, after successfully securing a competitive seed grant from Berkeley’s Office of the Vice Chancellor for Research. The events brought together academics and members of the public to hear affiliated faculty speak on topics ranging from the implications of President Trump’s proposed tax-and-transfer policy to the synergistic effects of pre-K and K-12 spending on children’s long-run educational attainment.
Harnessing technology for global development is at the core of CEGA's mission. Our technology portfolio, the Development Impact Lab (DIL), is a USAID-funded research program co-managed by CEGA and the Blum Center for Developing Economies. Launched in 2012, DIL integrates expertise in the social sciences with engineering innovation, to develop technology-intensive solutions for a range of development challenges.

$881,000 in 6 top-up grants.

80+ attendees at State of the Science event.
This year, DIL made competitive “accelerator” awards to six projects already within the DIL portfolio, with the aim of nudging promising research advances out of the university (and into practice). For example, CEGA affiliate Jeremy Magruder and colleagues are helping to refine an online job portal in India by including a skills assessment tool using interactive voice response (IVR). Earlier, they found evidence that skills assessments can make informal and entry-level jobs more accessible to job-seekers without formal credentials.

CEGA also supported the deployment of a novel electricity grid monitoring system, called GridWatch, that harnesses the sensors on smartphones to track power outages. The prototype technology was launched in Kenya last year, and CEGA affiliate Catherine Wolfram will help transfer the technology to Ghana next year, with support from the government power utility and the Millennium Challenge Corporation.

Through DIL, CEGA continues to support the creation of a new academic discipline, “Development Engineering,” that marries tech innovation with advances in research on markets, institutions, and human behavior. In May 2017, we opened the second volume of the open access journal Development Engineering, including publications by CEGA affiliates Sandra McCoy and David Levine.
Transparency

The Berkeley Initiative for Transparency in the Social Sciences (BITSS) was established as a response to weaknesses in research practices documented across social science fields. BITSS promotes openness, reproducibility, and integrity through consensus-building, education and training, and meta-research activities with the ultimate goal of improving the quality and credibility of research and strengthening the scientific base driving public policy.

$87,349 in Catalyst Grants awarded to 13 individuals in 11 countries.

6,584 graduate students, researchers, and faculty trained in research transparency.

Attendees to Catalyst & BITSS Fellow’s Workshop at University of Yaounde, Cameroon. Image: Elise Sonne
To engage the next generation in research transparency, BITSS supported 27 workshops, conferences, and seminars this year, reaching over 2,000 graduate students, researchers, and policymakers. Training highlights include workshops with J-PAL and 3ie in India, INSP in Mexico, and the first run of our Massive Open Online Course (MOOC). In December 2016, BITSS convened its fifth Annual Meeting with 85 researchers and policymakers, and announced the institutionalization of our annual Summer Institute with an award from the National Institutes of Health (NIH).

BITSS saw a rapid expansion of its Catalyst Program in 2017, a formalized network of researchers working to advance research transparency. Now with 82 researchers in 24 countries, Catalysts are developing open science curricula, presenting at high profile conferences, and training the next generation of researchers. To recognize leaders advancing and exemplifying openness and transparency in research, BITSS awarded 10 Leamer-Rosenthal Prizes for Open Social Science in 2017.

This year, BITSS also completed a detailed literature review and discussion of efforts to enhance the reliability of economics research. This piece, titled “Transparency, Reproducibility, and the Credibility of Economics Research” is currently available as a NBER working paper and BITSS Preprint, and is forthcoming from the Journal of Economic Literature. BITSS also supported two research projects focused on meta-science led by Global South researchers in its third round of SSMART grants.
Featured Events

Africa

July 12-14, 2016
East Africa Impact Evaluation Workshop and Evidence Summit
Dar es Salaam, Tanzania

July 14, 2016
Energy and Economic Growth: Sub-Saharan Africa Policy Workshop
Dar es Salaam, Tanzania

December 12-17, 2016
EASST collaborates with ASE at Summer Institute for Econ Research
Contonou, Benin

Asia

March 16-17, 2017
Research Transparency and Reproducibility Workshop
New Delhi

September 28, 2017
Energy and Economic Growth: South Asia Policy Workshop
Kathmandu, Nepal

Middle East

January 6-8, 2017
Working Group in African Political Economy (WGAPE) Special Meeting
Abu Dhabi, United Arab Emirates
North America

September 23, 2016
Behavioral Economics and Global Health Conference
Berkeley, California

September 26, 2016
The Science of Scaling: Evidence to Advance Anti-Poverty Innovations
Berkeley, California

October 13, 2016
Annual Conference on Measurement Technology (III): Infrastructure Monitoring
Berkeley, California

December 15-16, 2016
BITSS Annual Meeting
Berkeley, California

March 11, 2017
Pacific Conference for Development Economics (PacDev)
Riverside, California

May 4, 2017
What does Trump mean for the 99 percent?
San Francisco, California

May 10, 2017
Evidence to Action: Harnessing Technology for Public Good
San Francisco, California

May 24-25, 2017
Digital Credit Observatory Matchmaking Workshop
San Francisco, California

June 1-2, 2017
Annual Bank Conference on Africa: The Challenges and Opportunities of Transforming African Agriculture
Berkeley, California

June 7-9 2017
BITSS Research Transparency Training & Workshop
Berkeley, California
Financials

Funding Sources

- Campus: 218k
- Contract: 272k
- Corporate: 405k
- Gift: 1.4m
- Gov: 3.4m
- Foundation: 3.4m

Expenses

- Dissemination: 37k
- Training: 143k
- Operations: 536k
- Research: 8.4m
Supporters

$0 - $4,999
- Brian & Jennifer Blatnik
- Charles & Feralee Levin
- Douglas Wyatt & Shehla Imran
- Eduardo Montoya
- Ellen Ruth Levin
- First Republic Bank
- John Snider
- Michael Callen
- Nikesh Jayanti Patel
- Priyanka Rajagopalan & Anand Subramanian
- Salil Pitroda
- Sharon Gay Lapid
- Shirish Gupta & Pinkee Rasik Gupta
- Stephen Abel & Joanne Dane Brodke
- Tami Mulcahy
- Stephen Abel & Joanne Dane Brodke
- Tami Mulcahy

$5,000 - $14,999
- Anand Radhakrishnan
- Matt and Lisa Chanoff
- Matthew Lynde

$15,000 - $99,999
- Taneja Family Foundation
- BMW of North America
- Samsung Electronics Corporation
- Sony Corporation
- UC Berkeley College of Letters & Science

$100,000+
- Anonymous
- Apple Computer
- BASF Corporation
- Bill and Melinda Gates Foundation
- Good Ventures
- Laura and John Arnold Foundation
- National Institutes of Health
- Oxford Policy Management
- Pathfinder International
- Research Council of Norway
- UC Berkeley Vice Chancellor for Research
- UK Department for Int’l Development
- USAID
- Weiss Family Program Fund
- William and Flora Hewlett Foundation
Leadership

Directors
Temina Madon
*Executive Director*

Edward Miguel
*Faculty Director*

Advisory Board
Anand Radhakrishnan
*Chair*

Robin Burgess
Matt Chanoff
Annie Duflo
Rachel Glennerster
Matthew Lynde
Salil Pitroda
Hemant Taneja
Andrew Weiss
Doug Wyatt

Faculty Committee
Joshua Blumenstock
Ernesto Dal Bo
Paul Gertler
Aprajit Mahajan
Craig McIntosh
Grant Miller
Manisha Shah
Catherine Wolfram

Fellows
Jayne Byakika Tusiime
*Busitema University*

Dagim Belay
*University of Copenhagen*

Christine Simiyu
*KCA University, Kenya*

Michael Mbate
*London School of Economics*

Soazic Elise Wang Sonne
*United Nations University - MERIT*
Staff

Jeanette Aguilar
Administrative Associate

Leah Bridle
Program Associate

Carson Christiano
Director of Partnerships and Innovation

Garret Christensen
Project Scientist

Corinne Cooper
Administrative Associate

Katherine Hoeberling
Senior Program Associate

Shyan Kashani
Program Associate

Elena Lunt
Project Manager

Dustin Marshall
Events and Communications Associate

Emily Martin
Operations Associate

Kuranda Morgan
Program Associate

Kelsey Mulcahy
Program Manager

Alexandra Orsola-Vidal
Advisor, Global Networks

Ofir Reich
Data Scientist

Lauren Friedman Russell
Senior Manager, Operations

Jennifer Sturdy
Advisor, BITSS

Alexandra Wall
Program Associate

Drew Westbury
Program Manager

Sarah White
Senior Program Associate

Interns:
Teresita Cruz
Grace Han
Kevin Khuu
Rachel Kim
Sara Litke
Ravina Rattani
Sailing Tan
Affiliates

UC Berkeley

Stefano Bertozzi
Joshua Blumenstock
Eric Brewer
Jennifer Bussell
Jack Colford
Ernesto Dal Bo
Lucas Davis
Alain de Janvry
William Dow
Thad Dunning
Benjamin Faber
Lia Fernald
Frederico Finan
Meredith Fowlie
Paul Gertler
Marco Gonzalez-Navarro
Ben Handel
Solomon Hsiang

Susan Hyde
Ganesh Iyer
Supreet Kaur
David Levine
Ethan Ligon
Jeremy Magruder
Aprajit Mahajan
Ulrike Malmendier
Sandra McCoy
Edward Miguel
Erin Murphy-Graham
Nancy Padian
Maya Petersen
Elisabeth Sadoulet
Raul Sanchez de la Sierra
Catherine Wolfram
Noam Yuchtman
UCLA

Randall Akee
Graeme Blair
Darin Christensen
Miriam Golden
Ricardo Perez-Truglia
Daniel Posner
Manisha Shah

Stanford

Marshall Burke
Marcella Alsan
Katherine Casey
Arun Chandrasekhar
Dave Donaldson
Pascaline Dupas
Marcel Fafchamps
David Lobell
Beatriz Magaloni-Kerpe
Grant Miller
Melanie Morten
Jeremy Weinstein

University of Washington

Brian Dillon
Mary Kay Gugerty
Rachel Heath
James Long

UC San Diego

Eli Berman
Prashant Bharadwaj
Jennifer Burney
Michael Callen
Clark Gibson
Joshua Graff Zivin
Craig McIntosh
Karthik Muralidharan
Simeon Nichter
Paul Niehaus
Margaret Roberts
Charles Sprenger

Other Universities

Siwan Anderson, U of British Columbia
Alfredo Burlando, University of Oregon
Michael Carter, UC Davis
Cesi Cruz, U of British Columbia
Travis Lybbert, UC Davis
Paulina Oliva, UC Santa Barbara
Jonathan Robinson, UC Santa Cruz
Ajay Shanoy, UC Santa Cruz
Ketki Sheth, UC Merced
Bruce Wydick, University of San Francisco