**Philippines-California Advanced Research Institutes**

**Executive Summary Proposal**

**SUBMITTED TO: FLORENCIO ABAD**

**SECRETARY, DEPARTMENT OF**

**MANAGEMENT AND BUDGET**

**by**

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**select philippine universities**

**uc berkeley and uc san francisco**

**uc berkeley citris and globe centerPhilippines-California Advanced Research Initiative (PCARI)**

 Proposal for Two Joint Institutes For

Innovative Research, Education and Economic Impact

**EXECUTIVE SUMMARY**

With guidance from Dado Banatao and selected Philippine Universities, the University of California, Berkeley and the University of California, San Francisco propose to collaborate with the Philippine government and leading Philippine academic institutions to establish two joint research institutes that match the Philippine government’s goal of mobilizing knowledge for greater productivity and economic growth in the two key technology areas identified as the focus for the development of industry in the Philippines: Information and Communications Technology (ICT) and Health and Biotechnology.

Each of these two institutes will have a set of specific goals for innovative research, education and training, and implementation to advance research and educational excellence to promote economic growth and quality of life in the Philippines. The proposed working titles and focus areas for each institute follow below:

1. **Institute for Information Infrastructure Development** (focus: advancing information technology, energy, e-government and e-education in the Philippines through strategic research and education); and
2. **Institute for Health Innovation and Translational Medicine** (focus: advancing health care in the Philippines through strategic technology, delivery and training).

The Institute for Information Infrastructure Development will be supported respectively by the UC Berkeley College of Engineering and CITRIS Berkeley (Center for IT Research in the Interest of Society) and the Institute for Health Innovation and Translational Medicine will be supported by UC San Francisco and UC Berkeley. Together, the institutes will be known collectively as the Philippines-California Advanced Research Institutes (PCARI) and their oversight will be managed by the PCARI board.

1. **VISION AND GOALS**

The vision of PCARI is to unite scientific inquiry with practical use in two areas of advanced technology of significant potential benefit to the Philippines – information and communication technology (ICT) and translational medicine and healthcare. Both Institutes will be open-walled, benefiting from rapid national progress in electronics, telecommunication and biotechnology, collaborating with established Philippines business innovators like Ayala, Globe Telecom and Petron, thus stimulating an “ecosystem” of Research / Development / Deployment (RDD).

PCARI will embrace and accelerate startups, help clarify business models, and solicit the participation of prominent global corporations. Rather than being a proprietary operation, the Institutes will leverage the unique status of select Philippine universities, research institutions, and agencies as the only comprehensive, public, research-based scientific resource at scale in the nation.It will become the nation’s primary source of innovation in ICT and health and biotechnology, and will make its intellectual capital freely available.

The Institutes will be established in a matrix-based structure reflecting the “RDD” approach through two complementary organizational units — rows (“technology push”) and columns (“application pull”) (Table forthcoming in detailed proposal). This multi-disciplinary and multi-campus model is well illustrated by the Center for IT Research in the Interest of Society, CITRIS, headquartered in the UC Berkeley campus.

UC Berkeley, UC San Francisco, and CITRIS Berkeley all have a world-leading reputation in advanced technology development and in their commitment to addressing major societal issues (e.g., education, communication, health care, energy, the environment, etc.). The Philippines, a newly industrialized nation with sustained rapid growth, presents an enormous opportunity for UC Berkeley and UC San Francisco to engage with a rapidly advancing nation that also offers a variety of uniquely challenging societal areas worthy of research and development.

In the manner of other international research programs at both UC Berkeley and UC San Francisco, both institutes will have a faculty director and administrative associate director. Many of the faculty to be involved, (e.g., Professors Jan Rabaey and Eric Brewer) are intimately familiar with the Philippines and have strong relationships and a research and teaching history with faculty in the Philippines. Reciprocally, exemplary Philippine Faculty (e.g. Professors Rowena Guevarra, Manuel Ramos, and Luis Sison, etc.) have already participated in exchange programs between UC Berkeley through the GLOBE program.

It is our goal to combine the best academic researchers of the Philippines with the best of those of UC Berkeley and UC San Francisco to advance the technological capabilities in the Philippines to address societal needs, and, in so doing, to contribute to the continued economic growth and prosperity of the nation.

### BUSINESS PHILOSOPHY, OPERATIONS, AND MANAGEMENT

To create true intellectual capital at global levels, partnerships with other Philippine institutions in PCARI are premised on realistic relationships that provide mutual benefit to both sides. The Philippine universities will derive expertise and top-tier participants from UC Berkeley and UC San Francisco, representing unique depth and breadth in ICT, translational medicine, and healthcare. Additionally, visiting university scholars from the Philippines will gain exposure to the most advanced facilities and research on the participating campuses. UC Berkeley and UC San Francisco scholar-entrepreneurs will gain access to the dynamism of the rapidly evolving economy of the Philippines, as well as a second intellectual home and societal laboratory at the apex of the national university system.

In accord with PCARI’s structure, the Institutes’ operations will focus on the Technology Co-laboratories (Collaborative Laboratories) and Systems Integration Centers, to be established at various appropriate sites. At the same time, “mirrored” co-laboratories and centers will be set up at UC Berkeley and UC San Francisco to allow for substantive researcher exchange, construction of working teams of graduate students, and the involvement of visiting industrial fellows.

The governance of PCARI will be led by a Steering Committee composed of select government Department Secretaries and select PCARI Board members. Executive governance will be led by the PCARI Board. This board will be chaired by Mr. Dado Banatao, Vice Chaired by Dr. Rey Banatao, and will include senior leadership from select Philippine schools, UC Berkeley, UC San Francisco, Philippine Government, UC Berkeley CITRIS, GLOBE Center, and PhilDev (Philippine Development Foundation). To insure responsiveness to national interests, the Board will oversee the content development and progress of the Institutes through an annual review.

The executive management teams of both institutes will each include a faculty Director responsible for the overall research agenda, an Associate Director responsible for administrative coordination, and supporting staff for research administration, exchange coordination, daily communications, events, and activities support.

In the Philippines, the Institutes will each be managed by a sister administrative unit appointed by Philippine academic leadership with input from the PCARI Board. The institute directors in the Philippines will be supported by a Steering Committee consisting of several key university deans (such as Engineering, Business, and Medicine) and the leaders of individual co-laboratories.

Physically, each Institute is expected to require space from existing facilities of approximately 20,000 square feet in the Philippines and 10,000 square feet at Berkeley and UCSF. In a two-floor facility, one floor would house the technology co-laboratories, while the other would house the directorate and the systems-integration centers. We strongly believe that the purposes of the Institutes as outlined require that faculty, researchers, and visiting industrial fellows be co-located in shared-use facilities that architecturally encourage frequent encounters and exchange of ideas and information. At operating levels, we expect the average co-laboratory and integration center will house 5-8 faculty investigators, 8-10 industrial visitors, and about 50 graduate researchers each.

In the context of national aspirations, the Institutes will become a pivotal vehicle for achieving the Philippine nation’s vision for science and technology as a catalyst for poverty reduction and sustainable economic development. Although distinct from existing research institutes, these two Institutes derive substantial advantages from close affiliation with the top universities in the Philippines. The model for faculty participation in these Institutes will be an “opt-in” approach, including a grant-proposal process to permit access for faculty with compatible research interests and competitive standing at world standards.

### FINANCIAL SUPPORT

Core support from the government of the Philippines is sought for establishing the Institutes for an initial period of five years, renewable with a review begun in the third year. The funding will be dispensed annually, after approval by the Board.

Core support would be used in two primary locations in the Philippines —a major site at the most appropriate university partner for each institute, and “mirror sites” at UC Berkeley and UC San Francisco as appropriate to each institute’s research thrust. The objective is to achieve sufficient presence in both the Institute and its “mirror” site, along with robust telecommunications between them, to promote the rapid interchange of ideas and technologies, and to attract the organizational and financial participation of stakeholders.

Our initial estimate of the core funding profile in total is US$205 million over five years, with a portion spent in the Philippines as appropriate to the costs and needs to support the programs there. The Institute Directors and the PCARI board will manage funding for the mirror sites, at UC Berkeley and UC San Francisco. Funds for the Institute for Information Infrastructure Development will be spent on participating faculty and activities primarily in the College of Engineering and CITRIS Berkeley and the funds for the Institute for Healthcare Innovation and Translational Medicine will be spent on participating faculty and activities primarily at UC San Francisco and UC Berkeley. At this time, the annual funding is expected to be divided equally between the two institutes.

Please see **Chart 1** on the following page.

**Chart 1** **Proposed Budget:**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **(Figures shown are in US $ millions)** | **Year 1** | **Year 2** | **Year 3** | **Year 4** | **Year 5** | **Total** |
| **Institute for Information Infrastructure Development (IIID)** |  |  |  |  |  |  |
| 1. Technology Innovation Catalyst Programs
 | $5 | $5 | $5 | $5 | $5 | $25 |
| 1. Research and Training
 | 8 | 8 | 8 | 8 | 8 | 40 |
| 1. Domain specific development (wireless communications, alternative energy systems, etc.)
 | 6 | 6 | 6 | 6 | 6 | 30 |
| 1. Collaboration and Administration
 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 7.5 |
| **Institute for Health Innovation and Translational Medicine** |  |  |  |  |  |  |
| 1. Technology Innovation Catalyst Programs
 | 5 | 5 | 5 | 5 | 5 | 25 |
| 1. Research and Training
 | 8 | 8 | 8 | 8 | 8 | 40 |
| 1. Domain specific development (drugs/device development (ultrasound), healthcare delivery, , etc)
 | 6 | 6 | 6 | 6 | 6 | 30 |
| 1. Collaboration and Administration
 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 7.5 |
| **TOTAL for PCARI (2 Institutes)** | **$41** | **$41** | **$41** | **$41** | **$41** | **$205** |

Research projects will be jointly defined, and in conjunction with the projects, the institutes expect to host visiting fellows to work on the common projects. The Institutes’ success will be measured not merely by publications, but also by adoption of the technology they generate by societal stakeholders in flourishing start-ups, as well as by industry participation in the Institutes, creation of joint ventures, etc.

In summary we believe that in five years — by moving swiftly to capture the rich potential of the next generation of information technology and communications and biotechnology— PCARI will create a rich ecosystem of societal-scale research, direct benefits to the Philippines in the form of products and services that government and private enterprise can deploy, and a novel, highly-productive paradigm of research, development, and deployment.

The proposed institutes are described separately (Full proposal forthcoming).