

APEC PROJECT PROPOSAL

Fact Sheet

Name of Committee/Working Group: ICT Development	
Title of Project: Asia Pacific Sensor Grid for Environmental Monitoring	
Proposing APEC Economy: 1) Chinese Taipei	
Co-sponsoring APEC Economies: 1) Australia, 2) Brunei, 3) Canada, 4) Chile, 5) Japan, 6) Korea, 7) Malaysia, 8) Philippines, 9) Singapore, 10) Thailand, 11) Vietnam (in alphabetic order)	
Project number: <i>(To be filled in by Secretariat)</i>	Date received by Secretariat: <i>(To be filled in by Secretariat)</i>
<i>(Tick <input checked="" type="checkbox"/> one)</i> <input type="checkbox"/> Project seeking APEC funding <input type="checkbox"/> Progress Report <input type="checkbox"/> Evaluation Report	
<i>(Tick <input checked="" type="checkbox"/> one if applicable)</i> <input type="checkbox"/> Operational Account <input type="checkbox"/> TILF Special Account <input type="checkbox"/> APEC Support Fund	
<i>(Tick <input checked="" type="checkbox"/> if applicable)</i> <input type="checkbox"/> QAF attached QAF not applicable <input type="checkbox"/> QAF attached	
Financial Information	Total cost of proposal (US\$): Nil
	Amount being sought from APEC funding (US\$): Nil
Type of Project: <input type="checkbox"/> seminar/symposium <input type="checkbox"/> short-term training course <input type="checkbox"/> survey or analysis and research	
<input type="checkbox"/> database/website <input checked="" type="checkbox"/> other <i>(Please specify)</i> Applications	
Project start date: after October 2007	Project end date: March 31, 2009 (to align with scheduling of APEC TEL 36)
Brief Description of Project -- its purpose and the principal activities (including when and where):	
Sensors are increasingly pervasive. They have been used in a diverse array of applications including homeland security surveillance, tracking traffic, collecting weather data for forecasting, providing early flood warning, monitoring earthquake and tsunami, and bio-diversity. We propose building up an Asia Pacific sensor grid for environmental monitoring that makes use of data collected by sensors to respond to environmental epic events in APEC economics.	
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Signature of Project Overseer: <i>(Separate written confirmation acceptable for email submission)</i> Date:	

Signature of Committee Chair/WG Lead Shepherd: *(Not applicable to Progress Report and Evaluation Report)*

(Separate written confirmation acceptable for email submission)

Date:

Details of the Project Proposal

A. Project Design

Background

- 1) Sensor Grids are increasingly pervasive. They have been used in a diverse array of applications including homeland security surveillance, tracking traffic, collecting weather data for forecasting, providing early flood warning, monitoring earthquake and tsunami, and bio-diversity. These applications are strongly geo-based and need to address problems locally and regionally.
- 2) Chinese Taipei has developed several sensor grids for a variety of areas including flood control and bio-diversity [1]. Japan and Chinese Taipei are working on geo-grids that further integrate with remote sensing to monitor the environment [2]. Singapore is exploring the formation of a sensor grid using data made available from existing weather stations installed at schools across the island [3]. Many APEC economies also involve e-Science in environmental study [4]. Other experiences include Global Lake Ecological Observatory Network (GLEON) [5], which expanding globally to more than 25 lake areas across Asia, Europe, America and Africa. Chinese Taipei is one of the founding members of the network.

Scope of Collaboration

- 3) We propose building up an Asia Pacific Sensor Grid for environmental monitoring. This sensor grid would make use of data collected by sensors in the participating APEC economies to observe epic environmental events that occur across the Asia Pacific region. The development also provides a conduit between ICT specialists, environmental scientists, and policy makers to share as well as to exchange expertise and experience. This, in turn, may be extended to emergency response for environmental hazard.
- 4) This collaboration allows for the access of dynamic data collected by sensors in the participating economies to observe regional epic events that, by scale, would be beyond the capability of the countries individually.

Linkages

- 5) APEC economies that have already started sensor grids will share their knowledge and expertise through training and workshops. Some are prepared to contribute to the sensor grid infrastructure for which they have developed the software and middleware for adoption by others. The grid community, hence, focuses on developing the proposed Asia Pacific Sensor Grid using such technologies.
- 6) In tandem, the cooperation of owners of climate and other environmental datasets will be sought to make available their data collections for access via a common application.

Methodology

- 7) Chinese Taipei proposes that a core working group of interested economies be established to determine a timeframe, the responsibility of the various economies, and plan out an effective working schedule.
- 8) Participant economics should provide at least one virtual observatory node specifically for environmental monitoring. The node will play a role as a dynamic data source that provides constant image streaming of meteorological, hydrological, or other data of interest. The Asia Pacific Sensor Grid will federate the participating nodes and a common method of access. The core working group will determine the virtual observatory node specifications.
- 9) Workshops will be held to monitor progress and resolve outstanding issues at platforms such as the Pacific Rim Applications & Grid Assembly (PRAGMA) meetings. The collaborative results will be demonstrated and promoted in events such as APEC TEL meetings and Supercomputing Conference and Exhibition 2008 (SC08).

Dissemination of Project Output

- 10) A regional environmental monitoring testbed that makes use of related datasets will be available (with necessary localization) for general access. More importantly, the insight and knowledge derived from such an application should demonstrate what would be achievable sharing of such data for the common good.

Budget

- 11) All delegates of participating APEC economies would fund their own involvement in the project.

References

- [1] ECOGRID, NCHC <http://ecogrid.nchc.org.tw/>
- [2] Global Earth Observation Grid (Geogrid)., AIST, <http://www.geogrid.org/>
- [3] The National Weather Study Project, Nanyang Technological University
<http://nwsp.ntu.edu.sg/nwsp/>
- [4] Park, H., Lee, P., Lee, J., Kim, S., Kwak, J., Cho, K., Lim, S.-B., Lee, J. "Construction and Utilization of the Cyberinfrastructure in Korea," CTWatch Quarterly, Volume 2, Number 1, February 2006.
<http://www.ctwatch.org/quarterly/articles/2006/02/construction-and-utilization-of-the-cyberinfrastructure-in-korea/>
- [5] Global Lake Ecological Observatory Network (GLEON), <http://gleon.org>