4.B.1. Extending Environmental Observing Technology OSDT Android SensorPod to New Communities

Remote environmental monitoring systems are enabling environmental scientists and other field scientists to conduct their research in high resolution in near real-time. Although these technologies allow new scientific ideas to develop, they are challenging to adopt because of their associated high costs and the low accessibility of proprietary systems and custom radios. The Open Source DataTurbine (OSDT) Android SensorPod solves these problems by employing relatively inexpensive Android smart phones for network communication, open-source software components for extensibility, and off-the-shelf hardware components for easy repair and upgrade. (See Highlight XXX).

This technology is facilitating the growth of grassroots international collaboration. Since 2010, the Taiwan Forestry Research Institute (TFRI) has hosted seven UCSD undergraduates through the PRIME program to strengthen the collaboration between ecologists in Taiwan and cyberinfrastructure researchers at UCSD who are focusing on environmental monitoring applications. Among the students, Ariana Tsai and Sara Taghizadeh (both PRIME 2012), helped TFRI adopt the OSDT Android SensorPod at the Lienhauchich Research Center. This year. PRIME student Thaddeus Trinh furthered the grassroots movement by assisting with an effort at TFRI to share the technology with the Taiwan Agricultural Research Institute (TARI). Trinh took the lead in choosing, integrating, testing, and deploying new types of sensors for the TARI site, Chia-Yi litchi Orchard. He successfully integrated several sensors into the OSDT Android SensorPod, including Decagon 10HS Soil Moisture Sensor, Decagon CTD Water Depth Sensor, and Kipp & Zonnen SMP3 Solar Pyranometer. Although integrating the FTS FS-3 Fuel Stick Sensor was not completed during his stay, he proactively sought out advice from an electrical engineer at Linear Technology, thereby providing solutions and demonstrating his growth in engineering leadership.

Trinh also assisted in leading the hands-on technical session, and led a session on how to integrate new types of sensors into the system in the First OSDT Android SensorPod Workshop. (See also Section on Community Building.)

Participants: PRIME Student: Thaddeus Trinh; UCSD: Tony Fountain, Peter Shin; TFRI: Chau Chin Lin, Sheng-Shan Lu, Yu-Huang Wang