The IPP Program: A Possible Model for Future International Collaborations in Science and Engineering

by Prof. Gregory D. Durgin
School of Electrical and Computer Engineering, Georgia Institute of Technology
durgin@gatech.edu

Abstract: The International Propagation Partnership (IPP) program – which owes its origin to a 2001 JSPS post-doctoral fellowship – was established as a grass-roots method for select graduate students in Georgia Tech’s Electrical and Computer Engineering program to gain a value-adding international research experience. The ad-hoc, bottom-up approach to the program makes IPP unique among the many international student experiences available at Georgia Tech.

1. History
The author spent one year at the University of Osaka in 2001 on a long-term JSPS fellowship and returned to the United States convinced that US-born science and engineering graduate students needed to globalize their research experiences. This attribute was built into the formation of the Georgia Tech Propagation Group (GTPG), a research group in that provides rich international experiences to its students as part of a basic research mission. The result, the International Propagation Partners (IPP) program, has lead to fruitful graduate student exchanges and collaborations between partners in Japan and New Zealand [4].

2. Program Goals
There are several unique attributes of the IPP program, many of which add value to students and the research mission that are not possible through conventional collaborative programs.

Global Science: US technical graduates work alongside international engineers and scientists without ever leaving their country. A medium-term (semester) international research experience allows a graduate student a chance to work in a foreign, unfamiliar environment and cultivate a great deal of empathy towards their future colleagues. All GTPG PhD students are expected to spend 1 term overseas, with the stated goal of providing an enjoyable, productive cultural exchange without devolving into a “tourist experience” that many, larger programs become.

Continuity: The IPP program stresses long-standing, relational continuity with its partner laboratories, demonstrating the strengths of small, grass-roots collaborations in science and engineering. Partner labs each have relationships of 10+ years with the author.

Reciprocity: To date, the IPP program has been able to maintain reciprocity in its visits, hosting the same number of international students from Japan and New Zealand than it sends overseas. This ensures fairness and symmetry in the program, as well as providing extra incentives for serving as a good host for visiting students.

Complementarity: The partner laboratories in this program in the general field of electrical and communications engineering, have complementary expertise. Sampei laboratory at Osaka University has system-level wireless communications expertise, while GTPG emphasizes experimental work and physical-layer radio studies. This has led to research publications that neither group could have conducted by themselves [1-2,6]. Similar outcomes resulted from the New Zealand collaborations [1,5].

Creativity: Although not a stated goal of the program, a tremendous added benefit for the US students that participate in IPP exchanges was the boost in creative outputs during critical portions of their advanced studies. Each participant wrote significant portions of papers, proposals, and dissertations while overseas.

3. Future
The IPP program, while small, has been well received by graduate students in the GTPG, quickly becoming part of the student group culture. Based on past successes, a future goal could be a larger, more integrated research collaborative project like those that exist between many intra-national university research groups. In terms of educational impact, there is a need to develop quantitative assessments of these experiences so that the costs of international collaborations can be justified. Investigation is also required into how the benefits of IPP-style exchanges could be maintained when scaled to a larger program for emulation by other institutions.
4. References


