

# FOSTERING DESIGN INNOVATION IN THE UNIVERSITY

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## *Abstract*

The *Weiss Tech House* at the University of Pennsylvania is an incubator for technological innovation by undergraduates.

## *Keywords*

Design, innovation, product design, product development, technological innovation, entrepreneurship.

## **Introduction**

Five years ago, The University of Pennsylvania (Penn) created a “hub” system. At Penn, a hub

- is a stand-alone, non-residential entity designed to create a sense of community around specific areas of student interest,
- falls directly under the direction of the Provost and does not reside within any particular school,
- is inherently interdisciplinary and is explicitly charged with cutting across school boundaries,
- pursues a mission of broadening students’ educational experiences,
- attracts students not normally exposed to its area of focus in their coursework,
- is largely run by students, with guidance by one or more faculty and staff members.

Currently there are four hubs at Penn: the Kelly Writer’s House, the Civic House, the Student Performing Arts House, and the Weiss Tech House.

## **Weiss Tech House**

Weiss Tech House (<http://www.tech-house.upenn.edu>) encourages and supports students in the development and commercialization of innovative technologies. The technological domains of interest are broad, including, but not limited to, information, energy,

materials, manufacturing, communication, entertainment, medicine, and transportation.

The primary constituency of the Tech House is undergraduate students interested in technological innovation. However, the Tech House is inclusive, and seeks involvement from graduate students, faculty, staff, and members of the outside business and technical community.

## **Tech House Goals**

- Infect undergraduates with the excitement of technological innovation.
- Provide an action-oriented context to motivate learning.
- Foster the development of problem solving skills critical for successful innovation.
- Nurture an innovation community at Penn, including Penn alumni.
- Provide knowledge and infrastructure resources that enable innovation.

## **Programs and Activities**

*Student Innovation Fund.* The House operates an “innovation fund,” with the primary objective of creating a “feasibility hurdle” for projects receiving house support. A student committee considers proposals by project teams.

Successful teams receive modest seed funding, generally \$1000 at a time, intended primarily for project materials. This mechanism has the secondary benefit of teaching in a friendly, low-risk way the financing process for a new venture.

*Project Space.* A central organizing element of the house is the “project.” Active projects may apply for a project “bay.” A project bay is a physical location with a workbench, storage shelves, and a lockable cabinet. (Project bays are really only essential for the development of physical technologies. Teams focused on information technologies make use of computer workstations distributed around the House.) The bays have physical boundaries, but are not fully enclosed. These bays give students a reason to be on site and provide a visual indicator of project activity. Bays are provided for one semester, with extensions possible if the project is active.

*Mentors Program.* The mentors program brings in knowledgeable people from outside the Tech House. The program is intended to be of value both to the mentor and to the students. Two types of mentors are currently involved in the Tech House. First, graduate students from the Law and Business Schools at Penn serve as mentors for an entire academic year. Second, “innovators in residence” – usually experienced professionals-- spend one or two days at the Tech House. Recent mentors include John Osher, creator of the Crest Spinbrush, and Josh Kopelman, founder of Half.com.

*Lab.* The goal of the lab is to provide basic build-and-test resources for mechanical and electronic devices. Specialized laboratory and shop resources are provided by existing university facilities. However, to be a magnet for inventive students, the Tech House provides excellent electronics and mechanical prototyping resources. An important goal of the lab is to encourage student “hacking” whether or not this activity is officially recognized as a project.

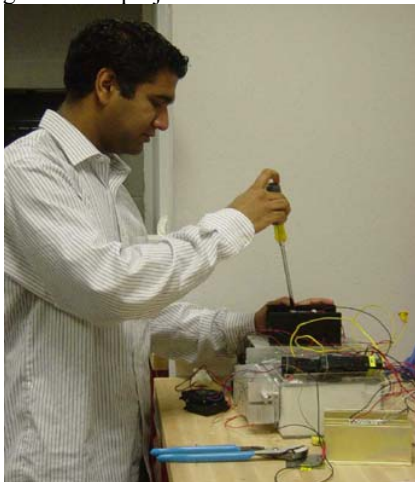


Figure 1. Amit Gupta, a engineering student, working on a prototype in one of the project bays.



Figure 2. Innovator-in-residence John Osher, inventor of Crest SpinBrush..

### Physical Environment

The physical environment is designed to support the House’s goals and programs. The House is substantially “open plan” with the following elements:

*Common area.* The common area is an open area that can be configured either for workshops or for informal interactions around tables and whiteboards.

*Computer workstations.* The computer workstations are intended to serve flexibly three purposes: (1) temporary mentor desks, (2) project areas for teams working on information technologies, and (3) work areas for students engaged in administrative projects, such as web site maintenance, house publicity, etc.

*Project bays.* These bays are relatively small physical areas (approximately 6’x10’) demarcated by half-height partitions and include enough space for a workbench, lockable cabinet, and materials storage.

*Lab/Shop.* The shop is fully enclosed for noise and access control, but has windows so that shop activity is clearly visible. The shop is directly accessible from the project bay area.

*Offices.* There are two offices, both of which have large windows into the main House spaces.

*Administrative area.* The administrative area is an open office area for the program assistant and several work-study students. This area also includes mailboxes, office machines, and files.

### Administration

The Tech House is a campus-wide initiative under the Provost. Day-to-Day operations are administered by a Director—Anne Stamer. The author—Karl Ulrich—is Faculty Director. Two Student Directors oversee the House’s programs. Each program is run by a student committee.

For more information, consult the website:

Weiss Tech House at The University of Pennsylvania.  
<http://www.tech-house.upenn.edu>