

IPRO 352: Solar Decathlon 2011

Project Plan

1.0. Objectives

Our objectives for the semester are:

- Form a network of potential donors and sponsors
- Create a PR campaign including a webpage that provides information to the public and potential sponsors
- Create a conference for fall 2008 at IIT, that will deal with solar building and technology. This will serve to raise campus and city wise awareness and support of this important undertaking.
- Create a database of information related to the building of a solar house
- Based on the database of information prepare and deliver a proposal to President John Anderson for IIT's involvement in the 2011 Solar Decathlon

2.0. Background

This EnPRO project is the first of several designed to position IIT for a competitive proposal entry in 2009 for the Solar Decathlon 2011 competition. The Solar Decathlon is a competition in which 20 teams of college and university students compete to design, build, and operate the most attractive, effective, and energy-efficient solar-powered house. The Solar Decathlon is also an event to which the public is invited to observe the powerful combination of solar energy, energy efficiency, and the best in home design.

This year the event will take place on the National Mall in Washington, D.C. October 12 - 20. The team houses are open for touring everyday except Wednesday, October 17, when they will close for competition purposes. An overall winner is announced on Friday, October 19 at 2 p.m.

Teams of college students design a solar house, knowing from the outset that it must be powered entirely by the sun. In a quest to stretch every last watt of electricity that's generated by the solar panels on their roofs, the students absorb the lesson that energy is a precious commodity. They strive to innovate, using high-tech materials and design elements in ingenious ways. Along the way, the students learn how to raise funds and communicate about team activities. They collect supplies and talk to contractors. They build their solar houses, learning as they go.

The 20 teams transport their solar houses to the competition site on the National Mall and virtually rebuild them in the solar village. Teams assemble their houses, and then the active phase of the Solar Decathlon begins with an opening ceremony for students, media, and invited guests. The teams compete in contests, and even though this part of the Solar Decathlon gets the most attention, the students really win the competition through the many

months of fundraising, planning, designing, analyzing, redesigning, and finally building and improving their homes. The public is invited to tour the solar homes and event exhibits during much of the competition.

The Solar Decathletes, i.e., tomorrow's engineers, architects, researchers, and homeowners, are sharing with us a new vision for living under the sun. These solar homes are powerful, comfortable, and stylish. They are relaxed and elegant, wasting neither space nor energy.

Today's solar houses connect with nature to take advantage of heat and light from the sun and cooling breezes and shading. But they crank this natural advantage way up by using the newest products and technologies on the market. The Solar Decathlon solar homes combine the best from the past and the present... and deliver the promise of a brighter future.

Being a large undertaking, participation in a solar decathlon must be preceded by much preparation. This IPRO team will begin laying the foundation for IIT's involvement in the 2011 Solar Decathlon in Washington, DC. This involves getting support not only from the Administration but the larger community as well. A large part of the team's work will be to create that "network of sponsors" to contribute either financially, with technical knowledge or simply manpower.

Wider issues are also encountered in this project. This touches on aspects of energy and resource management and stewardship. A solar house is still a progressive design and some aspects of society have not yet orientated themselves to changing climate of resource conservation and sustainable building. To move ahead in the project the team will need to be informed and prepared to address these issues as they come up.

Designing and building a solar house incorporates the entire range of academic disciplines. Architecture and civil engineering knowledge and skills for the design and construction of the house along with chemical, electrical and mechanical engineering to design and set up the technological aspects of a solar powered house. That only accounts for the main features of the house. Students with majors from business to psychology will be needed in different aspects of the project. The time required is immense! Because of this full cooperation of the administration is needed. This includes help with technical issues from the respective departments as well as academic credit for students who devote their time to this undertaking.

If at the end of this semester we have the support of the school and its respective departments, the beginning of outside sponsorship and a cohesive recommendation, we will bring a proposal to IIT president John Anderson for IIT's participation in the 2011 Solar Decathlon.

3.0. Methodology/Brainstorm/Work Breakdown Structure

Team Leaders

Webpage:	John Ruffolo & Juan DeMarco
Public Relations and Contacts:	Laura Mast
Database Management:	Jamie Amber
Solar Conference:	Marcin Mejsak
Final proposal:	John Carroll

The team has not been divided into further sub-teams yet. This will be done once we are past the research past solar decathlon teams stage. These teams will be determined by scope of task and skills and interests of team members.

The semester's task are divided into these major sections

- Research Past Solar Decathlon teams
 - Interview past team members to gain a broad understanding of what this project will take
 - Glean the past team websites to see what worked and what didn't
- Build a database to house research and information gained during the semester
- Use the information gained from interview and research to determine what will be needed financially as well as cooperation from the School
 - Determine the required resources
 - Workspace
 - Students
 - Materials
 - Technical Consultation
 - Determine the how interface will be needed with the academic departments
 - Come up with a financial estimate
- Build a network of Sponsors and Allies and Raise Awareness
 - Design and Publish a Website
 - Begin a PR campaign
 - Talk with the departmental heads and gain their support and input
 - Approach Engineering and Architectural Firms in Chicago about sponsorship
 - Get the student body interested
 - Organize a Solar Symposium at IIT
- Write and deliver the Final Proposal

4.0. Expected Results

In our research and preparation for IIT's potential involvement in a solar Decathlon endeavor we believe that we will come across subjects that would make interesting new iPROs. These could be dealing with solar technology, sustainable building, or many many other aspects that would be entailed in IIT's participation in the 2011 Solar Decathlon. As has been said before this is a huge undertaking and the involvement of as much as the campus as possible will make the birth of this project much simpler but the overall experience much more rewarding.

By the end of the semester the team will have made a proposal to IIT's President John Anderson. This will take the form of a written recommendation and a delivered presentation. In addition the team will have a web page that will be a summary of our research as well as a focal point for our PR campaign that will firstly extend to campus and then to greater Chicago. Finally we will have created a database of our findings, research and recommendations. This is as much to aid our team in their organization of data, as well as next semester's students who will need a clear way to summarize our gathered information and accomplishments.

5.0. Project Budget

Our estimated budget:

Expenditure	Estimated Cost
Research- Reports, Trade Magazines, pertinent literature.	\$200
Printing costs- Printing of reports and information for intra-team use.	\$200
Public Relations- Campus Advertising, and advertising for the greater Chicago area.	\$800
Transportation- Cost of travel to meet with potential supporters, and gather information.	\$250
Lunch meetings- Cost of meeting with vip sponsors and potential sponsors.	\$450
Group Social- A moral boosting event to sum up the semester's achievements.	\$250
Estimated total	\$2150

6.0. Schedule of Tasks and Milestone Events

Task	Hours needed	People assigned	Start Date	Deadline
Project Plan	15	2	02/12/08	02/22/08
Research Past Solar Decathlon teams	160	16	01/22/08	02/26/08
Build Database	60	3	02/12/08	02/26/08
Identifying Possible Sponsors	120	3	03/3/08	04/1/08
Creating interest	140	3	03/3/08	04/1/08
Analyzing database	160	16	04/8/08	04/12/08
Making Recommendations	80	16	04/12/08	04/14/08
Creating Website	100	2	02/26/08	03/31/08
Meeting with Sponsors	24	On average 2	03/3/08	05/2/08
finalized proposal	200	16	04/14/08	04/29/08
Preparing for IPRO Day	80	16	04/22/08	05/2/08
Midterm Report	3		02/26/08	03/14/08
Slack Time	20	NA	01/16/08	05/2/08
Minutes	5	1	01/16/08	04/18/08
IPRO Day Presentation	5 for each member	16	05/2/08	05/2/08
Group Social	48	16	Unknown	Unknown

7.0. Individual Team Member Assignments

Our faculty advisor is Frank Flury, from the Architecture Department.

Our team members:

Name	Major	Skills, Experience
Daniel Johnson	4 th Year Architecture Undergraduate	Design/Build experience, conceptual explanations, Intern for Halvorson and Partners Structural Engineers, growing interest in city planning... and stiffener plates
John Carroll	IBEW EJATT 5-year Apprenticeship IIT, Electrical Engineering, 3 rd year	<p>IBEW Local 134 member since 2001; installing, troubleshooting, and maintaining various electrical systems in commercial and industrial facilities.</p> <p>Licensed Supervising Electrician in the City of Chicago (In order to apply for permits to do electrical work in Chicago each contractor must have a licensed SE)</p> <p>Currently enrolled in NABCEP (North American Board of Certified Energy Practitioners) installer certification course through IBEW.</p>
John Ruffolo	4 th Year Architecture Undergraduate	Design/Build Studio, CAD development, photography, computer administration, web design, interested in architecture, new building technologies, systems and products, and anything architecturally related
Laura Mast	3 rd year Architecture	<p>Worked with Professor Flury to create Solar Decathlon IPRO proposal in Fall 2007. Summer internship at Center for Maximum Potential Building Systems in Austin, working under Pliny Fisk, head of Texas A&M's 2005 and 2007 Solar D entries.</p> <p>Worked briefly on steel details for 2007 prototype, designed supplementary "interest" piece for Decathlon, and did research into sustainable urban planning systems and further concepts related to Decathlon entry. Growing interest in entrepreneurial side of architecture through previous involvement with IPRO Fellows and Leadership Academy. Interest in social implications of building, highly integrated passive/efficient systems, and general environmentally responsible living.</p>
Marcin Mejsak	4 th Year Architecture Undergraduate	Design/Build experience, conceptual explanations
Matt Pollina:	4 th year Architecture undergraduate	CAD development, photography, Design/Build experience
Milagros Calizo	4 th year Biochemistry Major	Chemistry research fellowship. Intern at the Museum of Science and Industry

Nathaniel Hollister	4 th year, Architecture	Design/build experience Study abroad experience 2 year internship w/ sustainability oriented architecture firm
Trent Steffen	3 rd year Civil Engineering	Research, engineering analysis, cost/benefit analysis
Jamie Amber	4 th year, Electrical Engineering	I have an interest in the structure of the power grid and how to arrange it to accommodate renewable energy sources in a plug and play fashion. Power analysis, Renewable Technology, Power Transmission
Juan DeMarco	4 th year, Architecture	CAD development, Graphical Design, Conceptual Design

8.0. Assigned Roles

Meeting Roles

- **Minute Taker:** Daniel Johnson
- **Agenda Maker:** Milagros Calizo
- **Time Keeper:** Mohamed Ishaq

Status Roles

- **Weekly Timesheet Collector/Summarizer:** Automatic form filled out online
- **Master Schedule Maker:** Nathaniel Hollister
- **iGROUPS:** Jamie Amber