

Crop to Cup Coffee: Building Communities through Coffee

IPRO 333

Project Sponsor: Crop to Cup

Faculty Sponsors: Steve Beck & Dr. Mark Snyder



Ryan Bloom
Laurel Campbell
Dia Chatterjee
Stacy Economy
Emily Esko
Mathilde Gatepin

Cory Knapp
Jeremy Levin
Mark Swingler
Nicolas Sanchez
Becca Waterloo



Contents Page

- I. Abstract
- II. Team Information
 - Team Purpose
 - Team Objectives
- III. Background
 - Crop to Cup Coffee Company
 - Current Issues
 - Technology Considerations
 - Ethical and Societal Considerations
- IV. Team Values Statement
 - Desired Behavior
 - Conflict Resolution
- V. Work Breakdown Structure
 - Project Methodology
 - Weekly Breakdown Structure
- VI. Expected Deliverables
 - Expected Deliverables
 - Expected Results
- VII. Budget
- VIII. Designation of Roles
- IX. Appendix A
- X. Appendix B



I. Abstract

The mission of IPRO 333 is to assist the Crop to Cup Coffee Company (C2C) with a three phase plan to improve the quality of coffee and quality of life in the Bugisu region of Uganda. C2C has determined the first phase of improving coffee quality starts with the purchase and storage of coffee parchment. Farmers are paid premiums for higher quality coffee, but due to lack of education and resources do not produce at their potential. In order to prevent quality loss, IPRO 333 has been asked to design an enclosure for the temporary storage of coffee parchment. The enclosure or Banda (hut) will be located on Mt. Elgon in a remote farming area. It will act as a central location for farmers to sell their coffee without making the long trip down the mountain. In addition, it will allow C2C to sort coffee and provide feedback to individual farmers. In order to create consistency in the coffee, phase two is the purchase of cherry. This will allow C2C to have more control over the washing and drying process. In addition, the farmers make more money selling cherry. The banda and surrounding site will be transformed into a washing and drying station. The final phase involves the community using the benefits of the banda to improve infrastructure, education, and medicine. Phase two and three will not be the focus of this semester. However, they will need to be considered when finalizing the banda design and preparing the site. This semester IPRO 333 will finalize the building design, which has already been approved by the farmers. The team and sponsor are planning on constructing the building during the month of June 2011, provided it is ready. The IPRO will need to prepare all necessary documents for construction and fundraise to send a group of students to help build it. Relationships are critical when doing business in Uganda, and sending student will build community and further the success of the project.

The Fundraising aspect of the project consists of promotion and sales of Crop to Cup Coffee to increase market exposure of the product and support the Ugandan coffee farming community. In addition to direct donations, fundraising efforts will include sales of pre-packaged coffee and prepared coffee and at the campus coffee shop Global Grounds. The team will also organize fundraising events at other Crop to Cup Coffee retailers in the greater Chicago area.. This provides for more awareness within the local community of the project and possibilities for collaboration and input from outside sources to enrich the team's own efforts.

This document serves as a foundation upon which to build and guide the team's objectives and expected outcomes.. It includes an overview of the team information and strengths, project goals, background information, project methodology and, finally, the expected results. In addition, an itemized budget and breakdown of team member roles and responsibilities will be addressed within this document.



II. Team Information

The IPRO 333 member roster along with the members' individual strengths, needs and expectations are included in the appendices.

Team Purpose

The IPRO 333 team will complete the design of the banda and propose a schedule for its construction. In order to have an ethical project the team will also propose ideas for greater transparency throughout the process. This will include involving the local community in both the construction and design of the banda and drafting a document that both educates farmers about quality and tracks their progress towards it. The team hopes to promote a sustainable coffee community both at home and abroad by creating relationships that extend from the farmers growing the crop to the consumers drink from the cup. .

Team Objectives

- Become culturally aware of community in Bugisu regions of Uganda
- Understand the ethical implications of the project as a whole
- Maintain relationships with Ugandan farmers
- Create a document that gives feedback to farmers about their coffee and allows C2C to provide incentives for improvement
- Investigate locally available construction materials and create a cost estimate for the construction
- Estimate construction schedule for banda
- Propose an itinerary for summer trip to Uganda and construction of the banda
- Determine treatment of site location in Uganda
- Involve the local Bugisu Community in as much as possible in the construction of the banda
- Maintain communication with C2C organization
- Advocating C2C to American Culture through publicity events.



III. Background

The Crop to Cup Coffee Company

The Crop to Cup Coffee (C2C) imports coffee from farms in East Africa. They travel to the farm, select the best farmers and form relationships with them. The company takes pride in bringing customers closer to the coffee farmers and vice versa through the use of message boards, email, cameras, and video conferencing. C2C's mission is to connect the community of farmers and consumers in an attempt to allow them to better understand one other. The relationship C2C shares with its farmers are closer than that of the average coffee company. This allows for much higher traceability by tracking which beans are produced by which farmer. They offer biographies of the farmers they work closely with and give the consumer the opportunity to pose questions to the farmers on the C2C website. The farmers then are able to connect with the people who purchase their coffee beans.

C2C currently implements their “20, 5, 10” program, in which farmers receive 20 percent over market price for their coffee, 5 percent of their coffee's selling price in coffee consuming communities, and 10 percent of company profits. The program is designed to reward farmers for producing high quality coffee, provides funds to help gain international recognition for their communities' artists, support for community projects and training in technology.

C2C is now preparing to implement a three phase plan with the end goal of buying “Whole Crop” in which they will commit to purchasing 100 percent of the coffee produced from the farmers they currently work with. They plan to buy the coffee at an above-market price along with committing to pay a premium to individual farmers based on coffee quality. The first phase of this plan includes building a storage facility for this larger amount of beans, compared to the 14 percent they currently purchase.



Current Issues

The general banda design has been approved by the farmers and IPRO 333 now has the responsibility to create prototypes, cost estimates and documents that teach farmers how to construct the building. The challenge will be balancing the specificity of construction documents with the reality of constructing in a foreign country. Business in Uganda depends on relationships and spur of the moment alterations. A schedule constantly changes and nothing is final. In addition the team will need to maintain contact with the farmers they met on the trip to get specific information about available materials and equipment. The second aspect of the banda is a means of giving the farmers feedback. When farmers bring their coffee to the banda a sample will be taken and undergo a quality evaluation. Crop to Cup will then provide feedback in the form of a progress report. The team has been asked to design this document. The document must include an assessment of quality, possible ways that each individual farmer could improve quality, and incentives to improve. This document will also need to allow for C2C to audit farmers and set pay grades. This crucial step in a transparent company.

Technological Considerations

The coffee production process begins with the cherries that are handpicked from the coffee tree. Though mechanical means are available, they are not as effective. The cherries can be processed either as wet or dry. In wet processing, the outer skin is removed from the bean, and all the cherries that remain with pulp on them are placed in tanks to ferment where natural enzymes will dissolve the pulp on the coffee beans. Afterwards, the beans are washed and dried. Dry processing is the oldest method of processing coffee, in which the coffee cherries are washed and spread out to dry in the sun for a few weeks. After the beans are dry, the pulp on the beans will ferment. Fermentation affects the beans' flavor. Finally, after the coffee beans have dried completely, whatever dry outer layer that still exists on the bean is removed. A pulping machine is sometimes also used to aid the removal of the outer skin in both processes. Each stage of coffee production is an opportunity to improve or decrease the quality of the coffee. The team must consider how the banda can help farmer improve at each stage of production.



Previous Attempts

Communal storage has been used throughout history in many different models in many different situations, all being beneficial to the societies that utilized the methods. There are three major models that have some importance to the project at hand.

The ancient model of agriculture is one of community farming and community storage. In this model, the community farms the land regardless of ownership and the fruits of the labor are seen as a product of the community and not the specific farmer. Most ancient peasantry through feudalism used some form of this model. Community farming lasted in Britain until the enclosure movement, which is where private farms were surrounded with fences to stop open grazing of cattle. Often, the farmers would store the crops in the same location, with the most famous being the biblical story of grain storage in Egypt.

The Grange of the Order of Patrons of Husbandry was the next major model of communal storage. This movement started with the creation of a fraternity of farmers who suffered devaluation of crops after the Second World War. The purpose of the fraternity was to provide a stronger counterforce against the market forces. The farmers who joined the organization stored their crop at the facilities known as granges, which is a derivation of granaries. The communal storage helped the farmers of the granges sell their crops at higher prices than in the normal market.

The Cooperative Business Model of farmers that grew since the 1920's is basically a non-fraternal organization that bases itself off the Grange Model by providing farmers within the cooperative access to new markets and gives them some price control. They also offer access to tools that farmers may not be able to access when acting alone. This model is the one most closely relatable to Crop to Cup. The company will be purchasing all the coffee beans from the farmers, instead of a share of their produced coffee, and bringing them to a new market with connections to the consumers that are buying their coffee. The storage facility is one



of the benefits of Crop to Cup's "Whole Crop" plan, as well as the complete sell of their crops at premium prices.

Ethical Considerations

The IPRO 333 team needs to take into account the nature of interactions with farmers who have over the years been promised many improvements but have yet to see those effects. The issue of trust becomes very important and the *banda's* design, which will house the farmers' primary source of income, must function as a place where the farmers are comfortable and not patronized in any way. The negotiations within the design process must be handled in such a way to reduce any improper behavior that can lead to mistrust. It is important to consider the socio-economic impact of C2C's "Whole Crop" plan on the farmers. The farmers are currently used to only receiving small amounts of capital at a time. Because C2C will be buying all of their coffee at once, the question arises about how the farmers will react to this new system. The IPRO 333 team must consider which system would be better for the Ugandan people. Thus, it must ensure that care is taken when speaking to farmers so as to not foster high expectations without being able to deliver results. The team must still be friendly, cooperate, and productive, and design the *banda* to be structurally sound, secure, and offer enough flexibility, so as to prevent injury, theft, or damaging C2C's reputation.

Societal Costs of the Problems

The major challenges facing coffee farmers in Uganda are the following:

- 1) Low production and productivity levels. Much the coffee tree population has surpassed its optimum production lifespan. Poorly managed and leached soils lead to low productivity. Robust and Arabica is 500 kg/ha and 750 kg/ha of clean and parchment coffee respectively
- 2) Infection of coffee by the coffee wilt disease, a disease that has impacted a large portion of the coffee tree population.



- 3) Inadequate management capacity. According to the Uganda Coffee Development Authority, inexperienced workers such as youth, women and farmers in new regions contribute to the lack of productivity.
- 4) Volatile world market. Coffee prices are unstable due to the liberalization of the coffee market. Ugandan coffee growers are now able to receive a larger share of the export price for their coffee. However, due to the volatile nature of coffee prices, fluctuations in price, both high and low, often translate quickly to the producer. These fluctuations can be hard on farmers

IV. Team Values Statement

The IPRO 333 Team values clear communication between members, responsible actions, respect within the team and with others during fundraising events, attendance, punctuality, timely completion of all responsibilities, and most importantly, an optimistic outlook. Communication will be done through 'iGroups' for the duration of the semester. Each student is required to accomplish assigned tasks and take on certain leadership roles weekly. Classes are used for heated discussions and task completion so as to have all tasks completed before IPRO day.

Problems will be addressed openly among the group in a respectful manner, taking all views into consideration.

V. Work Breakdown Structure

To yield the most thorough research, the team will divide into subgroups, covering: Building, Community Impact, Logistics: Business, Logistics: Construction/Transportation



Projected Semester Plan and Team Structure

Deadlines:	Tasks:	Assignments:
	Materials	Becca, Emily, Mathilde, Jeremy, Dia, Cory
27-Jan	list of materials required	
27-Jan	price of materials in US dollars	
7-Feb	price of materials in Ugandan Shillings	
3-Feb	Prefered vendors for materials in US	
3-Apr	Prefered vendors for materials in Uganda	
11-Feb	Purchase materials for prototyping	
	Building	Ryan, Mark, Nico, Becca
25-Feb	Final interior plan	
25-Feb	plan for scale and weighing area	
28-Apr	construction schedule	
3-Feb	plan for prototyping	
18-Feb	prototype constuction	Entire Team
	Paper Deliverables	Laurel, Dia, Cory, Emily, Jeremy
10-Mar	proposal for incentives	
10-Apr	outline of quality expectations	
25-Mar	Rough draft of Progress Report	
15-Apr	Final Draft of Progress Report	
5-Feb	written instructions for construction	
7-Feb	Images for written instructions	
11-Feb	final formatted version of written instructions	
	Site	Mark, Ryan, Laurel
10-Feb	plan for dealing with elevation change	
15-Feb	layout of banda on site	
10-Mar	list of equipment need for site manipulation	
20-Feb	written instructions for site preparation	
	Publicity/Fundraising	Stacy, Mathilde
Feb	schedule event with Coffee Club	
3-Mar	Bake Sales/ Traveling Global Grounds	
Mar	Event at Turtles	
Apr	African Night in the Bog	Becca
Feb-May	Coffee Sales at Kent and Stuart (downtown)	
20-Feb	contact sodexo about discount coupons	
20-Feb	contact the colleges and talk to dean	
20-Feb	contact student orgs	
	IPro Deliverables	Entire Team
Ongoing	Information to insert in binder	Entire Team
Ongoing	Binder Layout and Compilation	Stacy
28-Jan	Project Plan	Laurel, Stacy
1-Mar	Midterm Presentation	
1-Mar	Midterm Presentation Slideshow	
8-Apr	Ethics Deliverable	
25-Apr	Abstract Handout	
25-Apr	Abstract Brochure	
25-Apr	Poster	
27-Apr	Final Presentation	
27-Apr	Final Presentation Slideshow	
27-Apr	Final Project Report	



VI. Expected Deliverables

After teambuilding sessions during the first week, the team required a starting point for research, and invited the Crop to Cup CEO, Jake Elster, to give a thorough presentation of the company's mission and the expected role for IPRO 333. This period was followed by a question and answer section which was helpful to guide the future activities of the team.

The IPRO 333 Team Deliverables

Paper Deliverables:

1. Progress Report to be given to the farmers regarding their individual coffee's.
 - a) Provide C2C with ability to audit
 - b) Basis on which to set a pay rate
 - c) Incentives for the farmers to improve quality
 - d) Opportunity for dialogue
 - e) Sets quality expectations
2. Directions for the construction of the Banda (to be provided to Jake before the trip in March)
 - a) Materials list with pricing information
 - b) Visual guide to earthbag construction
 - c) Site prep information and instructions

Site:

3. Elevation Change
 - a) Landscaping for entire site
 - b) Landscaping specific to the banda location
 - c) Access by foot traffic
 - d) Water management (including runoff, mudslides, and natural well)
4. Master Plan for the entire site
 - a) Accounts for Phase Two and Three
 - b) Flow Diagram (including movement of coffee and people)
 - c) Expansion
 - d) Additional site treatments required
5. Road
 - a) Possible materials research
 - b) Prototyping
 - c) Loading station
 - d) Plan for part 1 (worst 200ft)
 - e) Plan for part 2 (worst 1km)



Building:

6. Plan

- a) Interior storage specifics
 - b) Scale and area for weighing
 - c) Flow diagram
 - d) Adjustments necessary to hold 6 tons of coffee at a time
7. Construction
- a) Construction schedule
 - b) Earthbag prototyping
 - c) Maintenance document

Publicity:

8. Global Grounds
- a) Appoint a liaison
 - b) Maintain google doc of ideas
 - c) Organize events at GG
 - d) Complete picture book
9. Other
- a) Maintain contact with Jake
 - b) Organize/ create and print flyers and handouts
 - c) Craft proposals for events off campus

Expected Results

The IPRO 333 team hopes to conclude the semester with full preparation for the trip to Uganda to Construct the banda. The team visions this process to be a continuous reworking of designs to reflect changes requested by farmers and other issues that the team may recognize during their field research. These various designs and other new discoveries will need to be documented to allow the following IPRO class to be able to continue the process and move from phase one to phase two and three.

VII. Budget

The full budget will go towards supplies needed in the fundraising effort for the Ugandan trip. Fundraisers will be held at various Farmers' Markets in the Chicago land area and in other commercial locations if/when the opportunity arises. The costs involved are: application fees for Farmers Market events, acquiring tents, tables, development of posters and coffee accessories for sales (e.g. sleeves, lids, stirrers, and napkins); these initial costs will be paid via the IPRO Budget. Certain items will be sold at fundraising events and donations will be accepted and all extra funds raised will go back to Illinois Institute of Technology.



Items to be Sold at Fundraisers	
Item	Cost
Hot Coffee	\$2
Cold Coffee	\$3
Coffee w/ Horchata	\$5
Coffee Beans (10oz)	\$9
Coffee Beans (2lb)	\$20
T-Shirts	\$12

Projected Budget Proposal	Cost
Prototyping	\$400
Publicity	\$100
Total	\$500

Fundraising Goal	
Travelers	8
Approx. Cost per Traveler	\$2,000
Down Payment	\$200
Amount to be Fundraised	\$14,400

VIII. Designation of Roles

This team has decided to assign roles for each team member, some shared with others. Below are the roles (some invented, some existing) assigned and hope to be maintained throughout the semester, with some adjustments always assumed.

The stationary roles are shown below:

- iGroups moderator – Ryan Bloom
- Agenda Maker – Laurel Campbell
- Secretary/Scribe – Stacy Economy
- Publicity and Fundraising organizer – Stacy Economy, Mathilde Gatepin
- Crop to Cup Liaison – Emily Esko
- Farmer Liasion – Mark Swingler, Dia Chatterjee
- Professional Researcher – Cory Knapp, Jeremy Levin



Appendix A: Group Contact Information

Ryan Bloom [Architecture] rmbloom10@gmail.com

Laurel Campbell [Architecture] czarsmile@gmail.com

Dia Chatterjee [Psychology] dchatter@iit.edu

Stacy Economy [Architecture] seconomy56@gmail.com

Emily Esko [Biomedical Engineering] emily.esko@gmail.com

Mathilde Gatepin [Materials Science and Engineering]

Cory Knapp: [Applied Mathematics and Computer Science]
cory.m.knapp@gmail.com

Jeremy Levin [Mechanical Engineering] jlevin4@iit.edu

Nico Sanchez [Architecture] nsanche1@iit.edu

Mark Swingler [Architecture] mswingler12@gmail.com

Becca Waterloo [Architecture] oolretaw@gmail.com

Appendix B: Team Information & Skill Sets

Ryan Bloom: Architecture

Ryan is an architecture student with a growing love of coffee's taste and energy boost. He is looking forward to an exciting step toward a more feedback-driven coffee industry and is excited to work toward building the first earthen-built coffee storage banda in Uganda. Although he needs to work on his stress management, Ryan plans to use his enthusiasm, leadership, design and planning skills to further progress the banda's construction and continue to spread the excitement about IPRO 333.

Laurel Campbell: Architecture

Laurel is an architecture student dependent on coffee for survival. As such she hopes that IPRO 333 will be the first step in creating a transparent coffee industry. She plans to use her skills in research, planning, and time management to help with the finishing touches on the Banda and instructions for building it. She will not let her tendency to procrastinate and lack of knowledge of technical details get in the way of making IPRO 333 the best that it can be.



Dia Chatterjee: Psychology

Dia lives by the mantra that when good coffee teams up with the brain, something cerebral is bound to happen. As per her vision, IPRO 333 will make a lasting change in Uganda by empowering the coffee growing community one Banda at a time! She knows that the road ahead is anything but easy. She will ensure that her performance is not impacted by aspects such as her impatience, inability to travel to Uganda, and lack of architectural knowledge. She intends to use her research skills, critical and analytical skills, and insights in industrial and organizational psychology to ensure that the team is successful in its endeavors

Stacy Economy: Architecture

Stacy is an architecture student with a minor in structural engineering with specializations in architectural theory and history and landscape architecture. Coffee plays a vital and delicious role in her survival as a university student. Although this project may seem small in the realm of the coffee industry, she believes that work that IPRO 333 produces will impact the coffee industry. She plans to use her graphic design skills, planning, and writing skills to promote and to create awareness to help make the end product of the Banda successfully possible.

Emily Esko: Neural Biomedical Engineering

Emily finds that coffee is a necessary factor in her happiness and sanity. She is opinionated and outspoken, which she views as a strength, as well as logical, organized, and punctual. One of her greatest weaknesses is a lack of patience, as is task delegation. This semester she wants to use her strengths to keep the team working productively and efficiently, in order to be ready for the banda's construction this summer.

Mathilde Gatepin: Materials Science and Engineering

Mathilde is a senior Materials Science and Engineering student. She preferred drinking strong espresso but since coming to Chicago she now enjoys drinking larger cups of coffee just to wake her up and kickstart her day! She wants to make the best of her major in this IPRO by choosing the most adequate materials for the storage building. She hopes that her lack of knowledge in architecture will not be too much of an inconvenience, though! She is really excited about helping a fair trade company and use what she has learned so far in a concrete project. She's sure that she will have a wonderful time!

Cory Knapp: Applied Mathematics and Computer Science

Cory is a barista apprentice at Intelligentsia Coffee and Tea. He has seen first hand how transparent and just trade practices lead to better quality coffee. He hopes to use his knowledge of the coffee industry to promote fairness, transparency, and coffee quality.



He plans to overcome his poor organization skills, and learn technical details that will help him to further the goals of IPRO 333.

Jeremy Levin: Mechanical Engineering

Jeremy is a Mechanical Engineering Student with minors in Design Engineering and Political Science. His relationship with coffee is a love/hate relationship. Regardless of how often he goes on a caffeine free diet, a fresh brewed mocha always quickly ends the diet. He plans to use his analytical mind and strong communication skills to help IPRO 333 be as successful as possible, while avoiding his tendencies towards disorder. By doing this he feels he can bring a higher quality of coffee to the masses, making his mocha's that much sweeter.

Nico Sanchez: Architecture

Coffee! Coffee! Coffee! Nico believes in the power of beans: chocolate, refritos, and coffee. Nico has 16 years of experience in renovation and landscaping his home in Logan Square. Design has inspired him to bridge the gaps of home, heritage and the bustling metropolis. He is also experienced with computer drafting, modeling, physical models, and rendering. Nico is a practical designer, though he does recognize the importance of the occasional impracticality for beauty's sake. He is looking forward to enriching and continuing the progress of IPRO 333.

Mark Swingler: Architecture

Mark is a fifth year architecture student on the verge of graduation. While he still pulls all nighters and still occasionally bottoms a few cups off coffee to get through the night (not as much as he used to), coffee in his eyes is a life-boosting energizer (secretly teamed up with a chaser of ice water). He plans to take his skills of striving for achievement and results, developing concepts and ideas while communicating them clearly, and using his overall focus and creativity, to make a lasting change in Uganda. We are in fact changing the lives of the people and their community which we have come to know and love and been taken in as part of that community. Mark hopes to come out on the other end of the semester with a working, breathing action plan to implement and begin construction over the summer.

Becca Waterloo: Architecture

Coffee runs in her blood ever since she tasted Crop to Cup for the first time in summer 2010. Her passion for hopes to see it built this coming summer. Her project coordination and leadership contribute the project. Having been in the IPRO for her third semester now, traveling on the trip, as well as her architectural education should all be there as a resource for others who are not as familiar with the project. Taking too much on her shoulders is a bad habit, however. She also refuses to let her (very) small attention span go on unrelated tangents, distracting the rest of the team from what IPRO 333 is all about.