Crop to Cup Coffee: Building Communities through Coffee

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I. Abstract

The mission of IPRO 333 is to assist the Crop to Cup Company with the design and building of an enclosure for a temporary storage facility within the vicinity of their largest producing farming zone for robusta coffee in the Mbale region of Uganda. The sponsor, along with the team, has decided that the best method for addressing the local and global needs of the farmers is to present the research and design personally. Therefore, IPRO 333 will be fundraising to help finance the forthcoming trip to Uganda to present to the farming communities.

As a result, the IPRO 333 team has been entrusted with the design of a structure that will serve as a secure coffee storage facility for the farmers. The structure will also include a public space allowing farmers to weigh, sell, pulp, and dry their coffee.

The Research and Design Phase of the project has many considerations; taking into account the local customs of the Ugandan farmers, their ideas of security, the effectiveness of locally available materials for building, conditions at the site that may decrease the coffee's value (e.g. pests and climate) and the socio-economic impact of Crop to Cup's 2011 Plan. This will require in depth research of the culture and site which will lead to a series of designs most suitable and agreeable to the sponsor and the farmers. A systematic understanding of the production methods of coffee will yield a more efficient and suitable design. In addition, an ongoing relationship with the farmers, mediated by the sponsor through the form of emails will allow the team a greater understanding of the farming community's needs.

The Fundraising Phase of the project consists of promotion and sales of Crop to Cup Coffee to increase market exposure of the product as well as of the company's support of the Ugandan coffee farming community. These fundraising efforts will include sales of pre-packaged coffee as well as prepared coffee and other clothing items and donations at local farmers' markets within the vicinity. 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. The document will be used in the following semesters as a reference during in-depth design phase for the storage facility. 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 purpose the team has set forth is primarily to gain knowledge of socio-economic conditions in both Uganda and Chicago with respect to coffee. This obtained research will inform the design of a storage facility, called a *banda*, for the coffee farmers in Uganda. The storage facility needs to be built to benefit both the Ugandan farmers and Crop to Cup. The company hopes to see an increase in security for the farmers, profit per activity, overall farmer income, cultural awareness for consumers and a decrease in export and import time.

Team Objectives

- Becoming culturally aware of Uganda, with an emphasis on coffee farming
- Researching ethical and social considerations
- To create awareness of the coffee production process
- Become aware of the economic and social values coffee holds
- Forming relationships with Ugandan farmers
- Learn what the farmers consider as security
- Investigate locally available construction materials
- Create Detailed Itinerary for trip to Uganda

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 new plan in 2011 called "Whole Crop" in which they will commit to purchasing 100 percent of the coffee produced from the farmers they currently work with, in two regions of Uganda, Gibuzaale and Kapchowra. 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. An important part of this plan is building a storage facility for this larger amount of beans, compared to the 14 percent they currently purchase.

Current Issues

In preparation for "Whole Crop", the community storage facility that will allow the farmers to sell their entire crop at the Crop to Cup price needs to be designed and understood as a concept by the farmers. Also, because the farmers are not used to selling their coffee all at once many issues arises, such as the question about whether the farmers would want to be paid in full for their coffee and store the money versus the current system where they store some of their coffee at a time to sell when desired. Another option could be that they set up a sort of banking system where C2C would pay the farmers for their beans in monthly or weekly installments.

C2C has determined that a small storage facility *banda* must be designed to accommodate farmers' security and storage needs. In addition to this requirement of secure storage, the *banda* will also include a public office allowing farmers to weigh, sell, pulp, and dry their coffee. The *banda's* goal is to increase security with respect to the farmers' chief source of income along with fostering a sense of community among all farmers who use the public space.

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.

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 handles 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: Coffee, Architecture, and Culture.

Team Structure		
Coffee	Architecture	Culture
Freddy Canelo	Isabella Z	Becca Waterloo
Lindsay Drabek	Michael Erie	Yeamlaksira Awol
Stacy Economy	Treanndis Hurst	

Weekly Breakdown Structure

Weekly Itinerary		
Date	Week	Task
25-May	1	Team Building
27-May		Class
1-Jun	2	Sponsor Research
3-Jun		Market Planning
8- Jun	3	Project Plan Drafting
10- Jun		Sub Group Planning
15- Jun	4	Presentation Organization
16- Jun		Midterm Rehearsal
17- Jun		Midterm
22- Jun	5	Midterm Reflection/ Subgroup
24- Jun		Subgroup Presentations
29- Jun	6	Discuss Ethics Questions/Roles
1-Jul		IPRO Ethics Bowl
6-Jul	7	Subgroup Presentations Considerations
7-Jul		Complete Research
14-Jul	8	Presentation Completion
15-Jul		Presentation Rehearsal
16-Jul		IPRO Day

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

Fundraisers to help pay for the trip to Uganda to meet with the farmers will continue throughout the summer. This is done for two reasons:

1) It will help promote Crop to Cup's activities, thus allowing consumers to be more aware of the situation farmers in Uganda are facing and hopefully support C2C in its activities

2) It will give opportunity for the IPRO 333 team to travel to Uganda in order to have personal interactions with the farmers, learning about their customs and asking questions related to the project, conduct site surveys, and inspect locally available construction materials. The fundraisers require the team to obtain market reservations, go through training with respect to setting up and making coffee and a solid understanding of Crop to Cup's mission.

Development of questions and trip itinerary to ask during the interviews with the farmers with respect to the farmers' outlooks on safety, importance of coffee, strongly held ideals, opinions of the western world, what they think their coffee is used for in the United States. This research is to become more culturally aware, to help clarify incorrect perceptions and to have a better grasp on what is truly needed for the *banda* to be successful.

To prepare in-depth site surveys while still in the U.S. These surveys will include physical site information, climate and soil data and any natural occurring situations to inform the team.

To research locally available materials and methods of construction, material science, economic benefits of using locally available materials versus a pre-fabricated model.

Build relationships, via email, with the farmers to personally understand their needs, as well as facilitate the design process when meeting with the farmers in Uganda.

Design Proposals of various options resulting from the research completed. These proposals will be presented in the form of sketches, drawings, renderings and simple models.

Prepare travel information and book travel flights to Uganda during the semester.

Travel to Uganda and meet with the farmers. During this time the team will follow the planned itinerary and present ideas to the clients. Designs may need to be reworked and documented to reflect changes needed to be made.

Compile research and documentation and present succinctly in a book form to pass on to the next semester IPRO working on the Crop to Cup Coffee project.

Expected Results

The IPRO 333 team hopes to conclude the semester with full preparation for the trip to Uganda to meet with the farmers and present design proposals. 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 a design phase to a building phase.

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.

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

* The down payment was paid with the use of the student's funds.

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

VIII. Designation of Roles

The roles consist of two types, i.e. set roles and rotating roles. The rotating set consists of team leader and minute taker, such that on day 1 person 1(as shown below) is team leader and person 2 is minute taker. The following day person 2 is team leader and person 3 is minute taker. This rotation continues until person 8 and then the leadership returns to the first person.

1. Becca Waterloo
2. Stacy Economy

3. Yami Awol
4. Michael Erie- communicate with Jake
5. Treanndis Hurst
6. Lindsay Drabek
7. Freddy Canelo
8. Isabella Z

The stationary roles are shown below:

- iGroups moderator – Lindsay Drabek

- Agenda maker – Stacy Economy

- Fundraising accountant – Michael Erie

- Liaison to Crop to Cup – Becca Waterloo

Appendix A

IPRO 333 Roster		
Team Member	Major	Contact Info
Awol, Yeamlaksira	Civil Engineering	yawol@iit.edu
Canelo, Freddy	Architectural Engineering	fcanelo@iit.edu
Drabek, Lindsay	Biology	ldrabek@iit.edu
Economy, Stacy	Architecture	seconomy@iit.edu
Erie, Michael	Mechanical Engineering	merie@iit.edu
Hurst, Treanndis	Architecture	thurst1@iit.edu
Waterloo, Becca	Architecture	

		rwaterlo@iit.edu
Z, Isabella	Architecture	██████████ izorra@iit.edu

IPRO 333 Team Information			
Team Member	Strengths	Needs	Expectations
Awol, Yeamlaksira	Creative, natural leader, good communicator, passionate, understands the meaning and value of coffee in third world countries	For everyone to always keep an open mind, optimism and do each task to the best of their abilities	Dedication and to always have each others backs
Canelo, Freddy	Dedicated, good listener, reliable, AutoCad, MS Office, MathCad, some SAP, knowledge of basic structural theory	everyone to express their opinions, positive approach to problem solving, cooperation	willingness of others to work long and hard when needed, all members to identify with the group
Drabek, Lindsay	Organization, copy editing, research, proficient in iGroups	Optimism within the group	Be prepared
Economy, Stacy	Optimistic, strong leadership skills, efficient worker, respectful, good listener	Precision. Help each other, work together well. If someone disagrees with something to better the solution, speak up	Strong communication among group members, positive attitude, willingness to work until work is completed

Erie, Michael	Dedicated worker, self motivated, prompt, experienced in team design projects	Everyone to be extroverted, clear in presentation and acceptance (or rejection) of ideas, and to be prepared to do work	Everyone to be promptly on time, and willing to work late and long hours
Hurst, Treanndis	respectful, mediator, efficient worker, strong design skills	respect between all group members, everyone needs to take the time to listen to the ideas of others, minor problems should be resolved quickly	at the end of the summer, to have an overwhelming amount of information about the project and the site
Waterloo, Becca	efficient worker, self motivated, reliable, natural leader, time management	everyone to cooperate and do each task assigned and step up to the plate when asked to, be open to everyone's ideas	put as much into this as you can, use Jake as a resource, hit our goals sooner than expected
Z, Isabella	Self motivated, reliable, strong design skills, adobe illustrator and Photoshop	Cooperation, reliability, productivity	Timeliness, cooperation