Project: The CamPlug Venture

As we heard from the key stakeholders in this venture, they are looking for ways to add value to their invention through instrumentation and dashboard monitoring. They do not have a fully-formed vision, but will accept proposals and ideas related to improving their product and making it more competitive in the marketplace. So far, we've learned:

- the plug is at an advanced prototype stage and is undergoing lab testing for certification
- they want to add, at a minimum, a sensor that detects abnormal operating temperatures
- they are interested in detecting conditions that may represent a gasket failure (safety hazard)
- they are interested in detecting if the plug is locked or not
- they would like to have a way for the plug to indicate if it is live
- they are interested in having plugs communicate and report data to some central server
- they would like clients to have the ability to receive alarms and monitor plug status
- clients will likely use both a website and an app

Some aspects of this project are mechanical/electrical engineering challenges, and we'll minimize the scope of that work to ensure it remains viable as an academic project in MGMT1104. However, with that in mind, let's charge forth and see what we can contribute, practicing our predictive and adaptive project planning along the way.

SCOPE OF WORK

The project scope includes a mix of predictive and adaptive project management activities:

1. Prepare a product vision statement.
2. Prepare a project charter.
3. Identify and rank key stakeholders in a stakeholder map.
4. Collect and manage product requirements in a product backlog, prioritized by value.
5. Identify at least three overall project risks and outline mitigation measures.
6. Create a sprint backlog for the first sprint.
7. Identify at least one architectural or technical spike.
8. Prepare a WBS and project timeline for deploying the system (hint: https://www.teamgantt.com)
9. Allocate and level resources in the deployment project timeline.
10. Determine the BAC.
11. Calculate metrics of project economic viability (ROI, NPV, 5 year horizon, 12% discount rate).
12. [Instructor discretion] Present your plan.

Note: this is not a programming assignment. You are not required to do any coding or technical product development.

SUBMISSION GUIDE

All teams should submit their work on this project in two stages:

Stage 1:

Worksheet Name: Course Project Stage 1
Worksheet Code: PROJS1

Q1. [use text] Please insert your team's product vision statement.

Q2. [use text] Please insert your team's project charter.

Q3. [use text] Please list key stakeholders for your project annoted with a ranking of influence and interest using a scale of one to five.

Q4. [use text] Please insert all the user stories in your team's product backlog as at the submission date. Each user story should start on a new line. Kindly leave a blank line between user stories. Work containing *any* spelling or grammar errors will not be assessed.

After submitting the form, one person from each team should upload the proof of submission **.zip** file to D2L using **Project Dropbox - CamPlug Venture OR Machine Vision Recycling** (all teams use the same dropbox).

Stage 2:

Worksheet Name: Course Project Stage 2
Worksheet Code: PROJS2

Q1. [use text] Identify at least three overall project risks and outline mitigation measures.

Q2. [use text] Insert a sprint backlog for the first sprint, including what you think a regular Agile/Scrum development team could commit to in two weeks, a task breakdown for each story, and acceptance criteria for each story. Please leave a blank line between user stories in your work.

Q3. [use text] Identify at least one possible architectural or technical spike.

Q4. [use file] Upload a **.jpg** file with a one-page estimated project timeline for deploying the system, i.e. moving it from a completed system to field deployment on a pilot site. You will find some useful information attached below. You should include a realistic set of tasks, resources, and effort/cost estimates, and the schedule should be optimal. For professional results, you can take advantage of free online tools like https://www.teamgantt.com.

Q5. [use text] Based on the costs and revenue projections below, please enter the following metrics for your project, one per line:

 - BAC
 - ROI after five years
 - NPV using supplied cash flow information, a five year horizon, and a 12% discount rate

After submitting the form, one person from each team should upload the proof of submission **.zip** file to D2L using **Project Dropbox - CamPlug Venture OR Machine Vision Recycling** (all teams use the same dropbox).

PROJECT DETAILS

Assignment Type: Teams of 2 or 3

Original Work: **Required -- do not copy an online example or the work of others**

Submission: Please use the links provided by your instructor

Due Date: There are several due dates for staggered deliverables; dates are assigned in class

Writing Standard: Business professional

Cover Page: Required

Author Names: Required

Course Code: Required

APA Style: Ensure any material drawn from a third party source is appropriately cited

HOW TO GET TOP MARKS

Remember that uncertainty is part of all projects; work with what you have and reach out if you need additional information; study the problem and the attached information carefully; consider who your key stakeholders would be; identify user needs (your instructor will serve as a proxy if required); create a detailed and realistic product backlog; progressively elaborate product backlog items into tasks and acceptance criteria in a sprint backlog; build a detailed deployment plan; consider project risk; calculate realistic measures of economic viability; avoid submitting incomplete or superficial work; don't plagiarize; follow submission guidelines properly and submit on time!

ASSESSMENT CHECKLIST

Completeness of vision statement & project charter		/10
Completeness of stakeholder map & project risk assessment		/10
Completeness of product backlog		/20
Completeness of sprint backlog & information radiators		/20
Completeness and accuracy of predictive deployment plan		/20
Completeness and accuracy of economic viability metrics		/10
Overall impression of quality and presentation		/10
Total		/100
Days late (@5)		
Spelling/grammar faults (@5)		
Plagiarized or unoriginal work (0% + academic sanction)		
Total adjusted		/100

UPSIDE CONSTRUCTION
333 Riverfront Avenue SE
Calgary Alberta T2M2Q4

Cam-Plug Ltd.
Calgary, Alberta
Attention: Afshin Hamed

Dear Afshin:

It was a pleasure chatting on the phone with you earlier today. As we discussed, we're more than happy to help you validate your firm's new power plug system on an upcoming construction project. This can be the pilot project you seek. Here are the details of what this project will need:

 - 20m male-to-female power cables terminated with CamPlug 600V 100A pin and sleeve connectors (6 required).

 - Distribution panel with 6 female CamPlug 600V 100A pin and sleeve connectors to be wired to a site generator; we will supply the wiring labor and materials to the generator. The distribution panel should include the communication gear and HMI components you described (chiefly the on-panel indicators), so our construction staff can adequately test the system.

 - A two hour training session to show construction staff how to install and use the plugs, safety considerations, how to read the panel indicators, how to lock & tag, and so on.

 - Complimentary access to the CamPlug dashboard website and alert system for two project managers.

 - The CamPlug system should be set up to run on this site for four months, so any ongoing services and maintenance need to be provided (e.g. cell service for communication).

As we discussed, we will not be paying for any of this in exchange for providing you and your firm with a pilot project opportunity in Calgary. Please note, however, that we need to see proof of CSA safety certification before we can use this equipment on our site.

I hope this gives you what you need to set us up! Looking forward to working with you,

Dave Johnson, Project Manager
UPSIDE CONSTRUCTION

To: Afshin Hamed, Cam-Plug Ltd.
From: Sarah Williams, Precision Machining Corp
Date: December 1, 2019

Hi Afshin,

As you requested, I have prepared a quotation to manufacture the shell housings and inserts for your plug designs. Note that this does not include the microcontroller, communication gear, or connection cabling items on your list. This quotation assumes you are using the four-pin design for three-phase power.

We can supply materials and labor to machine these units at the following rates --

Male plug connector, aluminum housing	$140 each
Female plug connector, aluminum housing	$180 each
Male plug insert, epoxy resin	$40 each
Female plug insert, epoxy resin	$40 each
Male pin connectors, copper	$25 per pin
Female pin connectors, copper	$60 per pin
Connector tooling setup charges (per batch)	$2500

Once we receive your order, we can deliver the completed plugs in 10 business days plus 2 business days for each ten units or part thereof.

If you need a production run larger than 100 units we can deduct 15% from these rates.

All prices are FOB our facility in Calgary and do not include shipping charges.

Please let me know if I can assist further!

Sarah Williams
FABRICATION ESTIMATOR

EAI Fabrication Limited
200-1330 72 Avenue SE
Calgary, Alberta
T2M 4W6

Afshin Hamed, Co-founder
Cam-Plug Ltd.
Calgary, Alberta

November 30, 2019

Dear Afshin,

With pleasure, I attach herein our quotation for the custom fabrication and assembly of the embedded microcontroller system into your pin and sleeve connectors. To summarize:

- You will provide us with the pin and sleeve connector housings and inserts
- We will fabricate custom embedded system boards and sensor fittings
- We will burn firmware onto each embedded microcontroller board
- We will install the sensor fittings into the pin and sleeve connectors during assembly
- We will test each assembled connector prior to delivery

We can fabricate these units at a cost of $350.00 each. Please note that firmware for the embedded microcontroller system is **not** included in this quotation and we will expect your team to provide this firmware (I understand you may be using a college team to build this -- great idea!).

We can deliver units at a minimum rate of 15 per month and will bill you monthly upon delivery.

I trust you find everything in order. Don't hesitate to get in touch if I can assist further.

Steve Emerson,
Fabrication Estimator
Engaging & Awesome Inc

To: Afshin Hamed
From: Afshar Hamed
Date: November 21, 2019

Hey, I got some quotes back that will help us move this to our pilot:

To complete the engineering/design on the plug microcontrollers and develop the plug firmware will take 12 weeks and cost $35000 in material and time.

A NEMA-compatible panel with enough space for 6 plugs, $1700, 4 week lead time.

CSA certification tests, $15000, 8 week lead time. They give us the stickers to put on the plugs once they pass certification. Note that we can't make any significant change to the hardware or firmware after certification.

The dashboarding and datalogging software we will get from Ryan's students at no charge as it is a college capstone project. This apparently will take 16 weeks starting January 7 2020. He also tells me we will need to host this software in the cloud at $350 per month, starting as soon as they begin writing it. They also need a panel to begin work, but don't need any actual plugs or microcontrollers (they can work with the sample set and simulate the data feed).

We'll also need a SIM card and cell data plan for each panel at $40 per month. We need one for Ryan's team and a second one for our pilot construction site, when the system is ready.

I found out that IP67-compliant cable costs $200 per meter for three-phase power, 100A capacity. Most projects need 120m.

Hopefully we can put all this together and figure out when we can get this on to a pilot site.

--A

Calgary Economic Development Corporation
Calgary Alberta

Afshin Hamed, Co-Founder
CAM-Plug Ltd.
Calgary Alberta

November 25 2019

Dear Sir/Madam:

I'm happy to respond to your request for an overview of our CamPlug venture, and I
trust this gives you what you need to assess the viability. I've included estimates
based on the best available information to date. All figures are in $CAD.

Product R&D costs (accrued since start of project)	$180000
Remaining research and development costs	$35000
Safety certification costs	$15000

Our revenue model is simple: construction sites purchase the plugs, panels, and cable
at 30% over our fabrication cost, and pay an annual subscription of $9600 per panel
per year to operate, which covers communication and cloud computing costs.

Projected sales based on our market analysis:

Year	Male Plugs	Female Plugs	Panels	Cable (m)
1	6	12	1	120
2	12	24	2	240
3	30	60	5	600
4	72	144	12	1440
5	180	360	30	3600

I trust this gives you what you need!

Regards,

Afshin Hamed