



IGEM Council Meeting

April 11, 2017

Idaho Department of Commerce – Boise, Idaho
East Conference Room

IGEM Council Members Present:

Dr. Mark Rudin
Bill Gilbert
Von Hansen
Dr. Steven Aumeier
Dr. David Hill
Luke Malek - Phone
Mike Wilson – Phone
Neels Van Der Schyf - Phone
Rick Stott
Janet Nelson

Public:

Chris Faisal
Katie Ritter

Commerce Staff Present:

Megan Ronk, *Director*
Carmen Achabal, *IGEM Manager*
Cindy Lee, *Grants and Contracts Manager*
Laura Conilogue, *Administrative Assistant I*

Presenters:

Blake Issas
Dr. Peter Sheridan
Dr. Kirk Smith
Dr. David Estrata
Dr. Harish Subbaraman

Tuesday April 11, 2017:

Dr. David Hill called the meeting to order at 8:31 a.m.

Welcome Luke Malek

IGEM has a new member, Representative Luke Malek from Coeur d'Alene. He is in his 5th term in the Idaho Legislature.

Approval of Previous Minutes

Dr. Mark Rudin moves to approve the minutes from November 2016.

Bill Gilbert seconds. All in favor. **Motion approved.**

Report from the Investment Subcommittee – Bill Gilbert

Carmen Achabal gave an update on the new rules for the Investment Subcommittee. During the 2017 Legislative session the requirements for the Subcommittee were changed. The legislature felt that the Subcommittee was making funding decisions when they allowed only certain projects to forward before the IGEM Council. The Investment Subcommittee will now be a public meeting with a full agenda, minutes, and ability for executive session starting July 1, 2017.

Bill Gilbert explained that the project is coming forward without recommendation from Subcommittee.

Presentation: 001642 – Flexible Sensors Assisted Miniaturized Air Scrubber for Protecting Stored Produce

Dr. Harish Subbaraman, Dr. David Estrata, and Dr. Kirk Smith from Boise State University (BSU), Dr. Peter Sheridan from Idaho State (ISU), and Mr. Blake Isaacs from Isaacs Hydropermutation Technologies, Inc (IHT), presented their application to the Council. They described the technology being used and tested for their project, the market and commercialization opportunities, and the project planning and management of the application.

Project Questions

Question: Talk about the ultimate product: scrubber along with sensor. How is this a more complete solution for your customers? Does this help existing customers?

Answer: The first benefit IHT will receive from this IGEM grant is the university research that will validate that their product is working properly. Potential new customers always ask for scientific research showing how well the product works. Once they have this, it will accelerate adoption of the system. The data will also help them improve their products. Their application shows that the two teams are working together to have a complete system for their customers including the ventilation units with the humigator and the sensors.

Question: In potato storage in the US, are there are others making scrubbers? Would you be the first full system that included the scrubber with the sensors and the information feedback loop?

Answer: In potato storage now, no companies use air scrubbers to address potato diseases, instead they are developing chemicals to stop potato diseases. IHT is the only one that is trying to get rid of diseases by scrubbing them out of the air. The concept of an air scrubber is not new, but the way IHT is using it is unique, because they have very efficient scrubbers and they install many in a small space.

Question: The printed sensor technology is not unique. How is the research for printed sensor technology related to potato storage?

Answer: The printed sensor technology will be more applicable once this system has moved on to other crop storage. This type of system would be applicable for grain storage where the humidifier and air scrubber would only need to be turned on at specific times, and the printed sensor would tell when the scrubber and humidifier are needed. Potato storage does not need this array of sensors because a humidifier can be run at all times.

Question: Is there a market for this complete storage solution? Have you gone to your customers and asked if they would pay you more for this technology?

Answer: They have talked to a couple of customers about it. They know their customers could benefit from it, because some customers have found out too late that there is a problem in their storage areas. There is a real opportunity for this technology in potato storage, however to make it happen, low cost, highly sensitive sensors are needed to accurately describe the problem areas in the storage facility.

Question: What is the Intellectual Property (IP) relationship going to be?

Answer: Katy Ritter explained that in the IGEM program, the universities owns the IP. In a collaboration like this, there would be a license to IHT to be able to use the sensor in their fumigator. It would be solely developed at BSU pursuant to patent law, with no help from ISU, so BSU would own the IP. However, the industry partner has the first right to license the IP developed under the IGEM program. Chris Faisal mentioned that IHT approached ISU with this project with the understanding and expectation that further developments would be made as research progressed. The patent portfolio that IHT brought to the table is their own because they developed it prior to their relationship with ISU and BSU, but anything going forward that is developed together, will follow the standards of ownership for patent law where an inventorship dictates ownership. But, because they are working on research that was brought forward by IHT, IHT will have the first right to use it. If they fail to market or use the new technology, it would revert back to the university.

Question: What action you can take with the air filtration system based on the information from the sensors? What is the value of integrating these products?

Answer: When IHT installs the systems in potato storage areas, they recommend running the humidifier all the time because there is no such thing as too much humidity in potato storage. Therefore the value of running the humidifier exceeds the costs of running the humidifier. The next step is to see if this system works for other agriculture products because those products will not need the humidifier on all the time. The integrated product with the sensors would show when the agriculture products need the humidifier and air scrubber on.

Question: Who is designing the feedback loop and the intelligent software that brings the whole application together?

Answer: That product is not being developed yet. That is a concept, and a natural extension of this project.

Question: Isn't that technology needed to make this project function at its best?

Answer: IGEM is the first step in the process. Then, whether or not they get the funding, they will work on the ability to fine tune and control their machines through automation. Early next year they will create a telemetry feature with sensor feedback capability that will regulate the humidity and sense the airborne pathogens. This information will adjust the parameters to get rid of the airborne pathogens.

Question: But even if you can sense the hot spots, there is only one machine per storage area, so all it is doing is raising or lowering the humidity/temperature for the whole room. How would it address specific hot spots?

Answer: IHT would add ventilation systems that can hit on the specific hot spots. The ventilation systems would pull in the air with the viruses and scrub them clean before they spread throughout the facility.

Question: Do you have evidence that shows that if you scrub the air in the disease hot spot you reduce crop loss?

Answer: Yes. Most viruses spreads through the air, but the IHT air scrubber stops the viruses from spreading through the air. Many customers have told them that their system has worked for them. Accordingly, the more precise they can make their product, the better it will work, and will stop even more crop loss.

Funding Consideration

Bill Gilbert moves to adopt the proposal.

Rick Stott wanted to add a caveat about the budget into the motion because he thinks some of the allocated money is not appropriate. For example, the marketing budget is too large considering the purpose of the industry partner is to have a business strategy in place, including marketing. Moreover, IHT is already a part of the market, so they will need to advertise less for a new product than if they were trying to break into the market.

In summary, the motion would be to reduce the budget by \$7,960, the amount that was requested for marketing purposes. The Council agrees that is what they want.

The Council questioned PakSense's involvement in the project, and what they bring to the partnership. Katy Ritter explained that PakSense is helping BSU with software interface, and the system functional requirements of the sensors to make sure that they can be deployed outside of this project. PakSense is also giving BSU RF readers, and their own equipment to use for research.

Rick Stott suggested that the lead PI's work on modifying the scope and budget of the application. The Council is looking for a proposal that focuses more on potato storage, and the functional action of what happens when disease hotspots are located around the storage facility. The scope needs to be reduced and the budget cut back. Cindy Lee explained that the Council can approve the application today with the caveat that the lead PI's will modify the scope and budget of the application based on the Council's conversation. Once it is corrected, they would then resubmit it to the Council for an email vote. The revised application can be sent to the Council because the Subcommittee has already sent it forward.

The Council discussed printed sensors in relation to this project. From the point of view of potato storage, research for printed sensors is not a high priority. If they are necessary for this project, the printed sensor technology is already available, so it should be inexpensive, and there is no need for more research on the subject.

Dr. Mark Rudin asked if the investigative team can work directly with Carmen, and let Carmen facilitate the discussion of the progress of the change in scope and budget.

Katy Ritter asks if Emerson should still be the industry partner now that the Council wants the scope and budget changed. The Council says that Emerson can stay if they can contribute.

Megan Rock mentioned that this needs to be done before the fiscal year end, especially if there will be another round of funding. Commerce has \$29,000 left of the grant money that needs to be used this year, plus any extra that is removed from this application.

1:33:27 - Bill Gilbert motioned to request the Principle Investigators work on the reduced scope and budget of the project based on the Council feedback. Rick Stott seconded. Dr. Mark Rudin abstained. All in favor. **Motion approved.**

1:34:16 - Public comments

None heard.

Closing Remarks

The Council discussed their ideas of which proposals work best. An appropriate starting point is with an industry partner who needs the help of a university to solve a problem that will help their customers, and/or will lead to commercialization of an existing project. That is not what has been happening in the recent applications and the Council wants that to be the focus if there will be a round three.

The IGEM Council is worried that the next round of applications will not be up to standard, and if that is the case, IGEM does not want to award the money to any applications that are not deserving. If IGEM does not award all their grant money, Director Megan Ronk says that Commerce would not lose the money, it would go into another Commerce grant program. The Council thinks this could potentially be a better use for the money.

Chairman Dr. David Hill adjourned the meeting at 10:25 a.m.