Interdisciplinary Innovation Center

Project Description

This project directly supports FSU's top goal for its new strategic plan: "Deepening our Distinctive Commitment to Continuous Innovation."

Provost McRorie has designated funds to renovate the 1st floor of the Shores Building (LSB) - 14,000 square feet on Landis Green, to house a state-of-the-art Innovation Center and FabLab for all FSU students. Unfortunately, the cost of renovations has exhausted university funding for this project, and we are seeking funds for the equipment.

FSU's new Interdisciplinary Innovation Center (yet to be named) is scheduled for completion in the late Fall of 2017. The Center will provide students with robust collaborative workspace (CoLab), supporting independent, small, medium, and large group work, a classroom where tools for design and innovation will be taught, a FabLab for 3D printing, scanning, and laser cutting, a Robotics Lab for basic circuit board and robotics exploration, an Artificial Reality Lab featuring virtual and augmented reality workstations, a Pitch Room for pitching project and business ideas, and a café. The Center is intended to serve as a sandbox for innovation and technology where any student can walk in and begin exploring new technologies and potential projects in which to become involved.

Each of the above areas in the Innovation Center require cutting edge technology to support student exploration, student collaboration, and instruction. Because of the size of this project, it has been broken down into the following components:

- FabLab: requires fabrication technology (additive and subtractive) for prototyping student projects and PCs to drive them.
- CoLab: requires technology to assist in group collaboration and project design, group rooms, classroom and pitch room require projectors.
- Artificial Reality Lab: requires VR and AR headsets, media equipment and PCs to drive them.
- Robotics Lab requires circuit board kits for experimentation

This is a truly interdisciplinary project guided by a planning committee that includes faculty and students from several disciplines including the School of Entrepreneurship, School of Information, College of Education, Interdisciplinary Computing, School of Communication, College of Fine Arts, Department of Interior Architecture and Design, College of Motion Picture Arts, College of Engineering, Learning Systems Institute, College of Medicine, College of Social Sciences and University Libraries.

Students and student organizations have been involved in the planning of the Center including TechNole, FSU SigGraph, Association for Information Systems and the Office of Entrepreneurship and Innovation. Planning the Innovation Center was also presented to students in the Fall 2016 "Critical Entrepreneurship" class as a semester-long project. Students will continue to be involved in every aspect of the Center serving as employees and mentors, and

guiding the management and direction of the space. The Innovation Center will serve as home to many of the technology and innovation focused student organizations uniting them and providing opportunities for collaboration. An office within the space has been dedicated to serve student organization presidents.

More information about this effort is available in the following documents:
Innovation Center Planning Document: http://goo.gl/yVUbt1
Innovation Center Features: https://goo.gl/xwjREm
Innovation Center Draft Floorplan (not final): https://goo.gl/WxhHei
Innovation Center Planning Committee: http://goo.gl/Ob255o

Impact on Instruction

FSU's Innovation Center will provide opportunities for new forms of higher education. Workshops will be provided by departments and organizations across campus on topics such as Coding, Hacking, Web Design, App Development, 3D Design, 3D Printing, Laser Cutting, Design Thinking, Digital Graphics, Circuit Hacking with Arduino and Raspberry Pi, Robotics, Unmanned Aerial Vehicles and more. The space will provide a venue for faculty and students from Computer Science, Engineering, Art, Design, Information, Entrepreneurship, Scientific Computing, and other programs to demonstrate their projects and share their knowledge for the benefit of all. The center will provide students with the ability to engaged in real-world problem-solving, using the latest technologies and Design Thinking methods.

The Center will also be utilized by instructors of traditional courses who can create homework assignments for students to carry out in the space. Entrepreneur students and Interior design students will be able to build prototypes in the FabLab. All kinds of group projects can be hosted in the space providing the tools for ideation, brain-storming and prototyping.

A new course named Innovation by Design (https://goo.gl/mPZkf2) has been created that will serve to teach students about the opportunities available in the Innovation Center. The course will teach human-centered design and problem solving using the Design Thinking methodology and all of the tools in the Innovation Center.

We anticipate 3,260 students, on average, utilizing the Innovation Center each week during Fall and Spring semesters.

- 960 students attending classes
- 60 students attending workshops
- 80 students utilizing in FabLab
- 80 students utilizing VR Lab
- 1000 students utilizing café space
- 60 students attending pitches
- 200 students attending group meetings
- 400 students utilizing CoLab space
- 400 students attending student org functions
- 20 students employed and volunteering

This adds up to roughly 114,100 total students visits per year (calculating half utilization in summer semester). Of course, many of these visits will be return visits and duplication will exist across Innovation Center spaces, so the actual number of unique student visits will be significantly lower and somewhat difficult to estimate. Assuming that the classroom students will be the same students each week for the semester, and the student organization members, and employees will be the same all year, and calculating that 3/4 of the other categories are return visits, we end up with roughly 19,270 unique students impacted by the Innovation Center each year (again calculating half utilization in summer semesters).

In summary, we expect this space to support roughly

- 114,100 student visits per year
- 19,270 unique students per year

Project Plan

This project has already begun with many committee meetings already under our belt. Floorplans are being explored (see draft example at https://goo.gl/WxhHei) with a final draft expected prior to the new year. The goal is for construction to begin in May 2017 with completion of the Innovation Center scheduled for October 2017. Equipment listed in this proposal would be purchased for delivery for when the Innovation Center is completed. The project is complete upon the successful opening of the Innovation Center with all Labs functional.

Relationship to Other Activities

Technology, Hacking, Innovation and Entrepreneurship serve as an inspiration for students to learn new skills. Students and student organizations have been participating in a wide variety of activities around these areas for years, with no central unifying location. It has been a challenge for students to find space for meeting and events. The new Innovation Center will house many events and activities, organizational meetings, workshops, and projects. The technology provided in the space will be key to its success.

In addition to the physical space, the team that manages and maintains the Innovation Center (students, staff, and faculty) will also manage online resources to assist in uniting students and faculty around innovation (www.innovation.fsu.edu). The combination of physical and online spaces will bring together a diverse population working towards common interests and goals.

The Innovation Center will be an important resource for students preparing for local and national events including the InNOLEvatino Challenge, DIGITECH, ACC InVenture Prize, and ACC Creativity and Innovation Festival, to name a few.

Plan of Support

While the final organizational structure for the Innovation Center has yet to be finalized, it is intended that the Director of the Center will report directly to the Provost. The Innovation Center will work in collaboration with the new School of Entrepreneurship to support FSU student innovation and entrepreneurial interests. Primary contributors to the Center will include the

College of Communication and Information, University Libraries, the College of Engineering, the College of Fine Arts, and the College of Education. The Center will have a full staff to manage the various areas and activities. Students will serve in many staff, mentor and service roles. An interdisciplinary steering committee with representation from all of the above and more will guide the management and direction of the Innovation Center.

We are working with the FSU Foundation to find a corporation that will provide recurring funds for equipment once the Innovation Center is set up and operating. We estimate that keeping the Center up to date with the latest technologies will cost roughly $45,000 annually.

Project Team

Ken Baldauf, Director of FSU's Program in Interdisciplinary Computing, is heading up the planning effort for the Innovation Center. Ken has extensive experience with 3D printing, classroom technologies, coding and design. He is the co-founder of FSU's DIGITECH event (www.digitech.fsu.edu) and Stacking Layers 3D Printing Symposium (www.stackinglayers.fsu.edu). By the Provost's request he has researched and visited several successful university Innovation Centers on which the plans for this Center are based and attended workshops on University Innovation Centers and Design Thinking.

Ken co-chairs the planning committee with Paul Marty (School of Information), and Joe O'Shea (Provosts Office). Lorri Mon (School of Information Chira) and Bridget Birmingham (Libraries) and Dina Vyortkina (College of Education) have served leadership roles on subcommittees for the Innovation Center. Students Matt O'Hagan, Nhi Tran and Mega Burgman have been active in all aspects of planning. Many others have been very involved (see http://goo.gl/Ob255o).

The 42-member Planning Committee has met several times over the past 8 months, and subcommittees on Architecture, Equipment, Activities, and Human Resources have been established with student representatives on all.

Budget and Budget Explanation

This is a multicomponent proposal. It is our hope to be able to fund all components, but if the review committee feels it necessary, it may select a subset of components to fund. No personnel or installation charges are included in this grant proposal. We seek only the funds for the equipment portion of this project.

This is an interdisciplinary project involving several FSU colleges and organizations under the direction of FSU's Office of the Provost. Costs provided for items listed below were determined by lowest price found online. Additional savings may be incurred through discounts available through University Purchasing. This project has already begun and is anticipated to conclude by the end of the Fall semester 2017.

Total Request	**$156,963.68**

Component Breakdown	
Fablab Subtotal	$55,171.00
Colab Subtotal	$78,229.00
Artificial Reality Subtotal	$18,164.68
Robotics Subtotal	$5,399.00

FabLab Equipment

A variety of 3D printers were selected to support a variety of print sizes, materials and resolutions, and to provide students with more experience. The additive manufacturing approach of 3D printing combined with the subtractive manufacturing approach of laser cutters allow students to manufacture any object they can imagine and design.

Item	Qty	Price/Unit	Item Total
Epilog Zing 24 laser cutter	1	$11,995.00	$11,995.00
HP Envy Phoenix PC (to run equipment)	12	$999.00	$11,988.00
NextEngine Laser Scanner	2	$2,995.00	$5,990.00
Lulzbot TAZ6 3D Printer	2	$2,500.00	$5,000.00
Dremel IdeaBuilder 3D printer	4	$899.00	$3,596.00
Formlabs Form 2 Resin 3D printer	1	$3,499.00	$3,499.00
Full Spectrum H-Series 20x12 laser cutter	1	$3,499.00	$3,499.00
Ultimaker 3 3D printer	2	$1,747.50	$3,495.00
gMax 1.5 XT+ Large Format 3D printer	1	$2,995.00	$2,995.00
3D Printer Filament (variety)	40	$48.00	$1,920.00
Resin for Formlabs 3D Printer	6	$199.00	$1,194.00
		Fablab Subtotal	$55,171.00

CoLab Equipment

This equipment supports collaborative work in the large Colab area, in smaller group project rooms, in the pitch room and classroom. For projectors, we would utilize whichever projectors are recommended by FSU ITS. The ones listed below may cost more or less than standard University equipment.

Item	Qty	Price/Unit	Item Total
Microsoft Surface Studio creativity computers - 2TB/Itel Corei7; 32GB RAM; 4GB GPU	6	$4,199.00	$25,194.00

Ideum 55" Portrait collaboration computer w/intergrated Kinect	1	$16,950.00	$16,950.00
Ideum 55" Duet Coffee Table collabortation computer	1	$12,950.00	$12,950.00
PowerLite Pro G6170 XGA 3LCD Projector - for classroom and pitch room	2	$3,799.00	$7,598.00
Epson PowerLite Pro Z8350WNL WXGA 3LCD Projector - for CoLab space that will host large events	1	$11,999.00	$11,999.00
Epson BrightLink 595Wi Projector - for smaller group work rooms	3	$2,357.00	$7,071.00
Astar AWB-6507 65" Multi Touch Display Electronic White Board Interactive Smart Writing Board w/ Wi-Fi, 3G internet 5000:1 Built-in Speaker1920 x 1080 Optical - portable for use anywhere	1	$3,266.00	$3,266.00
Epson PowerLite Home Cinema 1040 1080p 3LCD Projector - portable for use anywhere	1	$799.00	$799.00
		Colab Subtotal	$85,827.00

Artificial Reality Lab Equipment

The Oculus Rift and Vive are the two dominant platforms in Virtual Reality. Microsoft's new Hololense will allow students to tap into the amazing world of Augmented Reality. 360 degree cameras allow the capture of environments and scenes that can then be viewed in Virtual Reality.

Item	Qty	Price/Unit	Item Total
Microsoft Hololense	2	$3,000.00	$6,000.00
HP Envy Phoenix PC (to run VR)	6	$999.00	$5,994.00
HTC VIVE virtual reality headsets	3	$799.00	$2,397.00
Oculus Rift & Touch virtual reality head sets	3	$798.00	$2,394.00
360fly 360° 4K Video Camera	2	$449.99	$899.98
Turtle Beach Stealth 350VR Headphones (for VR)	6	$79.95	$479.70
		Artificial Reality Subtotal	$18,164.68

Robotics Lab Equipment

This circuitry lab will grow over time to support more robust robotics technologies depending on student interests.

LittleBits Pro Library	1	$4,999.00	$4,999.00
Raspberry Pi 3 B	10	$35.00	$350.00
Raspberry Pi Zero	10	$5.00	$50.00
		Robotics Subtotal	$5,399.00