Accelerating Collaboration to Drive Innovation for the UAB Grand Challenge

Principal contact:
Joel Berry, PhD
Associate Professor, Department of Biomedical Engineering
jlberry@uab.edu
205-996-9661

Problem: The inaugural launch of the UAB Grand Challenge is an opportunity for all members of the UAB enterprise – students, faculty, staff, clinicians, and administrators – to join forces to solve a significant issue with a goal of creating better quality of life in our society. Solutions to the technological and societal problems that are important to the state of Alabama will require interdisciplinary collaborations and a strategic approach to address the complexity of the problems associated with the Grand Challenge. A project of this scope has not been proposed before at UAB, and its success depends on diligent tracking of the problems, projects, innovations, data, and collaborative efforts of those involved.

Proposal: Because the UAB Grand Challenge will support people engaged in problem solving from across the enterprise, we propose **development and implementation of a web-based software tool that can be used in multiple sectors and across multiple institutions to facilitate collaboration and innovation**. This tool will directly address the manner in which teams of innovators from within UAB and outside the walls of UAB are formed and how projects are managed.

The goal of this proposal is to **expand development and implementation of a prototype software tool that can be used in multiple sectors to facilitate problem solving and innovation**. Herein we describe our experience with advancing the first iteration of UAB Solution Studios™, our innovation platform, in the context of UAB's academic enterprise and UAB Hospital. Our current approach and results to date will serve as the basis for development of a more advanced and robust platform that will be deployed at UAB and beyond for accelerating innovative solutions to unsolved problems across disciplines.

Our experience with connecting students, faculty, and clinicians thus far has opened multiple collaborations across the UAB campus that would not have existed otherwise. Further, our web-based approach will naturally extend to other universities, clinics, community partners, and even industry in an accelerated manner. **We therefore propose that UAB Solution Studios™ be integrated into Grand Challenge teams as a support tool**.

Rationale: Since January 2016, our team has been engaged in developing UAB Solution Studios™, an interprofessional academic program involving domains of expertise in nursing, medicine, and engineering. UAB Solution Studios™ seeks to remove classic barriers between these fields to allow a more fluid exchange of ideas and insights.

Our primary means of accomplishing the specific aims of UAB Solution Studios™ is through the use of a web-based digital tool designed to allow clinicians to post unsolved problems and give STEM students access to those problems. Once interaction begins in the digital space,

collaboration ensues through team formation, followed by face-to-face meetings, background sharing, problem definition, ideation and prototyping toward solutions to the clinical problems.

The web tool was first established in 2016 in Canvas, UAB's learning management system. Clinicians and/or graduate nursing students with interest in posting their problem(s) for viewing were asked to provide a brief background of themselves, contact information, and a short description of their problem. Undergraduate STEM students from various courses were provided access to the Solution Studios site to view problem descriptions. They were granted the freedom to self-select into clinical design teams and choose a specific problem to work on as innovation projects, working directly with clinicians. Approximately 150 students and 50 clinicians have interacted with the program, resulting in 7 intellectual property disclosures and 4 provisional patents, with one patent converting to a full patent application in August 2018.

This early success has prompted steps to move the web-based tool out of the learning management system to a free-standing web platform with greater functionality. In late 2017, UAB Information Technology was engaged by UAB Solution Studios™ to create a web tool for accelerating innovation in a digital environment independent of the Canvas learning management system. This tool was designed to allow greater access by a larger number of users, including students, clinicians, university administration, and industry personnel.

In March 2018, UAB IT delivered a mockup of the proposed fully functional web tool. This mockup currently features the ability to intake student, faculty, clinician, community, and industrial users. Users are required to create a user profile containing basic information. This information is then parsed to the database according to the user category. Users can search for a project, or they can look for other users to form teams around posted technical problems. New projects involving interprofessional collaborations can be created and made available to specific users or all users as defined by administrators of the web tool. Additional functionality in the current version of the web tool includes project search features and project status features.

Desired Outcomes: We have demonstrated the utility of the web tool in promoting interaction between different domains of expertise in an academic medical setting. Expanding the functionality of this tool to facilitate the Grand Challenge is a natural extension of this effort. Various problems associated with the Grand Challenge can be directly posted in the portal. Teams from across the enterprise can form around these problems, and solutions can be sought while being tracked in the web tool. **We propose that the UAB Solution Studios™ platform functionality will be further developed to become the primary tool for forming collaborative teams for innovation in the Grand Challenge, offering project management, data tracking, and communication functionality to enhance team success.**

Plan of Work: UAB Solution Studios™ has been transitioned from the Canvas Learning Management system and is now under development at UAB's EITD. It is expected that a functional prototype will be ready for deployment by August 2018. This prototype will accommodate an unlimited number of users and teams. Debugging of this prototype will occur until January 2019. Subsequently, the web tool will be deployed to our other partners outside of UAB as a beta version. User feedback will be incorporated into later versions of UAB Solution Studios™ to accommodate the different stakeholders and their needs.

Core leadership team members:
- Kristen Noles, RN, MSN, CNL, UAB Hospital
- Nancy Wingo, PhD, School of Nursing
- Lee Moradi, PhD, UAB Engineering and Innovative Technology Development

Potential other UAB team members for tool development and implementation:
- UAB IT
- Harbert Institute for Innovation and Entrepreneurship
- Center for Clinical & Translational Science
- Computer Engineering Department
- Computer Science Department
- UAB Solution Studios™ Advisory Board

Potential other external team members for tool development and implementation:
- Southern Research
- Southern Company
- Innovate Birmingham
- Innovation Depot
- TechBirmingham
- University of Alabama Tuscaloosa and Huntsville
- Auburn University
- University of South Alabama