

## *Leadership Through Systems Engineering*

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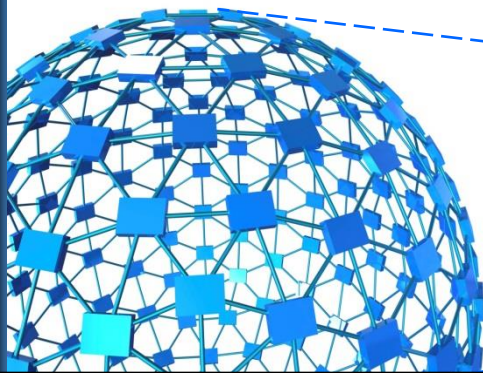
### **Ashley Bernal, Scott Kirkpatrick, Anneliese Watt, *Systems Engineering Models Applied to a Multi-disciplinary Undergraduate Project Experience***

The authors (professors of professional communication, mechanical engineering, and physics) have collaboratively designed and are teaching an intensive multidisciplinary design program in which undergraduate engineering and science students are tackling one of the National Academy of Engineering's Grand Challenges<sup>1</sup> during a 12 credit hour 10 week summer program. The program is centered around developing a system to utilize solar energy for power, with major components of systems engineering integrated throughout the experience. For instance, students are required to identify stakeholders and analyze their needs via the development of feature models. In addition, the students were required to generate domain models, feature definitions and attributes, & logical and physical architectures. Each of these different types of models will be discussed as well as our experience with integrating them into the classroom. The leadership dimension of this project involves appointing a student project manager whose responsibilities include coordination of the design, building, and testing process across subsystem groups. The students have chosen to focus on purifying water through solar-powered pasteurization for Kenyan citizens living near Lake Victoria; thus, the students are working on subsystem groups assigned to water transport, solar pasteurization, and water filtration. The system engineering models are used to facilitate communication across each of these subsystem groups to help ensure consistency and cohesion as the project progresses.

[1] <http://www.engineeringchallenges.org/cms/challenges.aspx>

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Abstract



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