Session Notes: Systems Integration Session

This session focused on the integration of systems for High Performance Buildings. There were many diverse topics discussed throughout the session. This summary provides the overall themes and potential tasks related to systems integration.

- **Collaboration:** There is a clear need to focus on collaboration and teamwork when developing HPB. New integrated delivery methods can make this collaboration more beneficial to the parties.
- **Culture:** There is a need to change the project culture to support more collaboration and a long-term perspective.
- **Incentives:** Teams need to be provided with incentives for collaborative design and construction. A discussion of delivery methods from design-build through build-operate-transfer occurred during the session which illustrated the need to provide incentives to all team members for good performance.
- **Process and Technology:** The process for construction and potential reuse of building components was discussed as an important issue. The using of information technology solutions such at Building Information Modeling were identified as important tools to facilitate the development and review of system integration information.
- **Owners are Critical:** There was clear consensus in the group that the active involvement of the owner is critical to the successful design and delivery of HPB. There was discussion around the long-term perspective that is important for owner commitment.
- **Lifecycle Approach:** There was a discussion regarding the need for more emphasis on lifecycle approaches, including concept options which may include the reduction of demolition of existing facilities.
- **Extend Beyond Buildings:** Building optimization may not always be the best long-term solution. There is a need to extend the limits of optimization beyond any single building and into the community level.

Tasks for Consideration: Research Focused

1. **Develop metrics and benchmarks** to define the level of performance on building projects. These metrics could be both hard, quantitative metrics, along with more qualitative metrics regarding issues such as culture and level of collaboration.
2. **Create demonstrations projects** which could function as research testbeds as well as outreach initiatives for educating the community. An example of a demonstration building in the U.K. was discussed where vendors and suppliers would showcase important high performance building components for university visitors, while also collecting performance data on the building.
3. **Study the impact of inceptives on performance** which could be achieved through the analysis of economic lifecycle costs related to the delivery methods and incentives for the project. This could extend into international projects which use integrated delivery methods such as build-operate-transfer.

**Tasks for Consideration: Teaching Focused:**

1. **Continue to develop more integrated design experience for students.** Build from the existing integrated design studio by providing more team-based integrated delivery experiences.
2. **Consider methods for teaching environmental ethics.** An example of the environmental and labor challenges associated with construction in Dubai was identified as one potential case study focused on ethics and the environment.
3. **Consider additional continuing education for the industry related to HPB and information technology solutions such as BIM.**
4. **Consider the addition of education programs targeted toward owners.**
5. **Continue to develop educational case studies** which may also play a role in outreach initiatives.