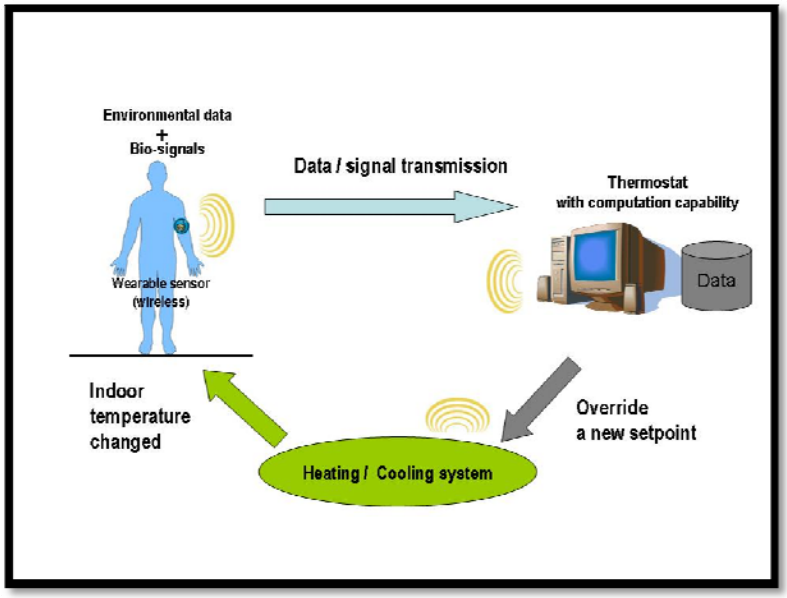
CoBi: Bio-sensing Wearable Controls for Individualized Thermal Comfort



Impact: With today's growing emphasis on minimizing energy use in buildings, indoor environmental quality (IEQ) and individual control of environmental conditions are often sacrificed. Critically needed control innovations for building mechanical systems can demonstrate that meeting the physiological needs of occupants can actually save energy and improve environmental quality.

Developing user-based sensors can improve human comfort and health, as well as reduce energy use. All this can be achieved through sensor control of local heating and cooling units to meet user-preferred indoor temperatures instead of overheating or over cooling spaces, whether occupied or unoccupied.

Project Overview: Carnegie Mellon University's Center for Building Performance and Diagnostics CoBi project will develop a wearable (bio-sensing) comfort controller that will measure the comfort of a person and adjust their immediate thermal environment to maximize comfort. This project will attempt to demonstrate that meeting the physiological needs of building occupants can save energy and improve environmental quality

The most marketable benefits of a CoBi controller may be in healthcare and aged-care facilities, bringing thermal comfort to those who are sensitive to thermal stress due to both their health conditions and their inability to adjust room temperatures without assistance. As CoBi combines energy savings with improved occupant comfort, it has significant potential for growing an industry in Pennsylvania, with market opportunity throughout the U.S. and other countries.

GBA Product Innovation Grant Amount: $20,000

Leadership Team: The project team will be led by Carnegie Mellon University Professor Vivian Loftness, as well as PhD Candidate Joonho Choi. Located in the Intelligent Workplace of the Center for Building Performance and Diagnostics at Carnegie Mellon University, the project team has expertise integrating sensors into the built environment.

Contact: Joonho Choi ▪ Carnegie Mellon University ▪ (412) 268-2350 ▪ joonhoc@andrew.cmu.edu ▪ www.cmu.edu

Awarded December 2008