VAEEC Spring 2018 Meeting

COMMERCIAL BUILDING AUTOMATION

Philip Agee, Viridiant
George Holcombe, Capital One
Cindy Zork, US Green Building Council
Amanda Jenkins, Johnson Controls

SPONSORED BY

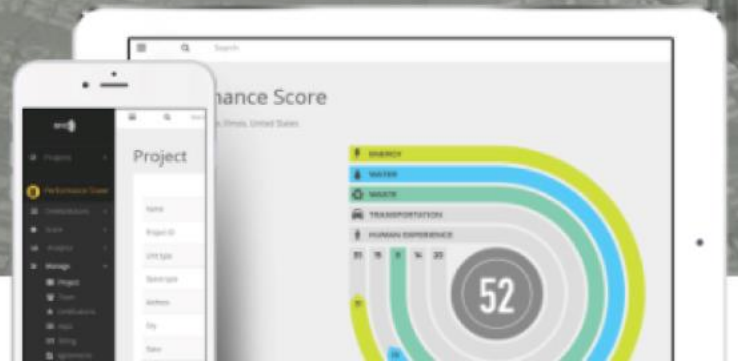

Save money
Consume less energy
Use less water
Use fewer resources
Better indoor environmental quality
U.S. GREEN BUILDING COUNCIL

arc

ABOUT LOG IN

Measure your green performance.

Arc is a state of the art platform designed to help you collect, manage and benchmark your data so you can improve sustainability performance.



SCORING 1-100

The building provides data across 5 categories to generate score:

- Energy
- Water
- Waste
- Transportation
- Human Experience

THE BENEFITS:

- Demonstrate your building's commitment to sustainability and human health
- Educate occupants & visitors on the importance of sustainability measures
- Provide shared accessibility and continuity of data across teams and over time
- Identify policies that will reduce resource consumption and operating costs

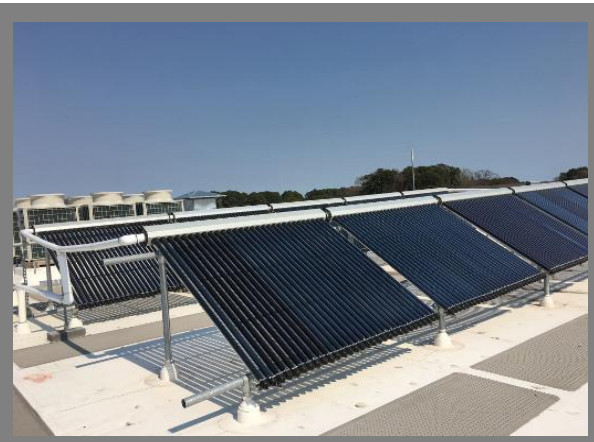
PHILIP AGEE

Technical Manager
Viridiant

MS Building Construction Science & Management
Virginia Polytechnic Institute and State University

MS Human Factors Engineering
Virginia Polytechnic Institute and State University

PhD Industrial & Systems Engineering | ‘19 (planned)
Virginia Polytechnic Institute and State University

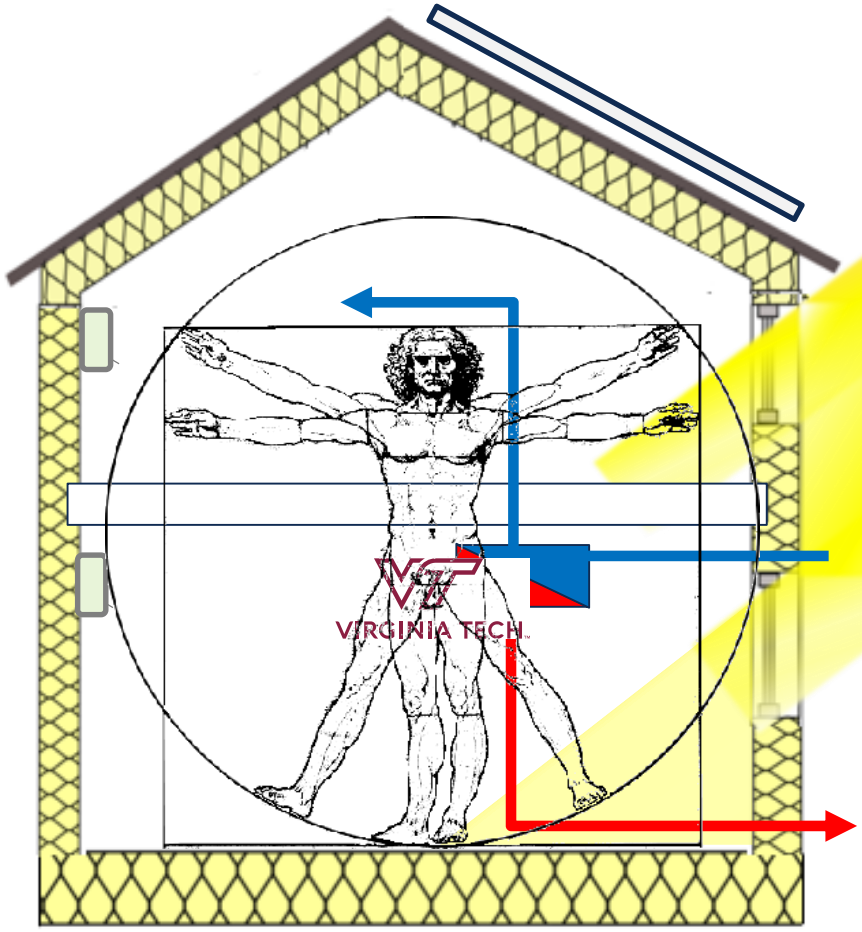


Building Automation Systems are for People

Human-System Design Flaws

(Henderick and Kleiner, 2001)

1. Technology-centered design
2. ”Left-over” approach to function and task allocation
3. Failure to consider socio-technical system characteristics and integrate them into the design of the system



Automation Decision Making - Who Does What?

Humans *better* than machines

(Fitts List, 1951)

- ✓ **Small amounts of visual or acoustic**
- ✓ **Improvise and use flexible procedures**
- ✓ **Ability to reason inductively**
- ✓ **Ability to exercise judgement**

Automation Decision Making - Who Does What?

Machines *better* than Humans

(Fitts List, 1951)

- ✓ **Respond quickly to control signals**
- ✓ **Perform repetitive, routine tasks**
- ✓ **Multi-tasking**
- ✓ **Reason deductively, including computation ability**

HUMAN-CENTERED SYSTEMS

- ✓ **Fault-detection**
- ✓ ***WHAT* information, *WHEN*, and *HOW***
- ✓ **Adaptive buildings**
- ✓ **Building automation as a component of intelligent infrastructure**