Intelligent Buildings Council (IBC)

Chair: Brian Ensign (Superior Essex Communications)
Vice-Chair: Harsha Chandrashekar (Honeywell International Inc)
Vice-Chair: Robert Lane (Robert H. Lane and Associates Inc.)
Vice-Chair: Bob Allan (The Siemon Company)

Connect to what’s next™

www.caba.org
1. Agenda
Greg Walker (CABA)

1. Agenda
2. Call to Order, Welcome, Introductions, about IBC
3. Administrative
4. White Paper Sub-Committee Update
5. “Digital Electricity in Intelligent Buildings” (30 min)
   Stephen Eaves (VoltServer)
6. Research Update
7. New Business
   “Paradigm Shift Impact on Commercial Buildings in a Post-Pandemic Market”
   James Carlini (Carlini & Associates)
8. Adjournment
2. Call to Order, Welcome, Introductions, About the IBC
Brian Ensign (Superior Essex Communications)

The CABA Intelligent Buildings Council works to strengthen the large building automation industry through innovative technology-driven research projects. The Council was established in 2001 by CABA to specifically review opportunities, take strategic action and monitor initiatives that relate to integrated systems and automation in the large building sector. The Council's projects promote the next generation of intelligent building technologies that incorporate a holistic approach that optimizes building performance and savings.
3. Administrative
Brian Ensign (Superior Essex Communications)

3.1 Motion to approve past IBC Minutes (Feb 17): [www.caba.org/ibc](http://www.caba.org/ibc)
5. Keynote
Bob Allan (The Siemon Company)

“Digital Electricity in Intelligent Buildings” (30 min)

Stephen Eaves
CEO
VoltServer

Source: Continental Automated Buildings Association (CABA) CABA Intelligent Buildings Council (IBC)
Digital Electricity™ in Intelligent Buildings

Steve Eaves, CEO  
VoltServer Inc  
stephen.eaves@voltserver.com  
401.474.4616
Connectivity has become as important to the wealth of nations as water and electricity.
Population growth and clean food awareness will soon disrupt traditional methods of food production
Buildings, new and old, are being reimagined with sustainability as a key requirement
Digital Electricity™ (DE) is high power electricity and data over communication cable

Energy Packet

Energy: 1.1ms  Data: 0.4ms

Discrete “packets” of electricity and data, each checked for safe transfer from transmitter to receiver. 500 safety checks per second. Safe to touch, fire safe.
Electrical Hazards and Mitigation

<table>
<thead>
<tr>
<th>HAZARD</th>
<th>YEAR</th>
<th>ANALOG AC/DC</th>
<th>DIGITAL ELECTRICITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Current</td>
<td>1960</td>
<td>Circuit Breaker</td>
<td>✓</td>
</tr>
<tr>
<td>Ground Fault</td>
<td>1971</td>
<td>GFCI/RCD</td>
<td>✓</td>
</tr>
<tr>
<td>Arc Fault</td>
<td>1999</td>
<td>✗ AFCI</td>
<td>✓</td>
</tr>
<tr>
<td>Resistive</td>
<td>—</td>
<td>✗</td>
<td>✓</td>
</tr>
<tr>
<td>Touch</td>
<td>—</td>
<td>✗</td>
<td>✓</td>
</tr>
</tbody>
</table>

✗ Fire risk only partially addressed by AFCI, insulation typically carbonized before activation
Buildings need Digital Convergence - DE helps solve it
Where is DE most useful?

- Where control and analytics are important
- Where the resilience of power is important
- In larger venues where distribution runs are hundreds of feet
- Where there are DC or renewable power sources
Connected Stadium/Arena

DE Transmitters at central location

DE cables in cable tray

WiFi

5G

IPTV
Indoor Agriculture

- Driverless LED lights in Grow Room
- Digital Electricity in Data Tray
- Facility Power Bus
- VoltServer Transmitter Cabinets
Industry practice is one 20A circuit for 4-6 workstations due to the uncontrolled nature of loads that can be plugged into an AC receptacle.

For 60 stations at 70% load diversity at the panelboard that results in a MCB rating of approx. 200A. Or 22kVA.

The 22kVA panel load reflects all the way back through the building distribution system.
The DC Desktop using DE

Basement Service Transformer 480VAC, 3Φ

Com. Riser

DE on Com. Cable

Com. Cable to Desks

Low Volt DC

DE Receiver

Digital Electricity Transmitter Rack (Basement)

Generator/Battery

DC workstations loads are managed to an average of 100W per workstation by the DE system. Standard AC receptacles are reduced to only wall locations.

For 60 stations that is only 6kVA, or a 73% reduction in loading to the building distribution system for workstations.
DE enables a PoE zone architecture where cable lengths are reduced <30m., most power losses are in PoE cable length. Short cable enables per=connectorized option.
Thank you!

Questions?
VoltServer, Inc.

Thank You!

Steve Eaves, CEO
stephen.eaves@voltserver.com
401.474.4616
5. Keynote - Questions?
Bob Allan (The Siemon Company)

Stephen Eaves
CEO
VoltServer
4. White Paper Sub-Committee Update
Ken Wacks (Ken Wacks Associates)

4.1 In Progress:
Part 2: “Impacts of Automated Shading in Building Projects”

TRC Energy Services (Chair)
Axis Lighting Inc.
Draper, Inc.
Ecotay Inc.
Ken Wacks Associates
Lawrence Berkeley National Laboratory (LBNL)
Lutron Electronics Co., Inc.
Mecho
NYSERDA (New York State Energy Research and Development Authority)
PLC-Multipoint, Inc.
Screen Innovations
Somfy Systems, Inc.
Sustainable Resources Management Inc.
Vistar Energy Consulting
4. White Paper Sub-Committee Update
Ken Wacks (Ken Wacks Associates)

4.1 In Progress:
“Fire Alarm Systems in Buildings”

Canadian Fire Alarm Association (Chair)
ex. US Services, Inc.
4. White Paper Sub-Committee Update
Ken Wacks (Ken Wacks Associates)

4.1 In Progress:
“Architecting Intelligent Self Learning Adaptive Smart Campus Framework for Smart Cities”

NAVATAT Solutions (Chair)
4. White Paper Sub-Committee Update
Ken Wacks (Ken Wacks Associates)

4.1 In Progress:
“Needlepoint Bipolar Ionization and its Contribution to Smart and Safe Buildings”

Pure Air Control Services, Inc. (Chair)
4. White Paper Sub-Committee Update
Ken Wacks (Ken Wacks Associates)

4.1 In Progress:
“Part 2: The Evolution of Integrating LiFi Technology into Smart Lighting and Control Systems for the Intelligent Building”

Wharton County Junior College (Chair)
Acuity Brands, Inc.
ArcoLogix LLC
SnapAV
Ken Wacks Associates
National Electrical Manufacturers Association
Telecommunications Industry Association (TIA)
4. White Paper Sub-Committee Update
Ken Wacks (Ken Wacks Associates)

All proposals and previously completed IBC White Papers can be downloaded at:
www.caba.org/whitepapers
6. Research Update
Bob Allan (The Siemon Company)

6.1 2021 IBC Landmark Research “AI and Predictive Maintenance in Intelligent Buildings”
6. Research Update
Greg Walker (CABA)

6.2 Annual “BACS Market Sizing North America”

Source: Continental Automated Buildings Association (CABA) CABA Intelligent Buildings Council (IBC)
7. New Business
James Carlini (Carlini & Associates)

7.1 Paradigm Shift Impact on Commercial Buildings in a Post-Pandemic Market

James Carlini, MBA, IC
Author, Strategist, Visionary- Mission Critical Infrastructure, Expert Witness
PARADIGM SHIFT IMPACT ON COMMERCIAL BUILDINGS IN A POST-PANDEMIC MARKET

"YOU ARE A MAN WITH VISION IN A WORLD OF BLIND PEOPLE" – FRANK BISBEE, VETERAN INDUSTRY PUNDIT
THE NEW MARKET (SMART CITIES)

HOW DO YOU FOSTER ECONOMIC DEVELOPMENT FOR THIS MARKET?

JOB CREATION = TAX BASE
THE IMPACT OF “WORK-FROM-HOME” WORKFORCE BECOMING PERMANENT

**SAMPLE UNIVERSE:** 1,000 Employees at one International Company in US with locations across the US.

<table>
<thead>
<tr>
<th>PRE-COVID</th>
<th>POST-COVID</th>
</tr>
</thead>
<tbody>
<tr>
<td>6%</td>
<td>46%</td>
</tr>
</tbody>
</table>
“MISSION CRITICAL APPLICATIONS MEANS THERE CAN BE NO SINGLE POINT-OF-FAILURE”

- James Carlini

• AUTHOR, KEYNOTE SPEAKER

• FORMER AWARD-Winning Adjunct Professor, Northwestern University

• Strategic Advisor, Intelligent Infrastructure & Mission Critical Applications
YOU CANNOT HAVE A SMART CITY

If you have Dumb Buildings!
WHO WILL LOSE OCCUPANCY?

- THOSE WHO FAIL TO SEE THE PARADIGM SHIFT
- THOSE WHO DO NOT HAVE INTELLIGENT AMENITIES IN THEIR BUILDINGS
- REDUNDANT POWER
- REDUNDANT NETWORK CONNECTIVITY
- ROUTING DIVERSITY
IN A POST-PANDEMIC ECONOMY
CAN YOUR CITY COMPETE?

CAN YOUR BUILDINGS COMPETE?
HOW MANY BUILDINGS IN YOUR DOWNTOWN AREA ARE TECHNOLOGICALLY OBSOLETE?

PROPOSED RESEARCH STUDY

WHERE ARE THE OPPORTUNITIES TO ADD AMENITIES?
**WHAT ARE WE LOOKING FOR IN BUILDINGS?**

<table>
<thead>
<tr>
<th>AMENITY</th>
<th>REDUNDANT</th>
<th>ROUTING DIVERSITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>POWER</td>
<td>Yes or No</td>
<td>Yes or No</td>
</tr>
<tr>
<td>BROADBAND CONNECTIVITY</td>
<td>Yes or No</td>
<td>Yes or No</td>
</tr>
</tbody>
</table>

**CABLING CAPACITIES**

<table>
<thead>
<tr>
<th>SPARE CAPACITY OF CABLING WITHIN THE BUILDING</th>
<th>USING TWINS* FORMULA (Proprietary Methodology)</th>
<th>*TOTAL PAIR, WORKING PAIR, IN-SERVICE PAIR, NON-WORKING PAIR, SPARE PAIR</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPARE CAPACITY OF CABLING COMING INTO THE BUILDING</td>
<td>USING TWINS FORMULA</td>
<td>SAME AS ABOVE</td>
</tr>
</tbody>
</table>

*TOTAL PAIR, WORKING PAIR, IN-SERVICE PAIR, NON-WORKING PAIR, SPARE PAIR
JAMES.CARLINI@SBCGLOBAL.NET

773-370-1888

PRESIDENT, CARLINI & ASSOCIATES

Expert Witness, Civil & Federal Courts
7. New Business
Brian Ensign (Superior Essex Communications)

7.2 Other new IBC business?
8. Adjournment
Brian Ensign (Superior Essex Communications)

Next IBC Meeting, Late September/Early Oct 2021

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